N2O

User Manual

> **Note:** All references to the N2O version in this manual are indicated by *vrs* or *v.r.s.* The current release of N2O is version 5.3.1.

This document is applicable to N2O, and N2O/3GL Version 5.3.1. N2O/3GL is a separately priced, optional feature.

Comments pertaining to this document, N2O, and N2O/3GL are encouraged. Please direct all comments to:

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Worldwide marketing of N2O and other Treehouse products is handled through the Sewickley office.

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PREFACE

The N2O documentation consists of an Administrator Manual, a User Manual, and an Administrative Guide. The Administrator Manual is designed to be used by the N2O Administrator, the User Manual is geared toward the everyday user of N2O, and the Administrative Setup Guide will assist the N2O Administrator in defining N2O's Environment Subsystem.

The first section of the Administrator Manual is an introduction, which defines Change Management and provides an overview of N2O.

The second section describes the installation procedure for N2O. This section illustrates the procedure for OS, VSE, VM, and Siemens BS2000 environments. Sample JCL is included for each environment. This section also describes conversion from N2O 4.0 to N2O 5.0.

The third section describes the Environment Subsystem. This section illustrates the manner in which site-specific information is provided to N2O. The sub-sections describing the Environment Subsystem are arranged in the order in which installation is performed. This arrangement allows the Environment Subsystem section to be used as a tutorial in addition to serving as a reference.

Security for N2O is administered in the Environment Subsystem, but it is discussed in the fourth section of the Administrator Manual. This section explains the different profiles that determine security for N2O users.

The fifth section describes N2O and N2O/3GL operations. Some of the operations included in this section are: customization options, running batch migrations and remote migrations, and Static SQL support.

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* In this document, CA-LIBRARIAN is referred to as LIBRARIAN, CA-PANVALET is referred to as PANVALET, CA-ACF2 is referred to as ACF2, CA-TOP SECRET is referred to as TOP SECRET, and CA-ENDEVOR is referred to as ENDEVOR.

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SECTION I

INTRODUCTION

I.1   Change Management Using N2O

N2O is an exceptional change management tool for programmers and others involved in application development. It performs many tasks including the following:

- Controls, monitors, and coordinates program changes made to applications
- Quickly and efficiently incorporates program changes into production
- Protects the integrity of production code and program changes
- Ensures that changes are tested and approved before being implemented
- Secures migrations by defining migration paths for users
- Archives and recovers previous versions of programs for an application
- Coordinates programming-related activities of development staff
- Maintains complete audit trails to provide the history of all program changes
- Tracks the status of changes and assists in managing projects
- Compares the differences between two NATURAL source programs, two NATURAL object programs, or two environments
- Documents and prints NATURAL objects, File Layouts, Descriptor X-Ref (Cross-Reference) Information, Object Flow Analysis, and Object X-Ref in local N2O environments
- Scans for strings over the object/library range specified by the user and reports on (and records for future lookup) all matches

These tasks help to minimize paper trails, secure environments, improve programmer productivity, reduce management review time, and add to the integrity of applications.

N2O provides Change Management for DDMS, METADATA, NATURAL objects, PREDICT objects, and SYSERR messages.

DDM	Data Definition Modules (DDM)
METADATA	METADATA for User Defined Entities
NATURAL objects	Any of the following in source and/or object format: programs, subprograms, subroutines, copycode, helproutines, maps, global data areas, local data areas, parameter data areas, classes, adapters, dialogs, command processors, and text.
PREDICT objects	Any of PREDICT's predefined object types. N2O requires PREDICT version 3.1 or later for migrating PREDICT objects.
SYSERR messages	User-supplied messages in short and/or extended form.

N2O/3GL, a separately-priced optional feature, provides Change Management for 3GL objects by interfacing with ENDEAVOR, The LIBRARIAN, and PANVALET. N2O/3GL also migrates 3GL objects between OS/390 (MVS) Partitioned Datasets (PDSs) using the IEBCOPY Utility.

3GL objects   Any of the following categories: Assembler, COBOL, FORTRAN, PL/I, RPG, JCL, DATA, MISC, or OTHER.

The Change Management process begins with a request to correct problems, enhance features, or add new applications. To perform these tasks, programmers may migrate or transfer objects from one environment to another. These migrations define an Application Life Cycle.

Sample Application Life Cycle

The diagram above shows a sample Application Life Cycle consisting of three environments: Production (PROD), Development (DEV), and Test (TEST). The diagram also shows an Archive file (ARCH) which contains previous versions of programs.

A programmer migrates objects from the Production environment to the Development environment to initiate a change request. The Production versions of the objects are modified and tested in Development.

After modifying objects in the Development environment, programmers may migrate them to the Test environment where they can be evaluated and tested before being migrated to Production. Typically, a testing or quality assurance group must approve an object for migration to Production. If problem areas are identified during testing, the modified objects may be rejected back to Development. Programmers may then correct these problems and migrate the objects back to Test again. This cycle may be repeated several times. When testing is complete, the objects may be approved to migrate to Production, completing the Change Management process.

Note: Individual site Application Life Cycles may vary greatly from the sample.

N2O Events

An Event is the process of migrating an object between environments using N2O. Examples of Event names are: GEN-LEDG, PAYROLL, and BENEFITS. All migrations in the N2O system have an Event name and an Event sequence number. Event sequence numbers are internally assigned during the migration process.

Once an Event is created, the objects may be migrated immediately, or they may require authorization for migration. If authorization is required, the specified objects will not be migrated until proper authorization is obtained.

I.2 N2O Subsystems

N2O is divided into five Subsystems, each having a separate responsibility within the Change Management process. These Subsystems are logically arranged so that many similar functions can be executed within the same Subsystem.

Environment Subsystem

After installing N2O, the N2O Administrator must define the site's environment and Change Management requirements using the Environment Subsystem. Information and instructions for this subsystem are located in the ***N2O Administrator Manual***.

Migration Subsystem

The Migration Subsystem initiates the Change Management process by creating and processing Events.

This Subsystem allows users to create Events by selecting objects to migrate. These objects include DDMS, METADATA and NATURAL objects, PREDICT objects, 3GL/OTHER objects, and SYSERR messages. N2O verifies authorization for users before processing an Event. If authorization is necessary, N2O holds the Event until the proper authorization is provided. Once authorization occurs, N2O migrates the objects to the specified environment and stores information about the Event.

N2O provides Checkout/Checkin, a feature that controls and monitors changes in an Application Life Cycle. Checkout/Checkin is designed to protect the integrity of objects throughout the Application Life Cycle and to provide an audit trail. N2O can limit multiple checkouts for an object and prevents objects from being overwritten.

Project Tracking Subsystem

The Project Tracking Subsystem maintains detailed information about projects and associated tasks.

Project Tracking can be used to collect requests for changes to a project from users at all levels. A request for a change then becomes a task for a specific project. A task is documented and its progress can be tracked as it advances from one stage to another.

The Project Tracking Subsystem can be used for NATURAL and non-NATURAL application development, as well as other non-programming projects.

Reporting Subsystem

The Reporting Subsystem provides vital information for users, such as administrators, programmers, and auditors. For example, the checked-out Objects Report assists programmers in identifying objects currently checked out.

Toolbox Subsystem

The Toolbox Subsystem supplies application development tools for administrators and programmers. These tools aid in the development, maintenance, and documentation of NATURAL applications.

User-Defined Subsystem

The User-Defined Subsystem allows site-specific, customized programs to be accessed from the N2O menu system

I.3   N2O Features

N2O automates the Change Management process by offering many features, including the following:

Archiving/Recovery
Archiving/Recovery retains previous versions of NATURAL objects, PDS members, and SYSERR messages for future recovery. Users may access the Archive file to view and to recover these versions.

Audit Trail
The Audit Trail maintains information about Events and migrated objects.

Autocompile
Autocompile automates the NATURAL object and 3GL member compile process.

Checkout/Checkin
Checkout/Checkin controls and monitors object changes and protects the integrity of objects throughout the Application Life Cycle.

Compare Utilities
Compare utilities provide reports that identify the differences between two NATURAL source programs, two NATURAL object programs, or two environments.

Cross Reference (XREF)
Cross Reference (XREF) uses PREDICT XREF information to identify all related programs affected or invoked by a object selected to be migrated. XREF is available only for NATURAL objects.

Documentation Toolbox
Documentation Toolbox function provides utilities to print NATURAL objects, File Layouts, Descriptor X-Ref (Cross-Reference) Information, Object Flow Analysis, Object X-Ref, NATURAL SYSERRs, and Archived 3GL Objects in local N2O environments.

N2OSCAN
The N2OSCAN utility processes the source of NATURAL objects, scanning for strings over the object/library range specified by the user, and reports on (and records for future lookup) all matches.

On-line Authorization
On-line authorization ensures integrity and secures applications by allowing only authorized users to migrate objects between environments. This feature provides up to ten levels of authorization, and allows the N2O Administrator to specify the order of authorization. Routine migrations may not require any authorization.

On-line/Batch Migration
On-line/Batch Migration provides the flexibility of migrating objects on-line or in batch. On-line migrations allow users to migrate objects immediately. Batch migrations allow users to schedule migrations for specific times.

On-line Request System
The On-line Request System allows a user to select objects to migrate.

Project Tracking

Project Tracking allows the progress of programming projects and non-programming projects to be assessed quickly through on-line and batch reports.

Reporting

Reporting provides reports about Events and objects by accessing information stored as an audit trail within N2O.

Security

Security controls the migration of objects and access to N2O menus and functions.

User-exits

User-exits provide the flexibility to tailor N2O for site-specific needs, such as additional security and the ability to interface with other software.

I.4   The N2O User Interface

The N2O interface makes the setup and operation of the product easy and trouble-free. N2O makes use of PF-keys, supports the use of direct commands, has an on-line help facility, and has an error trapping system.

There are several types of screens that are used throughout N2O:

Startup Screens
>   Startup screens display authorization and version information about N2O.

Menu Screens
>   Menu screens display sub-functions and allow the selection of a sub-function.

Data Entry Screens
>   Data entry screens display input fields for entering data necessary to perform N2O functions.

Selection Screens
>   Selection screens display a list of items available for possible processing.

Help Screens
>   Help screens display information about the current function or valid data for the field.

Error Message Screens
>   Error message screens display information about an error that has occurred during the use of N2O.

Startup Screens

Entering "N2O" at the NATURAL "Next" prompt or logging on to the library N2OLIB and typing "Menu" displays the N2O startup screen.

```
           NN        NN                              OOOO
           NNN       NN                           OO      OO
           NNNN      NN                          OO        OO
           NN  NN    NN                          OO        OO
           NN   NN   NN      2222222             OO        OO
           NN     NNNN      22      22           OO        OO
           NN      NNN              22            OO      OO
           NN       NN             22              OOOO
                                  22
                                 22
                                 222222222


        Authorized for use      N-2-O Trademark Pending       VERSION : 5.3
        by licensee only        (C) COPYRIGHT 1988-2015       SM  LVL : 1

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                              2605 Nicholson Road Suite 230
                                Sewickley, Pennsylvania
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        tsi@treehouse.com           www.treehouse.com      support@treehouse.com

                              Press ENTER to continue
```

Menu Screens

N2O menu screens display only the sub-functions listed in a user's security definition and contain an Enter Code field, a Direct Command line, and PF-keys. Menu screens are labeled in the lower right corner, identifying the Direct Command that accesses the menu screen.

```
01-12-31                         N-2-O MAIN MENU                    TSI0373
11:38:00                                                           TSI1

                    Code   Function
                    ----   ----------------------
                     E     Environment Subsystem
                     M     Migration Subsystem
                     R     Reporting Subsystem
                     T     Toolbox Subsystem
                     U     User-Defined Subsystem
                     .     Terminate N-2-O Session
                    ----   ----------------------

         Enter Code :   M




 Direct Command: _____            N2O MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

The Enter Code field allows users to select a menu sub-function. For example, on the screen above, entering "M" in the Enter Code field accesses the Migration Subsystem Menu.

The Direct Command line allows users to directly access menu screens. For example, entering MIG MENU on the Direct Command line accesses the Migration Subsystem Menu.

The Direct Command line may also be used to update changes made to a user's security during the user's N2O session by entering "REFRESH" on the Direct Command line. NATURAL System commands may be executed using the Direct Command line. Each NATURAL System command must be preceded by SYS. For example, entering SYS FIN exits N2O and NATURAL.

The PF-keys allow users to request help, end the function, access menu screens, or exit N2O. PF-keys 13-24 provide the same functions as PF-keys 1-12. For example, pressing PF1 or PF13 displays on-line help.

N2O screens, except for the startup screens, follow a standard template. The upper left corner of the screen displays the date and time. The upper right corner of the screen displays the User-ID and Terminal-ID. The top middle of the screen displays the name of the current N2O screen.

Data Entry Screens
Data entry screens allow users to enter data to perform N2O functions.

```
13-10-04                  N-2-O OBJECT REPORTING              TSI0373
14:01:18                  HISTORY OF AN OBJECT                SC0TCP06



                    Object         :  _____

                    Library        :  _____

                    Date Range     :  _____  -  _____

                    List Events    :  A (All/Closed/Open)

                    Detailed Report:  N (Batch Only)

                    Mode           :  O






  Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

For example, the History of an Object report requires an object name and a mode
specification to display the history of an object. The Library and Date Range are optional
fields that limit the output of the report.

Selection Screens
Selection screens display a list of items available for possible processing.

```
Valid Values: C - Copy D - Delete I - Inquire M - Modify
01-12-31               N-2-O SELECT EVENTS FOR PROCESSING          TSI0373
11:38:00                          STATUS:O                         TSI1

                    From To  Event ----Added----     ----Task----
S     Event   Seq  Env  Env  Type  User-ID Date      Group    Number
-     ------- ---- ---- ---- ---   ------- --------   -------- ------
_     EXTRACT 3311 EXTP EXTM N     TSI1    01-12-31   *****    *****
_     PAYOUT  1245 PAYP PAYD N     TSI1    01-12-31   *****    *****










Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  CHNG  ----  ----  ----  ----  ----  ----  ----
```

For example, the Select Events for Processing screen displays a list of Events. Entering D, I,
or M in the Select field next to an Event identifies the function (Delete, Inquire, or Modify) to
be performed.

Help Screens
Help Screens are available on Menu and Data Entry screens. There are two types of help screens: field-level help and screen-level help.

Field-Level Help
Pressing PF1 or entering "?" on a field invokes field-level help (if it is available).

```
01-12-31                         N-2-O MAIN MENU                      TSI0373
11:38:00                                                             TSI1

                       Code  Function
                       ----  ----------------------
                        E    Environment Subsystem
                        M    Migration Subsystem
                        R    Reporting Subsystem
                        T    Toolbox Subsystem
                        U    User-Defined Subsystem
                        .    Terminate N-2-O Session
                       ----  ----------------------

            Enter Code :  _



 Direct Command:  ?_____                    N2O MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

For example, entering "?" on the Direct Command line invokes field-level help for direct commands.

After entering "?" on the Direct Command line, the pop-up window below displays a list of Direct Commands.

```
 01-12-31                      N-2-O MAIN MENU                    TSI0373
 11:38:00                                                         TSI1

                   Code  Function
         +----------------------------------------------------------------+
         |Please select a screen name                                     |
         | X  Command                    Description                      |
         | -  -------  ------------------------------------------------ |
         | _  N2O MENU  MAIN MENU                                          |
         | _  ENV MENU  ENVIRONMENT SUBSYSTEM MENU                        |
         | _  ENV ARCH  ARCHIVE DEFINITION MENU                           |
         | _  ENV NODE  NODE DEFINITION MENU                              |
         | _  ENV EVNT  MASTER EVENT MENU                                 |
         | X  ENV PARM  INSTALL PARMS MENU                                |
         | _  ENV MIG   MIGRATION PROFILE MENU                            |
         | _  ENV DEF   ENVIRONMENT DEFINITION MENU                       |
         +----------------------------------------------------------------+



 Direct Command:  ?_____      N2O MENU
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Users may select a direct command by entering "X" in the Select field next to the command. For example, the screen above indicates "ENV PARM" has been selected. After pressing Enter, "ENV PARM" is then inserted on the Direct Command line.

Pressing Enter without selecting an item displays the next page of the selection list. Pressing Enter on the last page displays the top of the selection list. Pressing PF3 returns to the screen.

Throughout the manual, the availability of field-level help is identified with an infinity character (∞) beside the field in the field description table.

Screen-Level Help

Pressing PF1 or entering "?" in a field that does not have field-level help invokes screen-level help.

```
 01-12-31                  N-2-O HELP SCREEN FOR N2O0000P                  11:38:00

    N2O Main Menu

    Field             Description                                              *
    ----------------  --------------------------------------------
    ENTER CODE        The function to be executed.  Valid values
    (required)        are as follows:

                      E   Environment Subsystem
                          Defines site standards for Change Management
                                                                              *
                      M   Migration Subsystem
                          Migrates programs in a controlled manner using
                          information defined in the Environment Subsystem
                                                                              *
                      P   Project Tracking Subsystem
                          Maintains detailed information about Projects and
                          tracks the progress of changes within those Projects
                                                                              *

 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  TOP   UP    DOWN  BOT   ----  ----  ----
```

For example, the screen above displays screen-level help for the N2O Main Menu.

All screen-level help for N2O is stored in the library N2ODOCS and may be modified by editing the program name identified at the top of the Help screen. For example, N2O0000P is the program to be accessed for editing help information for the above screen. Screen-level help displays a maximum of 36 lines of text.

The following PF-keys are provided for screen-level help:

Key	Function	Description
PF3	END	ends screen-level help
PF6	TOP	pages to the top of the text
PF7	UP	pages up (back) through the text
PF8	DOWN	pages down (forward) through the text
PF9	BOT	pages to the bottom of the text

Error Message Screens
Error Message screens display information about an error and identifies the N2O program that was running when the error occurred.

```
01-12-31                    N-2-O FATAL ERROR DETECTED                    TSI0373
11:38:00                                                                  TSI1


           A FATAL ERROR HAS BEEN DETECTED BY N2O ROUTINE:  N2O1380N

        THE FOLLOWING ERROR MESSAGE WAS PROVIDED BY THE FAILING ROUTINE:


           PGM: N2O9200N CMD: L9 CID: L9SR RC: 9 TRACK: RSRC


           Please contact your N-2-O System Administrator or
                         Treehouse Software, Inc.
                        409 Broad Street, Suite 140
                        Sewickley, PA 15143  USA
                             (412) 741-1677
     tsi@treehouse.com           www.treehouse.com           support@treehouse.com


                 THIS N-2-O SESSION WILL BE TERMINATED.

                        PRESS ENTER TO PROCEED.
```

For example, the screen above shows that program N2O1380N called the subprogram N2O9200N and received a response code 9. The solution to response code 9 is restarting N2O.

Have the PGM, CMD, CID, RC, and TRACK information available when calling Treehouse Software.

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SECTION II

MIGRATION SUBSYSTEM

II.1   Introduction

The Migration Subsystem is the core of N2O where Events are created. An Event is the process of migrating NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages between environments using N2O.

The Migration Subsystem is used by developers to create and maintain Events, as well as by managers and support personnel to authorize Events. The Migration Subsystem relieves the DBA and systems administration staff of the day-to-day tasks associated with change management.

The Migration Subsystem section presents topics in the following order:

- Request Events
- Authorize Events
- Service Events
- Migration Utilities
- Checkout/Checkin Utilities
- Batch JCL Submission

Note: Field description tables in this section display valid object types for fields. Object types include the following: DDMS (D), METADATA (M), NATURAL objects (N), PREDICT objects (P), 3GL/OTHER objects (O), and SYSERR messages (S).

To access the Migration Subsystem menu, enter "M" on the N2O Main menu, enter the direct command MIG MENU, or press PF5 on any menu.

```
 01-12-31                      N-2-O MAIN MENU                      TSI0373
 11:38:00                                                           TSI1

                    Code   Function
                    ----   -------------------------
                     E     Environment Subsystem
                     M     Migration Subsystem
                     P     Project Tracking Subsystem
                     R     Reporting Subsystem
                     T     Toolbox Subsystem
                     U     User-Defined Subsystem
                     .     Terminate N-2-O Session
                    ----   -------------------------

            Enter Code:  _




  Direct Command: _____            N2O MENU
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

After following the instructions on the previous page, the Migration Subsystem menu is displayed.

```
01-12-31                N-2-O MIGRATION SUBSYSTEM MENU            TSI0373
11:38:00                                                         TSI1

                    Code   Function
                    ----   ---------------------------
                     A     Authorize Events
                     B     Batch JCL Submission
                     C     Checkout/Checkin Utilities
                     M     Migration Utilities
                     R     Request Events
                     S     Service Events
                     .     Terminate Migration Subsystem
                    ----   ---------------------------

          Enter Code:  _




 Direct Command: _____               MIG MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   ----  REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
Enter Code	The function to be executed. Valid values are as follows:

A **Authorize Events**
Authorizes open Events that require authorization.

B **Batch JCL Submission**
Submits batch JCL to the systems internal reader.

C **Checkout/Checkin Utilities**
Updates the Checkout/Checkin status of objects and provides the ability to enroll new objects.

M **Migration Utilities**
Performs Autocompile (if necessary) and completes the MOVE process for Events.

R **Request Events**
Creates and maintains Events.

S **Service Events**
Processes authorized Events that require servicing.

II.2   Request Events

The Request Events function initiates the migration process. This function allows users to request Events to migrate DDMS, METADATA, NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages. Events are created using a Master Event, which provides default values for the Event. Master Events may define a Single Target Event or Multiple Target Event.

Multiple Target Events allow a user to migrate DDMS, NATURAL objects, PREDICT objects, and/or SYSERR messages from one environment to several environments using one Event. 3GL/OTHER objects cannot be migrated to multiple targets. The targets for the Event are identified on the Master Event.

Checkout/Checkin

N2O provides Checkout/Checkin, an optional feature that controls and monitors changes in an application life cycle. It is designed to protect the integrity of objects throughout the application life cycle and to provide an audit trail. N2O limits multiple checkouts for an object and prevents objects from being overwritten.

To use Checkout/Checkin, at least one environment must be defined as a BASE environment. A BASE environment serves as a repository for source code. All non-BASE environments are referred to as "development" environments. The Checkout/Checkin feature does not permit migrations between BASE environments.

There are two methods for checking out objects:

- Existing objects are marked as checked-out when an object is selected to migrate from a BASE environment to a development environment.

- New objects in a development environment may be marked as checked-out using the Checkout Utility. For more information, refer to **Section II.6 Checkout/Checkin Utilities**.

The maintenance cycle of an existing object typically begins when it migrates from a BASE environment to a development environment. The object may continue to migrate to other development environments (e.g., system test, training, quality assurance). The cycle ends when the object migrates back to the original BASE environment. N2O then marks the object as checked-in.

When Checkout/Checkin is active, an Extract Event may be used to copy objects to a development environment without changing the Checkout status. These objects are not checked out and may be copied regardless of their current Checkout status. The following restrictions apply to Extract Events:

- The target cannot be a BASE environment.

- The migration cannot overwrite currently checked-out objects.

- The Migration method must be COPY.

When creating Multiple Target Events, the first migration path is verified against Checkout/Checkin rules. All other paths are verified against Extract rules.

Note: Once an object is checked out, only the Checkout user may request further migrations of the object. If the N2O Administrator has installed N2OEDIT, NATURAL objects checked out to a user may be edited by that user only.

When Checkout/Checkin is active, Checkout/Checkin rules are verified during the selection process. Unless a request violates the rules, the Checkout/Checkin process is transparent to the user. When an object is selected to migrate from a BASE environment, N2O marks the object as checked out. Once an object is checked out, subsequent migrations must be initiated from the current checkout location by the current checkout user. The object selection screen for migrations from development environments only displays objects the user has checked out.

The final step in the development cycle is to migrate an object back to the BASE environment for checkin. The same user responsible for the checkout must perform the checkin, and the migration must originate from the current checkout location.

The following apply when performing migrations with Checkout/Checkin active:

Migrating from BASE to Development (Checkout)

- An object is considered checked-out immediately after it is selected to migrate.

Migrating between Development Environments

- The object must be currently checked out to the requesting user.
- The Event must be initiated from the current checkout location of the object.

Migrating from Development to BASE (Checkin)

- The object must currently be checked out by the requesting user.
- The Event must be initiated from the current checkout location of the object.
- The object is considered checked-in when the object is migrated.

To access the Request Events menu, enter "R" on the Migration Subsystem menu or enter the direct command MIG REQ on any menu.

```
 01-12-31              N-2-O REQUEST EVENTS MENU                    TSI0373
 11:38:00                                                           TSI1
                       Code    Function
                       ----    ---------------------------
                        A      Add an Event
                        C      Copy an Event
                        D      Delete an Event
                        I      Inquire on an Event
                        M      Modify an Event
                        R      Recovery from Archive
                        S      Select Events for Processing
                        .      Terminate Request Event Menu
                       ----    ---------------------------

            Enter Code: _    Event    : _____    Type  : N____

                             Sequence : _____    Status: _



  Direct Command _____                      MIG REQ
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ  ----  ----  EXIT
```

Field	Description
ENTER CODE	The function to be executed. Valid values are as follows:

A	**Add an Event** Creates an Event for migrating objects.
C	**Copy an Event** Creates an Event for migrating objects by copying an existing Event.
D	**Delete an Event** Removes an Event that no longer needs to be processed.
I	**Inquire on an Event** Displays information about an Event.
M	**Modify an Event** Updates an Event.
R	**Recovery from Archive** Creates an Event for recovering objects.
S	**Select Events for Processing** Provides a list of Events that may be deleted, inquired on, or modified.

Field	Description
∞ EVENT (required)	The Master Event associated with the Event to be added or maintained. This name is a logical label used to differentiate individual migration paths. For the Select function, the name is used as a starting value.
∞ TYPE (required for Add and Copy)	The type of objects to migrate. Valid values are one or a combination of the following:

N   Indicates NATURAL objects.

S   Indicates SYSERR messages.

P   Indicates PREDICT objects.

O   Indicates 3GL/OTHER objects.

D   Indicates DDMS.

M   Indicates METADATA

   (METADATA and PREDICT objects (P) can not be migrated together)

All object types may be migrated using a single Event (Default: N).

Field	Description
SEQUENCE (required for Copy, Delete, Inquire and Modify)	The Sequence number of the request to be maintained. For the Add function, N2O automatically assigns this number.
∞ STATUS (optional)	The Status selected for display. For valid values refer to **Appendix B N2O Event Status**.

∞ indicates field-level help is available.

II.2.1 **Add an Event**

The Add an Event function creates new Events for migrating objects.

To add an Event, enter "A" in the Enter Code field, the Master Event of the Event to be added in the Event field, and "D" (DDMS), "M" (METADATA), "N" (NATURAL objects), "P" (PREDICT objects), "O" (3GL/OTHER objects), and/or "S" (SYSERR messages) in the Type field on the Request Events menu.

```
01-12-31                    N-2-O ADD AN EVENT                         TSI0373
11:38:00              Event: PAYOUT    Sequence: 1                     TSI1


          From Env       : PROD         From Library    : PAYPROD
          To Env         : DEV          To Library      : PAYDEV
          Process Date   : 20011231     Process Time    : 11:38:00
          Starting Program: _____
          Task Group     : _____       Task Number     : _____
                    Include Objects from UEX15: N
          C     _____
          o     _____
          m     _____
          m     _____
          e     _____
          n     _____
          t     _____
          s     _____
                _____
                _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

In the screen above, the Event is "PAYOUT", Sequence "1". Sequence "1" was the first/next available sequence number assigned by N2O.

The Master Event provides the other default values displayed in the Add an Event screen.

The following Field Descriptions apply to all Request Events functions (Add, Copy, Delete, Inquire, and Modify).

Field	Type	Description
EVENT (supplied)	N,S,P,O, D,M	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, D,M	The sequence number of the Event.
FROM ENV (required)	N,S,P,O, D,M	The source Environment Definition of the migration. When using Add or Copy an Event, this field may be modified if the master Event is not locked.
FROM LIBRARY (required)	N,S	The library containing the NATURAL objects and/or SYSERR messages for the migration. When using Add or Copy an Event, this field may be modified if the master Event is not locked.
TO ENV (required)	N,S,P,O, D,M	The target Environment Definition of the migration. When using Add or Copy an Event, this field may be modified if the master Event is not locked. An "*" indicates the Event is a Multiple Target Event.

(continued from previous page)

Field	Type	Description
TO LIBRARY (required)	N,S	The library to which NATURAL objects and/or SYSERR messages are to be migrated. When using Add or Copy an Event, this field may be modified. An "*" indicates the Event is a Multiple Target Event.
PROCESS DATE (required)	N,S,P,O, D,M	The earliest date on which the batch migration may take place. N2O automatically supplies the current date for Add an Event and Copy an Event, but it may be modified by the user if postdating of the migration is desired. When using Add, Copy, or Modify an Event, this field may be modified. For more information about submitting batch Events, refer to **Section II.7 Batch JCL Submission**.
PROCESS TIME (required)	N,S,P,O, D,M	The earliest time during the Process Date on which the batch migration may take place. When using Add, Copy, or Modify an Event, this field may be modified.
STARTING PROGRAM (optional)	N	The first NATURAL object to appear in the NATURAL object selection list. An "*" may be used as a wildcard character to start the selection list with NATURAL objects prefixed by a string (e.g., "PAY51*" shows a list of all NATURAL objects with names in the range of Starting Program "PAY51AAA" and Ending Program "PAY51999").
		If the user enters "*" as the Starting Program in an Event, all NATURAL objects are marked for migration. When using Add, Copy, or Modify an Event for NATURAL migrations, this field may be modified.
		If Program Dependent Master Events (PDME) are used, the Starting Program specified must be within the range of default values defined on the Master Event.
STARTING MESSAGE (optional)	S	The first SYSERR message to appear in the SYSERR message selection list.
		If the user enters "*" as the Starting Message in an Event, the entire application is marked for migration. When using Add, Copy, or Modify an Event for SYSERR migrations, this field may be modified.

(continued from previous page)

Field	Type	Description
SYSERR TYPE (required if migrating SYSERR)	S	The type of SYSERR messages to migrate: U Indicates user-supplied short messages are S to be migrated. U Indicates user-supplied long (extended) L messages are to be migrated. U Indicates both short and long messages are to be migrated. When using Add or Copy an Event for SYSERR migrations, this field may be modified.
SYSERR LANGUAGE (required if migrating SYSERR)	S	The language to be migrated. Valid values are single alphanumeric characters in the ranges 1 - 9, A - Z and a - y. These values are equivalent to the values available for the *LANGUAGE system variable. * Indicates all languages are to be migrated. When using Add or Copy an Event for SYSERR migrations, this field may be modified, unless Checkout/Checkin is active.
CHANGE CONTROL (required if Master Event change control='Y')	N,S,P,O, D,M	A value that relates multiple Events to a specific change request. This field is only displayed if Change Control is required. When using Add, Copy, or Modify an Event, this field may be modified.
TASK GROUP (required if Project Tracking on Master Event = 'Y')	N,S,P,O, D,M	A value that relates multiple Events to a specific Task Group from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
TASK NUMBER (required if Project Tracking on Master Event = 'Y')	N,S,P,O, D,M	A number that relates multiple Events to a specific task from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
INCLUDE OBJECTS FROM UEX15 (required)	N,S,P,O, D,M	"Y" indicates User-Exit 15 will be called to include Objects in the Event. "N" indicates User-Exit 15 will not be called. This field defaults to 'N'.
COMMENTS (optional)	N,S,P,O, D,M	A 10-line comment area describing the Event. When using Add, Copy, or Modify an Event, this field may be modified. If the master Event has Comments = 'YES', this field defaults to the Master Event comments.

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Selecting Multiple Target Environments

```
 01-12-31                   N-2-O ADD AN EVENT                      TSI0373
 11:38:00                   Event:  PAYMULT   Sequence:  4          TSI1


            From Env      :  PROD     From Library  :  PAYPROD__
            To Env        :  *___     To Library    :  *_____
            Process Date  :  20011231 Process Time  :  10:28:24
            Starting Pro +-----------------------------+
                         |                             |
                         |    Target Environments:     |
                         |                             |
              _____    |     DEV    PAYDEV           |    _____
            C _____    |     QA     PAYQA1           |    _____
            o _____    |                             |    _____
            m _____    |                             |    _____
            m _____    |                             |    _____
            e _____    |                             |    _____
            n _____    |                             |    _____
            t _____    |                             |    _____
            s _____    |                             |    _____
              _____    |                             |    _____
                         |                             |
Enter-PF1---PF2---PF3-- +-----------------------------+ -PF10--PF11--PF12---
       HELP  ----  END    ----  ----  ----  ----  ----  ----   ----   ----
```

When "*" is specified for the Environment and Library, the user must define the multiple targets in which to migrate.

Field	Description
From Environment (supplied)	Environment from which objects are migrated.
Target Environments	Environment/library to which objects are migrated.

II.2.2   Object Selection Process

The object selection process allows users to select objects to migrate. A screen is displayed allowing objects to be selected. When objects are selected, a message providing information about the selection is displayed. For more information about messages displayed when objects are selected, refer to **Section II.2.11 Object Selection Screen Messages**.

The following PF-keys are provided for scrolling throughout the selection process:

Key	**Function**	**Description**
PF7	Up	Pages up (back) through the text
PF8	Down	Pages down (forward) through the text

Note: The object selection screens for each object type to be migrated will appear. When all object selection screens have been displayed the migration process begins. (Refer to **Section II.2.3 Migration Process**.)

II.2.2.1   Selecting NATURAL Objects

When adding, copying, or modifying an Event that includes NATURAL objects, the NATURAL object selection screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD, REPLACE, or WARNING messages will be placed next to previously selected objects. NATURAL objects with no message in the Message field may be selected to migrate. When migrating from a development environment with Checkout/Checkin active, only NATURAL objects checked out to the user are displayed.

```
For the Event:  Type A to Add or D to Delete Objects
01-12-31                  N-2-O ADD AN EVENT                        TSI0373
11:38:00                  Event: PAYOUT      Sequence: 1            TSI1

From Env: PROD   From Library: PAYPROD   To Env: DEV    To Library: PAYDEV
                         Starting Object:  PAY5100M
               Object                              Object
 S  Object     Type     S/C  Message      S Object    Type     S/C  Message
 _  PAY5100M   MAP      S                  A PAY5100P  PROGRAM  S
 A  PAY5110M   MAP      S                  A PAY5110S  SUB-RTN  S
 _  PAY5120S   SUB-RTN  S                  _ PAY5130S  SUB-RTN  S
 _  PAY5140S   SUB-RTN  S                  _ PAY5150S  SUB-RTN  S
 _  PAY5160S   SUB-RTN  S                  A PAY5200M  MAP      S
 A  PAY5200P   PROGRAM  S                  _ PAY5210M  MAP      S
 _  PAY5210S   SUB-RTN  S                  _ PAY5220S  SUB-RTN  S
 _  PAY5230S   SUB-RTN  S                  A PAY5240S  SUB-RTN  S
 _  PAY5250S   SUB-RTN  S                  _ PAY5260S  SUB-RTN  S




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ALL   END   INQ   ----  ----  UP    DOWN  ----  ----  ----  STOP
```

Entering a value in the Starting Object field defines the NATURAL object where the selection list begins.

NATURAL objects are selected to migrate by entering "A" (Add) in the Select field next to each NATURAL object. Pressing PF2 automatically places "A" in the Select field next to all NATURAL objects on the selection screen. Entering "D" (Delete) in the Select field next to any of these NATURAL objects removes them from the Event. Pressing PF4 displays a pop-up window of all previously-selected NATURAL objects.

Once selections have been made and Enter is pressed, the screen below is displayed.

```
Press PF1 for more information about Messages
01-12-31                  N-2-O ADD AN EVENT                        TSI0373
11:38:00                  Event: PAYOUT     Sequence: 1             TSI1

From Env: PROD    From Library: PAYPROD    To Env: DEV    To Library: PAYDEV
                         Starting Object:  PAY5100M
               Object                              Object
 S  Object   Type     S/C  Message      S  Object   Type     S/C  Message
 _  PAY5100M MAP      S                  _  PAY5100P PROGRAM  S    REPLACE
 _  PAY5110M MAP      S    REPLACE       _  PAY5110S SUB-RTN  S    ADD
 _  PAY5120S SUB-RTN  S                  _  PAY5130S SUB-RTN  S
 _  PAY5140S SUB-RTN  S                  _  PAY5150S SUB-RTN  S
 _  PAY5160S SUB-RTN  S                  _  PAY5200M MAP      S    REPLACE
 _  PAY5200P PROGRAM  S    REPLACE       _  PAY5210M MAP      S
 _  PAY5210S SUB-RTN  S                  _  PAY5220S SUB-RTN  S
 _  PAY5230S SUB-RTN  S                  _  PAY5240S SUB-RTN  S    FAILED
 _  PAY5250S SUB-RTN  S                  _  PAY5260S SUB-RTN  S




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   INQ   ----  ----  UP    DOWN  ----  ----  C/O   STOP
```

The screen on the previous page allows the user to verify selections. A message is displayed in the Message field for the selected NATURAL objects. Add or Replace is the usual message that will appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

After selecting and verifying NATURAL objects on the current screen, pressing Enter displays the next screen of NATURAL objects. Pressing Enter on the last page or PF12 ends the current selection process.

XREF Selection Process for NATURAL Objects

The XREF (Cross-Reference) selection process for NATURAL objects identifies NATURAL objects affected or invoked by the objects selected to migrate. This process uses Cross-Reference information stored in PREDICT and is invoked following the selection process for NATURAL objects. Objects identified by XREF may optionally be added to the Event.

There are two options available: "Include XREF objects in the Event" or "Do not include XREF objects in the Event". The N2O Administrator determines which options are available for the XREF selection process for NATURAL objects on a user-by-user basis.

If the N2O Administrator specifies one option for the user, no pop-up window is displayed and the option assigned to that user is performed. However, if the N2O Administrator specifies both options for a user, a pop-up window allows the user to select one of the options for the Event.

```
 01-12-31                    N-2-O ADD AN EVENT                    TSI0373
 11:38:00                  Event: PAYOUT   Sequence: 1             TSI1

From Env: PROD    From Library: PAYPROD    To Env: DEV    To Library: PAYDEV
                     Starting Object:  PAY5100M


            Object
 S  Object    Type    +---------------------------------------+ S/C Message
 _  PAY5100M  MAP     |            Select An Option           |  S  REPLACE
 _  PAY5110M  MAP     |                                       |  S  ADD
 _  PAY5120S  SUB-RTN |   _  Include XREF objects in          |  S
 _  PAY5140S  SUB-RTN |      the Event.                       |  S
 _  PAY5160S  SUB-RTN |                                       |  S  REPLACE
 _  PAY5200P  PROGRAM |    - Do not include XREF objects in   |  S  ADD
 _  PAY5210S  SUB-RTN |      the Event.                       |  S
 _  PAY5230S  SUB-RTN |                                       |  S
 _  PAY5250S  SUB-RTN +---------------------------------------+  S




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  TOP   UP    DOWN  BOT   ----  ----  STOP
```

If the first option in the pop-up window, "Include XREF objects in the Event", is selected, the selection screen below is displayed.

```
Type A To Add NATURAL Programs To The Event
 01-12-31              N-2-O XREF LISTING                          TSI0373
 11:38:00              Event: PAYOUT    Sequence: 1                TSI1

From Env: PROD    From Library: PAYPROD   To Env: DEV    To Library: PAYDEV

   S   Object       Explanation              Objects selected to migrate
  ---  --------     ----------------------   ------------------------------
   -   MENUL        Invoked by               MENU
   -   MENU1        Invoked by               MENU
   -   PAY5100P     Affected by Changes to   PAY5100M  PAY5110M
                    and is Invoked by        MENU
   -   PAY5210S     Invoked by               PAY5200P
   -   PAY5230S     Invoked by               PAY5200P
   -   PAY5250S     Invoked by               PAY5200P




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ALL   END   INQ   ----  ----  ----  ----  ----  ----  ----  STOP
```

NATURAL objects identified by XREF are selected to migrate by entering "A" (Add) in the Select field next to each NATURAL object.

If the second option, "Do not include XREF objects in the Event", is selected, XREF processing is ignored.

II.2.2.2 Selecting SYSERR Messages

When adding, copying, or modifying an Event that includes SYSERR messages, the SYSERR message selection screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD, REPLACE, or WARNING messages will be placed next to previously selected objects. SYSERR messages with no message in the Message field are available to be selected to migrate. When migrating from a development environment with Checkout/Checkin active, only SYSERR messages checked out to the user are displayed.

```
For the Event:  Type A to Add or D to Delete Objects
 01-12-31                N-2-O ADD AN EVENT                        TSI0373
 11:38:00              Event: PAYOUT   Sequence: 1                 TSI1

From Env: PROD    From Library: PAYPROD   To Env: DEV    To Library: PAYDEV
                          Starting Object:  1010
                 SYSERR                        SYSERR    SYSERR
 S    Object     Language  S/L  Message   S    Object    Language  S/L  Message
 A    1010       E         S              A    1015       E         S
 _    1015       E         S              _    1040       E         S
 _    1030       E         S              _    1060       E         S
 _    1040       E         S              _    1070       E         S
 _    1050       E         S              A    1090       E         S
 _    1055       E         S              _    1110       E         S
 _    1060       E         S              _    1125       E         S
 _    1070       E         S              _    1140       E         S




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ALL   END   INQ   ----  TOP   UP    DOWN  BOT   ----  ----  STOP
```

Entering a value in the Starting Object field defines the SYSERR message where the selection list begins.

SYSERR messages are selected to migrate by entering "A" (Add) in the Select field next to each SYSERR message. Pressing PF2 automatically places "A" in the Select field next to all SYSERR messages on the selection screen. Entering "D" (Delete) in the Select field next to any of these SYSERR messages removes them from the Event. Pressing PF4 displays a pop-up window of all previously-selected SYSERR messages.

Once selections have been made and Enter is pressed, the screen below is displayed.

```
Press PF1 for more information about Messages
 01-12-31                N-2-O ADD AN EVENT                          TSI0373
 11:38:00             Event: PAYOUT   Sequence: 1                    TSI1

From Env: PROD    From Library: PAYPROD   To Env: DEV    To Library: PAYDEV
                           Starting Message: 1010
                SYSERR                           SYSERR
 S    Object   Language  S/L  Message   S   Object   Language  S/L  Message
 _    1010      E         S    ADD       _   1015      E         S    ADD
 _    1015      E         S              _   1040      E         S
 _    1030      E         S              _   1060      E         S
 _    1040      E         S              _   1070      E         S
 _    1050      E         S              _   1090      E         S    FAILED
 _    1055      E         S              _   1110      E         S
 _    1060      E         S              _   1125      E         S
 _    1070      E         S              _   1140      E         S




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   INQ  ----  TOP   UP   DOWN  BOT   ----  C/O   STOP
```

This screen allows the user to verify selections. A message is displayed in the Message field for selected SYSERR messages. Add or Replace is the usual message that will appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

After selecting and verifying SYSERR messages on the current screen, pressing Enter displays the next screen of SYSERR messages. Pressing Enter on the last page or PF12 ends the current selection process.

II.2.2.3 <u>Selecting PREDICT Objects</u>

When migrating PREDICT objects, the user must select PREDICT object types to migrate.

After pressing Enter on the Add an Event screen, a pop-up window is displayed to allow users to select PREDICT object types to be displayed for selection.

```
01-12-31              N-2-O ADD AN EVENT                     TSI0373
11:38:00              Event: PAYOUT    Sequence: 1           TSI1

        From Env     : +-------------------+   : PAYPROD_
        To Env       : |     Objects       |   : PAYDEV_
        Process Date : |  -  -----  -  ---  |   : 11:38:00
        Starting Program: |  _   DA    _  PR  |age : 0001
        SYSERR Type    : |  _   DC    _  RL  |ge : E
        Change Control : |  _   ET    _  RP  |
                  Inclu|  _   FI    _  RT  |: N
        C _____|  _   KY    _  SC  |_____
        o _____|  _   LS    _  SV  |_____
        m _____|  _   MO    _  SY  |_____
        m _____|  _   NO    _  US  |_____
        e _____|  _   NW    _  VE  |_____
        n _____|  _   PG    _  VM  |_____
        t _____|  _   UDE       |_____
        s _____+-------------------+_____
                          _____
                          _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

A separate object selection process is used for each PREDICT object type marked with "X" on the above pop-up window.

Field	Type	Description
X (optional)	P	"X" selects the PREDICT object types to be displayed for selection.
OBJECTS (supplied)	P	PREDICT objects may be selected from the following PREDICT object types:

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	Package List	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storage Space	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	
UDE	User Defined Entities	

When adding, copying, or modifying an Event that includes PREDICT objects, the PREDICT object selection screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD, REPLACE, or WARNING messages will be placed next to previously selected objects. PREDICT objects with no message in the Message field are available to be selected to migrate. When migrating from a development environment with Checkout/Checkin active, only PREDICT objects checked out to the user are displayed.

```
Type: A to Add File only; B to Add File and DDM; D - Delete
 01-12-31               N-2-O ADD AN EVENT                      TSI0373
 11:38:00               Event: PAYOUT        Sequence: 1        TSI1

From Env: PROD               To Env: DEV                  Object Type: FI
                   Starting Object: PAY-ADMINISTRATION


                                   File
             S   Object            Type   DDM    Message
             _   PAY-ADMINISTRATION  A      *
             B   PAY-ARCHIVE         A      *
             A   PAY-MIGRATION       A      *
             A   PAY-TEST-FILE       U






Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ALL   END   INQ   ----  TOP   UP    DOWN  BOT   ----  ----  STOP
```

Entering a value in the Starting Object field defines the PREDICT object where the selection list begins.

PREDICT objects are selected to migrate by entering "A" (Add) in the Select field next to each PREDICT object. Pressing PF2 automatically places "A" in the Select field next to all PREDICT objects on the selection screen. For File definitions, an additional selection option is available. Entering "B" (Both) in the Select field next to the file name selects both the file and the generated DDM. Entering "D" (Delete) in the Select field next to any of these PREDICT objects removes them from the Event. Pressing PF4 displays a pop-up window of all previously-selected PREDICT objects.

Once selections have been made and Enter is pressed, the screen below is displayed.

```
Press PF1 for more information about Messages
 01-12-31               N-2-O ADD AN EVENT                      TSI0373
 11:38:00               Event: PAYOUT        Sequence: 1        TSI1

From Env: PROD               To Env: DEV                  Object Type: FI
                   Starting Object: BENEFITS


                                   File
             S   Object            Type   DDM    Message
             _   PAY-ADMINISTRATION  A      *
             _   PAY-ARCHIVE         A      *    ADD
             _   PAY-MIGRATION       A      *    ADD
             _   PAY-TEST-FILE       U           FAILED






Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ALL   END   INQ   ----  TOP   UP    DOWN  BOT   ----  C/O-  STOP
```

The screen on the previous page allows the user to verify selections. A message is displayed in the Message field for selected PREDICT objects. Add or Replace is the usual message that will appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

After selecting and verifying PREDICT objects on the current screen, pressing Enter displays the next screen of PREDICT objects. Pressing Enter on the last page or PF12 ends the current selection process.

Related Userview Selection Process for PREDICT Files

The related userview selection process identifies userviews related to ADABAS Master Files selected to migrate. This process is invoked following the selection process for PREDICT files. The userviews identified by this process may optionally be added to the Event. When an ADABAS Master File is migrated, all ADABAS userviews of this file must also be migrated, or the userviews are locked and deleted at the target of the migration.

There are two options available: "Include related userviews in the Event" or "Do not include related userviews in the Event". The N2O Administrator determines which options are available for the related userview selection process for PREDICT files on a user-by-user basis.

If the N2O Administrator specifies one option for the user, no pop-up window is displayed and the option assigned to that user is performed. However, if the N2O Administrator specifies both options for a user, a pop-up window allows the user to select one of the options for the Event.

```
Press PF1 for more information about messages
 01-12-31                  N-2-O ADD AN EVENT                        TSI0373
 11:38:00              Event: PAYOUT          Sequence: 1            TSI1

From Env: PROD              To Env: DEV                         Object Type: FI
                    Starting Object: PAYROLL
                +---------------------------------------+
          S   Objec|          Select an Option          |
          _   PAY-A|                                     |
          _   PAY-A|  _   Include related userviews in   |
          _   PAY-M|      the Event.                     |
          _   PAY-T|                                     |
                   |                                     |
                   |  _   Do not include related userviews|
                   |      in the Event.                  |
                   |                                     |
                   |                                     |
                   |                                     |
                   +---------------------------------------+



Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ALL   END   INQ   ----  TOP   UP    DOWN  BOT   ----  ----  STOP
```

If the first option in the pop-up window, "Include related userviews in the Event", is selected, the selection screen below is displayed.

```
Type A to ADD Userview to the Event.
 01-12-31                 N-2-O USERVIEW XREF LISTING                 TSI0373
 11:38:00                 Event: PAYOUT  Sequence: 1                  TSI1

From Env: PROD              To Env: DEV                      Object Type: FI

   S    Userview                       Master File
   -    --------------------------     --------------------------------
   _    BENEFITS                       PAYROLL














Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ALL   END   INQ  ----  ----  ----  ----  ----   ----  ----  STOP
```

Userviews are selected to migrate by entering "A" (Add) in the Select field next to each userview.

If the second option in the pop-up window, "Do not include related userviews in the Event", is selected, the related userview selection process is ignored and the selection process continues.

UDE Selection Process

If UDE – User Defined Entities is selected from the PREDICT object types the selection screen below is displayed.

```
 01-12-31               N-2-O ADD AN EVENT                    TSI1
 09:54:48               Event:  PAYOUT    Sequence:  1        TERM

           From Env:  PROD                  To Env:  DEV

   UDE                                  UDE
 S Ty Description                     S Ty Description
 _ CM COMPANIES                       _ M1 METADATA1
 _ M2 METADATA2                       _ M3 METADATA3
 _ M4 METADATA4                       _ M5 METADATA5
 _ PD PRODUCTS


                _____


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

A separate object selection process is used for each UDE marked with "X" on the above screen.

Field	Description
X (optional)	"X" selects the UDE – User Defined Entities to be displayed for selection.
Type (supplied)	Object type of the UDE – User Defined Entities
Description (supplied)	Description of the UDE – User Defined Entities

II.2.2.4 Selecting 3GL/OTHER Objects

When migrating 3GL/OTHER objects, the user must select 3GL/OTHER Categories to migrate.

After pressing Enter on the Add an Event screen, a pop-up window allows users to select 3GL/OTHER Categories to be displayed for selection. When requesting ENDEVOR Events, a pop-up window requires the ENDEVOR System and Subsystem to be entered before the pop-up window is displayed.

```
01-12-31                    N-2-O ADD AN EVENT                          TSI0373
11:38:00                    Event: PAYOUT      Sequence: 1              TSI1


            From Env      : +----------------------+ry   : PAYPROD_
            To Env        : |  X    Categories     |     : PAYDEV__
            Process Date  : |  -    ----------      |me   : 11:38:00
            Starting Program: |  _    ASMB          |ssage : 0001
            SYSERR Type   : |  _    COBOL          |uage  : E
            Change Control : |  _    FORT          |
                    Inclu| _     PL/I           |: N
     C   _____| _     RPG            |_____
     o   _____| _     DATA           |_____
     m   _____| _     JCL            |_____
     m   _____| _     OTHER          |_____
     e   _____|                      |_____
     n   _____+----------------------+_____
     t   _____
     s   _____
         _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

A separate object selection process is used for each 3GL/OTHER Category marked with "X" on the above pop-up window.

Field	Description
X (optional)	"X" selects the 3GL/OTHER Categories to be displayed for selection.
CATEGORIES (supplied)	3GL/OTHER members may be selected from the following categories:

ASMB	Indicates all types of Assembler.
COBOL	Indicates all types of COBOL.
FORT	Indicates all types of FORTRAN.
PL/I	Indicates all types of PL/I.
RPG	Indicates RPG.
DATA	Indicates DATA FILES.
JCL	Indicates JCL, CLIST, CNTL.
OTHER	Indicates all other types.

When adding, copying, or modifying an Event that includes 3GL/OTHER objects, the 3GL/OTHER selection screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD, REPLACE, or WARNING messages will be placed next to previously selected objects.   3GL/OTHER objects with no message in the Message field are available to be selected to migrate. When migrating from a development environment with Checkout/Checkin active, only 3GL/OTHER objects checked out to the user display.

```
Type A to Add 3GL/OTHER Members to the Event, D to Delete
 01-12-31                N-2-O ADD AN EVENT                       TSI0373
 11:38:00                Event: PAYOUT    Sequence: 1                 TSI1
        DSN Name: COBOL.DATASET
From Env: PROD              To Env: DEV                  Category: COBOL
                    Starting Object: PAYROLL1
                 Object                          Object
   S   Object    Type      Message    S  Object  Type      Message
   A   PAYROLL1  COBOL                 A  PAYROLL2  COBOL
   _   PAYROLL3  COBOL                 _  TAXSUM1   ANSCB
   _   TAXSUM2   COB72




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ALL   END   INQ   ----  TOP   UP    DOWN  BOT   ----  ----  STOP
```

Entering a value in the Starting Object field defines the 3GL/OTHER object where the selection list begins.

3GL/OTHER objects are selected to migrate by entering "A" (Add) in the Select field next to each 3GL/OTHER object. Pressing PF2 automatically places "A" in the Select field next to all members on the selection screen. Entering "D" (Delete) in the Select field next to any of these 3GL/OTHER objects removes them from the Event. Pressing PF4 displays a pop-up window of all previously selected 3GL/OTHER objects.

Once selections have been made and Enter is pressed, the screen below is displayed.

```
Press PF1 for more information about Messages
 01-12-31                 N-2-O ADD AN EVENT                        TSI0373
 11:38:00              Event: PAYOUT    Sequence: 1                 TSI1
         DSN Name: COBOL.DATASET
From Env: PROD             To Env: DEV                   Category: COBOL
                      Starting Object: PAYROLL1
                Object                         Object
   S  Object     Type      Message   S  Object     Type      Message
   _  PAYROLL1   COBOL     FAILED     _  PAYROLL2   COBOL     ADD
   _  PAYROLL3   COBOL                _  TAXSUM1    ANSCB
   _  TAXSUM2    COB72




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   INQ   ----  TOP   UP   DOWN  BOT   ----  C/O   STOP
```

This screen allows the user to verify selections. A message is displayed in the Message field for the selected 3GL/OTHER objects. 'ADD' or 'REPLACE' are the usual messages that appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

After selecting and verifying 3GL/OTHER objects on the current screen, pressing Enter displays the next screen of 3GL/OTHER objects. Pressing Enter on the last page or PF12 ends the current selection process.

II.2.2.5   Extracting and Renaming NATURAL Objects

When using an Extract Event (migrate a copy of an object without creating a checkout), the user has the option of renaming the Object in the target environment.   The new Object will be created in the target environment and an N2O catalog master record will be created for the new Object in the From Environment. The Object will not be checked-out. If the new Object is to be migrated back to the Base Environment, check the Object out using the Checkout Utility.

The following rules are in effect during an Extract Event in which Objects are renamed:

- The "new" Object cannot exist in N2O.

- The "new" Object cannot exist in the FUSER.

- The Extract Event must be a single-target Event to utilize the rename option.

- The XREF selection process will occur for the original Object if XREF selection is turned on.

- No Autocompile will take place for an Object being renamed.

When adding, copying, or modifying an Extract Event that includes NATURAL objects, the 'NATURAL object selection and rename' screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD messages will be placed next to previously selected objects. NATURAL objects with no message in the Message field may be selected to migrate.

```
For the Event:Type A to Add or D to Delete Objects
 01-12-31                    N-2-O ADD AN EVENT                    TSI0373
 11:38:00                    Event:  PAYOUT  Sequence:  264        TSI1

  From Env:  PROD  From Library:  PAYPROD   To Env:  DEV  To Library: PAYDEV
                        Starting Object:  PROG1___
                          Object
             S  Object       Type     S/C  Rename To    Message
             A  PAY5100P     PROGRAM   S    _____
             A  PAY5110P     PROGRAM   S    _____
             _  PAY5130P     PROGRAM   S    _____
             _  PAY5150P     PROGRAM   S    _____
             _  PAY5160S     SUB-RTN   S    _____
             _  PAY6000P     PROGRAM   S    _____
             A  PAY6010P     PROGRAM   S    PAY601A_
             A  PAY6020P     PROGRAM   S    PAYEX6__
             _  PAY6030P     PROGRAM   S    _____
             _  PAY6040P     PROGRAM   S    _____
             _  PAY6050P     PROGRAM   S    _____
             _  PAY6060P     PROGRAM   S    _____
             A  PAY7000P     PROGRAM   S    PAYEX7__
             _  PAY7010P     PROGRAM   S    _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ALL   END   ----  ----  ----  UP    DOWN  ----  ----  ----  STOP
```

Entering a value in the Starting Object field defines the NATURAL object where the selection list begins.

NATURAL objects are selected to migrate by entering "A" (Add) in the Select field next to each NATURAL object. Pressing PF2 automatically places "A" in the Select field next to all NATURAL objects on the selection screen. Entering "D" (Delete) in the Select field next to any of these NATURAL objects removes them from the Event. Pressing PF4 displays a pop-up window of all previously-selected NATURAL objects.

Once selections have been made and Enter is pressed, the screen below is displayed.

```
Press PF1 for specific information regarding messages
 01-12-31               N-2-O ADD AN EVENT                    TSI0373
 11:38:00             Event:  PRODTEST  Sequence:  264        TSI1

  From Env:  KALT  From Library:  PRODLIB   To Env:  KALT  To Library: TESTLIB
                        Starting Object:  PROG1___
                        Object
             S  Object    Type     S/C  Rename To     Message
             _  PAY5100P  PROGRAM   S   _____      ADD
             _  PAY5110P  PROGRAM   S   _____      REPLACE
             _  PAY5130P  PROGRAM   S   _____
             _  PAY5150P  PROGRAM   S   _____
             _  PAY5160S  SUB-RTN   S   _____
             _  PAY6000P  PROGRAM   S   _____
             _  PAY6010P  PROGRAM   S   PAY601A_      ADD
             _  PAY6020P  PROGRAM   S   PAYEX6__      ADD
             _  PAY6030P  PROGRAM   S   _____
             _  PAY6040P  PROGRAM   S   _____
             _  PAY6050P  PROGRAM   S   _____
             _  PAY6060P  PROGRAM   S   _____
             _  PAY7000P  PROGRAM   S   PAYEX7__      EXISTS
             _  PAY7010P  PROGRAM   S   _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--F12-
      HELP  ----  END  ----  ----  ----  UP   DOWN  ----  ----  C/O   STOP
```

The screen above allows the user to verify selections. A message is displayed in the Message field for the selected NATURAL objects. ADD is the usual message that will appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

After selecting and verifying NATURAL objects on the current screen, pressing Enter displays the next screen of NATURAL objects. Pressing Enter on the last page or PF12 ends the current selection process.

II.2.2.6   Selecting DDMS

When adding, copying, or modifying an Event that includes DDMS, the DDM selection screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD, REPLACE, or WARNING messages will be placed next to previously selected objects. DDMS with no message in the Message field are available to be selected to migrate. When migrating from a development environment with Checkout/Checkin active, only DDMS checked out to the user are displayed.

```
For the Event:Type A to Add or D to Delete Objects
 01-12-31               N-2-O MODIFY AN EVENT                    TSI1
 10:18:20             Event:  PAYOUT    Sequence:  1             TERM


              From Env:  PROD             To Env:   DEV
              Starting DDM:  AC-PAYGO-SCHED_____
                                     DDM         ADA
        S  DDM                       Dbid   Fnr   6    Message
        _  AC-PAYGO-SCHED             ___71  __241
        _  ADAREORG-EMPL              ___55  ___99  X
        _  ADV-PRIORITY-ZIP           ___71  ___64
        _  AR-REFUND                  ___71  __131
        A  AR-TRANS                   ___71  __133  X
        _  BEACON-FILE                ____0  ___38  X
        _  BUDGET-STU                 ___71  ___65
        _  COMMAND                    ____1  ____1  X
        _  COMMODITIES-ADAB           ____0  ___98  X
        A  EMPL-USERVIEW              ____0  ____1  X
        _  EMPLOYEES                  ____0  ____1  X
        _  EMPLOYEES-FILE             ____0  ____1  X
        A  EMPLOYEES-PWD              ____0  ___77  X
        _  FMP-ICM-CASE-V2            ____0  __118  X
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--F12-
      HELP  ----  END   INQ   ----  ----  UP    DOWN  ----  ----  ----  STOP
```

Entering a value in the Starting DDM field defines the DDM message where the selection list begins.

DDMS are selected to migrate by entering "A" (Add) in the Select field next to each DDM. Pressing PF2 automatically places "A" in the Select field next to all DDMS on the selection screen. Entering "D" (Delete) in the Select field next to any of these DDMS removes them from the Event. Pressing PF4 displays a pop-up window of all previously-selected DDMS.

Field	Description
DDM Dbid (optional)	Database number that the DDM will point to in the target environment.
DDM Fnr (optional)	File number that the DDM will point to in the target environment.
ADA 6 (supplied)	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.

Once selections have been made and Enter is pressed, the screen below is displayed.

```
Objects selected for migration, Press ENTER to proceed
 01-12-31              N-2-O MODIFY AN EVENT                      TSI1
 10:19:45             Event: PAYOUT    Sequence: 1                TERM

              From Env:  PROD              To Env:  DEV
                                         DDM        ADA
       S  DDM                            Dbid   Fnr   6   Message
       _  AC-PAYGO-SCHED                 ___71  __241
       _  ADAREORG-EMPL                  ___55  ___99  X
       _  ADV-PRIORITY-ZIP              ___71  ___64
       _  AR-REFUND                      ___71  __131
       _  AR-TRANS                       ___71  __133  X   ADD
       _  BEACON-FILE                    ____0  ___38  X
       _  BUDGET-STU                     ___71  ___65
       _  COMMAND                        ____1  ____1  X
       _  COMMODITIES-ADAB               ____0  ___98  X
       _  EMPL-USERVIEW                  ____0  ____1  X   ADD
       _  EMPLOYEES                      ____0  ____1  X
       _  EMPLOYEES-FILE                 ____0  ____1  X
       _  EMPLOYEES-PWD                  ____0  ___77  X   FAILED
       _  FMP-ICM-CASE-V2                ____0  __118  X
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--F12-
      HELP  ----  END   INQ   ----  ----  UP    DOWN  ----  ----  ----  STOP
```

This screen allows the user to verify selections. A message is displayed in the Message field for selected DDMS. Add or Replace is the usual message that will appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

After selecting and verifying DDMS on the current screen, pressing Enter displays the next screen of DDMS. Pressing Enter on the last page or PF12 ends the current selection process.

II.2.2.7 Selecting METADATA

When adding, copying, or modifying an Event that includes METADATA, the METADATA selection screen is displayed. When User-Exit 15 is invoked or when copying or modifying an Event, ADD, REPLACE, or WARNING messages will be placed next to previously selected objects. METADATA with no message in the Message field are available to be selected to migrate. When migrating from a development environment with Checkout/Checkin active, only METADATA checked out to the user are displayed.

```
For the Event:Type A to Add or D to Delete Objects
 01-12-31                  N-2-O ADD AN EVENT                        TSI1
 12:36:39                  Event:  PAYOUT     Sequence:  1           TERM

               From Env:  PROD                To Env:   DEV
                         Starting METADATA:   CM

           S   OT   METADATA                        Message
           _   CM   COMPANIES
           A   M1   METADATA1
           _   M2   METADATA2
           _   M3   METADATA3
           _   M4   METADATA4
           _   M5   METADATA5
           A   PD   PRODUCTS




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ALL   END   ----  ----  ----  UP    DOWN  ----  ----  ----  STOP
```

Entering a value in the Starting DDM field defines the DDM message where the selection list begins.

METADATA are selected to migrate by entering "A" (Add) in the Select field next to each DDM. Pressing PF2 automatically places "A" in the Select field next to all METADATA on the selection screen. Entering "D" (Delete) in the Select field next to any of these METADATA removes them from the Event. Pressing PF4 displays a pop-up window of all previously-selected METADATA.

Once selections have been made and Enter is pressed, the screen below is displayed.

```
For the Event:Type A to Add or D to Delete Objects
 01-12-31              N-2-O ADD AN EVENT                      TSI1
 12:38:14              Event: PAYOUT    Sequence: 1            TERM

                From Env:  PROD              To Env:  DEV
                       Starting METADATA:  CM

              S   OT  METADATA                    Message
              _   CM  COMPANIES
              _   M1  METADATA1                    FAILED
              _   M2  METADATA2
              _   M3  METADATA3
              _   M4  METADATA4
              _   M5  METADATA5
              _   PD  PRODUCTS                     ADD




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   INQ   ----  ----  UP    DOWN  ----  ----  C/O   STOP
```

This screen allows the user to verify selections. A message is displayed in the Message field for selected METADATA. Add or Replace is the usual message that will appear. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

After selecting and verifying METADATA on the current screen, pressing Enter displays the next screen of METADATA. Pressing Enter on the last page or PF12 ends the current selection process.

II.2.3   <u>Migration Process</u>

When the Migration process begins, one of the following occurs:

- An authorization screen is displayed indicating the required levels of authorization (shown below).

- A screen is displayed to begin the migration process.

The authorization screen is displayed if authorization is required for an Event. This screen indicates how many levels of authorization are required. For more information, refer to **Section II.3 Authorize Events**.

```
01-12-31                   N-2-O EVENT REQUEST                    TSI0373
11:38:00                   Event: PAYOUT      Sequence: 1         TSI1




                        Event Awaiting Authorization

                    (Requires 3 level(s) of authorization)

                          Press ENTER to continue








Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
```

One of the following on-line or batch processing screens is displayed if authorization is not required for an Event.

When a batch Event is ready to begin the migration process, the screen below is displayed, giving the option to submit the batch job to the system internal reader or delay the submission.

```
01-12-31                   N-2-O SUBMIT AN EVENT                  TSI0373
11:38:00                                                          TSI1

                        Event   :    PAYOUT
                        Sequence:    1

                             is a batch Event

                 Press ENTER To Submit JCL for this Event
                                    or
                 PF3 to Delay the Submission of the JCL







Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Pressing Enter submits the batch JCL (or EXECs) to the system internal reader by reading the batch JCL as defined on the Migration Profile for the Event and replacing any character strings prefixed with "&".

Pressing PF3 delays the submission of the JCL (or EXECs) for a Batch Event. The Event may then be submitted at the appropriate time using the Batch JCL Submission Facilities or using manual procedures.

Note: Depending on the value of the Batch Event Submission set by the N2O Administrator, the Event may be forced into delayed or immediate submission. In either case, this screen will not appear.

When an on-line Event is ready to begin the migration process, the screen below is displayed, giving the option to migrate the NATURAL objects and/or SYSERR messages.

```
Press Enter To Proceed Or PF3 To Stop Migration
 01-12-31              N-2-O EVENT PROCESSING SCREEN               TSI0373
 11:38:00              Event: PAYOUT   Sequence: 1                 TSI1

From Env: PROD    From Library: PAYPROD    To Env: DEV    To Library: PAYDEV


                                    Migrated                Archived
 Object                        Source      Object      Source      Object
 ----------------------------- --------    --------    --------    ------



                   ************************************
                   ***    The number of selections   ***
                   ***    in this Event is:           ***
                   ***        NATURAL: 8              ***
                   ***        SYSERR : 0              ***
                   ***        DDM    : 0              ***
                   ************************************


```

Pressing Enter proceeds with the migration. As NATURAL objects and/or SYSERR messages are migrated, each object scrolls upward by target. The target currently being processed is displayed at the top of the processing screen. A count is displayed for objects in each path.

PF3 stops the migration. To start the Event at a later time, use the Select Events for Processing option from the Request Event menu. Refer to **Section II.2.10 Select Events for Processing**.

When archiving is specified for an Event, NATURAL objects are automatically archived before being replaced. If Autocompile and Autorecovery are specified on the Migration Profile and the Event migrates only source code, the object code for Natural objects is also automatically archived. When using autorecovery, if the Autocompile process encounters errors, the original source and object code may be restored.

If Autocompile is specified and N2O User-Exit 4 (N2OUE04N) has been activated, the Libraries Pending Autocompile screen will be displayed. If User-Exit 4 has not been activated and Autocompile is specified, the user must execute the Autocompile. Refer to **Section II.5.1 Libraries Pending Autocompile**.

MOVE

If MOVE is specified for the Migration Method and the Deferred Time on the Migration Profile is 0, the deletion process is started immediately following the migration process.

After the completion of the migration process, the screen below is displayed.

```
Press Enter To Proceed
 01-12-31                N-2-O EVENT PROCESSING SCREEN                TSI0373
 11:38:00                Event: PAYQA    Sequence: 1                  TSI1

From Env: DEV   From Library: PAYDEV    To Env: TEST    To Library: PAYTEST


                            Migrated              Archived
 Object                   Source       Object   Source    Object
 ----------------------   -------      -------   -------   ------



                 *****************************************
                 ***  6 Modules will be deleted from:  ***
                 ***          Env Def: DEV             ***
                 ***          Library: PAYDEV          ***
                 *****************************************
```

Pressing Enter proceeds with the deletion process for the Event. As NATURAL objects are deleted, each object scrolls upward until processing is complete.

A pop-up window is displayed at the end of the on-line migration process indicating the migration process for the Event has successfully completed.

```
+-----------------------------+
|                             |ENT PROCESSING SCREEN              TSI0373
|                             |PAYOUT   Sequence: 1               TSI1
|   Migration Complete for    |
|                             |PAYDEV    To Env: TEST    To Library: PAYTEST
|    Event        :  PAYIN    |
|    Event Sequence :  1      |
|                             |            Migrated              Archived
+-----------------------------+ Source       Object     Source       Object
------------------------------  --------    --------    --------     ------




    PAY5100P                    REPLACED    ****        ****         ****
    PAY5110M                    REPLACED    ****        ****         ****
    PAY5110S                    ADDED       ****        ****         ****
    PAY5200M                    REPLACED    ****        ****         ****
    PAY5200P                    REPLACED    ****        ****         ****
    PAY5210M     6 out of 6     ADDED       ****        ****         ****
```

If the Event is an Extract Event for NATURAL objects, the message "Extract Complete" instead of " Migration Complete " is displayed and the 'Rename To' object will be shown in parenthesis to the right of the object name if the object is renamed during the extract.

If a Deferred MOVE is requested, the pop-up window also displays the earliest date and time at which the deletion process may begin.

II.2.4   Copy an Event

The Copy an Event function creates an Event for migrating objects by copying an existing Event. The Copy function copies the Change Control Number, Task Group, and Task Number, comments, and objects from the existing Event to the new Event.

To copy an Event, enter "C" in the Enter Code field, the Event to be copied in the Event field, and the Sequence number of the Event to be copied in the Sequence field , or leave the Event and Sequence fields blank. A pop-up window is displayed for the user to enter the new Event.

```
 01-12-31                 N-2-O REQUEST EVENTS MENU              TSI0373
 11:38:00                                                        TSI1
                         Code  Function
                         ----  ---------------------------
                         A    Add an Event
                         C    Copy an Event
                         D    Delete an Event
                         I    Inquire on an Event
                         M    Modify an Event
                         R    Recovery from Archive
                         S    Select Events for Processing
                         .    Termina +------------------------------------+
                         -    ------- |                                    |
                                      | Copy Event   :      PAYOUT2        |
               Enter Code:  c   Event: |     Sequence:      1____          |
                                      |                                    |
                              Sequenc | To   Event   :     PAYOUT2_       |
                                      +------------------------------------+

 Direct Command: _____                           MIG REQ
```

In the screen above, the new Event is "PAYOUT2", Sequence "2". Sequence "2" was the next available sequence number assigned by N2O. If the Change Control field or the Task Group and Task Number fields are required for the Event, they are defaulted from the original Event. The Comments fields are also defaulted from the original Event.

The setting of the LOCK EVENT field on the Master Event determines if a popup window is displayed. This window prompts for confirmation of copying the original Event's From/To Environment and Library Information and the Processing Date and Time. To confirm the copy request, enter "Y" in the pop-up window for the appropriate information. To cancel the copy request for the appropriate information, enter "N" in the pop-up window or press PF3.

```
 01-12-31                 N-2-O REQUEST EVENTS MENU              TSI0373
 11:38:00                                                        TSI1
                         Code  Function
                         ----  ---------------------------
                         A    Add an Event
                         C    Copy an Event
                         D    Delete an Event
                         I    Inquire on an Event
                         M    Modify an Event
                    +------------------------------------+
                    |                                    |
                    | Original Event: PAYOUT2       1   | -----------------+
                    |  Copy  From/To LIB Info   : N     |                  |
                    |  Copy Process Date and Time: N    | PAYOUT2          |
               Enter C |                                    | 1___             |
                    +------------------------------------+                  |
                              Sequenc | To   Event   :    _PAYOUT2         |
                                      +------------------------------------+

Direct Command: _____                           MIG REQ
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   ----  PRJ   ----  ----  EXIT
```

All other information is defaulted from the Master Event.

The remainder of the copy Event process is identical to the Object Selection process (refer to **Section II.2.2 Object Selection Process**).

II.2.5   Delete an Event

The Delete an Event function removes an Event that no longer needs to be processed.

To delete an Event, enter "D" in the Enter Code field, the Event to be deleted in the Event field, and the Sequence number of the Event to be deleted in the Sequence field on the Request Events menu.

```
 01-12-31                  N-2-O DELETE AN EVENT                    TSI0373
 11:38:00                  Event:  PAYOUT  Sequence:  2             TSI1


          From Env       :  PROD     From Library    :  PAYPROD_
          To Env         :  DEV      To Library      :  PAYDEV__
          Process Date   :  19991231 Process Time    :  11:38:00

          Added User-ID  :  TSI1__



               _____
       C       _____
       o       _____
       m       _____
       m       _____  +-------------------------------+
       e       _____  |                               |
       n       _____  | Do you want to Delete? N (Y/N) |
       t       _____  |                               |
       s       _____  +-------------------------------+
               _____
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

An Event can only be deleted by the user who creates the Event from the Request Events menu.

Closed Events (Status "C"), In-progress Events (Status "I"), and Held Events (Status "H") that have migrated objects cannot be deleted. Other In-progress Events may only be deleted from the Authorize Events menu. For more information about deleting In-progress Events, refer to **Section II.3.1 Authorize an Event**.

To delete the Event, enter "Y" in the pop-up window. To cancel the delete request, enter "N" in the pop-up window or press PF3.

II.2.6 __Inquire on an Event__

The Inquire on an Event function displays information about an Event.

To inquire on an Event, enter "I" in the Enter Code field, the Event to be displayed in the Event field, and the Sequence number of the Event to be displayed in the Sequence field on the Request Events menu.

```
Press ENTER to display the selection list
 01-12-31               N-2-O INQUIRE ON AN EVENT                      TSI0373
 11:38:00               Event: PAYOUT     Sequence: 1                  TSI1


          From Env       : PROD          From Library    : PAYPROD__
          To Env         : DEV           To Library      : PAYDEV_
          Process Date   : 20011231      Process Time    : 11:38:00
          Migrate Method : COPY          Change Control  : EXAMPLE_
          Added User-ID  : TSIO373
          SYSERR Type    : US            SYSERR Language : E
              THIS IS A SAMPLE EVENT _____
        C   _____
        o   _____
        m   _____
        m   _____
        e   _____
        n   _____
        t   _____
        s   _____
            _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Pressing Enter displays a screen listing the objects for the Event.

When inquiring on an Event that migrates more than one type of object, the list for each type is displayed in the following order: NATURAL objects, PREDICT objects, 3GL/OTHER objects, and SYSERR messages.

```
Type X to view source programs
 01-12-31               N-2-O INQUIRE ON AN EVENT                      TSI0373
 11:38:00               Event: PAYOUT     Sequence: 1                  TSI1

From Env: PROD    From Library: PAYPROD    To Env: DEV    To Library: PAYDEV
                       Starting Object: PAY5100P


            Object                             Object
 S  Object  Type     S/C   Message    S  Object  Type     S/C   Message
 _  PAY5100P PROGRAM  S    REPLACE     _  PAY5100M MAP      S    REPLACE
 _  PAY5110S SUB-RTN  S    ADD         _  PAY5200M MAP      S    REPLACE
 _  PAY5200P PROGRAM  S    REPLACE     _  PAY5210M MAP      S    ADD








Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  TOP   UP    DOWN  BOT   ----  ----  EXIT
```

If the list of objects does not fit entirely on one screen, pressing Enter displays the next screen until the end of the list is displayed.

When reviewing the NATURAL object and SYSERR message lists, pressing PF12 displays the next type of Object. When reviewing the PREDICT object and 3GL/OTHER object lists, pressing PF12 displays the next PREDICT object type or the next 3GL/OTHER Category in the list.

Entering "X" beside a NATURAL object on the previous screen displays the source code of the NATURAL object.

```
   Press PF4 For Update Information > + PROGRAM : PAY5100P Lib: PAYPROD
      ....+....1....+....2....+....3....+....4....+....5....+....Mode: STRUCT
0010 *
0020 * * * * * * * * * * * * * * * * * * * *
0030 *   PAY (PROGRAM MANAGEMENT SYSTEM)      *
0040 *   TREEHOUSE SOFTWARE, INC.  (C) 1999.   *
0050 * * * * * * * * * * * * * * * * * * * *
0060 *
0070 * PROGRAM  : PAY5100P
0080 *
0090 * AUTHOR(S): TSI
0100 *
0110 * FUNCTION : GET HELP DATA
0120 *
0130 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
0140 *
0150 DEFINE DATA
0160     GLOBAL
0170     USING PAYGDA
0180 END-DEFINE
0190 **
0200 INPUT WITH TEXT CS-MESSAGE USING MAP 'PAYM5100'

   Press PF3 to Exit...Press PF12 to STOP viewing....6....+....7.
```

Pressing Enter displays the next page of source code. Pressing Enter on the last page displays the next selected NATURAL object in the list. If no other NATURAL objects are selected, pressing Enter returns to the display list.

Pressing PF4 displays update information for the NATURAL object, such as date and time saved, date and time cataloged, User-ID, and NATURAL version. Pressing PF12 cancels display of the current NATURAL object and begins display of the next NATURAL object. If no other NATURAL objects are selected, pressing PF12 returns to the display list.

II.2.7   Modify an Event

The Modify an Event function updates an Event. Only the user who creates the Event may modify the Event.

To modify an Event, enter "M" in the Enter Code field, the Event to be modified in the Event field, and the Sequence number of the Event to be modified in the Sequence field on the Request Events menu.

When modifying an Event, the Change Control or Task Group and Task Number, and Comments fields may be updated. Process Date and Process Time may also be updated to delay the migration of a batch Event.

The next step of the Modify an Event function is the object selection process. The object selection process allows users to select objects to migrate. A screen is displayed allowing objects to be selected. Entering "A" next to an object adds the object to the Event. Entering "D" next to a previously-selected object removes the object from the Event. For more information, refer to **Section II.2.2 Object Selection Process**.

```
 01-12-31                N-2-O MODIFY AN EVENT                      TSI0373
 11:38:00                Event:  PAYOUT   Sequence:  1             TSI1


            From Env       :  PROD     From Library   :  PAYPROD
            To Env         :  DEV      To Library     :  PAYDEV
            Process Date   :  20011231 Process Time   :  11:38:00
            Starting Program:  _____



       C    _____
       o    _____
       m    _____
       m    _____
       e    _____
       n    _____
       t    _____
       s    _____
            _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

If modifying an In-progress Event (Status=I) a pop-up window will allow the Event to be continued. Press enter to continue the Event or PF3 to cancel the Modify. The user cannot change any values in an In-progress Event.

II.2.8   Recovery from Archive

The Recovery from Archive function creates an Event for recovering NATURAL objects, SYSERR messages, and/or PDS objects that have been archived. PREDICT, LIBRARIAN, PANVALET, and ENDEVOR objects are not currently archived. There are two methods of recovery:

- Event Recovery   Recovers NATURAL objects, SYSERR messages, and/or PDS objects archived by an Event.

- N2OPURGE Recovery   Recovers NATURAL objects archived by the N2OPURGE Utility.   For more information refer to **Section II.2.9 N2O Purge Recovery**.

To create a Recovery from Archive Event, enter "R" in the Enter Code field, the Event to be added in the Event field, and "N", "S", or "O" in the Type field on the Request Events menu.

The Recovery from Archive function retrieves NATURAL objects, PDS objects, and/or SYSERR messages that have been archived by an Event. When archiving is active, NATURAL objects, PDS objects, and SYSERR messages being replaced by a migration are automatically archived. Recovery from Archive may recover to Multiple Targets using a Multiple Target Master Event. When performing Recovery from Archive, the Archive Event and Archive Sequence fields on the Recovery from Archive screen must contain the Event and Sequence that performed the archiving of the NATURAL objects, PDS objects, and/or SYSERR messages being recovered. To identify the Event and Sequence that archived the version of a NATURAL object, PDS object, and/or SYSERR message to be recovered, refer to **Section IV.4.8 Archive Version Summary**.

```
 01-12-31               N-2-O RECOVERY FROM ARCHIVE              TSI0373
 11:38:00            Event:  PAYREC    Sequence:  1              TSI1

          Archive Event   :  _____   Archive Sequence:  _____

          To Env         :  DEV      To Library     :  PAYDEV__
          Process Date    :  20011231 Process Time    :  11:38:00
          Starting Program:  _____



          C     _____
          o     _____
          m     _____
          m     _____
          e     _____
          n     _____
          t     _____
          s     _____
                _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
EVENT (supplied)	N,S,O	The Master Event of the recovery.
SEQUENCE (supplied)	N,S,O	The sequence number of the Event.
ARCHIVE EVENT (required)	N,S,O	The Event that archived the NATURAL objects, PDS objects, and/or SYSERR messages to be recovered.
		"N2OPURGE" must be specified to recover NATURAL objects deleted by the N2OPURGE Utility.
ARCHIVE SEQUENCE (required)	N,S,O	The sequence number of the Event that archived the NATURAL objects, PDS objects, and/or SYSERR messages to be recovered.
		When N2OPURGE is entered in the Archive Event field, the archive sequence is defaulted to "1" (this is the only valid value for N2OPURGE recoveries)
TO ENV (required)	N,S,O	The Environment Definition serving as the target of the recovery.
TO LIBRARY (required)	N,S	The library to which NATURAL objects or SYSERR messages are to be recovered. This field is not displayed for PDS object recoveries.
PROCESS DATE (required)	N,S,O	The earliest date on which the batch migration may take place. The current date is automatically supplied by N2O, but may be modified by the user if postdating of the migration is desired. For more information about submitting batch Events, refer to **Section II.7 Batch Submission JCL**.
PROCESS TIME (required)	N,S,O	The earliest time on the Process Date during which the batch migration may take place.
CHANGE CONTROL (required if specified in the Master Event)	N,S,O	A value that relates multiple Events to a specific change request. This field is only displayed if Change Control is required.
TASK GROUP (required if specified in the Master Event)	N,S,O	A value that relates multiple Events to a specific Task Group from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
TASK NUMBER (required if specified in the Master Event)	N,S,O	A number that relates multiple Events to a specific task from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.

(continued from previous page)

Field	Type	Description
STARTING PROGRAM (optional)	N	The first NATURAL object to appear in the NATURAL object selection list. An "*" may be used as a wildcard character to start the selection list with NATURAL objects prefixed by a string (e.g., "N2O*").
		If the user enters an "*" as the Starting Program for the Event, all NATURAL objects are marked for migration.
STARTING MESSAGE (optional if SYSERR)	S	The first SYSERR message to appear in the SYSERR message selection list.
		If the user enters an "*" as the Starting Message in an Event, all SYSERR messages are marked for migration.
SYSERR TYPE (required for SYSERR)	S	The type of SYSERR message to migrate. Valid values are as follows:
		US Indicates user-supplied short messages are to be selected.
		UL Indicates user-supplied long (extended) messages are to be selected.
		U Indicates both short and long messages are to be selected.
SYSERR LANGUAGE (required for SYSERR)	S	The language to be migrated. Valid values are single alphanumeric characters in the ranges 1 - 9, A - Z and a - y. These values are equivalent to the values available for the *LANGUAGE system variable.
		* Indicates all languages are to be migrated.
COMMENTS (optional)	N,S,O	A 10-line comment area describing the Event.

If a Multiple Target Event is entered for the Archive Event, a pop-up window is displayed listing all paths of the Event that performed archiving. Events perform archiving on a target-by-target basis. To recover NATURAL objects or SYSERR messages from one of these paths, enter "X" next to the path that performed the archiving.

```
 ┌──────────────────────────────────────────────────────────────────────┐
 │  01-12-31               N-2-O RECOVERY FROM ARCHIVE             TSI0373 │
 │  11:38:00               Event: PAYREC    Sequence:  1          TSI1    │
 │                                                                        │
 │          Archive Event  :  PAYIN___  Archive Sequence: 1____          │
 │                                                                        │
 │          To Env         :  DEV      To Library     :  PAYDEV__         │
 │          Process Date   :  20011231 Process Time    :  14:06:48        │
 │          Starting Pro +------------------------------+                 │
 │                       | Please choose one            |                 │
 │                       |  S    Recover from:          |                 │
 │                       |  -    ---------------         |                 │
 │             _____  |  _    TEST    PAYTEST        |_____          │
 │          C  _____  |  _    STG1    PAYSTG1        |_____          │
 │          o  _____  |  _    STG2    PAYSTG2        |_____          │
 │          m  _____  |                             |_____          │
 │          m  _____  |                             |_____          │
 │          e  _____  |                             |_____          │
 │          n  _____  |                             |_____          │
 │          t  _____  |                             |_____          │
 │          s  _____  |                             |_____          │
 │             _____  |                             |_____          │
 │ Enter-PF1---PF2---PF3-- +----------------------------+--PF10--PF11--PF12---│
 │      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ---- │
 └──────────────────────────────────────────────────────────────────────┘
```

The next step of the Recovery from Archive function is the object selection process. This process allows users to select objects to migrate. A screen is displayed allowing objects to be selected. Entering "A" next to an object adds the object to the Event. Entering "D" next to a previously-selected object removes the object from the Event. For more information, refer to **Section II.2.2 Object Selection Process**.

After the object selection process is complete, the migration process begins. For more information about the migration process, refer to **Section II.2.3 Migration Process**.

II.2.9   **N2OPURGE Recovery**

The N2OPURGE Recovery function retrieves NATURAL objects that have been archived and deleted using the N2OPURGE Utility. NATURAL objects archived using the N2OPURGE Utility are recovered from an Archive file using the Recovery from Archive function. When performing an N2OPURGE Recovery, "N2OPURGE" must be entered in the Archive Event field, and "1" is defaulted automatically in the Archive Sequence field on the Recovery from Archive screen. The To Env and To Library fields must contain the destination Environment Definition and Library where the NATURAL objects are to be recovered to. A pop-up window will be displayed after pressing ENTER. Enter the N2OPURGE recovery parameters.

```
 01-12-31                 N-2-O RECOVERY FROM ARCHIVE              TSI0373
 11:38:00                 Event:  PAYREC    Sequence:  1            TSI1

         Archive Event   :  N2OPURGE  Archive Sequence:  1

         |-------------------------------------------|
         |  N2OPURGE Archive Recovery Parameters     |
         |                                           |      _____
         |  N2OPURGE From Env....:  prdt             |      _____
         |                                           |      _____
         |  N2OPURGE From Library:  payprod          |      _____
         |                                           |      _____
         |-------------------------------------------|
             t    _____
             s    _____
                  _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

The N2OPURGE From Env and From Library fields must contain the Environment Definition and Library where the NATURAL objects resided before being deleted. This will limit the object selection list to only those NATURAL objects that were deleted from the specified From Environment and Library.

When recovering NATURAL objects that were archived by the N2OPURGE Utility, the following screen is displayed. For more information about the N2OPURGE Utility, refer to **Section V.3.1 N2OPURGE Utility**.

NATURAL objects with an ADD or REPLACE message in the Message field have been previously selected to migrate. NATURAL objects with no message in the Message field are available to be selected to migrate.

```
 For the Event:  Type A to Add or D to Delete Objects
 01-12-31                 N-2-O Recovery from Archive              TSI0373
 11:38:00                 Event: PAYREC   Sequence: 1               TSI1

From Env: ARC1    From Library: PAYPROD    To Env: PROD    To Library: PAYPROD
                         Starting Object: PAY5100P

              Purge                             Purge
 S  Object    Date     S/C  Message      S Object    Date     S/C  Message
 A  PAY5100P  01-12-01  S                _ PAY5110M  01-02-17  S
 A  PAY5210M  01-04-06  S                A PAY5200M  01-05-06  S
 _  PAY5200P  01-05-01  S




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ALL   END   INQ   ----  TOP   UP    DOWN  BOT   ----  ----  STOP
```

Entering a value in the Starting Object field defines the NATURAL objects where the selection list begins.

NATURAL objects are selected to migrate by entering "A" (Add) in the Select field next to each NATURAL object. Pressing PF2 automatically places "A" in the Select field next to all NATURAL objects on the selection screen. Pressing PF4 displays a pop-up window of all previously-selected NATURAL objects. Entering "D" (Delete) in the Select field next to any of these NATURAL objects removes them from the list.

Field	Type	Description
EVENT (supplied)	N	The Master Event of the migration.
SEQUENCE (supplied)	N	The sequence number of the Event.
FROM ENV (supplied)	N	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N	The library from which the NATURAL objects were archived.
TO ENV (supplied)	N	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N	The library to which the NATURAL objects are to be migrated.
STARTING OBJECT (optional)	N	The NATURAL object where the selection list begins. Defaults to the first NATURAL object on the screen.
S (optional)	N	The selection code indicates the action to be taken on the NATURAL object. Valid values are as follows:
		A Adds the NATURAL object to the Event.
		D Deletes the NATURAL object from the Event.
OBJECT (supplied)	N	The name of the NATURAL object.
PURGE DATE (supplied)	N	The date the NATURAL object was deleted using the N2OPURGE Utility.
S/C (supplied)	N	The form of the NATURAL object. Valid values are as follows:
		S Indicates only the source form of the program may be selected.
		C Indicates only the cataloged form of the program may be selected.
		S/C Indicates both forms of the program may be selected.
MESSAGE (supplied)	N	Provides information about the selection of an object. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

Once selections have been made and Enter is pressed, the screen below is displayed.

```
Press PF1 for more information about Messages
 01-12-31                N-2-O Recovery From Archive                    TSI0373
 11:38:00                Event: PAYREC   Sequence: 1                    TSI1

From Env: ARC1    From Library: PAYPROD   To Env: PROD    To Library: PAYPROD
                       Starting Object: PAY5100P


              Purge                              Purge
 S  Object    Date     S/C   Message    S  Object    Date     S/C   Message
 _  PAY5100P  01-12-01  S    ADD        _  PAY5110M  01-02-17  S
 _  PAY5210M  01-04-06  S    ADD        _  PAY5200M  01-05-06  S    ADD
 _  PAY5200P  01-05-01  S







Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   INQ   ----  TOP   UP    DOWN  BOT   ----  ----  STOP
```

This screen allows the user to verify selections. A message is displayed in the Message field for the selected NATURAL objects. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

After selecting and verifying NATURAL objects on the current screen, pressing Enter displays the next screen of objects. Pressing Enter on the last page or PF12 ends the current selection process and proceeds with the next selection process.

II.2.10   Select Events for Processing

The Select Events for Processing function provides a list of Events that may be copied, deleted, inquired on, or modified. The user's Function Profile security defines the user's valid functions.

To select Events for processing, enter "S" in the Enter Code field on the Request Events menu. A starting value may be entered in the Event and Sequence fields. Entering a value in the Status field limits the output to Events with the specified status. If no status is entered, a value of "O" is assumed. The Select Events for Processing function from the Request Events menu only displays Events created by the user.

```
Valid Values: C - Copy D - Delete I - Inquire M - Modify
  01-12-31                 N-2-O SELECT EVENTS FOR PROCESSING        TSI0373
  11:38:00                          Status:  O                       TSI1

                     From To    Event  ----  Added  ----  ---- Task  ----
  S  Event    Seq    Env  Env   Type   User-ID  Date     Group    Number
  -  -------- -----  ---- ----  -----  -------- -------- -------- ------
  _  EXTRACT  3311   PROD PAYM  N      TSI1     01-12-31 ******   *****









 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  CHNG  ----  ----  ----  ----  ----  ----  ----
```

PF5 is available to toggle between the Project Tracking Task and Change Control for each Event listed on the select screen.
PF7 is available to toggle between sorting the events by Change Control and sorting by event/event sequence.

Field	Description
S (optional)	The function to be executed. Valid functions are C, D, I, or M (Copy, Delete, Inquire, or Modify). The user's Function Profile security defines the user's valid functions. The Event/Sequence selected is processed according to the function code entered.

Pressing Enter pages forward on all screens until the last screen is displayed. Pressing Enter on the last screen wraps around to display the first screen again.

Entering a "C" in the 'S' field on the Select Events for Processing screen invokes the copy option. A pop-up window will be displayed to allow users to enter a new Event name when one Event is copied to another Event with a different name.

```
Valid Values: C - Copy D - Delete I - Inquire M - Modify
  01-12-31               N-2-O SELECT EVENTS FOR PROCESSING          TSI0373
  11:38:00                         Status:  O                        TSI1

                    From To    Event  ----  Added  ----  Change
   S   Event    Seq  Env Env   Type   User-ID Date        Control  Warning
   -   ------ +--------------------------------+ -----  -------- --------
   C   EXTRAC |                                | -12-31  ******  *****
          | Copy Event: EXTRACT   Seq:   3311 |
          |  To Event: EXTRACT                |
          |                                   |
          +--------------------------------+




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  TASK  ----  ----  ----  ----  ----  ----  ----
```

II.2.11   Object Selection Screen Messages

Object Selection Screen Messages are messages received during the selection process. Typically, "ADD" or "REPLACE" messages are displayed when objects are selected. ADD indicates the selected object will be added to the target; REPLACE indicates the selected object will replace an object at the target. The following are additional messages that may be displayed:

FAILED
"FAILED" is displayed when Checkout/Checkin is active and one of the following rules is violated:

- When selecting objects to migrate, source code must be available for each NATURAL object to be migrated, and short text must be available for each SYSERR message to be migrated.

- When selecting objects to migrate to a development environment, the selected object cannot overwrite an object with the same name that is checked out in the development environment.

- When selecting objects to migrate from a BASE environment, the number of checkouts for the selected object may not exceed the Checkout/Checkin level. The N2O Administrator determines the Checkout/Checkin level.

- When selecting objects to migrate from a development environment, the checked-out objects may be in only one open Event. To identify Events containing the checked-out objects, refer to **Section IV.4.9 Events Pending for an Object**.

- When selecting objects to migrate to a BASE environment, the selected object must be migrated back to the original BASE environment.

When the "FAILED" message is displayed, place the cursor on the object in question and use PF11 to display any existing checkout information for that object.

The "FAILED" message indicates the selected object is not included in the Event.

WARNING
When the "WARNING" message is displayed, place the cursor on the object in questions and use PF11 to display any existing checkout information for that object.

"WARNING" is displayed when Checkout/Checkin is active and the selected object is checked out more than one time. "WARNING" indicates the object is added to the Event.

NO XREF
"NO XREF" is displayed when a NATURAL object is selected to migrate and PREDICT Cross-Reference data does not exist. The "NO XREF" message indicates the NATURAL object is not included in the Event.

NO DOC
"NO DOC" is displayed when a NATURAL object is selected to migrate and the PREDICT program documentation does not exist. The "NO DOC" message indicates the NATURAL object is not included in the Event.

OBJ FAIL
"OBJ FAIL" is displayed when a NATURAL object is selected to migrate and the object code does not exist or does not match the source code. The "OBJ FAIL" message indicates the NATURAL object is not included in the Event.

DENIED

"DENIED" is displayed when an object is selected to migrate and the object does not pass User-Exit 2 rules. The "DENIED" message indicates the object is not included in the Event.

NO SHORT

"NO SHORT" is displayed when only the long text of a SYSERR message is selected to migrate to a target and no short text exists at the target.

NO SRC

"NO SRC" is displayed when a NATURAL object is selected to migrate to multiple targets and source code does not exist. The "NO SRC" message indicates the NATURAL object is not included in the Event.

NO OBJ

"NO OBJ" is displayed when a NATURAL object is selected to migrate to multiple targets and object code does not exist. The "NO OBJ" message indicates the NATURAL object is not included in the Event.

MULTIPLE

"MULTIPLE" is displayed when a NATURAL object, PREDICT object, or SYSERR message is selected to migrate to multiple targets. "MULTIPLE" indicates the object is added to the Event.

NOSPACES

"NOSPACES" is displayed when a PREDICT object whose name contains one or more spaces is selected to migrate to a target. "NOSPACES" indicates the PREDICT object is not included in the Event.

MISC DUP

"MISC DUP" is displayed when a 3GL object is selected to migrate to a 3GL PDS environment with a category of MISC and an identically named 3GL object of a different category has already been selected for migration to that environment. The " MISC DUP" message indicates the 3GL object is not included in the Event.

II.3   Authorize Events

The Authorize Events section describes the functions used to authorize Events.   The authorization process allows the user to view the Event selection list, as well as the source code of NATURAL objects.   In-progress Events may only be deleted from the Authorize Event menu.

To access the Authorize Events menu, enter "A" on the Migration Subsystem menu. Entering the direct command MIG AUTH on any menu also accesses the Authorize Events menu.

```
 01-12-31                N-2-O AUTHORIZE EVENTS MENU                 TSI0373
 11:38:00                                                            TSI1

                        Code   Function
                        ----   -----------------------------
                         A     Authorize an Event
                         D     Delete an Event
                         I     Inquire on an Event
                         R     Reject an Event
                         S     Select Events for Processing
                         .     Terminate Authorize Event
                        ----   -----------------------------

             Enter Code:  _     Event    : _____

                                Sequence : _____

                                Status   : _

 Direct Command _____                          MIG AUTH
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE	The function to be executed. Valid values are as follows:
	A **Authorize an Event** Provides one level of authorization for an Event.
	D **Delete an Event** Removes an Event that no longer needs to be processed.
	I **Inquire on an Event** Displays information about an Event.
	R **Reject an Event** Allows an authorizer to reset all authorizations to send the event back to the developers.
	S **Select Events for Processing** Provides a list of Events that may be deleted, inquired on, or authorized.
EVENT (Required for Authorize, Delete, and Inquire)	The Master Event of the request to be authorized or maintained. For the Select function, the name is used as a starting value.
SEQUENCE (Required for Authorize, Delete, and Inquire)	The Sequence number of the Event to be authorized or maintained.
STATUS (optional)	Limits Events displayed by the Select function. For valid values refer to **Appendix B N2O Event Status**.

II.3.1   **Authorize an Event**

The Authorize an Event function allows an approved user to provide a level of authorization for an Event. It also permits the authorizer to view the object selection list for an Event. The ability to view source code for any selected NATURAL object is also available under this option.

To authorize an Event, enter "A" in the Enter Code field, the Event to be authorized in the Event field, and the Sequence number of the Event to be authorized in the Sequence field on the Authorize Events menu.

```
Press ENTER to view the selection list
 01-12-31              N-2-O AUTHORIZE AN EVENT                 TSI0373
 11:38:00           Event:  PAYIN    Sequence:  1              TSI1


          From Env     :   TEST     From Library   :   PAYTEST_
          To Env       :   PROD     To Library     :   PAYPROD_
          Process Date :   20011231 Process Time   :   11:34:00
          Added User-ID :  TREE08__

          Task Group   :   PAY33OE_ Task Number    :   14____

             VERIFICATION PROGRAMS_____
          C  _____
          o  _____
          m  _____
          m  _____
          e  _____
          n  _____
          t  _____
          s  _____
             _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

The Process Date, Process Time, Change Control, and Comments fields are modifiable when authorizing an Event.

If PF5 is labeled AUTH, pressing PF5 will display the list of authorizers for Events that require multiple levels of authorization.

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages to be migrated.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N,S	The library to which NATURAL objects and/or SYSERR messages are to be migrated.

(continued from previous page)

Field	Type	Description
PROCESS DATE (required)	N,S,P,O, M,D	The earliest date on which the batch migration takes place. The current date is automatically supplied by N2O, but it may be modified by the user if postdating of the migration is desired. For more information about submitting batch Events, refer to **Section II.7 Batch JCL Submission**.
PROCESS TIME (required)	N,S,P,O, M,D	The earliest time on the Process Date during which the batch migration may take place.
ADDED USER-ID (supplied)	N,S,P,O, M,D	The user who created the Event.
TASK GROUP (required if Master Event Project Tracking = 'Y')	N,S,P,O, M,D	A value that relates multiple Events to a specific Task Group from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
TASK NUMBER (required if Master Event Project Tracking = 'Y')	N,S,P,O, M,D	A number that relates multiple Events to a specific task from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
COMMENTS (optional)	N,S,P,O, M,D	A 10-line comment area describing the Event.
AUTH USER-ID (supplied)	N,S,P,O, M,D	The last user who authorized the Event.
CHANGE CONTROL (required if Master Event Charge Control='Y')	N,S,P,O, M,D	A value that relates multiple Events to a specific change request. This field is only displayed if Change Control is required.

Pressing Enter displays a screen listing the objects selected for the Event. For example, the screen below displays NATURAL objects selected for Event "PAYIN", Sequence "1".

When authorizing an Event that migrates more than one object type, the selection list for each type is displayed in the following order: NATURAL objects, PREDICT objects, 3GL/OTHER objects, and SYSERR messages.

```
 01-12-31                 N-2-O AUTHORIZE AN EVENT                TSI0373
 11:38:00                 Event: PAYIN    Sequence: 1             TSI1

From Env: TEST   From Library: PAYTEST    To Env: PROD   To Library: PAYPROD
                      Starting Object: PAY5100P

              Object                              Object
 S  Object    Type     S/C   Message    S  Object    Type     S/C   Message
 _  PAY5100P  PROGRAM  S     REPLACE    _  PAY5100M  MAP      S     REPLACE
 _  PAY5110S  SUB-RTN  S     ADD        _  PAY5200M  MAP      S     REPLACE
 _  PAY5200P  PROGRAM  S     REPLACE    _  PAY5210M  MAP      S     ADD











Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  TOP   UP    DOWN  BOT   ----  ----  EXIT
```

If the selection list does not fit entirely on one screen, pressing Enter displays the next screen. This process is repeated until the end of the list.

When reviewing the NATURAL objects and SYSERR message lists, pressing PF12 displays the next object type list. When reviewing the PREDICT and 3GL/OTHER object lists, pressing PF12 displays the next PREDICT object type or the next 3GL/OTHER category in the selection list.

Source code for NATURAL objects may be viewed by entering "X" in the Select field beside the program name and pressing Enter. For more information, refer to **Section II.2.6 Inquire on an Event**.

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages to be migrated.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N,S	The library to which the NATURAL objects and/or SYSERR messages are to be migrated.

(continued from previous page)

Field	Type	Description
STARTING OBJECT (optional)	N,S,P,O, M,D	The object where the selection list begins.
S (optional)	N,S,P,O, M,D	"X" in the Select field allows source code of a NATURAL object to be viewed when inquiring on an Event.
OBJECT (supplied)	N,S,P,O, M,D	The name of the object.
OBJECT TYPE (supplied)	N,P,O	The NATURAL object type (e.g., program, map, subprogram, etc.).
S/C (supplied)	N	The form of the NATURAL object: S Indicates only the source form of the object may be selected. C Indicates only the cataloged form of the object may be selected. S/C Indicates both forms of the object may be selected.
DDM Dbid (optional)	D	Database number that the DDM will point to in the target environment.
DDM Fnr (optional)	D	File number that the DDM will point to in the target environment.
ADA 6 (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
METADATA (supplied)	M	Description of the UDE – User Defined Entities
MESSAGE (supplied)	N,S,P,O, M,D	Provides information about the selection of an object. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

If additional levels of authorization are required, the screen below is displayed indicating how many more levels of authorization are required.

```
01-12-31              N-2-O EVENT REQUEST                    TSI0373
11:38:00              Event: PAYIN      Sequence: 1          TSI1




                      Event Awaiting Authorization

               (Requires 1 more level(s) of authorization)

                      Press ENTER to continue






 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
```

If servicing is required for the Event, the screen below is displayed.

```
 01-12-31                 N-2-O EVENT REQUEST                       TSI0373
 11:38:00                 Event: PAYIN      Sequence: 1             TSI1




                     Event Awaiting Servicing


                      Press ENTER to continue






Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
         ----  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
```

If no additional levels of authorization or servicing are required, the migration process begins.
For more information about the migration process, refer to **Section II.2.3 Migration Process**.

II.3.2 Delete an Event

The Delete an Event function removes an Event that no longer needs to be processed.

To delete an Event, enter "D" in the Enter Code field, the Event to be deleted in the Event field and the Sequence number of the Event to be deleted in the Sequence field on the Authorize Events menu.

Closed Events (Status "C") and In-progress Events (status "I") that have migrated Objects cannot be deleted. Other In-progress Events may only be deleted from the Authorize Event menu.

```
01-12-31                  N-2-O DELETE AN EVENT                    TSI0373
11:38:00                  Event:  PAYOUT    Sequence:  3           TSI1


            From Env        :  PROD      From Library    :  PAYPROD_
            To Env          :  DEV       To Library      :  PAYDEV__
            Process Date    :  20011231  Process Time    :  11:38:00
            Added User-ID   :  TSI1__




        C   _____
        o   _____
        m   _____
        m   _____  +----------------------------------+
        e   _____  |                                  |
        n   _____  | Do you want to Delete? N (Y/N)   |
        t   _____  |                                  |
        s   _____  +----------------------------------+
            _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

To delete the Event, enter "Y" in the pop-up window. To cancel the delete request, press PF3 or enter "N" in the pop-up window.

Refer to **Section II.2.1 Add an Event** for a description of each field.

II.3.3   Inquire on an Event

The Inquire on an Event function displays Event information.

To inquire on an Event, enter "I" in the Enter Code field, the Event to be viewed in the Event field, and the Sequence number of the Event to be viewed in the Sequence field on the Authorize Events menu.

```
Press Enter to display the selection list
 01-12-31               N-2-O INQUIRE ON AN EVENT             TSI0373
 11:38:00               Event:  EXTRACT   Sequence:  1        TSI1
                          Extract Event

          From Env      :  PROD     From Library    :  PAYPROD_
          To Env        :  MAIN     To Library      :  PAYMAIN_
          Process Date  :  20011231 Process Time    :  12:10:42
          Added User-ID :  TSI1__



          C    _____
          o    _____
          m    _____
          m    _____
          e    _____
          n    _____
          t    _____
          s    _____
               _____
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Refer to **Section II.2.1 Add an Event** for a description of each field.

Pressing Enter displays a screen listing the objects selected for the Event. For example, the screen below displays NATURAL objects selected for Event "EXTRACT", Sequence "1".

When inquiring on an Event that migrates more than one object type, the selection list for each type is displayed in the following order: NATURAL objects, PREDICT objects, 3GL/OTHER objects, SYSERR messages DDMS and METADATA .

```
 01-12-31               N-2-O INQUIRE ON AN EVENT             TSI0373
 11:38:00               Event: EXTRACT   Sequence: 1          TSI1

From Env: PROD    From Library: PAYPROD   To Env: MAIN    To Library: PAYMAIN
                    Starting Object: PAY5100P

              Object                        Object
 S  Object    Type     S/C  Message    S  Object   Type     S/C  Message
 _  PAY5100P  PROGRAM  S    REPLACE    _  PAY5100M  MAP      S    REPLACE
 _  PAY5110S  SUB-RTN  S    ADD        _  PAY5200M  MAP      S    REPLACE
 _  PAY5200P  PROGRAM  S    REPLACE    _  PAY5210M  MAP      S    ADD






Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  TOP   UP    DOWN  BOT   ----  ----  EXIT
```

If the list does not fit entirely on one screen, pressing Enter displays the next screen. This process is repeated until the end of the list.

When reviewing the DDMS, NATURAL objects and SYSERR message lists, pressing PF12 displays the next object type. When reviewing the METADATA, PREDICT and 3GL/OTHER object lists, pressing PF12 displays the next PREDICT object type or the next 3GL/OTHER category in the selection list.

Source code for NATURAL objects may be viewed by entering "X" in the Select field beside the object name and pressing Enter. For more information, refer to **Section II.2.6 Inquire on an Event**.

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages to be migrated.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N,S	The library to which the NATURAL objects and/or SYSERR messages are to be migrated.
STARTING OBJECT (optional)	N,S,P,O, M,D	The object where the selection list begins.
S (optional)	N,S,P,O, M,D	"X" in the Select field allows source code of a NATURAL object to be viewed when inquiring on an Event.
OBJECT (supplied)	N,S,P,O, M,D	The name of the object.
OBJECT TYPE (supplied)	N,P,O	The object type (e.g., program, map, subprogram, etc.)
S/C (supplied)	N	The form of the object:

S   Indicates only the source form of the object may be selected.

C   Indicates only the cataloged form of the object may be selected.

S/C   Indicates both forms of the object may be selected.

(continued from previous page)

Field	Type	Description
DDM Dbid (optional)	D	Database number that the DDM will point to in the target environment.
DDM Fnr (optional)	D	File number that the DDM will point to in the target environment.
ADA 6 (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
METADATA (supplied)	M	Description of the UDE – User Defined Entities
MESSAGE (supplied)	N,S,P,O	Provides information about the selection of an object. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

II.3.4   Reject an Event

The Reject an Event function allows an authorizer to reject all authorizations applied to an Event.

To Reject an Event, enter "R" in the Enter Code field, the Event to be viewed in the Event field, and the Sequence number of the Event with authorizations to be rejected in the Sequence field on the Authorize Events menu.

Pressing Enter displays a screen listing the userids that have authorized the Event. For example, the screen below displays NATURAL objects selected for Event "PAYOUT", Sequence "3".

```
 Reject Event: PAYOUT   Seq:       3
    ------ Authorization ------
 #   USERID     DATE       TIME
 -   --------   --------   --------
 1   AUTH1       20130729  15:29:21
 2
 3
 4
 5
 6
 7
 8
 9
10
Press ENTER to Reject the authorizations, or
   PF3 to Stop the Reject Process
```

Pressing Enter will reject all Authorizations for the Event. Pressing PF3 will abort rejecting all Authorizations and leave the Authorizations in place.

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
USERID (supplied)	N,S,P,O, M,D	Userid that authorized the authorization level.
DATE (supplied)	N,S,P,O, M,D	Date of the authorization for the authorization level.
TIME (supplied)	N,S,P,O, M,D	Time of the authorization for the authorization level.

II.3.5   <u>Select Events for Processing</u>

The Select Events for Processing function provides a list of Events that may be deleted, inquired on, or authorized. This function only displays Events that need to be authorized.

To select Events for processing, enter "S" in the Enter Code field on the Authorize Events menu. A starting value may be entered in the Event and Sequence fields. Entering a value in the Status field limits the output to Events with the specified status. If no status is entered, a value of "O" is assumed.

```
Valid Values: D - Delete I - Inquire
 01-12-31                N-2-O SELECT EVENTS FOR PROCESSING          TSI0373
 11:38:00                          Status:  O                        TSI1

                     From To     Event  ---- Added  -----  ---- Task  ----
  S  Event     Seq   Env  Env    Type   User-ID  Date      Group    Number
  -  --------  ----- ---- ----   -----  -------- --------  -------- ------
  _  EXTRACT   1     PROD MAIN   N      TSIO373  01-12-31  ******   *****

 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  CHNG  ----  ----  ----  ----  ----  ----  ----
```

PF5 is available to toggle between the Project Tracking Task and Change Control for each Event listed on the select screen.
PF7 is available to toggle the sorting of displayed Events by Change Control or Event and Sequence.

Field	Description
S (optional)	The function to be executed. Possible functions are A, D, or I (Authorize, Delete, or Inquire). The user's Function Profile security defines the user's valid functions. The Event/Sequence selected is processed according to the function code entered.

Pressing Enter pages forward on all screens until the last screen is displayed. Pressing Enter on the last screen displays the first screen again.

II.4   Service Events

The Service Events section describes the functions used to service Events. The Service Events process allows the user to view the Event selection list, as well as the source code of NATURAL objects.

To access the Service Events menu, enter "S" on the Migration Subsystem menu. Entering the direct command MIG SERV on any menu also accesses the Service Events menu.

```
01-12-31                N-2-O SERVICE EVENTS MENU                TSI0373
11:38:00                                                         TSI1

                    Code   Function
                    ----   -----------------------------
                     D     Delete an Event
                     I     Inquire on an Event
                     P     Service an Event
                     S     Select Events for Processing
                     .     Terminate Service Event
                    ----   -----------------------------


          Enter Code:  _    Event    : _____

                            Sequence : _____

                            Status   : _


 Direct Command: _____                    MIG SERV
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE	The function to be executed. Valid values are as follows:
	D Delete an Event Removes an Event that no longer needs to be Serviced.
	I Inquire on an Event Displays information about an Event.
	P Service an Event Provides a level of authorization above Authorize an Event.
	S Select Events for Processing Provides a list of Events that may be deleted, inquired on, or modified.
EVENT (Required for Inquire and Service)	The Master Event of the request to service or inquire on. For the Select function, the Event name is used as a starting search key.
SEQUENCE (Required for Inquire and Service)	The sequence number of the Event on which to service or inquire.
STATUS (optional)	The Status limits Events displayed by the Select function. For valid values refer to **Appendix B N2O Event Status**.

II.4.1   Delete an Event

The Delete an Event function removes an Event that no longer needs to be processed.

To delete an Event, enter "D" in the Enter Code field, the Event to be deleted in the Event field, and the Sequence number of the Event to be deleted in the Sequence field on the Service Events menu.

Closed Events (Status "C") and In-progress Events (status "I") that have migrated Objects cannot be deleted.

```
 01-12-31                N-2-O DELETE AN EVENT                    TSI0373
 11:38:00                Event:  PAYOUT  Sequence:  2             TSI1


          From Env       :  PROD     From Library     :  PAYPROD_
          To Env         :  DEV      To Library       :  PAYDEV__
          Process Date   :  20011231 Process Time     :  11:38:00

          Added User-ID  :  TSI1__




        _____
   C    _____
   o    _____
   m    _____
   m    _____ +-------------------------------+
   e    _____ |                               |
   n    _____ | Do you want to Delete? N (Y/N) |
   t    _____ |                               |
   s    _____ +-------------------------------+
        _____
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ---- ----  END   ---- ---- ---- ---- ---- ---- ---- ---- ----
```

To delete the Event, enter "Y" in the pop-up window. To cancel the delete request, press PF3 or enter "N" in the pop-up window.

Refer to **Section II.2.1 Add an Event** for a description of each field.

II.4.2   Inquire on an Event

The Inquire on an Event function displays information about an Event.

To inquire on an Event, enter "I" in the Enter Code field, the Event to be displayed in the Event field, and the Sequence number of the Event to be displayed in the Sequence field on the Service Events menu.

```
 Press Enter to display the selection list
  01-12-31                 N-2-O INQUIRE ON AN EVENT                   TSI0373
  11:38:00                 Event:  PAYIN   Sequence:  1                TSI1


               From Env       :  TEST      From Library   :  PAYTEST_
               To Env         :  PROD      To Library     :  PAYPROD_
               Process Date   :  20011231  Process Time   :  12:10:42
               Create User-ID :  TSI1__




           C    _____
           o    _____
           m    _____
           m    _____
           e    _____
           n    _____
           t    _____
           s    _____
                _____
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Pressing Enter displays a screen listing objects selected to migrate. For example, the screen below displays NATURAL objects selected for Event "PAYIN", Sequence "1".

When inquiring on an Event that migrates more than one object type, the selection list for each type is displayed in the following order: NATURAL objects, PREDICT objects, 3GL/OTHER objects, and SYSERR messages.

```
  01-12-31                 N-2-O INQUIRE ON AN EVENT                   TSI0373
  11:38:00                 Event: PAYIN   Sequence: 1                  TSI1

 From Env: TEST    From Library: PAYTEST    To Env: PROD   To Library: PAYPROD
                       Starting Object: PAY5100P

               Object                            Object
  S   Object   Type     S/C   Message   S   Object   Type     S/C   Message
  _   PAY5100P PROGRAM  S     REPLACE   _   PAY5100M MAP      S     REPLACE
  _   PAY5110S SUB-RTN  S     ADD       _   PAY5200M MAP      S     REPLACE
  _   PAY5200P PROGRAM  S     REPLACE   _   PAY5210M MAP      S     ADD








 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  TOP   UP    DOWN  BOT   ----  ----  EXIT
```

If the selection list does not fit entirely on one screen, pressing Enter displays the next screen. This process is repeated until the end of the list.

When reviewing the NATURAL objects and SYSERR message lists, pressing PF12 displays the next object type. When reviewing the PREDICT and 3GL/OTHER object lists, pressing PF12 displays the next PREDICT object type or the next 3GL/OTHER category in the selection list.

Source code for NATURAL objects may be viewed by entering "X" in the Select field beside the object name and pressing Enter. For more information, refer to **Section II.2.6 Inquire on an Event**.

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages to be migrated.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N,S	The library to which the NATURAL objects and/or SYSERR messages are to be migrated.
STARTING OBJECT (optional)	N,S,P,O, M,D	The object where the selection list begins.
S (optional)	N,S,P,O, M,D	"X" in the Select field allows source code of a NATURAL object to be viewed when inquiring on an Event.
OBJECT (supplied)	N,S,P,O, M,D	The name of the object.
OBJECT TYPE (supplied)	N,P,O	The NATURAL object type (e.g., program, map, subprogram, etc.).
S/C (supplied)	N	The form of the NATURAL object:
		S Indicates only the source form of the object may be selected.
		C Indicates only the cataloged form of the object may be selected.
		S/C Indicates both forms of the object may be selected.

(continued from previous page)

Field	Type	Description
DDM Dbid (optional)	D	Database number that the DDM will point to in the target environment.
DDM Fnr (optional)	D	File number that the DDM will point to in the target environment.
ADA 6 (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
METADATA (supplied)	M	Description of the UDE – User Defined Entities
MESSAGE (supplied)	N,S,P,O, M,D	Provides information about the selection of an object. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

II.4.3   Service an Event

The Service an Event function allows a user to view the Event selection list. This function also provides the ability to view the source code of NATURAL objects and provides an additional level of authorization.

To service an Event, enter "P" in the Enter Code field, the Event to be serviced in the Event field, and the Sequence number of the Event to be serviced in the Sequence field on the Service Events menu.

```
 Press ENTER to view the selection list
  01-12-31              N-2-O SERVICE AN EVENT                   TSI0373
  11:38:00             Event:  PAYIN    Sequence:  66           TSI1


           From Env      :  TEST     From Library    :  PAYTEST_
           To Env        :  PROD     To Library      :  PAYPROD_
           Process Date  :  20011231 Process Time    :  11:34:00
           Added User-ID  :  TSI1____ Authorize User-ID:  TSI2____

           Task Group    :  PAYE____ Task Number     :   7_____


       C   _____
       o   _____
       m   _____
       m   _____
       e   _____
       n   _____
       t   _____
       s   _____
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

The Process Date, Process Time, Change Control, and Comments fields are modifiable when servicing an Event.

If PF5 is labeled AUTH, pressing PF5 will display the list of authorizations for Events that require multiple levels of authorization.

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages to be migrated.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N,S	The library to which NATURAL objects and/or SYSERR messages are to be migrated.

(continued from previous page)

Field	Type	Description
PROCESS DATE (required)	N,S,P,O, M,D	The earliest date on which the batch migration takes place. The current date is automatically supplied by N2O, but it may be modified by the user if postdating of the migration is desired. For more information about submitting batch Events, refer to **Section II.7 Batch JCL Submission**.
PROCESS TIME (required)	N,S,P,O, M,D	The earliest time on the Process Date during which the batch migration may take place.
ADDED USER-ID (supplied)	N,S,P,O, M,D	The user who created the Event.
TASK GROUP (required)	N,S,P,O, M,D	A value that relates multiple Events to a specific Task Group from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
TASK NUMBER (required)	N,S,P,O, M,D	A number that relates multiple Events to a specific task from the N2O Project Tracking Subsystem. This field is only displayed if Project Tracking is required. When using Add, Copy, or Modify an Event, this field may be modified.
AUTH USER-ID (supplied)	N,S,P,O, M,D	The last user who authorized the Event.
CHANGE CONTROL (required)	N,S,P,O, M,D	A value that relates multiple Events to a specific change request. This field is only displayed if Change Control is required.
COMMENTS (optional)	N,S,P,O, M,D	A 10-line comment area describing the Event.

Pressing Enter displays a screen listing objects selected to migrate. For example, the screen below displays NATURAL objects selected for Event "PAYIN", Sequence "1".

When servicing an Event that migrates more than one object type, the selection list for each type is displayed in the following order: NATURAL objects , PREDICT objects, 3GL/OTHER objects, and SYSERR messages.

```
 01-12-31                   N-2-O SERVICE AN EVENT                    TSI0373
 11:38:00                   Event: PAYIN     Sequence: 1              TSI1

From Env: TEST    From Library: PAYTEST   To Env: PROD    To Library: PAYPROD
                      Starting Object: PAY5100P

              Object                              Object
 S  Object    Type    S/C  Message    S  Object  Type     S/C  Message
 _  PAY5100P  PROGRAM  S    REPLACE    _  PAY5100M MAP      S    REPLACE
 _  PAY5110S  SUB-RTN  S    ADD        _  PAY5200M MAP      S    REPLACE
 _  PAY5200P  PROGRAM  S    REPLACE    _  PAY5210M MAP      S    ADD




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  TOP   UP    DOWN  BOT   ----  ----  EXIT
```

If the selection list does not fit entirely on one screen, pressing Enter displays the next screen. This process is repeated until the end of the list.

When reviewing the NATURAL objects and SYSERR message lists, pressing PF12 displays the next object type. When reviewing the PREDICT and 3GL/OTHER object lists, pressing PF12 displays the next PREDICT object type or the next 3GL/OTHER category in the selection list.

Source code for NATURAL objects may be viewed by entering "X" in the Select field beside the object name and pressing Enter. For more information, refer to **Section II.2.6 Inquire on an Event**.

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQUENCE (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
FROM LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages to be migrated.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.
TO LIBRARY (supplied)	N,S	The library to which the NATURAL objects and/or SYSERR messages are to be migrated.
STARTING OBJECT (optional)	N,S,P,O, M,D	The object where the selection list begins.
S (optional)	N,S,P,O, M,D	"X" in the Select field allows source code of a NATURAL object to be viewed when inquiring on an Event.
OBJECT (supplied)	N,S,P,O, M,D	The name of the object.
OBJECT TYPE (supplied)	N,P,O	The NATURAL object type (e.g., program, map, subprogram, etc.).
S/C (supplied)	N	The form of the NATURAL object: S Indicates only the source form of the object may be selected. C Indicates only the cataloged form of the object may be selected. S/C Indicates both forms of the object may be selected.
DDM Dbid (optional)	D	Database number that the DDM will point to in the target environment.
DDM Fnr (optional)	D	File number that the DDM will point to in the target environment.
ADA 6 (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
METADATA (supplied)	M	Description of the UDE – User Defined Entities
MESSAGE (supplied)	N,S,P,O, M,D	Provides information about the selection of an object. For more information about messages, refer to **Section II.2.11 Object Selection Screen Messages**.

II.4.4   Select Events for Processing

The Select Events for Processing function provides a list of Events that may be inquired on or serviced.

To select Events for processing, enter "S" in the Enter Code field on the Service Events menu. A starting value may be entered in the Event and Sequence fields. Entering a value in the Status field limits the output to Events with the specified status. Refer to **Appendix B N2O Event Status** for valid Status field values. If no status is entered, a value of "A" is assumed.

```
Valid Values: D - Delete I - Inquire P - Service
 01-12-31                 N-2-O SELECT EVENTS FOR PROCESSING              TSI0373
 11:38:00                          Status:  O                            TSI1

                       From To   Event  ----  Added  ----  ---- Task  ----
  S  Event     Seq     Env  Env  Type   User-ID  Date      Group    Number
  -  --------  -----   ---- ----  -----  -------- --------  -------- ------
  _  PAYIN     1       TEST PROD  N      TSI1     01-12-31  ******   *****












 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  CHNG  ----  ----  ----  ----  ----  ----  ----
```

PF5 is available to toggle between the Project Tracking Task and Change Control for each Event listed on the select screen.

 PF7 is available to toggle between sorting the events by Change Control and sorting by event/event sequence.

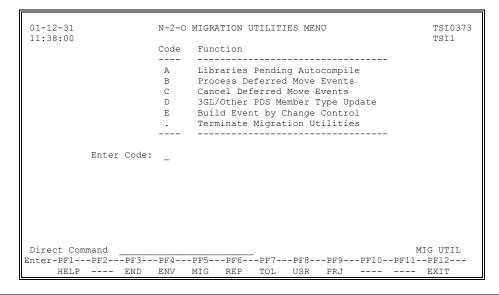| Field	Description
S (optional)	The function to be executed. Valid functions are D, I, and P (Delete, Inquire and Service). The user's Function Profile security defines the user's valid functions.

Only Events that a user may process are displayed.   The Event/Sequence selected is processed according to the function code entered.

Pressing Enter pages forward on all screens until the last screen is displayed. Pressing Enter on the last screen wraps around to display the first screen again.

II.5 Migration Utilities

The Migration Utilities assist users in performing Autocompile and completing the MOVE process for Events.

To access the Migration Utilities menu, enter "M" on the Migration Subsystem menu. Entering the direct command MIG UTIL on any menu also accesses the Migration Utilities menu.

```
01-12-31                    N-2-O MIGRATION UTILITIES MENU              TSI0373
11:38:00                                                               TSI1
                            Code   Function
                            ----   --------------------------------
                             A     Libraries Pending Autocompile
                             B     Process Deferred Move Events
                             C     Cancel Deferred Move Events
                             D     3GL/Other PDS Member Type Update
                             E     Build Event by Change Control
                             .     Terminate Migration Utilities
                            ----   --------------------------------

            Enter Code:  _




 Direct Command _____                          MIG UTIL
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE	The function to be executed. Valid values are as follows:

A **Libraries Pending Autocompile**
Displays a list of libraries that contain Events marked for Autocompile.

B **Process Deferred Move Events**
Processes deferred move Events.

C **Cancel Deferred Move Events**
Cancels deferred move Events.

D **3GL/OTHER PDS Member Type Update**
3GL/OTHER objects for 3GL/OTHER Autocompile.

E **Build Event by Change Control**
Build an Event by Change Control.

II.5.1   Libraries Pending Autocompile

Libraries Pending Autocompile displays a list of all libraries in the current FUSER that contain Events marked for Autocompile.

N2O provides Autocompile to automate the compile process for NATURAL source objects after they have been migrated. Autocompile automatically updates the NATURAL buffer pool for the target environment. If Autocompile is not used and object code is migrated, the NATURAL buffer pool is not updated. The Libraries Pending Autocompile function initiates the on-line Autocompile process.

XREF at the Target is available with Autocompile and uses Cross-Reference information stored in PREDICT. If the object type being migrated is specified in the XREF TARGET field on the Migration Profile, PREDICT Cross-Reference information will be used to determine all NATURAL objects affected by the migrated object(s). These affected objects and the objects being migrated will be autocompiled in the target Environment.

During the Autocompile process, N2O provides an optional Automatic Recovery feature. If an error occurred during the Event compilation process, then Automatic Recovery restores the previous versions of all the migrated objects within that Event.

After entering "A" in the Enter Code field and pressing Enter on the Migration Utilities menu, the Libraries Pending Autocompile screen is displayed. Entering "N2OCATI" on the NATURAL Command line also accesses the Libraries Pending Autocompile screen.

A pop-up window indicates that a scan of all libraries is being performed, which searches for libraries pending Autocompile. The screen below displays all libraries pending Autocompile. The number next to the library name identifies the number of Events that are pending Autocompile.

```
Type X to select a library to perform AUTOCOMPILE on (DOES NOT RETURN TO N2O)
  01-12-31               N-2-O LIBRARIES PENDING AUTOCOMPILE           TSI0373
  11:38:00                                                             TSI1


                       DBID: 1     FNR: 231


                    X Library  Nbr    X Library  Nbr
                    - -------- ---    - -------- ---
                    _ PAYPROD  1












  Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ----
```

To list the Events awaiting Autocompile for a library, enter "X" beside the library name and press Enter. Only one library may be selected.

N2O logs on to the selected library and lists all Events marked for Autocompile as shown on the Events Pending Autocompile screen. Entering "N2OCAT" on the NATURAL Command line in the target environment also accesses the Events Pending Autocompile screen. This provides the ability to perform Autocompile on remote environments.

```
Type X to perform Autocompile or D to Delete
 01-12-31                N2O MIGRATION UTILITIES                  TSI0373
 11:38:00                   EVENTS PENDING AUTOCOMPILE            TSI1

           S  Event    Seq    Date      Time      User-ID   Function
           -  -------- -----  --------  --------  --------  --------
           _  PAYIN    1      01-12-31  13:58:12  TSI1      CAT














Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

The screen above displays a list of Events for the selected target library that are pending Autocompile. To compile NATURAL objects for an Event, enter "X" beside the Events. To delete the Autocompile process for an Event, enter "D" beside the Event. A pop-up window displays the number of Events to be deleted, and requests confirmation before deleting. It is possible to select more than one Event at a time.

After selecting Events for Autocompile and pressing Enter, the Automatic Compile Subsystem screen displays the Event selected for Autocompile.

```
 01-12-31                N-2-O AUTOCOMPILE                        TSI0373
 11:38:00                                                         TSI1



                   Autocompile has been requested for

              Event :  PAYIN        Sequence :  1






                      Press ENTER to proceed



Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

After pressing Enter on the Automatic Compile Subsystem screen, the Cataloging Phase screen displays each NATURAL object as it is cataloged. If an error occurs during the cataloging process, the error and the line number on which the error occurred are displayed next to the object.

```
 11:38:00            *****  Recatalog Application *****            01-12-31
 USER: TSI0373                 Cataloging Phase             LIBRARY: PAYPROD


                                                     Object   Error Line
                                                     -------  ----- ----




                           Please  wait
                           ------------


                                                     BPAY     82    1050
   Objects    current    correct    failed   Curr. Object   CATSCAN
       4          4          2          1        DEL0PAY     COPIER

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
```

After the cataloging phase is complete, the Error Report screen is displayed if any of the NATURAL objects received syntax errors. This screen identifies NATURAL objects with errors, the errors they received, and the lines that caused the errors.

```
 11:38:00            *****  Recatalog  Application *****           TSI0373
 User: TSI1                    Error  Report                       TSI1


 Object   Error Line
 -------  ----- ----
 BPAY     82    1050
```

When Autocompile is completed for an Event, the Autocompile screen confirms that Autocompile is completed. After pressing Enter, User-Exit 7 is invoked. This User-Exit may be used to return the user to the N2O main menu or exit NATURAL (Refer to the *N2O Administration Manual* for details on User-Exit 7).

```
 01-12-31                    N-2-O AUTOCOMPILE                       TSI0373
 11:38:00                                                            TSI1




                           Autocompile has completed for

                     Event :  PAYIN        Sequence :  1






                           Press ENTER to proceed




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----  ----
```

To restart a compile that was terminated abnormally, enter "N2OCAT" on the NATURAL Command line and press Enter. An Autocompile Re-Start screen is displayed. If Enter is pressed on the Re-Start screen, the compile process continues compiling NATURAL objects at the point where it had previously terminated.   If PF3 is pressed, the request for Autocompile is deleted for that Event and the Autocompile process continues for the remaining Events.

II.5.2   **Process Deferred Move Events**

The Process Deferred Move Events function starts the deletion process for Deferred Move Events. This utility only processes on-line Events. Batch Events are handled by the deletion process for a Batch Deferred Move. Events having a deferred date and time greater than the current date and time are bypassed. User-Exit 12 may be called to secure the use of the Process Deferred Move Events function. (Refer to the *N2O Administration Manual* for details on User-Exit 12.)

After entering "B" in the Enter Code field on the Migration Utilities menu, the Process Deferred Move Events screen is displayed.

```
Type X To Process a Deferred Move Event
 01-12-31               N-2-O PROCESS DEFERRED MOVE EVENTS            TSI0373
 11:38:00                                                             TSI1


                   From   From       --- Migration ----   Added
   X  Event   Seq  Env    Library    Date      Time       User-ID
   _  -------- ---  ----   --------   --------  --------   ---------
   _  PAYTEST  2    DEV    PAYDEV     01-12-01  13:30:00   TSIO373
   _  PAYTES   3    DEV    PAYDEV     01-12-01  15:30:00   TSIO373













Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12--
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----    ----   ----
```

The deletion process is initiated by entering "X" beside an Event. It is possible to select more than one Event at a time. As the Event is processed, the NATURAL objects scroll upward until processing is complete. A "CANCEL" message indicates that a previous migration has eliminated the need for the delete to occur. A verification screen is displayed after each selection is processed.

II.5.3   Cancel Deferred Move Events

The Cancel Deferred Move Events function cancels the deletion process for deferred moves. User-Exit 12 may be called to secure the use of the Cancel Deferred Move Events function. (Refer to the *N2O Administration Manual* for details on User-Exit 12.)

After entering "C" in the Enter Code field on the Migration Utilities menu, the Cancel Deferred Move Events screen is displayed.

```
Type X to cancel a Deferred Move Event
 01-12-31              N-2-O CANCEL DEFERRED MOVE EVENTS              TSI0373
 11:38:00                                                            TSI1

                      From    From     --- Migration ----  Added
     X    Event    Seq  Env   Library   Date       Time    User-ID
     -   --------  ----- ----  --------  --------  --------  --------
     _   PAYTEST   2     DEV   PAYDEV    01-12-01  13:30:00  TSIO373
     _   PAYTEST   3     DEV   PAYDEV    01-12-01  15:30:00  TSIO373








Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

The deletions for an Event may be canceled by placing "X" beside the Event. It is possible to select more than one Event at a time.

II.5.4 3GL/OTHER PDS Object Type Update

The 3GL/OTHER PDS Object Type Update function updates the N2O Migration file with information about 3GL/OTHER PDS objects. This information is used during the migration selection process and the 3GL/OTHER Autocompile process.

After entering "D" in the Enter Code field on the Migration Utilities menu and pressing Enter, the 3GL/OTHER PDS Object Type Update screen is displayed.

```
01-12-31                  N-2-O 3GL/OTHER PDS MEMBER TYPE UPDATE          TSI0373
11:38:00                                                                  TSI1




                        Env Def       : PDSP
                        Category      : COBOL_
                        Starting Value:  _____









Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ---   ---   ----  ----  ----
```

Field	Description
∞ ENV DEF (required)	The Environment Definition of the PDS to be updated.
∞ CATEGORY (required)	The 3GL/OTHER category to be selected for updating.
STARTING VALUE (optional)	The starting object.

∞ indicates field-level help is available.

After entering the appropriate information on the 3GL/OTHER PDS Object Type Update screen and pressing Enter, the PDS Object Type Update screen is displayed.
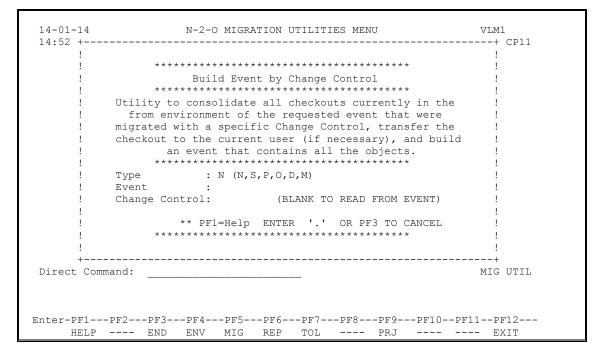
```
 01-12-31                  N2O 3GL/OTHER PDS MEMBER TYPE UPDATE       TSI0373
 11:38:00                                                             TSI1
                          Env Def:    PDSP       Category:   COBOL

                          Member        Member Type   Message
                          --------      -----------   --------
                          C-BOL-3       COBOL___
                          CAKENAT6      COBOL___
                          CARRPRTC      COBOL___
                          CATALLC       COBOL___
                          CATOS6        COBOL___
                          CCATALL       COBOL___
                          CDACMP        COBOL___
                          CDADBS        COBOL___
                          CDAFRM        COBOL___
                          CDALOD        COBOL___
                          CDAREORG      COBOL___
                          CDAREP        COBOL___
                          CDAULD        COBOL___
                          CDAWAN        COBOL___

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

A list of objects and member types is displayed. The member types may be updated by entering a new value.

II.5.5 Build Event by Change Control

The Build Event by Change Control function allows the entry of an Event and change control number. This information will be used to build an Event containing all modules checked out using the associated change control number and currently residing in the Environment/Library of the Master Event entered. The existing checkouts will be transferred to the current user (if necessary) before being selected for the event.

After entering "E" in the Enter Code field on the Migration Utilities menu and pressing Enter, Build Event by Change Control Update screen is displayed.

```
 14-01-14                N-2-O MIGRATION UTILITIES MENU              VLM1
  14:52 +------------------------------------------------------------+ CP11
     !                                                            !  !
     !           ****************************************         !  !
     !                Build Event by Change Control              !  !
     !           ****************************************         !  !
     !     Utility to consolidate all checkouts currently in the  !  !
     !       from environment of the requested event that were    !  !
     !     migrated with a specific Change Control, transfer the   !  !
     !     checkout to the current user (if necessary), and build  !  !
     !            an event that contains all the objects.         !  !
     !           ****************************************         !  !
     !     Type          : N (N,S,P,O,D,M)                        !  !
     !     Event         :                                        !  !
     !     Change Control:        (BLANK TO READ FROM EVENT)       !  !
     !                                                            !  !
     !          ** PF1=Help  ENTER  '.'  OR PF3 TO CANCEL          !  !
     !           ****************************************         !  !
     !                                                            !  !
     +------------------------------------------------------------+
  Direct Command: _____                         MIG UTIL



 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   ----  PRJ   ----  ----  EXIT
```

Field	Description
∞TYPE (required)	The type of objects affected. Valid values are as follows:
	D Indicates DDM.
	M Indicates METADATA.
	N Indicates NATURAL.
	P Indicates PREDICT.
	S Indicates SYSERR.
	O Indicates 3GL/OTHER
∞ EVENT (required)	The Master Event of the migration.
∞ CHANGE CONTROL (required)	A value that relates multiple Events to a specific change request.

∞ **indicates field-level help is available.**

II.6   Checkout/Checkin Utilities

When the Checkout/Checkin feature is active, it automatically updates the Checkout/Checkin status as objects migrate through the application life cycle. The Checkout/Checkin Utilities are also available to manually update the Checkout/Checkin status of an object.

Each of the Checkout/Checkin Utilities maintains an audit trail, which lists the User-ID of users of the utility, and the date and time the utility was executed. Other relevant information is stored according to the type of utility that was executed. The complete life cycle for an object may be viewed in **Section IV.4.2 History of an Object**.

User-Exit 5 may be called to secure the use of the Checkout/Checkin Utilities. This user-exit may be used to prevent users from canceling or transferring objects checked out to other users, to verify naming standards, or to prevent existing objects from being checked out (Refer to the **N2O Administration Manual** for details on User-Exit 5).

To access the Checkout/Checkin utilities menu, enter "C" in the Enter Code field on the Migration Subsystem menu. Entering the direct command MIG COCI on any menu also accesses the Checkout/Checkin Utilities menu.

```
 01-12-31                N-2-O CHECKOUT/CHECKIN UTILITIES MENU        TSI0373
 11:38:00                                                             TSI1
                         Code  Function
                         ----  --------------------------
                          A    Cancel Utility
                          B    Transfer Utility
                          C    Transfer by Event Utility
                          D    Checkout Utility
                          E    Reject Utility
                          F    Enrollment Facility
                          G    Reject by Event Utility
                          .    Terminate Checkout Utilities
                          -    --------------------------

             Enter Code:  _    Type  :  N




  Direct Command: _____               MIG COCI
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Note: The following sections display only NATURAL object screens. However, field description tables include fields found on screens for the following objects: DDMS (D), METADATA (M), NATURAL objects (N), PREDICT objects (P), 3GL/OTHER objects (O), and SYSERR messages (S).

Field	Description
ENTER CODE	The function to be executed. Valid values are as follows:

A   **Cancel Utility**
Utilities that remove the Checkout status of an object.

B   **Transfer Utility**
Transfers responsibility for a checked-out object to another user.

C   **Transfer by Event Utility**
Transfers responsibility for all checked-out objects in an Event to another user.

D   **Checkout Utility**
Checks out newly-created objects in a development environment.

E   **Reject Utility**
Updates the checkout location to the previous development environment.

F   **Enrollment Facility**
Updates the Migration file with information about objects on a remote node or objects in a 3GL Environment.

G   **Reject by Event Utility**
Updates the checkout location to the previous environment for all objects in an Event.

Field	Description
TYPE	The type of objects affected. Valid values are as follows:

D   Indicates DDM.
M   Indicates METADATA.
N   Indicates NATURAL.
P   Indicates PREDICT.
S   Indicates SYSERR.
O   Indicates 3GL/OTHER.

This field is not required for the Transfer by Event Utility.

II.6.1 <u>Cancel Utility</u>

To access the Cancel utility menu, enter "A" in the Enter Code field on the Checkout/Checkin Utilities menu. Entering the direct command MIG CANC on any menu also accesses the Cancel Utility menu.

If only one function is allowed by N2O Security, the Cancel Utility menu will be skipped and the allowed function screen will appear.

```
 01-12-31                   N-2-O CANCEL Utility MENU              TSI0373
 11:38:00                                                          TSI1
                        Code  Function
                        ----  --------------------------
                         A    Cancel
                         B    Cancel with Delete
                         C    Cancel with Extract
                         .    Terminate Cancel Utilities
                         -    --------------------------

             Enter Code: _    Type  :  N




  Direct Command: _____                          MIG CANC
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

NOTE – In order to access the 2 new cancel utility functions (added in N2O v5.2.1), Cancel with Delete and Cancel with Extract, a site must include the MIG CANC functions in a Function Profile assigned to the user.

Field	Description
ENTER CODE	The function to be executed. Valid values are as follows:
	A **Cancel Utility** Removes the Checkout status of an object.
	B **Cancel with Delete Utility** Removes the Checkout status of an object and will delete the object from the current library.
	C **Cancel with Extract Utility** Removes the Checkout status of an object and create a Extract event to migrate a new copy of the object from the Base Environment/Library.
TYPE	The type of objects affected. Valid values are as follows:
	D Indicates DDM. M Indicates METADATA. N Indicates NATURAL. P Indicates PREDICT. S Indicates SYSERR. O Indicates 3GL/OTHER.
	This field is not required for the Cancel with Delete and Cancel with Extract Utilities.

II.6.1.1 Cancel Utility

The Cancel Utility removes the checkout status of an object. A checked-out object may be canceled for any user, unless restricted by User-Exit 5.

After entering "A" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu and pressing Enter, the Cancel Utility for NATURAL Objects screen is displayed.

```
01-12-31                   N-2-O CANCEL UTILITY                    TSI0373
11:38:00                   NATURAL OBJECTS                         TSI010




                       BASE Env        : ____
                       BASE Library    : _____
                       Object          : _____
                       User-ID         : TSI0373_
                       Checkout Date   : _____  EQ (EQ,GT,LT)
                       Current Env     : ____
                       Current Library : _____





Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
BASE ENV (required)	N,S,P,O,M,D	The Environment Definition representing the repository for the checked-out object.
BASE LIBRARY (required)	N,S	The library within the environment that contains the checked-out NATURAL object or SYSERR message.
OBJECT (required)	N,S,P,O,M,D	The checked-out object to be canceled.
		"*" Generates a selection list of all objects checked out to the user. The "*" may also be used as a wildcard character to select objects prefixed by a string (e.g., N2O*).
USER-ID (required)	N,S,P,O,M, D	The User-ID responsible for the checked-out object (defaults to the user executing the utility). If User-Exit 5 does not restrict the utility, any User-ID may be entered. Partial names and wildcards (e.g., AAP*) may be entered.
ENDEVOR SYSTEM	O	The classification of an application for an ENDEVOR object.
ENDEVOR SUBSYSTEM	O	The specific application within a system for an ENDEVOR object.
CHECKOUT DATE	N,S,P,O,M, D	The date used to evaluate which checkouts are displayed based on when the Object was checked out.
CHECKOUT DATE CRITERIA (Ignored if CHECKOUT DATE is blank)	N,S,P,O,M, D	Criteria used to evaluate which checkouts are displayed based on when the Object was checked out.
		EQ=Equal,GT=Greater-Than,LT=Less-Than
CURRENT ENV	N,S,P,O,M, D	The Environment Definition serving as the current development location of the object.
CURRENT LIBRARY	N,S	The library within the development environment where the NATURAL objects and SYSERR messages currently are located.

When wildcarding is specified ('*' in the Object field) and Enter is pressed on the initial Cancel Utility screen, the screen below is displayed.

```
Type X to select
 01-12-31                   N-2-O CANCEL UTILITY                      TSI0373
 11:38:00                     NATURAL PROGRAMS                        TSI1
          Library:  PAYPROD            User-ID:  TSIO373
               Object                                 Object
   X    Object   Type       Message     X    OBJECT    Type       Message
   -    -------  --------    --------    -    -------   --------   --------
   _    PAY5900P PROGRAM                 _    PAY5910S  SUBROUTINE
   _    PAY59101 MAP                     _    PAY5920S  SUBROUTINE
   _    PAY5950P PROGRAM                 _    PAY5952S  SUBROUTINE
   _    PAY5953S SUBROUTINE




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages.
USER-ID (supplied)	N,S,P,O, M,D	The User-ID of the user responsible for the checked-out objects.
X (optional)	N,S,P,O, M,D	"X" in the Select field cancels the object.
OBJECT (supplied)	N,S,P,O, M,D.	The object to be canceled. Partial names and wildcards (e.g., AAP*, *s would list everything ending in s)
OBJECT TYPE (supplied)	N,P,O	Identifies the type of NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages.
MESSAGE (supplied)	N,S,P,O, M,D	Indicates the success or failure of the requested cancel:

CANCEL   Indicates a successful cancel.

FAILED   Indicates a failed cancel.

DENIED   Indicates the cancel was prevented by user-exits.

When wildcarding is specified ('*' in the Object and Userid field) and Enter is pressed on the initial Cancel Utility screen, the screen below is displayed.

```
Type X to select
 01-12-31              N-2-O CANCEL UTILITY                        TSI1
 13:01:09              NATURAL PROGRAMS                            TERM
          Library:  PAYPROD                 User-ID:  *
               Object                                  Object
 X Object   Type     Userid   Message  X Object   Type     Userid   Message
 - -------- -------- -------- -------- - -------- -------- -------- --------
 _ CITYTAXP PROGRAM  TSI1              _ FEDTAXL  LOCAL    TSI1
 _ LIFEINSC COPYCODE TSI1              _ LIFEINSL LOCAL    TSI1




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages.
USER-ID (supplied)	N,S,P,O, M,D	The User-ID entered into the previous screen.
USERID (supplied)	N,S,P,O, M,D	The User-ID of the user responsible for the checked-out objects.
X (optional)	N,S,P,O, M,D	"X" in the Select field cancels the object.
OBJECT (supplied)	N,S,P,O, M,D.	The object to be canceled.
OBJECT TYPE (supplied)	N,P,O	Identifies the type of NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages.
MESSAGE (supplied)	N,S,P,O, M,D	Indicates the success or failure of the requested cancel:

CANCEL	Indicates a successful cancel.	
FAILED	Indicates a failed cancel.	
DENIED	Indicates the cancel was prevented by user-exits.	

II.6.1.2 Cancel with Delete Utility

The Cancel with Delete Utility removes the checkout status of an object and deletes the object from the Natural FUSER in the envrienment the object is currently checked out to. A checked-out object may be canceled for any user, unless restricted by User-Exit 5.

After entering "B" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu and pressing Enter, the Cancel with Delete Utility for NATURAL Objects screen is displayed.

```
08-07-01                N-2-O CANCEL W/ DELETE                 TSI1
16:44:35                NATURAL PROGRAMS                       TERM


                   BASE Env        : ____
                   BASE Library    : _____
                   Object          : _____
                   User-ID         : _____
                   Checkout Date   : _____ EQ (EQ,GT,LT)
                   Current Env     : ____
                   Current Library : _____


           This Cancel option will cancel the checkout of the
           Object(s) selected AND Delete the Objects(s) from
                   the current Environment/Library

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
BASE ENV (required)	N	The Environment Definition representing the repository for the checked-out object.
BASE LIBRARY (required)	N	The library within the environment that contains the checked-out NATURAL object or SYSERR message.
OBJECT (required)	N	The checked-out object to be canceled.
		"*" Generates a selection list of all objects checked out to the user. The "*" may also be used as a wildcard character to select objects prefixed by a string (e.g., N2O*).
USER-ID (required)	N	The User-ID responsible for the checked-out object (defaults to the user executing the utility). If User-Exit 5 does not restrict the utility, any User-ID may be entered. Partial names and wildcards (e.g., AAP*) may be entered.
CHECKOUT DATE	N	The date used to evaluate which checkouts are displayed based on when the Object was checked out.
CHECKOUT DATE CRITERIA (Ignored if CHECKOUT DATE is blank)	N	Criteria used to evaluate which checkouts are displayed based on when the Object was checked out. EQ=Equal,GT=Greater-Than,LT=Less-Than
CURRENT ENV	N	The Environment Definition serving as the current development location of the object.
CURRENT LIBRARY	N	The library within the development environment where the NATURAL objects and SYSERR messages currently are located.

When wildcarding is specified ('*' in the Object field) and Enter is pressed on the initial Cancel Utility screen, the screen below is displayed.

```
Type X to select
 01-12-31                    N-2-O CANCEL W/ DETETE                    TSI0373
 11:38:00                    NATURAL PROGRAMS                          TSI1
          Library:  PAYPROD              User-ID:  TSIO373
                 Object                                   Object
   X    Object   Type     Message      X   OBJECT    Type     Message
   -    -------  -------- --------      -   -------   -------- --------
   _    PAY5900P PROGRAM                _   PAY5910S  SUBROUTINE
   _    PAY59101 MAP                    _   PAY5920S  SUBROUTINE
   _    PAY5950P PROGRAM                _   PAY5952S  SUBROUTINE
   _    PAY5953S SUBROUTINE




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
LIBRARY (supplied)	N	The library containing the NATURAL objects and/or SYSERR messages.
USER-ID (supplied)	N	The User-ID of the user responsible for the checked-out objects.
X (optional)	N	"X" in the Select field cancels the object.
OBJECT (supplied)	N	The object to be canceled. Partial names and wildcards (e.g., AAP*, *s would list everything ending in s)
OBJECT TYPE (supplied)	N	Identifies the type of NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages.
MESSAGE (supplied)	N	Indicates the success or failure of the requested cancel: CANCEL Indicates a successful cancel. FAILED Indicates a failed cancel. DENIED Indicates the cancel was prevented by user-exits. DELETE Indicates a successful cancel and the object was deleted from the Current Environment.

II.6.1.3 <u>Cancel with Extract Utility</u>

The Cancel with Extract Utility removes the checkout status of an object and creates an EXTRACT event to migrate the current object from the base environment into the current checkout environment. A checked-out object may be canceled for any user, unless restricted by User-Exit 5.

After entering "C" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu and pressing Enter, the Cancel with Extract Utility for NATURAL Objects screen is displayed.

```
08-07-01                 N-2-O CANCEL W/ EXTRACT                    TSI1
 16:49:04                   NATURAL PROGRAMS                         TERM



                  BASE Env        : ____
                  BASE Library    : _____
                  Object          : _____
                  User-ID         : ___1____

                  Extract Event   : _____

       Leave Blank or Press PF5 to retrieve information from the Event
                  Current Env     : ____
                  Current Library : _____

         This cancel option will cancel the checkout of the object(s)
         selected and creates an Extract Event to migrate the original
            object(s) (in the Base) to current environment/library

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
BASE ENV (required)	N	The Environment Definition representing the repository for the checked-out object.
BASE LIBRARY (required)	N	The library within the environment that contains the checked-out NATURAL object or SYSERR message.
OBJECT (required)	N	The checked-out object to be canceled.
		"*" Generates a selection list of all objects checked out to the user. The "*" may also be used as a wildcard character to select objects prefixed by a string (e.g., N2O*).
USER-ID (required)	N	The User-ID responsible for the checked-out object (defaults to the user executing the utility). If User-Exit 5 does not restrict the utility, any User-ID may be entered. Partial names and wildcards (e.g., AAP*) may be entered.
EXTRACT EVENT (required)	N	Extract Event which will migrate the cancelled objects.
CURRENT ENV (required)	N	The Environment Definition serving as the current development location of the object.
CURRENT LIBRARY (required)	N	The library within the development environment where the NATURAL objects and SYSERR messages currently are located.

When wildcarding is specified ('*' in the Object field) and Enter is pressed on the initial Cancel Utility screen, the screen below is displayed.

```
 Type X to select
 01-12-31                   N-2-O CANCEL W/ EXTRACT                  TSI0373
 11:38:00                     NATURAL PROGRAMS                         TSI1
           Library:  PAYPROD              User-ID:  TSIO373
                   Object                                Object
    X     Object   Type       Message     X    OBJECT   Type       Message
    -     -------  --------    --------    -    -------  --------   --------
   _      PAY5900P PROGRAM                _     PAY5910S SUBROUTINE
   _      PAY59101 MAP                    _     PAY5920S SUBROUTINE
   _      PAY5950P PROGRAM               _      PAY5952S SUBROUTINE
   _      PAY5953S SUBROUTINE




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages.
USER-ID (supplied)	N,S,P,O, M,D	The User-ID of the user responsible for the checked-out objects.
X (optional)	N,S,P,O, M,D	"X" in the Select field cancels the object.
OBJECT (supplied)	N,S,P,O, M,D.	The object to be canceled. Partial names and wildcards (e.g., AAP*, *s would list everything ending in s)
OBJECT TYPE (supplied)	N,P,O	Identifies the type of NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages.
MESSAGE (supplied)	N,S,P,O, M,D	Indicates the success or failure of the requested cancel:

CANCEL   Indicates a successful cancel.

FAILED   Indicates a failed cancel.

DENIED   Indicates the cancel was prevented by user-exits.

EXTRACT   Indicates a successful cancel and the object was added to the Extract Event.

After the user finishes canceling the checkouts, the option to process or modify the extract event that contains the objects cancelled will be displayed .

```
Type X to select
 01-12-31                 N-2-O CANCEL W/ EXTRACT                    TSI1
 13:01:09                   NATURAL PROGRAMS                         TERM
          Library:  PAYPROD                   User-ID:  *
               Object                              Object
 X Object    Typ +----------------------------------------+serid   Message
 - --------  -----|                                       | TSI1
 _ CITYTAXP PROGR|    Event: EEVENT   Seq:    31 Created  | TSI1
 _ LIFEINSC COPYC|          with      1 Objects           |
                 |                                        |
                 |            Process Event:  Y           |
                 |            Modify Event :  N           |
                 |            Delete Event :  N           |
                 |                                        |
                 +----------------------------------------+



 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
Event	N,S,P,O, D,M	The Master Event of the Extract Event.
Sequence	N,S,P,O, D,M	The sequence number of the Event
Process Event		'Y' Continue to process the Extract Event 'N' do not process the Extract Event
Modify Event		'Y' Modify the generated Extract Event 'N' Do not modify the generated Extract Event
Delete Event		'Y' Delete the generated Extract Event 'N' Do not delete the generated Extract Event

II.6.2 <u>Transfer Utility</u>

The Transfer Utility transfers responsibility for a checked-out object to another user. Checkout responsibility may be transferred for any user, unless restricted by User-Exit 5 (Refer to the ***N2O Administration Manual*** for details on User-Exit 5).

After entering "B" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu and pressing Enter, the Transfer Utility screen is displayed.

```
 01-12-31                   N-2-O TRANSFER UTILITY                  TSI0373
 11:38:00                   NATURAL PROGRAMS                        TSI1




                     BASE Env    : ____
                     BASE Library: _____
                     Object      : _____
                     User-ID     : TSI0373_
                     New User-ID : _____







 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
BASE ENV (required)	N,S,P,O, M,D	The Environment Definition representing the repository for the checked out object.
BASE LIBRARY (required)	N,S	The library within the environment that contains the checked-out NATURAL object or SYSERR message.
OBJECT (required)	N,S,P,O, M,D	The checked-out object to be transferred. "*" Generates a selection list of all objects checked out to the user. The "*" may also be used as a wildcard character to select objects prefixed by a string (e.g., N2O*).
USER-ID (required)	N,S,P,O, M,D	The User-ID currently responsible for the object (defaults to the User-ID executing the utility). If User-Exit 5 does not restrict the utility, any User-ID may be substituted. Partial names and wildcards (e.g., AAP*, *s would list everything ending in s)
NEW USER-ID (required)	N,S,P,O, M,D	The User-ID being assigned the checked-out object.
ENDEVOR SYSTEM	O	The classification of an application for an ENDEVOR object.
ENDEVOR SUBSYSTEM	O	The specific application within a system for an ENDEVOR object.

When wildcarding is specified ('*' in the Object field) and Enter is pressed on the initial

Transfer Utility screen, the screen below is displayed.

```
Type X to select program(s)
 01-12-31               N-2-O TRANSFER UTILITY                TSI0373
 11:38:00                  NATURAL PROGRAMS                   TSI1
        Library:  PAYPROD              User-ID:  TREE06
            Object                          Object
  S  Object    Type     Message      S  Object    Type     Message
  -  --------  -------- --------      -  --------  -------- --------
  _  CMIGUTIL  COPYCODE               _  PAYDCOCI  PROGRAM
  _  PAYENVA   PROGRAM                _  PAYENVB   PROGRAM
  _  PAYENVC   PROGRAM                _  PAYENVD   PROGRAM
  _  PAYENVE   PROGRAM                _  PAYEVNTA  PROGRAM
  _  PAYEVNTB  PROGRAM                _  PAYEVNTC  PROGRAM
  _  PAYEVNTD  PROGRAM                _  PAYEVNTE  PROGRAM
  _  PAYEVNTF  PROGRAM                _  PAYEVNTG  PROGRAM
  _  PAYEVNTI  PROGRAM                _  PAYOBJA   PROGRAM
  _  PAYOBJB   PROGRAM                _  PAYOBJD   PROGRAM
  _  PAYOBJG   PROGRAM                _  PAYOBJH   PROGRAM
  _  PAYOBJI   PROGRAM                _  PAYSTATA  PROGRAM
  _  PAYSTATB  PROGRAM                _  PAYSTATC  PROGRAM
  _  PAYSTATD  PROGRAM                _  PAYSTATE  PROGRAM
  _  PAYUE15N  SUB-RTN                _  PAYVCOCI  PROGRAM

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages.
USER-ID(supplied)	N,S,P,O,M ,D	The User-ID of the user who is responsible for the objects.
S (optional)	N,S,P,O.M .D	"X" in the Select field transfers an object.
OBJECT (supplied)	N,S,P,O,M ,D	The object to be transferred.
OBJECT TYPE (supplied)	N,P,O	Identifies the type of NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages.
MESSAGE (supplied)	N,S,P,O,M, D	Indicates the success or failure of the requested transfer:

		TRANSFER	Indicates a successful transfer.
		FAILED	Indicates a failed transfer.
		DENIED	Indicates the transfer was prevented by User-Exit-5.

When wildcarding is specified ('*' in the Object and User-id field) and Enter is pressed on the initial Transfer Utility screen, the screen below is displayed.

```
Type X to select
 01-12-31                  N-2-O TRANSFER UTILITY                      TSI1
 13:20:27                   NATURAL PROGRAMS                           TERM
          Library:  PAYPROD                    User-ID:  *
               Object                                    Object
 X Object   Type     Userid   Message   X Object   Type     Userid   Message
 - -------- -------- -------- --------   - -------- -------- -------- --------
 _ CITYTAXP PROGRAM  TSI1                _ FEDTAXL  LOCAL    TSI1
 _ LIFEINSC COPYCODE TSI1                _ LIFEINSL LOCAL    TSI1




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
LIBRARY (supplied)	N,S	The library containing the NATURAL objects and/or SYSERR messages.
USER-ID (supplied)	N,S,P,O,M,D	The User-ID entered into the previous screen.
USERID (supplied)	N,S,P,O,M,D	The User-ID of the user who is responsible for the objects.
S (optional)	N,S,P,O.M.D	"X" in the Select field transfers an object.
OBJECT (supplied)	N,S,P,O,M,D	The object to be transferred.
OBJECT TYPE (supplied)	N,P,O	Identifies the type of NATURAL objects, PREDICT objects, 3GL/OTHER objects, and/or SYSERR messages.
MESSAGE (supplied)	N,S,P,O,M,D	Indicates the success or failure of the requested transfer:

	TRANSFER	Indicates a successful transfer.
	FAILED	Indicates a failed transfer.
	DENIED	Indicates the transfer was prevented by User-Exit-5.

II.6.3   Transfer by Event Utility

The Transfer by Event Utility transfers responsibility for all checked-out objects in an Event to another user.

After entering "C" in the Enter Code field on the Checkout/Checkin Utilities menu and pressing Enter, the Transfer by Event Utility screen is displayed.

```
 01-12-31                 N-2-O TRANSFER BY EVENT UTILITY          TSI0373
 11:38:00                                                          TSI1




                      Event          : _____
                      Sequence       : ___
                      New User-ID    : _____
                      Change Control :










 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
EVENT (required)	The Event that last migrated the checked-out objects that are to be transferred. The destination of the Event must match the current checkout location of the objects.
SEQUENCE (optional)	A starting Sequence number for the Event specified.
NEW USER-ID (required)	The User-ID that will be responsible for the checked-out object after the transfer.
CHANGE CONTROL (optional)	A limiting value for the Event specified. Only Events with this Change Control are shown.

After entering the information on the previous screen and pressing Enter, a list of Events is shown.

```
Type an X to select an Event for Transfer
 01-12-31                 N-2-O TRANSFER BY EVENT UTILITY            TSI0373
 11:38:00                                                           TSI1

                    Change    --- From ----   ---- To -----    Added
   X    Event    Seq   Control   Env   Library  Env   Library   User-ID
   -    --------  -----  --------  ----  --------  ----  --------  --------
   _    PAYOUT    1      E141      PROD  PAYPROD   TEST  PAYTEST   TSIO373




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
X (optional)	"X" selects the Event.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library for the Event.
TO ENV (supplied)	The target Environment Definition of the Event.
TO LIBRARY (supplied)	The target library of the Event.
ADDED USER-ID (supplied)	The User-ID of the user that created the Event.

The utility attempts to transfer checkout responsibility of all objects in an Event. If the utility successfully transfers objects, the Event is marked with "*" in the Select field. If the utility does not transfer any objects, the Event is marked with "F" in the Select field. If objects are not transferred, they are displayed on a separate screen with a reason for their failure.

II.6.4   Checkout Utility

The Checkout Utility checks out objects created in a development environment. Objects must be marked as checked out before they may be migrated to other environments. When Checkout/Checkin is active, existing objects are automatically checked out when they migrate from a BASE environment to a development environment.

The Checkout Utility updates the checkout status and identifies the current checkout location for an object. This utility does not migrate objects.

After entering "D" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu and pressing Enter, the Checkout Utility screen is displayed. An object's Checkout/Checkin status can only be updated by the user who currently has the object checked out.

```
 01-12-31                    N-2-O CHECKOUT UTILITY                  TSI0373
 11:38:00                      NATURAL PROGRAMS                      TSI1




                    BASE Env         : ____
                    BASE Library     : _____
                    Current Env      : ____
                    Current Library  : _____
                    Object           : _____
                    Object Type      : __
                    User-ID          : TSI1____






Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
BASE ENV (required)	N,S,P,O, M,D	The Environment Definition representing the repository for the checked-out object.
BASE LIBRARY (required)	N,S	The library within the environment containing the checked-out NATURAL objects and SYSERR messages.
CURRENT ENV (required)	N,S,P,O, M,D	The Environment Definition serving as the current development location of the object.
CURRENT LIBRARY (required)	N,S	The library within the development environment where the NATURAL objects and SYSERR messages currently are located.

(continued from previous page)

Field	Type	Description
OBJECT (required)	N,S,P,O, M,D	The object to be checked out.
		"*" Generates a selection list of all NATURAL objects, SYSERR messages, and PREDICT objects in the current environment and library. The "*" may also be used as a wildcard character to select NATURAL objects, SYSERR messages, and PREDICT objects prefixed by a string (e.g., N2O*, *s would list everything ending in s)). If this field is left blank, a second data entry screen is displayed, allowing up to 28 objects to be entered.
OBJECT TYPE (required)	N	The object type to be checked out.
		Valid object types for NATURAL are as follows:

A   Indicates Parameter data.
C   Indicates Copycode.
G   Indicates Global data.
H   Indicates Helproutine.
L   Indicates Local data.
M   Indicates Map.
N   Indicates Subprogram.
P   Indicates Program.
S   Indicates Subroutine.
T   Indicates Text.
O   Indicates Macro.
R   Indicates Report.
Y   Indicates ExpertModel.
Z   Indicates Recording.
3   Indicates Dialog.
4   Indicates Class.
5   Indicates Processor.
K   Indicates Server.
7   Indicates Function.
8   Indicates Adapter.
O   Indicates Macro.

(continued from previous page)

Field	Type	Description
	P	Valid object types for PREDICT are as follows:

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

Field	Type	Description
	O	The 3GL/OTHER type for a category:

ASMB	Indicates all types of Assembler.
COBOL	Indicates all types of COBOL.
FORT	Indicates all types of FORTRAN.
PL/I	Indicates all types of PL/I.
RPG	Indicates RPG.
DATA	Indicates DATA FILES.
JCL	Indicates JCL, CLIST, CNTL.
OTHER	Indicates all other object types.

Field	Type	Description
USER-ID (required)	N,S,P,O, M,D	The User-ID responsible for the checked-out Object (defaults to the user executing the utility). If User-Exit 5 does not restrict the utility, any User-ID may be substituted.
CATEGORY (required)	O	The category associated with the member being checked out. Valid 3GL/OTHER categories are as follows:

ASMB	Indicates all types of Assembler.
COBOL	Indicates all types of COBOL.
FORT	Indicates all types of FORTRAN.
PL/I	Indicates all types of PL/I.
RPG	Indicates RPG.
DATA	Indicates DATA FILES.
JCL	Indicates JCL, CLIST, CNTL.
OTHER	Indicates all other object types.

This field is valid for 3GL/OTHER checkouts only.

(continued from previous page)

Field	Type	Description
FILE TYPE (required)	P	The type of file being checked out. Valid values are:
		A Indicates ADABAS. C Indicates Conceptual. D Indicates DB2 table. E Indicates DB2 view. I Indicates IMS segment. J Indicates IMS seg. layout. K Indicates IMS userview. L Indicates Logical VSAM. M Indicates ISAM. O Indicates OTHER. P Indicates NATURAL PROCESS. Q Indicates PROCESS userviews. R Indicates Logical VSAM view. S Indicates Sequential. U Indicates ADABAS userview. V Indicates VSAM. W Indicates VSAM userview. Z Indicates Standard.
DDM GENERATED (required)	P	An identification of the existence or non-existence of a generated DDM. Y indicates a generated DDM exists for a file. N indicates a generated DDM does not exist for a file.
ENDEVOR SYSTEM	O	The classification of an application for an ENDEVOR object.
ENDEVOR SUBSYSTEM	O	The specific application within a system for an ENDEVOR object.
DDM Dbid (required)	D	Database number that the DDM will point to.
DDM Fnr (required)	D	File number that the DDM will point to.
DDM ADA 6 (required)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
METADATA (required)	M	Description of the UDE – User Defined Entities

When wildcarding is specified ('*' in the Object field) on the initial Checkout Utility screen and Enter is pressed, the screen below is displayed.

```
 Type X to select
  01-12-31                    N-2-O CHECKOUT UTILITY                    TSI0373
  11:38:00                    NATURAL PROGRAMS                          TSI1
          Library:  PAYPROD            User-ID:  TSIO373
                 Object                              Object
   X     Object   Type    Message       X    Object   Type    Message
   -     -------  ---     --------       -    -------  ---     --------
   _     PAY5900P  P                     _    PAY5910S  S
   _     PAY59101  M                     _    PAY5950P  P
   _     PAY5951S  S                     _    PAY59511  M
   _     PAY5952S  S                     _    PAY59521  M
   _     PAY5953S  S                     _    PAY59531  M




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
LIBRARY (supplied)	N,S	The library containing the objects.
USER-ID (supplied)	N,S,P,M,D	The User-ID of the user responsible for the objects.
X (optional)	N,S,P,M,D	"X" in the Select field checks out an object.
OBJECT (supplied)	N,S,P,M,D	The object to be checked out.
OBJECT TYPE (supplied)	N,P	Identifies the object type to be checked out:

A   Indicates Parameter data.
C   Indicates Copycode.
G   Indicates Global data.
H   Indicates Helproutine.
L   Indicates Local data.
M   Indicates Map.
N   Indicates Subprogram.
P   Indicates Program.
S   Indicates Subroutine.
O   Indicates Macro.
R   Indicates Report.
Y   Indicates ExpertModel.
Z   Indicates Recording.
3   Indicates Dialog.
4   Indicates Class.
5   Indicates Processor.
K   Indicates Server.
7   Indicates Function.
8   Indicates Adapter.
O   Indicates Macro.

(continued from previous page)

Field	Type	Description
		Valid object types for PREDICT are as follows:

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

Field	Type	Description
DDM Dbid (supplied)	D	Database number that the DDM will point to.
DDM Fnr (supplied)	D	File number that the DDM will point to.
DDM ADA 6 (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
METADATA (supplied)	M	Description of the UDE – User Defined Entities
MESSAGE (supplied)	N,S,P,M, D	Indicates the success or failure of the requested checkout:

CHKD OUT	Indicates a successful checkout.
WARNING	Indicates multiple checkouts of the same objects.
FAILED	Indicates a failed checkout.
DENIED	Indicates User-Exit 5 prevented the checkout.
REJECTED	Indicates N2O Security prevented the checkout.

When the 'FAILED' or 'WARNING' message is displayed next to an Object, place the cursor over the Object and use PF11 to display any existing Checkout information.

II.6.5   Reject Utility

The Reject Utility returns the checkout location to the previous development environment. This utility does not migrate objects.

Many sites have a review process as objects move from one development environment to another. For example, objects may be copied from Development to Quality Assurance. A user may determine that the objects have deficiencies and may wish to return the objects to development. Rather than create an Event to copy the objects back to the development environment, a user may use the Reject Utility.

After entering "E" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu, the Reject Utility screen is displayed.

```
 01-12-31               N-2-O REJECT UTILITY                    TSI0373
 11:38:00               NATURAL PROGRAMS                        TSI1




                   BASE Env       :        ____
                   BASE Library   :        _____
                   Object         :        _____










 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
BASE ENV (required)	N,S,P,O, M,D	The Environment Definition representing the repository for the checked-out object.
BASE LIBRARY (required)	N,S	The library within the environment containing the checked-out NATURAL objects and SYSERR messages objects.
OBJECT (required)	N,S,P,O, M,D	The checked-out object to be rejected.
ENDEVOR SYSTEM	O	The classification of an application for an ENDEVOR object.
ENDEVOR SUBSYSTEM	O	The specific application within a system for an ENDEVOR object.

II.6.6   Enrollment Facility

The Enrollment Facility updates the N2O Migration file with information about objects on a remote node or 3GL/OTHER objects. This information is used during the migration selection process. The Enrollment Facility is used to enroll new objects in an environment, as well as to update information about existing objects.

After entering "F" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu, the Enrollment Facility screen is displayed.

```
01-12-31                    N-2-O ENROLLMENT FACILITY              TSI0373
11:38:00                    NATURAL PROGRAMS                       TSI1


                    Env Def         :      ____
                    Library         :      _____
                    Object          :      _____
                    Src/Obj         :      __
                    Object Type     :      _








Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ---   ---    ----  ----  ----
```

Field	Type	Description
ENV DEF (required)	N,S,P,O, M,D	The Environment Definition for the remote node or 3GL Environment containing the object to be enrolled.
LIBRARY (required)	N,S	The library within the remote Environment. This field is only available when enrolling NATURAL objects and SYSERR messages objects.
OBJECT (required)	N,S,P,O, M,D	The object to be enrolled.
SRC/OBJ (required)	N	The form of the NATURAL object.
		S Indicates the source form of the object is being enrolled.
		C Indicates the cataloged form of the object is being enrolled.
		SC Indicates both forms of the object are being enrolled.
SHORT/LONG (required)	S	The length of the message to be enrolled.
		S Indicates user-supplied short messages are to be enrolled.
		SL Indicates both short and long message are to be enrolled.

(continued from previous page)

Field	Type	Description
OBJECT TYPE (required)	N,P	The object type to be enrolled. Valid object types for NATURAL objects are as follows:

A   Indicates Parameter data.
C   Indicates Copycode.
G   Indicates Global data.
H   Indicates Helproutine.
L   Indicates Local data.
M   Indicates Map.
N   Indicates Subprogram.
P   Indicates Program.
S   Indicates Subroutine.
O   Indicates Macro.
R   Indicates Report.
Y   Indicates ExpertModel.
Z   Indicates Recording.
3   Indicates Dialog.
4   Indicates Class.
5   Indicates Processor.
K   Indicates Server.
7   Indicates Function.
8   Indicates Adapter.
O   Indicates Macro.

Valid object types for PREDICT objects are as follows:

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

(continued from previous page)

Field	Type	Description
FILE TYPE (required)	P	The type of file being checked out. Valid values are:
		A Indicates ADABAS.
		C Indicates Conceptual.
		D Indicates DB2 table.
		E Indicates DB2 view.
		I Indicates IMS segment.
		J Indicates IMS seg. layout.
		K Indicates IMS userview.
		L Indicates Logical VSAM.
		M Indicates ISAM.
		O Indicates OTHER.
		P Indicates NATURAL PROCESS.
		Q Indicates PROCESS userviews.
		R Indicates Logical VSAM view.
		S Indicates Sequential.
		U Indicates ADABAS userview.
		V Indicates VSAM.
		W Indicates VSAM userview.
		Z Indicates Standard.
DDM GENERATED (required)	P	Indicates whether a generated DDM exists or not.
		Y indicates a generated DDM exists for a file.
		N indicates a generated DDM does not exist for a file.
CATEGORY (required)	O	The category associated with the member. This field is only available when enrolling 3GL/OTHER objects. Valid 3GL/OTHER categories are as follows:
		ASMB Indicates all types of Assembler.
		COBOL Indicates all types of COBOL.
		FORT Indicates all types of FORTRAN.
		PL/I Indicates all types of PL/I.
		RPG Indicates RPG.
		DATA Indicates DATA FILES.
		JCL Indicates JCL, CLIST, CNTL.
		OTHER Indicates all other object types.
ENDEVOR SYSTEM	O	The classification of an application for an ENDEVOR object.
ENDEVOR SUBSYSTEM	O	The specific application within a system for an ENDEVOR object.
DDM Dbid (supplied)	D	Database number that the DDM will point to.
DDM Fnr (supplied)	D	File number that the DDM will point to.

(continued from previous page)

Field	Type	Description
DDM ADA 6 (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
METADATA (supplied)	M	Description of the UDE – User Defined Entities

II.6.7 Reject by Event Utility

The Reject by Event Utility returns the checkout location to the previous development environment for all objects in an Event. This utility does not migrate objects.

Many sites have a review process as objects move from one development environment to another. For example, objects may be copied from a development environment to a quality assurance environment. A user may determine that the objects have deficiencies and wants to return the objects to development. Rather than create an Event to copy the objects back to the development environment, a user may use the Reject by Event Utility.

After entering "G" in the Enter Code field and "N" (NATURAL) in the Type field on the Checkout/Checkin Utilities menu, the Reject by Event Utility screen is displayed.

```
01-12-31                N-2-O REJECT BY EVENT UTILITY              TSI0373
11:38:00                                                           TSI1




                        Event        : _____
                        Sequence     : _____







 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
EVENT (required)	The Event that migrated the objects to be rejected.
SEQUENCE (optional)	The Event sequence that migrated the objects to be rejected.

After entering the information on the previous screen and pressing Enter, a list of Events is shown.

```
Type an X to select an Event for Reject
 01-12-31                    N-2-O REJECT BY EVENT UTILITY              TSI0373
 11:38:00                                                              TSI1

                        Change   --- From ----   ---- To -----   Added
    X    Event    Seq   Control  Env   Library   Env   Library   User-ID
    -    --------  -----  --------  ----  --------  ----  --------  --------
    _    DEV2QUAL  1      ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373
    _    DEV2QUAL  2      ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373
    _    DEV2QUAL  3      ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373
    _    DEV2QUAL  4      ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373
    _    DEV2QUAL  5      ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373
    _    DEV2QUAL  6      ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373
    _    DEV2QUAL  7      ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373
    _    DEV2QUAL  8      ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373
    _    DEV2QUAL  9      ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373
    _    DEV2QUAL  10     ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373
    _    DEV2QUAL  11     ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373
    _    DEV2QUAL  12     ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373
    _    DEV2QUAL  13     ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373
    _    DEV2QUAL  14     ********  DEV   PAYDEV    QUAL  PAYQA    TSI0373

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
X (optional)	"X" selects the Event.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library for the Event.
TO ENV (supplied)	The target Environment Definition of the Event.
TO LIBRARY (supplied)	The target library of the Event.
ADDED USER-ID (supplied)	The User-ID of the user that created the Event.

The utility attempts to return each object in the Event to the previous development environment. If the utility successfully rejects all objects, the Event is marked with "*" in the Select field. If the utility fails to reject any objects, the Event is marked with "F" in the Select field. All objects are displayed on a separate screen with a status message.

II.7 **Batch JCL Submission**

N2O provides the ability to submit batch JCL (or EXECs) to a system internal reader. N2O reads batch JCL from the JCL Library specified on the Install Parms screen or on the Migration Profile for an Event. If the JCL contains substitution variables, N2O supplies and replaces the necessary values before submitting the JCL to the system internal reader. The N2O Job Submission Exit, "N2OUERJE", must be modified for site RJE requirements before submitting batch JCL. If a system internal reader is not available, the batch JCL must be submitted manually. Refer to the **N2O Administration Manual** for details on N2OUERJE.

To access the Batch JCL Submission menu, enter "B" in the Enter Code field on the Migration Subsystem menu. Entering the direct command MIG SUB on any menu also accesses the Batch JCL Submission menu.

```
 01-12-31                  N-2-O BATCH JCL SUBMISSION                TSI0373
 11:38:00                                                            TSI1

                         Code  Function
                         ----  ----------------------------
                          A    Submit an Event
                          B    Submit a Master Event
                          C    Submit Migration Profiles
                          D    Submit All Pending Events
                          E    View JCL for a Profile
                          F    3GL/Other Autocompile
                          G    DB2 DBRM Generation
                          H    DB2 Plan Bind
                          .    Terminate Batch JCL Submission
                          -    ----------------------------


             Enter Code: _



 Direct Command: _____             MIG SUB
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE	The function to be executed. Valid values are as follows:

A **Submit an Event**
Displays all Events pending batch migration and submits JCL for selected Events.

B **Submit a Master Event**
Displays a count of all Events pending batch migration for a master Event and submits JCL to process the group of Events.

C **Submit Migration Profiles**
Displays a count of all Events pending batch migration for a Migration Profile and submits JCL to process the group of Events.

D **Submit All Pending Events**
Displays a list of all Events pending batch migration and submits the JCL to migrate all Events.

E **View JCL for a Profile**
Displays the JCL associated with a Migration Profile.

F **3GL/OTHER Autocompile**
Displays all closed 3GL/OTHER Events that are pending Autocompile, and submits the JCL to compile selected Events.

G **DB2 DBRM Generation**
Displays all Events pending DBRM generation, and submits JCL to generate DBRM(s) for selected Events.

H **DB2 Plan Bind**
Displays all Events for which a DBRM has been generated, and submits JCL to bind a DB2 Plan.

II.7.1 **Submit an Event**

The Submit an Event function submits batch migration JCL (or EXECs) to a system internal reader for an Event. Batch Events that have been delayed are available for submission from this screen. Refer to **Section II.2.3 Migration Process**.

To access the Submit an Event Screen, enter "A" in the Enter Code field on the Batch JCL Submission menu.

```
Type an X - submit D - delete Event I - Inquire V - View JCL
 01-12-31              N-2-O SUBMIT AN EVENT                  TSI0373
 11:38:00                                                     TCP00004

 Ret           Event ------- System JCL ------- -------- 3GL JCL ----------
 Code X Event  Seq   Library  Program  Pred Pgm Library  Program  Arch Pgm
 ---- - ------ ----- -------- -------- -------- -------- -------- --------
      _ PRODTEST 3    N2OJCL   PRODTEST ******** ******** ******** ********
      _ PRODTEST 2    N2OJCL   PRODTEST ******** ******** ******** ********
      _ PRODTEST 140  N2OJCL   PRODTEST ******** ******** ******** ********
      _ PRODTEST 141  N2OJCL   PRODTEST ******** ******** ******** ********
      _ PRODTEST 142  N2OJCL   PRODTEST ******** ******** ******** ********
      _ PRODTEST 143  N2OJCL   PRODTEST ******** ******** ******** ********
      _ PRODTEST 146  N2OJCL   PRODTEST ******** ******** ******** ********
      _ PRODTEST 147  N2OJCL   PRODTEST ******** ******** ******** ********
      _ PRODTEST 148  N2OJCL   PRODTEST ******** ******** ******** ********
      _ PRODTEST 176  N2OJCL   PRODTEST ******** ******** ******** ********
      _ PRODTEST 178  N2OJCL   PRODTEST ******** ******** ******** ********
      _ PRODTEST 234  N2OJCL   PRODTEST ******** ******** ******** ********


 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  USER  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
RET CODE (supplied)	N,S,P,O, M,D	A value appears in this column next to an Event if the job submission receives a return code greater than zero.
X (optional)	N,S,P,O, M,D	"X" submits JCL for an Event. "D" deletes the Event.
		"I" displays information about an Event.
		"V" displays the JCL that will be submitted for the Event.
		After pressing enter,
		"*" Indicates a successful submission.
		"F" indicates a failed submission.
		"#" Indicates the JCL was deleted.
		"N" indicates the JCL was not found
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
EVENT SEQ (supplied)	N,S,P,O, M,D	The sequence number of the Event.
SYSTEM JCL LIBRARY (supplied)	N,S,P,O, M,D	The NATURAL library that contains the JCL for migrating DDMS, METADATA, NATURAL objects, PREDICT objects, and SYSERR messages.

(continued from previous page)

Field	Type	Description
SYSTEM JCL PROGRAM (supplied)	N,S,D	The NATURAL object that contains the JCL for migrating DDM, NATURAL objects and SYSERR messages.
SYSTEM JCL PRED PGM (supplied)	P,M	The NATURAL object that contains the JCL for migrating METADATA and PREDICT objects. Contains "DISABLED" if the BUILD-EXTRACT variable in User-Exit 14 is set to FALSE.
3GL JCL LIBRARY (supplied)	O	The NATURAL library that contains the JCL for migrating 3GL/OTHER objects.
3GL JCL PROGRAM (supplied)	O	The NATURAL object that contains the JCL for migrating 3GL/OTHER objects.
3GL JCL ARCH PGM (supplied)	O	The NATURAL object that contains the JCL for archiving PDS members.

If the Event contains a combination of NATURAL and 3GL/OTHER objects, two jobs are submitted for the Event.

The following PF-keys are provided for the Submit an Event function:

Key	Function	Description
PF5	USER	Toggle between displaying all events / displaying only the current user's event.

II.7.2   Submit a Master Event

The Submit a Master Event function submits batch migration JCL (or EXECs) to a system internal reader. All batch-ready Events for a Master Event are submitted as a single job.

To access the Submit a Master Event screen, enter "B" in the Enter Code field on the Batch JCL Submission menu.

```
Type X to submit or D to delete Event for a Master Event
  01-12-31              N-2-O SUBMIT A MASTER EVENT              TSI0373
  11:28:00                                                      TCP00004

                    Ret                        Event
                    Code    X    Master Event  Count
                    ----    -    ------------  -----
                      _        PRODTEST        12








  Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
RET CODE (supplied)	N,S,P,O,M ,D	A value appears in this column next to an Event if the job submission receives a return code greater than zero.
X (optional)	N,S,P,O,M ,D	"X" in the Select field submits JCL for a Master Event.
		"D" in the Select field deletes the Event.
		"*" Indicates a successful submission.
		"F" indicates a failed submission.
		"#" Indicates the JCL was deleted.
MASTER EVENT (supplied)	N,S,P,O,M ,D	The Master Event of the migration.
EVENT COUNT (supplied)	N,S,P,O,M ,D	The number of batch-ready Events to be processed.

A list of all Master Events with pending batch jobs is displayed. The Event Count indicates how many Events are pending for the Master Event.

II.7.3 <u>Submit Migration Profiles</u>

The Submit Migration Profiles function submits batch migration JCL (or EXECs) to a system internal reader. All batch-ready Events for a Migration Profile are submitted as a single job.

To access the Submit Migration Profiles menu, enter "C" in the Enter Code field on the Batch JCL Submission menu.

```
Type X to submit, C for Change Control or D to delete Events
 01-12-31                N-2-O SUBMIT MIGRATION PROFILES          TSI0373
 11:38:00                                                         TCP00004

 Ret   Migration Event ------- System JCL -------  --------- 3GL JCL---------
 Code X Profile   Count Library  Program  Pred Pgm  Library  Program  Arch Pgm
 ---- - --------- ----- -------- -------- --------  -------- -------- --------
      _ PROD  TEST   12  N2OJCL   PRODTEST ******** ******** ******** ********




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ALL   END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
RET CODE (supplied)	N,S,P,O,M ,D	A value appears in this column next to an Event if the job submission receives a return code greater than zero.
X (optional)	N,S,P,O,M ,D	"X" in the Select field submits JCL for a Migration Profile.
		"C" in the Select field submits JCL for a Migration Profile to process all Events that are related to a specified Change Control.
		"D" in the Select field deletes all pending Events (status "B") for a Migration Profile.
		After pressing enter,
		"*" indicates successful submission
		"F" indicates failed submission
		"#" indicates the JCL was deleted.
MIGRATION PROFILE (supplied)	N,S,P,O,M ,D	The Migration Profile to be submitted.
EVENT COUNT (supplied)	N,S,P,O,M ,D	The number of batch-ready Events to be processed.
SYSTEM JCL LIBRARY (supplied)	N,S,P,M,D	The NATURAL library that contains the JCL for migrating DDMS, METADATA, NATURAL objects, PREDICT objects, and SYSERR messages.
SYSTEM JCL PROGRAM (supplied)	N,S,D	The NATURAL object that contains the JCL for migrating DDMS, NATURAL objects, and SYSERR messages.

(continued from previous page)

Field	Type	Description
SYSTEM JCL PRED PGM (supplied)	P	The NATURAL object that contains the JCL for migrating METADATA and PREDICT objects.
		Contains "DISABLED" if the BUILD-EXTRACT variable in user exit 14 is set to FALSE.
3GL JCL LIBRARY (supplied)	O	The NATURAL library that contains the JCL for migrating 3GL/OTHER objects.
3GL JCL PROGRAM (supplied)	O	The NATURAL object that contains the JCL for migrating 3GL/OTHER objects.
3GL JCL ARCH PGM (supplied)	O	The NATURAL object that contains the JCL for archiving PDS objects.

A list of all Migration Profiles with pending batch jobs is displayed. The Event Count indicates how many Events are pending for the Migration Profile.

When "C" is used in the Select field to submit JCL for a Migration Profile, based on change control number, the following popup window allows the Change Control to be input or selected.

```
Type X to submit, C for Change Control or D to delete JCL
  01-12-31               N-2-O SUBMIT MIGRATION PROFILES            TSI0373
  11:38:00          +---------------------------------------------+ TCP00004
                    | Select or Enter a Change Control: _____  |
  Ret    Migration  | X CC       #   X CC       #   X CC      #   | L---------
  Code X Profile    | - -------- --- - -------- --- - -------- --- |   Arch Pgm
  ---- - ---------  | _ CHGCNTL1 3   _ CHGCNRL2 2                 | - --------
         C PROD  TEST |                                           | * ********
                    |                                             |
                    |                                             |
                    |                                             |
                    |                                             |
                    |                                             |
                    |                                             |
                    |                                             |
                    |                                             |
                    |                                             |
                    |                                             |
                    |                                             |
                    |                                             |
                    +---------------------------------------------+
  Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        ----  ALL   END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
Select or Enter a Change Control (optional)	N,S,P,O,M,D	Input of Change Control.
X (optional)	N,S,P,O,M,D	"X" in the Select field selects the Change Control.
CC (supplied)	N,S,P,O,M,D	Change Control.
# (supplied)	N,S,P,O,M,D	Number of events associated with the Change Control.

II.7.4   Submit All Pending Events

The Submit All Pending Events function submits batch migration JCL (or EXECs) to a system internal reader. All batch-ready Events are submitted as a single job.

To access the Submit All Pending Events screen, enter "D" in the Enter Code field on the Batch JCL Submission menu.

```
Press ENTER to submit JCL for all Events
 01-12-31                N-2-O SUBMIT ALL PENDING EVENTS              TSI0373
 11:38:00                                                             TSI1

                      From   To                          From   To
       Event    Seq   Env    Env     Event     Seq       Env    Env
       -------- ----- ----   ----    --------  -----     ----   ----
       PAYIN    2     DEV    PROD    PAYIN     3         DEV    PROD














Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----   ----   ----
```

Field	Type	Description
EVENT (supplied)	N,S,P,O, M,D	The Master Event of the migration.
SEQ (supplied)	N,S,P,O, M,D	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O, M,D	The source Environment Definition of the migration.
TO ENV (supplied)	N,S,P,O, M,D	The target Environment Definition of the migration.

A list of all pending batch Events is displayed. When Enter is pressed, a pop-up window displays for the user to enter the JCL library and JCL object to perform the batch migration. Events that include PREDICT objects cannot be submitted using this option and are not included in the list.

II.7.5   <u>View JCL for a Profile</u>

The View JCL for a Profile function displays the JCL Object for a Migration Profile.

To access the View JCL for a Profile screen, enter "E" in the Enter Code field on the Batch JCL Submission menu.

```
Valid Values: D (Default Mig), P (PREDICT Mig), B (Both)
01-12-31                  N-2-O VIEW JCL FOR A PROFILE                TSI0373
11:38:00                                                             TSI1

                              Predict
              JCL          JCL      JCL
       X    Library     Program   Program    Migration Profile
       -    --------    --------  --------   ------------------
       _    PAYJCL      NATMIGR   NATMIGP      DEV     TEST
       _    PAYJCL      NATMIGA   ********     TEST    PROD




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12
     ----  ----  END   ----  ----  ----  ----  ----  ----  ----   ----   ----
```

Field	Type	Description
X (optional)	N,S,P,M,D	"D" in the Select field displays the JCL program specified in the Migration Profile.
		"P" in the Select field displays the PREDICT JCL program specified in the Migration Profile.
		"B" in the Select field displays both JCL programs specified in the Migration Profile.
JCL LIBRARY (supplied)	N,S,P,O,M D	The NATURAL library that contains the JCL for migrating DDMS, METADATA, NATURAL objects, PREDICT objects, and SYSERR messages. This is assigned on the Migration Profile.
JCL PROGRAM (supplied)	N,S,D	The NATURAL object that contains the JCL for migrating DDMS, NATURAL objects, SYSERR messages, METADATA and PREDICT objects (if User-Exit 14 sets the Build-Extract variable to false). This is assigned on the Migration Profile.
PREDICT JCL PROGRAM (supplied)	P,M	The NATURAL object that contains the JCL for migrating PREDICT objects(if User-Exit 14 sets the Build-Extract variable to true). This is assigned on the Migration Profile.
		Contains "DISABLED" if the BUILD-EXTRACT variable in User-Exit 14 is set to FALSE.
MIGRATION PROFILE (supplied)	N,S,P,M,D	The Migration Profile identifying the JCL for migrating NATURAL objects, SYSERR messages, and PREDICT objects.

Entering "D" in the Select field for the DEV to TEST Migration Profile on the View JCL for a Profile screen, the screen below is displayed.

```
01-12-31                N-2-O VIEW JCL FOR A PROFILE                    TSIO373
11:38:00    Library: N2OJCL   Program: N2OMIG   Type: DEFAULT          TSI1
   ....+....1....+....2....+...  DB1   PRD3 ..+....5....+....6....+....7..
   //NATMIGR JOB (20000),'NATURAL MIGRATION',CLASS=T,NOTIFY=&USERID
   //*
   //       USER-ID will be replaced automatically by N2O with
   //*      *INIT-USER or the User-ID supplied to N2O by
   //*      N2OUEOON when the batch migration is submitted
   //*      to an internal reader.
   //*
   //*      Proc NATL must execute NATURAL on the FUSER local to
   //*      the N2O installation.
   //*
   //*      &INPUT will be replaced automatically by N2O with
   //*      the required parameters when the batch
   //*      migration is submitted to an internal reader.
   //*      For manual submission, see Select Options.
   //*
   //N2OSEL  EXEC NATL
   //CMWKF01 DD *
   &INPUT
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12
     ----  ----  END   ----  ----  ----  ----  ----  ----  ----   ----   STOP
```

This screen displays the default JCL that is used to migrate NATURAL, SYSERR, and PREDICT objects. Pressing Enter continues listing the JCL for the Migration Profile.

II.7.6   3GL/OTHER Autocompile

The 3GL/OTHER Autocompile function submits 3GL compile JCL (or EXECs) to a system internal reader.

To access the 3GL/OTHER Autocompile screen, enter "F" in the Enter Code field on the Batch JCL Submission menu. Enter a starting Event and Sequence on the first screen displayed and press enter. A summary screen similar to the one below will be shown.

```
Type an X to submit JCL for an Event
 01-12-31               N-2-O 3GL/OTHER AUTOCOMPILE              TSI0373
 11:38:00                                                       TSI1


                Event    From      To     3GL       ---- Migrated ----
 X    Event     Seq      Env       Env    Type      Date       Time
 -    -------   -----    --------  -----  --------  --------   --------
 _    COBOLTTP  34       LIBT      LIBP   LIBR      01-11-27   16:08:00
 _    COBOLTTP  35       LIBT      LIBP   LIBR      01-11-28   16:04:00
 _    COBOLTTP  36       LIBT      LIBP   LIBR      01-11-29   16:01:00



Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----   ----   ----
```

Field	Type	Description
X (optional)	O	"X" in the Select field submits JCL for a 3GL Autocompile.
		"D" in the Select field deletes JCL for a 3GL Autocompile.
		After pressing enter,
		"*" Indicates the 3GL/OTHER Autocompile JCL was successfully submitted.
		"N" indicates the JCL could not be located.
		"F" indicates an error was encountered when the JCL was submitted.
		"#" Indicates the JCL was deleted.
EVENT (supplied)	O	The Master Event of the migration.
EVENT SEQ (supplied)	O	The sequence number of the Event.
FROM ENV (supplied)	O	The source Environment Definition of the migration.
TO ENV (supplied)	O	The target Environment Definition of the migration.
3GL INTERFACE (supplied)	O	The 3GL interface used to migrate the 3GL/OTHER objects. Valid values are as follows: PDS, LIBR, PANV, ENDV.
MIGRATED DATE (supplied)	O	The date the Event completed the migration process.
MIGRATED TIME (supplied)	O	The time the Event completed the migration process.

II.7.7 DB2 DBRM Generation

The DB2 DBRM Generation function submits JCL (or EXECs) to a system internal reader using NATRJE. The DBRM Generation process performs the following steps:

- **Execute the Create DBRM (Data Base Request Modules) Command**
  The database access statements generated in NATURAL objects are extracted and transformed to a static assembler program (DBRM).

- **Execute the DB2 Precompile**
  In this step, the generated static assembler program is sent through the DB2 Precompiler. The output consists of the precompiled DBRM containing the SQL statements, and an assembler program, which contains all the database access statements, transformed from SQL into assembler statements.

- **Assemble and Link the Assembler Program**
  The assembler program is then assembled and linked creating an executable load module.

- **Bind the DBRM as a Package (optional)**
  This is an optional step available with DB2 V2.3. A package is a subcomponent of a Plan, and it is not executable until it is included in a Plan.

N2O provides Static SQL Support by creating Database Request Modules (DBRM) and then binding these DBRMs into a DB2 Application Plan. After an Event has completed, the Event is ready for DBRM Generation.

Once an Event has been submitted for DBRM Generation, a batch job may then be submitted to bind the DBRM(s) and/or Packages into a DB2 Application Plan.

To access the DB2 DBRM Generation screen, enter "G" in the Enter Code field on the Batch JCL Submission menu.

```
Valid Values : X - Submit DBRM, C - Cancel DBRM/PLAN
 01-12-31               N-2-O DB2 DBRM GENERATION                  TSI0373
 11:38:00                                                          TSI1

   Ret                       -- Target ---  --- Compiled ----        DB2
   Code  S   Event    Seq    Env  Library   Date      Time    Warning Stat
   ----  -   -------- -----  ---- --------  --------  -------- ------- ----
         _   PAYIN    1      PROD PAYPROD   01-03-09 12:16:29 AC-ERROR  D
         _   PAYIN    2      PROD PAYPROD   01-03-10 09:50:37 RECOVERD  D
         _   PAYIN    3      PROD PAYPROD   01-03-10 10:02:41 RECOVERD  D
         _   PAYIN    4      PROD PAYPROD   ******   ******   RECOVERD  D
         _   PAYIN    5      PROD PAYPROD   ******   ******   RECOVERD  C
         _   PAYIN    6      PROD PAYPROD   ******   ******   RECOVERD  D
         _   PAYIN    7      PROD PAYPROD   01-04-05 09:03:53 RECOVERD  D
         _   PAYIN    8      PROD PAYPROD   ******   ******   RECOVERD  D
         _   PAYIN    9      PROD PAYPROD   ******   ******   RECOVERD  D
         _   PAYIN    10     PROD PAYPROD   ******   ******   RECOVERD  D
         _   PAYIN    11     PROD PAYPROD   ******   ******   RECOVERD  D
         _   PAYIN    12     PROD PAYPROD   01-04-05 09:47:22 RECOVERD  D
         _   PAYIN    13     PROD PAYPROD   ******   ******   RECOVERD  D
         _   PAYIN    14     PROD PAYPROD   ******   ******   RECOVERD  D

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
RET CODE (supplied)	O	A value appears in this column next to an Event if the job submission receives a return code greater than zero.
S (optional)	O	Valid values are as follows: X submits the DBRM. C cancels the DBRM/PLAN.
EVENT (supplied)	O	The Master Event of the migration.
SEQ (supplied)	O	The sequence number of the Event.
TARGET ENV (supplied)	N	The target Environment Definition of the migration.
TARGET LIBRARY (supplied)	N	The library to which NATURAL objects and/or SYSERR messages are to be migrated.
COMPILED DATE (supplied)	N	The date the objects were compiled using Autocompile.
COMPILED TIME (supplied)	N	The time the objects were compiled using Autocompile.
WARNING (supplied)	N	Events may contain one of the following warning messages:

		OVERRIDE	The Event migrated to an environment without proper authorization.
		AC-ERROR	Objects within the Event received compile errors during the Autocompile process.
		RECOVERED	Objects within the Event received errors and the Event was automatically recovered.
		******	Indicates Events with no warning message.

Field	Type	Description
DB2 STAT (supplied)	O	Limits the report to Events with the specified DB2 Status. Valid values are as follows: D Indicates DBRM Ready. P Indicates Plan Ready. S Indicates Static. C Indicates Canceled.

The DBRM to be created for each program of an Event defaults to the object name. However, User-Exit 9 may identify a single DBRM Name for all objects of the Event. The Event may be re-submitted at a later date and time if an error occurs in the DBRM Generation process. To cancel DB2 processing for the Event, enter "C" in the select field.

II.7.8 DB2 Plan Bind

The DB2 Plan Bind function submits JCL (or EXECs) to the system internal reader to bind the DBRMs and/or packages into a DB2 Application Plan.   After an Event has been submitted for DBRM Generation, the Event may be submitted for the DB2 Plan Bind.

To access the DB2 Plan Bind screen, enter "H" in the Enter Code field on the Batch JCL Submission menu.

```
 Valid Bind Values: X - Submit C - Cancel D - Delete
 01-12-31               N-2-O DB2 PLAN BIND                    TSI0373
 11:38:00                                                      TSI1

 Ret                        -- Target --- DBRM    ----- DBRM Generated ----- DB2
 Code  X  Event    Seq  Env  Library Name      Date     Time     User-ID  Stat
 ----  -  -------- ----- ---- -------- -------- -------- -------- -------- ----
       _  EXTRACT  2085  TST4 PAY11             01-03-02 11:20:38 PAY04      S






                                                              MIG SUB
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  ---   ---   ---   ---   ---   ---   ----  ----  EXIT
```

Field	Type	Description
RET CODE (supplied)	O	A value appears in this column next to an Event if the job submission receives a return code greater than zero.
X (optional)	O	"X" in the Select field submits Bind JCL for an Event.
EVENT (supplied)	O	The Master Event of the migration.
SEQ (supplied)	O	The sequence number of the Event.
TARGET ENV (supplied)	N	The target Environment Definition of the migration.
TARGET LIBRARY (supplied)	N	The library to which NATURAL objects and/or SYSERR messages are to be migrated.
DBRM NAME (supplied)	O	The name of the DBRM generated for the Event.
DBRM GENERATED DATE (supplied)	O	The date the DBRM was generated.
DBRM GENERATED TIME (supplied)	O	The time the DBRM was generated.

(continued from previous page)

Field	Type	Description
DBRM GENERATED USER-ID (supplied)	O	The User-ID of the user who generated the DBRM.
DB2 STAT (supplied)	O	Limits the report to Events with the specified DB2 Status. Valid values are as follows:

D Indicates Deleted.
P Indicates Plan Ready.
S Indicates Static.
C Indicates Canceled.

Only those Events that have been previously submitted for DBRM Generation are displayed. The Event may be re-submitted at a later date and time if an error occurs in the Bind process.

After submitting an Event, "*" in the Select field indicates the DB2 Bind JCL was successfully submitted, "N" indicates the JCL could not be located. "F" indicates an error was encountered when the JCL was submitted. "C" indicates the job was cancelled back to DBRM Generation. "D" indicates the job was deleted.

SECTION III

PROJECT TRACKING SUBSYSTEM

III.1   Introduction

The Project Tracking Subsystem maintains information about organizational activities. It is designed to provide a framework for sites to use in developing the project information that they require.   The Project Tracking Subsystem can be used to manage NATURAL and non-NATURAL application development projects. It can also be used to manage hardware and software installations, documentation efforts, and other non-programming activities.

The Project Tracking Subsystem identifies the activities that need to be performed, why they must be accomplished, when they must be completed, and how they are progressing. Based on this information, projects can be scheduled efficiently, and resources can be allocated where they are most needed.

A project consists of the following:

- TASK GROUPS
- STAGES OF A TASK
- PRIORITY VALUES
- IMPACT VALUES

The Project Tracking Subsystem section presents topics in the following order:

- PROJECT DEFINITION
- TASK LIST
- SUGGESTION BOX
- TASK UTILITIES
- PROJECT TRACKING REPORTS

To access the Project Tracking Subsystem menu, enter "P" on the N2O Main menu, enter the direct command PRJ MENU, or press PF9 on any menu.

```
01-12-31               N-2-O MAIN MENU                       TSI0373
11:38:00                                                     TSI1

                     Code  Function
                     ----  -------------------------
                      E    Environment Subsystem
                      M    Migration Subsystem
                      P    Project Tracking Subsystem
                      R    Reporting Subsystem
                      T    Toolbox Subsystem
                      U    User-Defined Subsystem
                      .    Terminate N-2-O Session
                     ----  -------------------------


          Enter Code:  _




 Direct Command: _____          N2O MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ  ----  ----  EXIT
```

After following the instructions on the previous page, the Project Tracking Subsystem menu is displayed.

```
 01-12-31                  N-2-O PROJECT TRACKING SUBSYSTEM MENU          TSI0373
 11:38:00                                                                 TSI1

                     Code   Function
                     ----   -----------------------------------
                      A     Project Definition
                      B     Task List
                      C     Suggestion Box
                      D     Task Utilities
                      E     Project Tracking Reports
                      .     Terminate Project Tracking Subsystem
                     ----   -----------------------------------

            Enter Code:  _




 Direct Command: _____                         PRJ MENU
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   USR   ----  ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

	A	**Project Definition**
		Defines applications and activities to the Project Tracking Subsystem.
	B	**Task List**
		Defines each element of work to be accomplished within a project.
	C	**Suggestion Box**
		Allows users at all levels of an organization to document changes or ideas.
	D	**Task Utilities**
		Assists users in documenting and updating all information related to a task.
	E	**Project Tracking Reports**
		Provides access to the information stored in the Project Tracking audit trail.

III.2   Project Definition

The first step in using the Project Tracking Subsystem is defining projects. A project is a collection of related activities. The Project Tracking Subsystem maintains the characteristics of each project. Some examples of projects are: payroll applications, invoicing procedures, and software installation.

To access the Project Definition menu, enter "A" on the Project Tracking Subsystem menu or enter the direct command PRJ PROJ on any menu.

```
01-12-31                  N-2-O PROJECT DEFINITION MENU                TSI0373
11:38:00                                                               TSI1

                      Code   Function
                      ----   -----------------------------
                       A     Add a Project Definition
                       C     Copy a Project Definition
                       D     Delete a Project Definition
                       I     Inquire on a Project Definition
                       M     Modify a Project Definition
                       S     Select a Project Definition
                       .     Terminate Project Definition
                      ----   -----------------------------

             Enter Code:  _      Project: _____



 Direct Command _____                          PRJ PROJ
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

	A	**Add a Project Definition** Creates a Project Definition.
	C	**Copy a Project Definition** Creates a Project Definition by copying an existing Project Definition.
	D	**Delete a Project Definition** Removes a Project Definition.
	I	**Inquire on a Project Definition** Displays information about a Project Definition.
	M	**Modify a Project Definition** Updates a Project Definition.
	S	**Select a Project Definition** Provides a list of Project Definitions that may be copied, deleted, inquired on, or modified.

∞ PROJECT (required for all functions except Select)	The project to be added or maintained. For the Select function, the project is the starting value.

∞ indicates field-level help is available.

III.2.1   **Add a Project Definition**

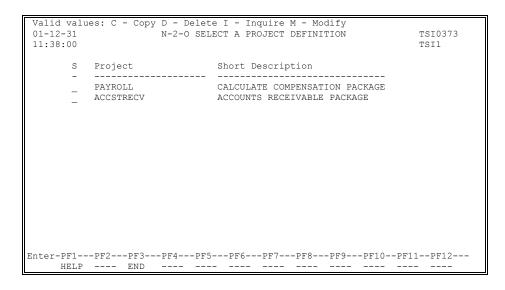Add a Project Definition creates a new Project Definition.

To add a Project Definition, enter "A" in the Enter Code field and the name of the project to be added in the Project field on the Project Definition menu.

```
01-12-31                   N-2-O ADD A PROJECT DEFINITION              TSI0373
11:38:00                                                              TSI1

  Project  : PAYROLL
  Updated  : TSIO373    01-12-31   10:09:13
  Short Desc:  CALCULATE COMPENSATION PACKAGE

  Options:
     Extended Desc  :  Y
     Task Groups    :  Y
     Stages         :  Y
     Priority Values:  Y
     Impact Values  :  Y




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

The following Field Descriptions apply to all Project Definition functions (Add, Copy, Delete, Inquire on, and Modify).

Field	Description
PROJECT (supplied)	The name of the Project Definition to be added or maintained.
UPDATED (supplied)	The User-ID of the user who created or last updated the record and the date and time that action occurred.
SHORT DESC (required)	A 30-character description of the project.
EXTENDED DESC (required)	Indicates whether a longer description of the project can be entered or not.
	Y Allows a longer description to be entered. This is the default value.
	N Bypasses the Extended Description feature.
TASK GROUPS (required)	Indicates whether the user is able to list task groups or not.
	Y Allows the user to list task groups.
	N Bypasses the Task Groups feature.

(continued from previous page)

Field	Description
STAGES (required)	Indicates whether the user is able to list stages or not.

	Y	Allows the user to list stages.
	N	Bypasses the Stages feature.

Field	Description
PRIORITY VALUES (required)	Indicates whether the user is able to define a set of priority values for project activities.

	Y	Allows the user to define a set of priority values.
	N	Bypasses the Priority Values feature.

Field	Description
IMPACT VALUES (required)	Indicates whether the user is able to define a set of impact values for project activities.

	Y	Allow the user to define a set of impact values.
	N	Bypasses the Impact Values feature.

If Extended Desc option='Y' the following screen will appear to define an extended description screen.

```
 01-12-31                  N-2-O ADD A PROJECT DEFINITION            TSI0373
 11:38:00                  Project: PAYROLL                             TSI1

  Extended Description:
         _____
         _____
         _____
         _____
         _____
         _____
         _____
         _____
         _____
         _____
         _____
         _____
         _____
         _____
         _____
         _____
         _____
         _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
EXTENDED DESCRIPTION (optional)	Additional freeform information for describing the project in detail.

If task group option = 'Y', the following pop up window will appear to define task groups.

```
 01-12-31                  N-2-O ADD A PROJECT DEFINITION            TSI0373
 11:38:00                                                            TSI1

   Project       :  PAYROLL
+-----------------------+1-12-31   10:09:13
|                       |COMPENSATION PACKAGE
|    Task Groups        |
|    ----------         |
|    1. CITYTAX_        |
|    2. FICA____        |
|    3. FEDTAX__        |
|    4. BENEFITS        |
|    5. SALARY__        |
|    6. BONUSES_        |
|    7. _____        |
|    8. _____        |
|    9. _____        |
|   10. _____        |
|                       |
+-----------------------+


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
TASK GROUPS (optional)	Identify and organize related tasks within a project. A Task Group must be unique throughout Project Tracking.

Note: Task Groups information will not be copied because it must be unique to all of Project Tracking.

If stages option = 'Y', the following pop up window will appear to define stages.

```
 01-12-31                  N-2-O ADD A PROJECT DEFINITION            TSI0373
 11:38:00                                                            TSI1

   Project   :  PAYROLL
   Updated   : +-----------------------------------+
   Short Desc: |   Stages of a Task                |
               |   ----------------------------    |
               |   1. DESIGN____  11. _____   |
               |   2. ACTIVE____  12. _____   |
               |   3. PHASE 1___  13. _____   |
               |   4. TEST_____  14. _____   |
               |   5. APPROVE___  15. _____   |
               |   6. PHASE 2___  16. _____   |
               |   7. COMPLETE__  17. _____   |
               |   8. _____   18. _____   |
               |   9. _____   19. _____   |
               |  10. _____   20. _____   |
               |                                   |
               +-----------------------------------+


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
STAGES OF A TASK (optional)	Identify the milestones for a task on its path to completion. The following stages are reserved for use by N2O:

	CANCEL	Indicates a successful cancel.
	FAILED	Indicates a failed cancel.
	DENIED	Indicates the cancel was prevented by user-exits.
	DEFINED	Indicates a new task that has not been started.

If priority values option = 'Y', the following pop-up window will appear to define priority values.

```
 01-12-31                  N-2-O ADD A PROJECT DEFINITION              TSI0373
 11:38:00                                                              TSI1

   Project  : PAYROLL
   Updated  : TSIO373    01-12-31   10:0  +------------------+
   Short Desc:  CALCULATE COMPENSATION PAC  |                  |
                                            |  Priority Values |
   Options:                                 |  --------------   |
      Extended Desc  : Y                    |  High    HIGH_    |
      Task Groups    : Y                    |         MED__     |
      Stages         : Y                    |         LOW__     |
      Priority Values: Y                    |         _____     |
      Impact Values  : Y                    |         _____     |
                                            |         _____     |
                                            |         _____     |
                                            |         _____     |
                                            |         _____     |
                                            |  Low    _____     |
                                            |                   |
                                            +------------------+


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
PRIORITY VALUES (optional)	Identify a set of valid priorities to assign to tasks within the project. The HIGH and LOW labels establish a range for the values.

If impact values = 'Y', the following pop-up window will appear to define impact values.

```
 01-12-31                    N-2-O ADD A PROJECT DEFINITION              TSI0373
 11:38:00                                                                TSI1

   Project   : PAYROLL
   Updated   : TSIO373    01-12-31   10:09:13     +------------------+
   Short Desc: CALCULATE COMPENSATION PACKAGE     |                  |
                                                  |  Impact Values   |
   Options:                                       |  --------------   |
      Extended Desc : Y                           |  High   HIGH_     |
      Task Groups   : Y                           |         MED__     |
      Stages        : Y                           |         LOW__     |
      Priority Values: Y                          |         _____     |
      Impact Values : Y                           |         _____     |
                                                  |         _____     |
                                                  |         _____     |
                                                  |         _____     |
                                                  |         _____     |
                                                  |  Low    _____     |
                                                  |                  |
                                                  +------------------+



Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
IMPACT VALUES (optional)	Identify a set of valid impacts to assign to tasks within the project. The HIGH and LOW labels establish a range for the values.

III.2.2   Copy a Project Definition

Copy a Project Definition creates a Project Definition by copying an existing Project Definition.

> **Note:**   Task group information will not be copied because it must be unique to all of Project Tracking.

To copy a Project Definition, enter "C" in the Enter Code field and the Project Definition to be copied in the Project field on the Project Definition menu. A pop-up window is displayed for the user to enter the new project name.

```
 01-12-31                  N-2-O PROJECT DEFINITION MENU              TSI0373
 11:38:00                                                             TSI1

                     Code    Function
                     ----    -----------------------------
                      A      Add a Project Definition
                      C      Copy a Project Definition
                      D      Delete a Project Definition
                      I      Inquire on a Project Definition
                      M      Modify a Project Definition
                      S      Select a Project Definition
                      .      Termina +------------------------------------+
                     ----    --------|                                    |
                                     | Copy Project:  PAYROLL_____ |
              Enter Code:  _     Project |                                |
                                     | To Project  :  ACCTSRECV_____ |
                                     |                                    |
                                     +------------------------------------+


 Direct Command  _____                       PRJ PROJ
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

All of the screens for copying a Project Definition are the same as adding a project. Refer to **Section III.2.1 Add a Project Definition** for more details.

III.2.3   <u>Delete a Project Definition</u>

Delete a Project Definition removes a Project Definition that no longer needs to be referenced.

If any tasks are related to the project, the user must first delete the tasks using the Task List Delete option.

To delete a Project Definition, enter "D" in the Enter Code field and the Project Definition to be deleted in the Project field on the Project Definition menu.

```
01-12-31              N-2-O DELETE A PROJECT DEFINITION          TSI0373
11:38:00                                                         TSI1

  Project      :  PAYROLL
  Updated      :  TSIO373    01-12-31
  Short Desc   :  COMPENSATION PACKAGE

                                          Priority      Impact
Task Groups    Stages of a Task           Values        Values
-----------    ---------------------------  ----------    ----------
1.  CITY TAX   1.  DESIGN     11.           High          High
2.  FED TAX    2.  APPROVAL1  12.
3.  FICA TAX   3.  INITIATE   13.
4.  BENEFITS   4.  TEST       14.
5.             5.  APPROVAL2  15.
6.             6.  USER TEST  16.     +----------------------------------+
7.             7.  APPROVAL3  17.     |                                  |
8.             8.  COMPLETED  18.     | Do you want to Delete?  N (Y/N)  |
9.             9.            19.      |                                  |
10.           10.            20.      +----------------------------------+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

To confirm the delete request, enter "Y" in the pop-up window. To cancel the delete request, enter "N" in the pop-up window or press PF3.

III.2.4   Inquire on a Project Definition

Inquire on a Project Definition displays information about a Project Definition.

To inquire on a Project Definition, enter "I" in the Enter Code field and the Project Definition to be viewed in the Project field on the Project Definition menu.

```
01-12-31                  N-2-O INQUIRE ON A PROJECT DEFINITION       TSI0373
11:38:00                                                              TSI1

  Project       :  PAYROLL
  Updated       :  TSIO373     01-12-31
  Short Desc    :  CALCULATE COMPENSATION PACKAGE

                                                     Priority     Impact
Task Groups     Stages of a Task                     Values       Values
-----------     ----------------------------         ----------   ----------
1.  CITY TAX    1.   DESIGN      11.                  High         High
2.  FED TAX     2.   APPROVAL1   12.
3.  FICA TAX    3.   INITIATE    13.
4.  BENEFITS    4.   TEST        14.
5.              5.   APPROVAL2   15.
6.              6.   USER TEST   16.
7.              7.   APPROVAL3   17.
8.              8.   COMPLETED   18.
9.              9.               19.
10.             10.              20.                  Low          Low

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

III.2.5   Modify a Project Definition

Modify a Project Definition updates a Project Definition.

To modify a Project Definition, enter "M" in the Enter Code field and the project to be modified in the Project field on the Project Definition menu.

```
01-12-31                  N-2-O MODIFY A PROJECT DEFINITION           TSI0373
11:38:00                                                              TSI1

  Project   :  PAYROLL
  Updated   :  TSIO373     01-12-31    10:09:13
  Short Desc:  CALCULATE COMPENSATION PACKAGE

  Options:
     Extended Desc  :  Y
     Task Groups    :  Y
     Stages         :  Y
     Priority Values:  Y
     Impact Values  :  Y






Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

III.2.6 Select a Project Definition

Select a Project Definition provides a list of Project Definitions that may be copied, deleted, inquired on, or modified.

To select a Project Definition, enter "S" in the Enter Code field on the Project Definition menu. A starting value may be entered in the Project field on the Project Definition menu.

```
Valid values: C - Copy D - Delete I - Inquire M - Modify
01-12-31                N-2-O SELECT A PROJECT DEFINITION         TSI0373
11:38:00                                                          TSI1

      S   Project             Short Description
      -   --------------------  -----------------------------
      _   PAYROLL             CALCULATE COMPENSATION PACKAGE
      _   ACCSTRECV           ACCOUNTS RECEIVABLE PACKAGE












Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
S (optional)	The function to be executed. Each user's Function Profile security determines the user's valid values. Valid values are as follows: C Indicates Copy a Project Definition. D Indicates Delete a Project Definition. I Indicates Inquire on a Project Definition. M Indicates Modify a Project Definition.

Pressing Enter pages forward on all screens until the last screen is displayed. Pressing Enter on the last screen wraps around to display the first screen again.

III.3 Task List

Each activity that is part of a project is called a task. A task is a unit of work that advances the project toward completion. The Project Tracking Subsystem stores important information about a task. This information can be used to follow the progress of the task.

To access the Task List menu, enter "B" on the Project Tracking Subsystem menu or enter the direct command PRJ TASK on any menu.

```
 01-12-31                 N-2-O TASK LIST MENU                      TSI0373
 11:38:00                                                           TSI1

                         Code   Function
                         ----   ---------------------
                          A     Add a Task
                          C     Copy a Task
                          D     Delete a Task
                          I     Inquire on a Task
                          M     Modify a Task
                          S     Select a Task
                          .     Terminate Task List
                         ----   ---------------------

             Enter Code:  _      Project: _____

                                 Task Group: _____   Task Number: _____


 Direct Command _____                          PRJ TASK
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   ----  PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:
	A Add a Task Creates a task.
	C Copy a Task Creates a task by copying an existing task.
	D Delete a Task Removes a task.
	I Inquire on a Task Displays information about a task.
	M Modify a Task Updates a task.
	S Select a Task Provides a list of tasks that may be copied, deleted, inquired on, or modified.
∞ PROJECT (required)	The name of the project.
TASK GROUP (required for all functions except Select)	The group that identifies a task.
TASK NUMBER (required for Copy, Modify, Inquire on, and Delete)	The number that uniquely identifies a task.

∞ indicates field-level help is available.

III.3.1 <u>Add a Task</u>

The Add a Task function creates a new task.

To add a task, enter "A" in the Enter Code field, and the project name and task group of the task to be added on the Task List menu.

```
01-12-31                N-2-O ADD A TASK                            TSI0373
11:38:00                Project: PAYROLL                            TSI1

  Task Group     : BENEFITS     Task Number:000001    Stage: DEFINED

  Updated        :  TSIO373    01-12-31  10:10:10
  Short Desc     :  CALCULATE AS PERCENTAGE OF DEDUCT
  Priority       :  _____
  Impact         :  _____
  Change Cntl    :  _____
  Time Estimate  :  ___ weeks   ___ days   ___ hours

  Primary Contact Information:
  Name   :  _____     Phone:  _____
  User-ID:  _____    Other:  _____

  Extended Desc      :  Y
  Checklist          :  Y
  Additional Contacts:  Y


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

When adding a new task, N2O automatically assigns the task number and a stage of "Defined".

The following Field Descriptions apply to all Task List functions (Add, Copy, Delete, Inquire on, and Modify).

Field	Description
∞ PROJECT (supplied)	The project in which a task belongs.
TASK GROUP (supplied)	The group that identifies a task.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
STAGE (supplied)	The progress of a task. All tasks begin at the DEFINED stage.
UPDATED (supplied)	The User-ID of the user who created or last updated the record and the date and time that action occurred.
SHORT DESC (required)	A 30-character description of the task.
PRIORITY (optional)	Displays the priority of the task. Valid values for this field are defined on the Project Definition.

∞ indicates field-level help is available.

(continued from previous page)

Field	Description
IMPACT (optional)	Displays the impact of the task. Valid values for this field are defined on the Project Definition.
CHANGE CNTL (optional)	Relates a task to a site-specific tracking number or label.
TIME ESTIMATE (optional)	Displays the projected time required to complete a task in weeks, days, or hours.
NAME (optional)	The name of the contact.
PHONE (optional)	The phone number of the contact.
USER-ID (optional)	The User-ID of the contact.
OTHER (optional)	Other information pertinent to the contact, such as e-mail address or department.
EXTENDED DESC (required)	Indicates whether a longer description of the project can be entered.
	Y Allows a longer description of the project to be entered. This is the default value.
	N Bypasses the extended description feature.
CHECKLIST (required)	Indicates whether a pop-up window that can hold specifications or reminders about a task is available or not.
	Y Displays the pop-up window. This is the default value.
	N Bypasses the pop-up window.
ADDITIONAL CONTACTS (required)	Indicates whether a pop-up window for information to be entered for up to 9 additional contacts is available or not.
	Y Displays the pop-up window. This is the default value.
	N Bypasses the pop-window.

III.3.2   Copy a Task

The Copy a Task function creates a task by copying an existing task. The Copy function copies all information from an existing task to a new task.

To copy a task, enter "C" in the Enter Code field, and the project, task group, and task number of the task to be copied in the task fields on the Task List menu.

```
 01-12-31                  N-2-O TASK LIST MENU                    TSI0373
 11:38:00                                                          TSI1

                    Code    Function
                    ----    ---------------------------
                     A      Add a Task
                     C      Copy a Task
                     D      Dele +-----------------------------------------+
                     I      Inqu |                                         |
                     M      Modi | Copy Task Group :  BENEFITS             |
                     S      Sele |      Task Number:  2_____               |
                     .      Term |                                         |
                    ----    ---- |   To Project    :  ACCTSRECV_____ |
                                 |      Task Group :  ANNUITY              |
            Enter Code:  _      Proje|                                     |
                                 |                                         |
                                 |                                         |
                                 +-----------------------------------------+


 Direct Command _____                            PRJ TASK
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

A pop-up window is displayed for information to be entered about the new task. Refer to **Section III.3.1 Add a Task** for an explanation of copy screens.

III.3.3   Delete a Task

The Delete a Task function removes a task.

To delete a task, enter "D" in the Enter Code field, and the project, task group, and task number of the task to be deleted in the task fields on the Task List menu.

```
 01-12-31                  N-2-O DELETE A TASK                     TSI0373
 11:38:00                  Project:  PAYROLL                       TSI1

  Task Group    :       BENEFITS     Task Number:  000001   Stage:  DEFINED

  Updated       :       TSI0373 01-12-31   11:38:00
  Short Desc    :       2000 Benefits changes
  Priority      :
  Impact :
  Change Cntl   :
  Time Estimate :          weeks        days        hours

  Primary Contact Information:
  Name   :                             Phone:
  User-ID:           Other:
                                    +--------------------------------+
  Extended Desc    :   Y            |                                |
  Checklist        :   Y            | Do you want to Delete?  N (Y/N) |
  Additional Contacts:  N           |                                |
                                    +--------------------------------+

 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

To confirm the delete request, enter "Y" in the pop-up window. To cancel the delete request, enter "N" in the pop-up window or press PF3.

III.3.4   Inquire on a Task

The Inquire on a Task function displays information about a task.

To inquire on a task, enter "I" in the Enter Code field, and the project, task group, and task number of the task to be viewed in the task fields on the Task List menu.

```
 01-12-31                N-2-O INQUIRE ON A TASK                  TSI0373
 11:38:00                   Project: PAYROLL                      TSI1

   Task Group  : BENEFITS   Task Number:000001    Stage: DEFINED

   Updated     : TSIO373   01-12-31  12:00:00
   Short Desc  : _____
   Priority    :  ____
   Impact      :  ____
   Change Cntl :  ____
   Time Estimate:  ___ weeks   ___ days   ___ hours

   Primary contact Information:
   Name   : _____  Phone  : _____
   User-ID: _____      Other  : _____

   Extended Desc     :  Y
   Checklist         :  Y
   Additional Contacts:  N


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

III.3.5   Modify a Task

The Modify a Task function updates a task.

To modify a task, enter "M" in the Enter Code field, and the project, task group, and task number of the task to be modified in the task fields on the Task List menu.

```
 01-12-31                N-2-O MODIFY A TASK                      TSI0373
 11:38:00                   Project:  PAYROLL                     TSI1

   Task Group  : BENEFITS   Task Number:000001    Stage: DEFINED

   Updated     : TSIO373   01-12-31   12:00:00
   Short Desc  : CALC AS PERCENTAGE OF DEDUCT
   Priority    :  ____
   Impact      :  ____
   Change Cntl :  ____
   Time Estimate:  ___ weeks   ___ days   ___ hours

   Primary contact Information:
   Name   : _____  Phone  : _____
   User-ID: _____      Other  : _____

   Extended Desc     :  Y
   Checklist         :  Y
   Additional Contacts:  N


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

III.3.6   Select a Task

The Select a Task function provides a list of tasks that may be copied, deleted, inquired on, or modified.

To select a task, enter "S" in the Enter Code field on the Task List menu. A starting value may be entered in the Project and Task Group fields on the Task List menu.

```
Valid values: C - Copy D - Delete I - Inquire M - Modify
01-12-31                N-2-O SELECT A TASK                    TSI0373
11:38:00                                                       TSI1
        ---- Task ----
  S   Group          Number  Short Description            Stage
  -   --------------------   ----------------------------  ----------
  _   CITY TAX       000001  ALL ACCOUNTS                 DEFINED
  _   FED TAX        000002  ALL ACCOUNTS                 DEFINED
  _   FICA TAX       000003  ALL ACCOUNTS                 DEFINED
  _   BENEFITS       000004  ALL ACCOUNTS                 DEFINED




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
S (optional)	The function to be executed. Each user's Function Profile security determines the user's valid values. Valid values are as follows:

    C   Indicates Copy a Task.
    D   Indicates Delete a Task.
    I   Indicates Inquire on a Task.
    M Indicates Modify a Task.

Pressing Enter pages forward on all screens until the last screen is displayed. Pressing Enter on the last screen wraps around to display the first screen again.

III.4   Suggestion Box

The Suggestion Box is a Project Tracking function that is designed to collect end-user requests for changes to projects. The Suggestion Box can also hold ideas or other types of requests from management, application programmers, etc.

To access the Suggestion Box menu, enter "C" on the Project Tracking menu or enter the direct command PRJ SUGG on any menu.

```
 01-12-31                    N-2-O SUGGESTION BOX MENU                 TSI0373
 11:38:00                                                              TSI1

                      Code   Function
                      ----   --------------------------
                       A     Add a Suggestion
                       C     Copy a Suggestion
                       D     Delete a Suggestion
                       I     Inquire on a Suggestion
                       M     Modify a Suggestion
                       S     Select a Suggestion
                       .     Terminate Suggestion Box
                      ----   --------------------------

              Enter Code:  _      Project: _____

                                  Suggestion: _____


 Direct Command _____                            PRJ SUGG
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

	A	**Add a Suggestion** Creates a suggestion.
	C	**Copy a Suggestion** Creates a suggestion by copying an existing suggestion.
	D	**Delete a Suggestion** Removes a suggestion.
	I	**Inquire on a Suggestion** Displays information about a suggestion.
	M	**Modify a Suggestion** Updates a suggestion.
	S	**Select a Suggestion** Provides a list of suggestions that may be copied, deleted, inquired on, or modified.

∞ PROJECT (required)		The project to which the suggestion applies.
SUGGESTION (required for Copy, Modify, Delete, and Inquire on)		The number that uniquely identifies a suggestion. When adding, N2O automatically generates the suggestion number.

∞ indicates field-level help is available.

III.4.1   Add a Suggestion

Add a Suggestion creates a new suggestion.

To add a suggestion, enter "A" in the Enter Code field, and the project to which the suggestion applies in the Project field on the Suggestion Box menu. N2O automatically assigns the next available suggestion number to the request.

```
 01-12-31                    N-2-O ADD A SUGGESTION                   TSI0373
 11:38:00                                                             TSI1

   Project   :  PAYROLL
   Suggestion:     100
   Updated   :  TSIO373   01-12-31   10:00:00
   Short Desc: _____
   Status    : _____

   Requested by:
   Name   :  _____
   Phone  :  _____   User-ID:  _____
   Date   :  19991231    Other  :  _____

   Suggestion Description:

          _____
          _____
          _____
          _____
          _____
          _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

The following Field Descriptions apply to all Suggestion Box functions (Add, Copy, Delete, Inquire on, and Modify).

Field	Description
PROJECT (supplied)	The project to which the suggestion applies.
SUGGESTION (supplied)	The number that uniquely identifies the suggestion. When adding, N2O automatically generates the suggestion.
UPDATED (supplied)	The User-ID of the user who created or last updated the record and the date and time that action occurred.
SHORT DESC (required)	A 30-character description of the suggestion.
STATUS (optional)	The status of a suggestion (i.e., opens, rejected, accepted, etc.). N2O does not restrict values for this field.
NAME (optional)	The name of the contact individual responsible for the suggestion.
PHONE (optional)	The phone number of the requester.

(continued from previous page)

Field	Description
USER-ID (optional)	The User-ID of the requester.
DATE (optional)	The date the request was made. N2O automatically supplies this, but the requester may modify it.
OTHER (optional)	Other information pertinent to the requester.
SUGGESTION DESCRIPTION (optional)	Provides a description of the suggestion.

III.4.2   Copy a Suggestion

Copy a Suggestion creates a suggestion by copying an existing suggestion.

To copy a suggestion, enter "C" in the Enter Code field, the Project Definition in the Project field, and the suggestion number to be copied in the Suggestion field on the Suggestion Box menu.

```
01-12-31                    N-2-O SUGGESTION BOX MENU                   TSI0373
11:38:00                                                               TSI1

                      Code   Function
                      ----   ---------------------------
                       A     Add a Suggestion
                       C     Copy a Suggestion
                       D     Delete a Suggestion
                       I     Inquire on a Suggestion
                       M     Modify a Suggestion
                       S     Select a Suggestion
                       .     Termina +-----------------------------------+
                      ----   --------|                                   |
                                     | Copy Project:  PAYROLL_____ |
              Enter Code:  _    Project | Suggestion  :  100_____        |
                                     |                                   |
                                     | To Project  :  ACCTSRECV_____ |
                                     |                                   |
                                     |                                   |
                                     +-----------------------------------+
 Direct Command _____                            PRJ SUGG
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

A pop-up window is displayed for information to be entered about the new suggestion.

III.4.3   Delete a Suggestion

Delete a Suggestion removes a suggestion.

To delete a suggestion, enter "D" in the Enter Code field, the Project Definition in the Project field, and the suggestion number to be deleted in the Suggestion field on the Suggestion Box menu.

```
01-12-31                    N-2-O DELETE A SUGGESTION                   TSI0373
11:38:00                                                               TSI1

  Project   :  PAYROLL
  Suggestion:     100
  Updated   :  TSIO373    01-12-31   11:34:07
  Short Desc:  _____
  Status    :  _____

  Requested by:
  Name   :  _____
  Phone  :  _____  User-ID:  _____
  Date   :  20011231    Other  :  _____

  Suggestion Description:
             _____  +-------------------------------+
             _____  |                               |
             _____  | Do you want to Delete?  N (Y/N) |
             _____  |                               |
             _____  +-------------------------------+

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

To confirm the delete request, enter "Y" in the pop-up window. To cancel the delete request, press "N" in the pop-up window or press PF3.

III.4.4   Inquire on a Suggestion

Inquire on a Suggestion displays information about a suggestion.

To inquire on a suggestion, enter "I" in the Enter Code field, the Project Definition in the Project field, and the suggestion number to be viewed in the Suggestion field on the Suggestion Box menu.

```
01-12-31                    N-2-O INQUIRE ON A SUGGESTION              TSI0373
11:38:00                                                              TSI1

  Project       :  PAYROLL
  Suggestion    :       1
  Updated       :  TSIO373    01-12-31
  Short Desc    :  ENHANCE PAYROLL RPT1
  Status        :  _____

  Requested by:
  Name    :  _____
  Phone   :  _____   User-ID:  _____
  Date    :  20011231    Other  :  _____

  Suggestion Description:
           ___ADD EMPLOYEE ADDRESS TO RPT._____
           ___ALLOW SORT ORDER TO BE SPECIFIED_____
           ___BY THE USER._____
           _____
           _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

III.4.5   Modify a Suggestion

Modify a Suggestion updates a suggestion.

To modify a suggestion, enter "M" in the Enter Code field, the project in the Project Definition field, and the suggestion number to be modified in the Suggestion field on the Suggestion Box menu.

```
01-12-31                    N-2-O MODIFY A SUGGESTION                 TSI0373
11:38:00                                                              TSI1

  Project       :  PAYROLL
  Suggestion    :       1
  Updated       :  TSIO373    01-12-31
  Short Desc    :  ENHANCE PAYROLL RPT1
  Status        :  OPEN____

  Requested by:
  Name    :  _____
  Phone   :  _____   User-ID:  _____
  Date    :  20011231    Other  :  _____

  Suggestion Description:
           ADD EMPLOYEE ADDRESS TO RPT._____
           ALLOW SORT ORDER TO BE SPECIFIED_____
           BY THE USER._____
           _____
           _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

III.4.6   Select a Suggestion

Select a Suggestion provides a list of all suggestions currently recorded.

To select a suggestion, enter "S" in the Enter Code field on the Suggestion Box menu. A starting value may be entered in the Project and Suggestion fields on the Suggestion Box menu.

```
Valid values: C - Copy D - Delete I - Inquire M - Modify
01-12-31                 N-2-O SELECT A SUGGESTION                 TSI0373
11:38:00                                                           TSI1

   S   Project              Suggestion  Short Description             Status
   -   --------------------  ----------  ----------------------------  ------
   _   PAYROLL                       1   ENHANCE PAYROLL RPT1          OPEN














Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
S (optional)	The function to be executed. Each user's Function Profile security determines the user's valid values. Valid values are as follows:

    C   Indicates Copy a Suggestion.
    D   Indicates Delete a Suggestion.
    I   Indicates Inquire on a Suggestion.
    M   Indicates Modify a Suggestion.

Pressing Enter pages forward on all screens until the last screen is displayed. Pressing Enter on the last screen wraps around to display the first screen again.

III.5   Task Utilities

Most of the basic information about tasks is maintained in the Task List. However, there are circumstances that require additional information about a task. The Task Utilities allow this type of detailed information to be created and updated.

To access the Task Utilities menu, enter "D" on the Project Tracking Subsystem menu or enter the direct command PRJ TUTL on any menu.

```
01-12-31              N-2-O TASK UTILITIES MENU              TSI0373
11:38:00                                                     TSI1

                  Code   Function
                  ----   --------------------------
                   A     Update Stage for a Task
                   B     Cancel a Task
                   C     Reject a Task
                   D     Link Objects to a Task
                   E     Link Suggestions to a Task
                   F     Link Tasks to a Task
                   .     Terminate Task Utilities
                  ----   --------------------------

           Enter Code:  _



 Direct Command _____                       PRJ TUTL
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

A	**Update Stage for a Task** Allows a task to be promoted to a new stage.
B	**Cancel a Task** Marks the stage of a task as canceled.
C	**Reject a Task** Marks the stage of a task as rejected.
D	**Link Objects to a Task** Maintains a list of objects that are affected by a particular task.
E	**Link Suggestions to a Task** Maintains a list of suggestions that are related to a task.
F	**Link Tasks to a Task** Maintains a list of tasks that are related to a particular task.

III.5.1 <u>Update Stage for a Task</u>

As resources are assigned to a task and activities are accomplished, the progress of a task changes. This progress is tracked by the stage of a task.

The Update Stage for a Task function allows a task to be promoted to a new stage. Usually, the task is updated to the next sequential stage. The order of the stages is determined by the Project Definition. In some cases, it may be necessary to skip stages or to return to a previous stage. User-Exit 20 is available from this utility to allow sites to override the order of the stages. User-Exit 20 can also be used to provide security to update the stages of tasks. Refer to the **N2O Administration Manual** for details on User-Exit 20.

To update a stage for a task, enter "A" on the Task Utilities menu.

```
01-12-31                   N-2-O TASK UTILITIES                    TSI0373
11:38:00                   UPDATE STAGE FOR A TASK                 TSI1




                         Project   :  PAYROLL
                         Task Group :  _____
                         Task Number:  _____












Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ PROJECT (required)	The project in which a task belongs.
TASK GROUP (optional)	The group in which a task belongs.
TASK NUMBER (optional)	The number that uniquely identifies a task.

∞ indicates field-level help is available.

To display the Update Stage for a Task select screen, enter a project on the previous screen. A task group and a task number may also be entered on the previous screen to limit the search.

```
01-12-31                    N-2-O UPDATE STAGE FOR A TASK              TSI0373
11:38:00                    Project: PAYROLL                           TSI1

    ----- Task -----
X   Group      Number Short Description                 Stage        Message
-   ---------------   ------------------------------    ----------   --------
_   BENEFITS       2  CALC AS PERCENTAGE OF DEDUCT      DEFINED
_   BONUSES        1  YEAR TO DATE SUMMARY OF BONUS     DEFINED
_   CITYTAX        1  COMPUTE 99 RATE INCREASE          DEFINED
_   CITYTAX        2  CALC AS PERCENTAGE OF DEDUCT      DESIGN
_   FEDTAX         1  ADJUST TO NEW RATES               DEFINED
_   FEDTAX         2  CALC AS FEDTAX AS % OF DEDUCT     DEFINED
_   FICA           1  CALC AS PERCENTAGE OF DEDUCT      DEFINED




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
PROJECT (supplied)	The name of the project.
X (optional)	Entering "X" next to a task displays a pop-up window for the new stage, allowing comments to be entered. The new stage defaults to the next stage in the sequence defined on the Project Definition.
TASK GROUP (supplied)	The group in which a task belongs.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESCRIPTION (supplied)	A 30-character description of the task.
STAGE (supplied)	The current stage assigned to the task.
MESSAGE (supplied)	Indicates the stage of the task has been updated.

III.5.2   Cancel a Task

Tasks that are in the process of being completed may be re-evaluated based on available resources. Tasks that are suspended for this reason are considered canceled.

Cancel a Task marks the stage of a task to be canceled. Tasks that are in the canceled stage may be restarted from the beginning at any time.

To cancel a task, enter "B" on the Task Utilities menu.

```
 01-12-31                 N-2-O TASK UTILITIES                    TSI0373
 11:38:00                 N-2-O CANCEL A TASK                     TSI1




                          Project   :  PAYROLL
                          Task Group : _____
                          Task Number: _____










Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ PROJECT (required)	The project in which a task is to be canceled.
TASK GROUP (optional)	The group that identifies a task.
TASK NUMBER (optional)	The number that uniquely identifies a task.

∞ indicates field-level help is available.

To display the Cancel a Task select screen, enter a project on the previous screen. A task group and a task number may also be entered on the previous screen to limit the search.

```
 01-12-31                  N-2-O CANCEL A TASK                    TSI0373
 11:38:00                   Project: PAYROLL                      TSI1

     ----- Task -----
 X   Group     Number  Short Description            Stage       Message
 -   ---------------   -----------------------------  ----------   --------
 _   BENEFITS       2  CALC AS PERCENTAGE OF DEDUCT   DEFINED
 _   BONUSES        1  YEAR TO DATE SUMMARY OF BONUS  DEFINED
 _   CITYTAX        1  COMPUTE 99 RATE INCREASE       DEFINED
 _   CITYTAX        2  CALC AS PERCENTAGE OF DEDUCT   DESIGN
 _   FEDTAX         1  ADJUST TO NEW RATES            DEFINED
 _   FEDTAX         2  CALC AS FEDTAX AS % OF DEDUCT  DEFINED
 _   FICA           1  CALC AS PERCENTAGE OF DEDUCT   DEFINED




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
PROJECT (supplied)	The name of the project.
X (optional)	Entering "X" next to a task displays a pop-up window allowing comments to be entered and sets the task's stage to cancel.
TASK GROUP (supplied)	The group in which a task belongs.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESCRIPTION (supplied)	A 30-character description of the task.
STAGE (supplied)	The current stage assigned to the task.
MESSAGE (supplied)	Indicates the task has been canceled.

III.5.3 __Reject a Task__

A task may reach a certain stage and not meet the requirements for being at that stage. In this situation, the task should be rejected.

Reject a Task removes a task from its current stage and places it in the prior stage. Tasks that are rejected must be restarted at the prior stage.

A canceled task may not be rejected.

To reject a task, enter "C" on the Task Utilities menu.

```
 _____
|                                                                        |
| 01-12-31                 N-2-O TASK UTILITIES                 TSI0373   |
| 11:38:00                 N-2-O REJECT A TASK                  TSI1      |
|                                                                        |
|                                                                        |
|                                                                        |
|                         Project   :  PAYROLL                           |
|                         Task Group : _____                         |
|                         Task Number: _____                         |
|                                                                        |
|                                                                        |
|                                                                        |
|                                                                        |
|                                                                        |
|                                                                        |
| Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--- |
|       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ---- |
|_____|
```

Field	Description
∞ PROJECT (required)	The project in which a task is to be rejected.
TASK GROUP (optional)	The group that identifies a task.
TASK NUMBER (optional)	The number that uniquely identifies a task.

∞ indicates field-level help is available.

To display a Reject a Task select screen, enter a project on the previous screen. A task group and a task number may also be entered on the previous screen to limit the search.

```
 01-12-31                N-2-O REJECT A TASK                       TSI0373
 11:38:00                  Project: PAYROLL                        TSI1

     ----- Task -----
 X   Group     Number  Short Description              Stage       Message
 -   ---------------   -----------------------------  ----------  --------
 _   BENEFITS       2  CALC AS PERCENTAGE OF DEDUCT   DEFINED
 _   BONUSES        1  YEAR TO DATE SUMMARY OF BONUS  DEFINED
 _   CITYTAX        1  COMPUTE 99 RATE INCREASE       DEFINED
 _   CITYTAX        2  CALC AS PERCENTAGE OF DEDUCT   DESIGN
 _   FEDTAX         1  ADJUST TO NEW RATES            DEFINED
 _   FEDTAX         2  CALC AS FEDTAX AS % OF DEDUCT  DEFINED
 _   FICA           1  CALC AS PERCENTAGE OF DEDUCT   DEFINED




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
PROJECT (supplied)	The name of the project.
X (optional)	Entering "X" next to a task displays a pop-up window allowing comments to be entered.
TASK GROUP (supplied)	The group in which a task belongs.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESCRIPTION (supplied)	A 30-character description of the task.
STAGE (supplied)	The current stage assigned to the task.
MESSAGE (supplied)	Indicates the task has been rejected.

III.5.4   Link Objects to a Task

In application programming, it is useful to package objects affected by a change. The Link Objects to a Task function maintains a list of objects that are affected by a task.

To link Objects to a task, enter "D" on the Task Utilities menu.

```
01-12-31                    N-2-O TASK UTILITIES                    TSI0373
11:38:00                    LINK OBJECTS TO A TASK                  TSI1



     Task Group :  BENEFITS
     Task Number:  000003

     Options:
        View Linked Objects            Y
        Select Objects from Event/Seq  N
        Add Linked Objects             N
        Delete Linked Objects          N




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field		Description
TASK GROUP (required)		The group that identifies a task.
TASK NUMBER (required)		The number that uniquely identifies a task.
VIEW LINKED OBJECTS	Y	Displays a list of objects already linked to a task. (If "Y" is entered for this option, "N" must be entered for all other options.)
	N	Bypasses the display.
SELECT OBJECTS FROM EVENT/SEQ	Y	Prompts for Event, then displays a list of Event objects, and allows objects to be linked to an object. (If "Y" is entered for this option, "N" must be entered for all other options.)
	N	Bypasses the display.
ADD LINKED OBJECTS	Y	Allows the user to add objects linked to a task. (If "Y" is entered for this option, "N" must be entered for all other options.)
	N	Bypasses the display.
DELETE LINKED OBJECTS	Y	Allows the user to remove objects linked to a task. (If "Y" is entered for this option, "N" must be entered for all other options.)
	N	Bypasses the display.

To display the View Linked Objects screen, enter a task group and a task number on the previous screen, and a "Y" next to the View Linked Objects option.

```
 Press Enter to continue
  01-12-31              N-2-O LINK OBJECTS TO A TASK                TSI0373
  11:38:00              VIEW LINKED OBJECTS                         TSI1
                        Task Group: BENEFITS  Task Number: 1
                        Short Desc: ALL ACCOUNTS


              Object Name                    Type  Obj Type
              ------------------------------ ----  --------
              PAYEVNTD                        N    PROGRAM
              PAY4240N                        N    SUB-PGM
              PAY4240S                        N    SUB-RTN
              PAY42401                        N    MAP
              PAY42411                        N    MAP
              PAY42412                        N    MAP





 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ---- ---- END   ---- ---- ---- ---- ---- ---- ---- ---- STOP
```

Field	Description
TASK GROUP (supplied)	The group in which the task belongs.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESC (supplied)	A 30-character description of the task.
OBJECT NAME (supplied)	The object linked to the task.
TYPE (supplied)	The following types are required when using this function to supply information to User-Exit 15: N Indicates NATURAL. S Indicates SYSERR. P Indicates PREDICT. O Indicates 3GL/OTHER.

(Continued from previous page)

Field	Description
OBJ TYPE (supplied)	The following object types are required when using this function to supply information to User-Exit 15 (Refer to the **N2O Administration Manual** for details on User-Exit 15). This field is not used for SYSERR messages.

NATURAL object type

PARM	Indicates Parameter data area.
COPYCODE	Indicates Copycode.
GLOBAL	Indicates Global data area.
HELP-RTN	Indicates Helproutine.
LOCAL	Indicates Local data area.
MAP	Indicates Map.
SUB-PGM	Indicates Subprogram.
PROGRAM	Indicates Program.
SUB-RTN	Indicates Subroutine.
TEXT	Indicates Text.
MACRO	Indicates macro.
REPORT	Indicates Report.
EXP-MDL	Indicates ExpertModel.
RECORD	Indicates Recording.
DIALOG	Indicates Dialog.
CLASS	Indicates Class.
CMD-PROC	Indicates Processor.
SERVER	Indicates Server.

PREDICT object type

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

(Continued from previous page)

Field	Description

3GL category

ASMB	Indicates Assembler.
COBOL	Indicates COBOL.
FORT	Indicates FORTRAN.
PL/I	Indicates PL/I.
RPG	Indicates RPG.
DATA	Indicates DATA FILES.
JCL	Indicates JCL.
OTHER	Indicates all other objects.

III.5.5   Link Suggestions to a Task

Suggestions may be the reason a task is defined. Several suggestions can be accomplished by a single task.

Link Suggestions to a Task allows suggestions to be related to a task.

To link suggestions to a task, enter "E" on the Task Utilities menu.

```
01-12-31              N-2-O TASK UTILITIES                   TSI0373
11:38:00              LINK SUGGESTIONS TO A TASK             TSI1



     Task Group :  BENEFITS
     Task Number:      3

     Options:
        View Linked Suggestions    Y
        Modify Linked Suggestions  N







Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
TASK GROUP (required)	The group in which a particular task belongs.
TASK NUMBER (required)	The number of a particular task.
VIEW LINKED SUGGESTIONS (required)	Y Provides a list of suggestions linked to a task. (If "Y" is entered for this option, "N" must be entered for the remaining option.)
MODIFY LINKED SUGGESTIONS (required)	Y Allows user to modify suggestions linked to a task. (If "Y" is entered for this option, "N" must be entered for the remaining option.)

To display the View Linked Suggestions screen, enter a task group and a task number on the previous screen and a "Y" next to the View Linked Suggestions option.

```
  01-12-31                 N-2-O LINK SUGGESTIONS TO A TASK          TSI0373
  11:38:00                 VIEW LINKED SUGGESTIONS                   TSI1


  Task Group :  BENEFITS
  Task Number:       3
  Short Desc :  UPDATE TAX CODES



     Project              Suggestion    Project              Suggestion
     --------------------  ----------    --------------------  ----------
     PAYROLL                     32
     PAYROLL                     35
     PAYROLL                     38
     PAYROLL                     40
     PAYROLL                     53
     PAYROLL                     33
     PAYROLL                     36
     PAYROLL                     39
     PAYROLL                     51



 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
TASK GROUP (supplied)	The group to which a particular task belongs.
TASK NUMBER (supplied)	The number of a particular task.
SHORT DESC (supplied)	A 30-character of the task.
PROJECT (supplied)	The name of the project.
SUGGESTION (supplied)	The number of the suggestion.

To display the Modify Linked Suggestions screen, enter a task group and a task number on the previous screen and a "Y" next to the Modify Linked Suggestions option.

```
01-12-31              N-2-O LINK SUGGESTIONS TO A TASK           TSI0373
11:38:00              MODIFY LINKED SUGGESTIONS                  TSI1


Task Group :  BENEFITS
Task Number:       3
Short Desc :  UPDATE TAX CODES



   Project                 Suggestion    Project                 Suggestion
   --------------------    ----------    --------------------    ----------
   PAYROLL_____    32            _____    _____
   PAYROLL_____    35            _____    _____
   PAYROLL_____    38            _____    _____
   PAYROLL_____    40            _____    _____
   PAYROLL_____    53            _____    _____
   PAYROLL_____    33            _____    _____
   PAYROLL_____    36            _____    _____
   PAYROLL_____    39            _____    _____
   PAYROLL_____    51


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   LIST  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
TASK GROUP (supplied)	The group to which a particular task belongs.
TASK NUMBER (supplied)	The number of a particular task.
SHORT DESC (supplied)	A 30-character of the task.
PROJECT (optional)	The name of the project.
SUGGESTION (optional)	The number of the suggestion.

PF4 allows selection of a suggestion from a list.

III.5.6 Link Tasks to a Task

Many activities within a project overlap one another. It is important for tracking to be able to relate any similar activities.

Link Tasks to a Task allows up to 20 tasks to be linked to a single task.

To link tasks to a task, enter "F" on the Task Utilities menu.

```
01-12-31                N-2-O TASK UTILITIES                    TSI0373
11:38:00                LINK TASKS TO A TASK                    TSI1


  Task Group :  BENEFITS
  Task Number:  1_____

  Options:
     View Linked Tasks     N
     Modify Linked Tasks   N







Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
TASK GROUP (required)	The group in which a particular task belongs.
TASK NUMBER (required)	The number that uniquely identifies a task.
VIEW LINKED TASKS (required)	Y Displays a list of objects already defined to a task. (If "Y" is entered for this option, "N" must be entered for the remaining option.)
MODIFY LINKED TASKS (required)	Y Allows user to modify linked tasks. (If "Y" is entered for this option, "N" must be entered for the remaining option.)

To display the View Linked Tasks screen, enter a task group and a task number on the previous screen, and enter a "Y" next to the View Linked Tasks option.

```
 01-12-31                   N-2-O LINK TASKS TO A TASK                TSI0373
 11:38:00                   VIEW LINKED TASKS                         TSI1


 Task Group : BENEFITS
 Task Number:      1
 Short Desc : ALL ACCOUNTS

     Task Group  Task Number        Task Group  Task Number
     ----------  -----------        ----------  -----------
      PAY330E      42                _____    _____
      _____    _____           _____    _____
      _____    _____           _____    _____
      _____    _____           _____    _____
      _____    _____           _____    _____
      _____    _____           _____    _____
      _____    _____           _____    _____
      _____    _____           _____    _____
      _____    _____           _____    _____


 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
TASK GROUP (supplied)	The group to which a particular task belongs.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESC (supplied)	A 30-character description of the task.
TASK GROUP (supplied)	The task linked with this task.
TASK NUMBER (supplied)	The task number associated with the linked task.

To display the Modify Linked Tasks screen, enter a task group and a task number on the previous screen, and enter a "Y" next to the Modify Linked Tasks option.

```
  01-12-31                 N-2-O LINK TASKS TO A TASK              TSI0373
  11:38:00                   MODIFY LINKED TASKS                   TSI1


  Task Group : BENEFITS
  Task Number:      1
  Short Desc :  ALL ACCOUNTS

     Task Group  Task Number          Task Group  Task Number
     ----------  -----------          ----------  -----------
      PAY330E      42                  _____    _____
      _____    _____               _____    _____
      _____    _____               _____    _____
      _____    _____               _____    _____
      _____    _____               _____    _____
      _____    _____               _____    _____
      _____    _____               _____    _____
      _____    _____               _____    _____
      _____    _____               _____    _____
      _____    _____               _____    _____


 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
TASK GROUP (supplied)	The group to which a particular task belongs. Pressing PF4 allows a selection of a task from a list.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESC (required)	A 30-character description of the task.
TASK GROUP (optional)	The task linked with this task.
TASK NUMBER (optional)	The task number associated with the linked task.

III.6   Project Tracking Reports

To access the Project Tracking Reports menu, enter "E" on the Project Tracking Subsystem menu or enter the direct command PRJ REP on any menu.

```
 01-12-31              N-2-O PROJECT TRACKING REPORTS MENU        TSI0373
 11:38:00                                                         TSI1

                      Code   Function
                      ----   --------------------------------
                       A     History of a Task
                       B     Task Details
                       C     Project Status
                       D     User Status
                       E     Events Related to a Task
                       F     Suggestion Details
                       .     Terminate Project Tracking Reports
                             --------------------------------
                       _

          Enter Code:  _




 Direct Command _____              PRJ REP
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

A   History of a Task
Provides a history of the stages a task has passed in reverse chronological order.

B   Task Details
Provides all information about a task.

C   Project Status
Shows all tasks defined to a project, and the current stage of each task.

D   User Status
Displays all tasks where a user is listed as a contact, based on User-ID.

E   Events Related to a Task
Provides a list of all Events that influence a particular task.

F   Suggestion Details
Provides detailed information about each suggestion within a project.

III.6.1   <u>History of a Task</u>

History of a Task provides a history of the stages a task has passed in reverse chronological order.

To access the History of a Task function, enter "A" on the Project Tracking Reports menu.

```
 ┌─────────────────────────────────────────────────────────────────────┐
 │ 01-12-31              N-2-O PROJECT TRACKING REPORTS         TSI0373  │
 │ 11:38:00              HISTORY OF A TASK                      TSI1     │
 │                                                                       │
 │                                                                       │
 │                                                                       │
 │                       Project   :  PAYROLL_____              │
 │                       Task Group :  _____                          │
 │                       Task Number:  _____                            │
 │                       Date Range :  _____ - _____               │
 │                                                                       │
 │                       Mode      :  O                                  │
 │                                                                       │
 │                                                                       │
 │                                                                       │
 │                                                                       │
 │                                                                       │
 │                                                                       │
 │ Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--- │
 │      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----   │
 └─────────────────────────────────────────────────────────────────────┘
```

Field	Description
∞ PROJECT (required)	The name of the project.
TASK GROUP (required)	The group that identifies a task.
TASK NUMBER (required)	The number that uniquely identifies a task.
DATE RANGE (optional)	Limits output to specific time period. Dates must be formatted YYYYMMDD.
MODE (required)	Indicates how the job is executed (batch or on-line).
	O Submits JCL to the internal reader that processes the function in batch.
	B Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

To display the History of a Task report, enter a project, task group, and task number on the previous screen.

```
 01-12-31                  N-2-O PROJECT TRACKING REPORTS              TSI0373
 11:38:00                     HISTORY OF A TASK                        TSI1
                                                                 Page:  1
 Task Group:  BENEFITS  Task Number:      3   Project: PAYROLL

   Stage       Date      Time     User-ID     Comments
   ----------  --------  --------  --------    ------------------------------------
   APPROVED    01-12-31  11:35:40  TSIO373     ALL ACCOUNTS
   TESTED      00-12-04  10:23:00  TSIO373     RECENT ACCOUNTS
   DEFINED     01-09-25  12:22:58  TSIO373     INITIAL ACCOUNTS












 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
TASK GROUP (supplied)	The group that identifies a task.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
PROJECT (supplied)	The name of the project.
STAGE (supplied)	The progress of a task.
DATE (supplied)	Date the task passed the specified stage.
TIME (supplied)	Time the task passed the specified stage.
USER-ID (supplied)	The User-ID responsible for updating the task to the specified stage.
COMMENTS (supplied)	The information provided when the task was updated to the specified stage.

III.6.2 Task Details

Task Details provides the details of a task. The following fields can limit this report: Project, Task Group, Task Number, Stage, Priority, and Impact.

To access the Task Details function, enter "B" on the Project Tracking Reports menu.

```
 01-12-31                N-2-O PROJECT TRACKING REPORTS             TSI0373
 11:38:00                TASK DETAILS                               TSI1




                       Project   :  PAYROLL_____
                       Task Group :  _____
                       Task Number:  _____
                       Stage     :  _____
                       Priority  :  _____
                       Impact    :  _____

                       Mode      :  O





 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ PROJECT (required)	The name of the project.
TASK GROUP (optional)	Limits the report to tasks with the specified task group.
TASK NUMBER (optional)	The number of a task.
STAGE (optional)	Limits the report to tasks with the specified stage.
PRIORITY (optional)	Limits the report to tasks with the specified priority.
IMPACT (optional)	Limits the report to tasks with the specified impact.
MODE (required)	Indicates how the job is executed (batch or on-line).
	O Submits JCL to the internal reader that processes the function in batch.
	B Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

To display the Task Details report screen, enter a project on the previous screen.

```
Valid values: D-Details C-Contacts L-Checklist
 01-12-31                 N-2-O PROJECT TRACKING REPORTS              TSI0373
 11:38:00                      TASK DETAILS                           TSI1
                                                               Page:  1
   ---- Task ----
 S  Group     Number  Short Description              Stage       Prty  Impact
 -  --------------  ------------------------------ ----------- ----  ------
 _  BENEFITS     1  ALL ACCOUNTS                   DEFINED      **     **
 _  BENEFITS     2  RECENT ACCOUNTS                DEFINED      **     **
 _  BENEFITS     3  INITIAL ACCOUNTS               DEFINED      **     **




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows:
	D Displays detailed information about the task.
	C Displays the list of contacts for the task.
	L Displays the checklist items for the task.
TASK GROUP (supplied)	The group that identifies a task.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESCRIPTION (supplied)	A 30-character description of the task.
STAGE (supplied)	The current stage of a task.
PRTY (supplied)	The priority of a task.
IMPACT (supplied)	The impact of a task.

III.6.3   Project Status

Project Status shows all tasks defined to a project, and the current stage of each task.

To access the Project Status function, enter "C" on the Project Tracking Reports menu.

```
 01-12-31                 N-2-O PROJECT TRACKING REPORTS           TSI0373
 11:38:00                 PROJECT STATUS                           TSI1




                     Project:  _____

                     Mode   :  O








 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ PROJECT (required)	The name of the project.
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

To display the Project Status report screen, enter a project on the previous screen.

```
01-12-31              N-2-O PROJECT TRACKING REPORTS              TSI0373
11:38:00              PROJECT STATUS FOR PAYROLL                  TSI1
                                                                  Page 1
---- Task -----
Group    Number  Short Description                Prty   Impact  Stage
-------------- ------------------------------ ------ ------ ------------
BENEFITS 000002  CALC AS PERCENTAGE OF DEDUCT     MED    MED    DEFINED
BONUSES  000001  YEAR TO DATE SUMMARY OF BONUS    LOW    LOW    DEFINED
CITYTAX  000001  COMPUTE 99 RATE INCREASE         HIGH   MED    DEFINED
CITYTAX  000002  CALC AS PERCENTAGE OF DEDUCT     MED    MED    DESIGN
FEDTAX   000001  ADJUST TO NEW RATES              HIGH   HIGH   DEFINED
FEDTAX   000002  CALC AS FEDTAX AS % OF DEDUCT    HIGH   MED    DEFINED
FICA     000001  CALC AS PERCENTAGE OF DEDUCT     MED    MED    DEFINED




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

The Project Status report shows all tasks that belong to the project. The Current Stage field is displayed to allow the user to quickly assess the status of the entire project.

Field	Description
TASK GROUP (supplied)	The group that identifies a task.
TASK NUMBER (supplied)	The number that uniquely identifies a task.
SHORT DESCRIPTION (supplied)	A 30-character description of the task.
PRTY (supplied)	The priority of a task.
IMPACT (supplied)	The impact of a task.
STAGE (supplied)	The current stage of a task.

III.6.4   User Status

User Status displays all tasks where a user is listed as a contact. The report is based on the User-ID of the user.

To access the User Status function, enter "D" on the Project Tracking Reports menu.

```
 01-12-31                   N-2-O PROJECT TRACKING REPORTS            TSI0373
 11:38:00                   USER STATUS                               TSI1




                       User-ID       :  TSIO373_
                       Project       :  PAYROLL_____
                       Date Range    :  _____ - _____
                       Primary Contact: Y

                       Mode          :  O







Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
USER-ID (required)	The User-ID.
∞ PROJECT (required)	Limits the report to tasks for the specified project.
DATE RANGE (optional)	Limits the report to a specific time period. Dates must be formatted YYYYMMDD.
PRIMARY CONTACT (required)	Indicates whether tasks are displayed only if the specified User-ID is the primary contact or all tasks where the specified User-ID is referenced. Y Displays only tasks where the specified User-ID is the primary contact. N Displays all tasks that reference the specified User-ID.
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

To display the User Status report screen, enter a User-ID on the previous screen.

```
Press PF5 to view Description
 01-12-31              N-2-O PROJECT TRACKING REPORTS            TSI0373
 11:38:00                USER STATUS FOR TREE06                  TSI1

                    ---- Task -----          ------  Update  ------
 Project            Group   Number Stage     Date    Time    User-ID
 ------------------ --------------- ---------- -------- -------- --------
 PAYROLL            BENEFITS 000002 AUTHORIZED 01-10-17 10:29:02 TSI0373
 PAYROLL            BENEFITS 000003 AUTHORIZED 01-08-04 16:11:44 TSI0373
 PAYROLL            BENEFITS 000005 AUTHORIZED 01-07-16 15:30:57 TSI0373
 PAYROLL            BENEFITS 000009 DEFINED    01-05-26 14:23:37 TSI0373
 PAYROLL            BENEFITS 000010 AUTHORIZED 01-02-17 10:29:12 TSI0373
 PAYROLL            BENEFITS 000011 AUTHORIZED 01-02-20 09:57:56 TSI0373
 PAYROLL            BENEFITS 000014 AUTHORIZED 01-02-17 10:28:05 TSI0373
 PAYROLL            BENEFITS 000015 TESTING    01-02-01 09:23:38 TSI0373
 PAYROLL            BENEFITS 000016 AUTHORIZED 01-02-15 15:31:15 TSI0373
 PAYROLL            BENEFITS 000017 AUTHORIZED 01-02-24 11:00:18 TSI0373
 PAYROLL            BENEFITS 000018 AUTHORIZED 01-01-21 11:56:11 TSI0373
 PAYROLL            BENEFITS 000020 AUTHORIZED 01-01-23 14:09:40 TSI0373
 PAYROLL            BENEFITS 000022 AUTHORIZED 01-01-06 16:57:38 TSI0373
 PAYROLL            BENEFITS 000023 AUTHORIZED 01-01-17 10:28:15 TSI0373

 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  DESC  ----  ----  ----  ----  ----  ----  STOP
```

The User Status report displays all tasks that reference the User-ID. The PF5 key toggles between the short description of the task and the Update Date, Update Time, and Update User-ID fields of the task.

Field	Description
PROJECT (supplied)	The name of the project.
TASK GROUP (supplied)	The group that identifies a task.
TASK NUMBER (supplied)	The number that identifies a task.
STAGE (supplied)	The current stage of the task.
UPDATE DATE (supplied)	The date the task was updated.
UPDATE TIME (supplied)	The time the task was updated.
UPDATE USER-ID (supplied)	The User-ID that updated the task to the specified stage.

III.6.5   Events Related to a Task

Events Related to a Task provides a list of all Events that reference a particular task.

To access the Events Related to a Task function, enter "E" on the Project Tracking Reports menu.

```
 01-12-31                 N-2-O PROJECT TRACKING REPORTS              TSI0373
 11:38:00                 EVENTS RELATED TO A TASK                    TSI1




                      Task Group   :  _____
                      Task Number  :  _____

                      Mode         :  O








 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
TASK GROUP (required)	The group that identifies a task.
TASK NUMBER (required)	The number that uniquely identifies a task.
MODE (required)	Indicates how the job is executed (batch or on-line).

> O   Submits JCL to the internal reader that processes the function in batch.
>
> B   Processes the function on-line. (Default: O)

To display the Events Related to a Task report screen, enter a task group and task number on the previous screen.

```
 01-12-31                N-2-O PROJECT TRACKING REPORTS              TSI0373
 11:38:00                   EVENTS RELATED TO TASK                   TSI1
              Task Group : PAY330E  Task Number:      1      Page:  1
              Short Desc : ENHANCE REPORTING SUBSYSTEM


                       --------  Added  -----------  --------  Closed  ----------
      Event      Seq   Date      Time      User-ID   Date      Time      User-ID
      --------  -----  --------  --------  --------  --------  --------  --------
      PAYOUT      171  01-02-21  10:25:02  TSI006    01-02-21  10:25:43  TSI004
      PAYOUT      220  01-03-23  07:28:39  TSI006    01-03-23  07:29:07  TSI004








 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

The Events Related to a Task report shows all Events that were related to the task when they were added. This report helps to track program migrations within a project area.

Field	Description
TASK GROUP (supplied)	The group that identifies a task.
TASK NUMBER (supplied)	The number that identifies a task.
SHORT DESC (supplied)	A 30-character description of the task.
EVENT (supplied)	The name of the Event.
SEQ (supplied)	The sequence number of the Event.
ADDED DATE (supplied)	The date the Event was added.
ADDED TIME (supplied)	The time the Event was added.
ADDED USER-ID (supplied)	The User-ID that added the Event.
CLOSED DATE (supplied)	The date the Event was closed.
CLOSED TIME (supplied)	The time the Event was closed.
CLOSED USER-ID (supplied)	The User-ID that closed the Event.

III.6.6   Suggestion Details

Suggestion Details provides detailed information about each suggestion within a project.

To access the Suggestion Details function, enter "F" on the Project Tracking Reports.

```
 01-12-31                N-2-O PROJECT TRACKING REPORTS              TSI0373
 11:38:00                SUGGESTION DETAILS                          TSI1




                         Project  :  _____
                         Suggestion: _____
                         Status   :  _____

                         Mode     :  O







 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ PROJECT (required)	The name of the project.
SUGGESTION (optional)	The number of the suggestion to be displayed.
STATUS (optional)	Limits the report to suggestions with the specified status.
MODE (required)	Indicates how the job is executed (batch or on-line). O Submits JCL to the internal reader that processes the function in batch. B Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

To display the Suggestion Details report screen, enter a project on the previous screen.

```
01-12-31              N-2-O PROJECT TRACKING REPORTS           TSI0373
11:38:00                 SUGGESTION DETAILS                    TSI1
                         Project: PAYROLL                Page:  1

                                                     Request
 X   Suggestion  Short Description            Status  Date
 -   ----------  ------------------------------ -------- --------
 _            1  SEPARATE AUTOCOMPILE STEP      OPEN     01-02-10
 _            2  LIMIT AUTOCOMP TO SINGLE USER  OPEN     01-02-10
 _            3  USER-DEFINED PF-KEYS           OPEN     01-02-10
 _            4  DISABLE USE OF CLEAR KEY       ACCEPTED 01-02-10
 _            5  SELECT OBJECTS BY DATE/TIME    OPEN     01-02-10
 _            6  STARTING OBJECT FOR ALL TYPES  OPEN     01-02-10
 _            7  SELECTION BY OBJECT TYPE       OPEN     01-02-10
 _            8  SELECTION BY LIFO OR FIFO      OPEN     01-02-10
 _            9  NEW STATUS CODES               OPEN     01-02-10
 _           10  EVENT TRIGGERED MIGRATIONS     OPEN     01-02-10
 _           11  EXPAND COPYCODE IN VIEW        OPEN     01-02-10
 _           12  ADD EDITOR FUNCTIONS TO VIEW   OPEN     01-02-10
 _           13  ADD SCAN UTILITY TO TOOLBOX    OPEN     01-02-10

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

The Suggestion Details report shows the list of suggestions within the project.

Field	Description
PROJECT (supplied)	The name of the project.
X (optional)	Entering "X" next to a suggestion (or next to more than one suggestion) displays specific details about the suggestion.
SUGGESTION (supplied)	The number of the suggestion displayed.
SHORT DESCRIPTION (supplied)	A 30-character description of the suggestion.
STATUS (supplied)	The status assigned to the suggestion.
REQUEST DATE (supplied)	The date the suggestion was requested.

SECTION IV

REPORTING SUBSYSTEM

IV.1 Introduction

N2O maintains an audit trail of all migration activities. The Reporting Subsystem provides reports that display information retrieved from this audit trail. The Reporting Subsystem also provides reports that show relationships within the Environment Subsystem.

The Reporting Subsystem section presents topics in the following order:

- Environment Reporting
- Event Reporting
- Object Reporting
- Statistical Reporting
- Security Reporting

To access the Reporting Subsystem menu, enter "R" on the N2O Main menu or enter the direct command REP MENU or PF6 on any menu.

```
01-12-31                    N-2-O MAIN MENU                    TSI0373
11:38:00                                                       TSI1

                    Code  Function
                    ----  -------------------------
                     E    Environment Subsystem
                     M    Migration Subsystem
                     P    Project Tracking Subsystem
                     R    Reporting Subsystem
                     T    Toolbox Subsystem
                     U    User-Defined Subsystem
                     .    Terminate N-2-O Session
                    ----  -------------------------

          Enter Code:  _




 Direct Command: _____              N2O MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

After following the instructions on the previous page, the Reporting Subsystem menu is displayed.

```
 01-12-31                  N-2-O REPORTING SUBSYSTEM MENU              TSI0373
 11:38:00                                                             TSI1

                    Code    Function
----     ---------------------------
                     A      Environment Reporting
                     B      Event Reporting
                     C      Object Reporting
                     D      Statistical Reporting
                     E      Security Reporting
                     .      Terminate Reporting Subsystem
                    ----    ---------------------------

          Enter Code:  _




 Direct Command: _____            REP MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   ----  TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

A **Environment Reporting**
Provides reports that display relationships within the Environment Subsystem.

B **Event Reporting**
Provides reports that display information about Events.

C **Object Reporting**
Provides reports that display information about objects.

D **Statistical Reporting**
Provides reports that display numerical data for Events and objects.

E **Security Reporting**
Provides reports that detail the N2O Security definitions.

Note: Pressing PF12 (STOP) exits a report and returns to the previous data entry screen. Pressing PF3 (END) exits a report and returns to the menu from which the report was accessed.

IV.2 <u>Environment Reporting</u>

Environment Reporting provides reports that display relationships within the Environment Subsystem.

To display the Environment Reporting menu, enter "A" on the Reporting Subsystem menu or enter the direct command REP ENV on any menu.

```
 01-12-31                  N-2-O ENVIRONMENT REPORTING MENU             TSI0373
 11:38:00                                                               TSI1


                       Code   Function
                       ----   --------------------------------
                        A     Authorized Users to an Environment
                        B     Node Definition Usage
                        C     Archive Definition Usage
                        D     Environment Definition Usage
                        E     Users Related to a Group-ID
                        .     Terminate Environment Reporting
                       ----   --------------------------------

             Enter Code:  _




 Direct Command: _____                                REP ENV
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

    A   **Authorized Users to an Environment**
            Displays users who are authorized to migrate objects to an environment.

    B   **Node Definition Usage**
            Displays Environment Definitions and Archive Definitions that reference a Node Definition.

    C   **Archive Definition Usage**
            Displays Environment Definitions that reference an Archive Definition.

    D   **Environment Definition Usage**
            Displays Migration Profiles that reference an Environment Definition or an Archive Definition.

    E   **Users Related to a Group-ID**
            Displays users that are assigned a Group-ID.

IV.2.1 <u>Authorized Users to an Environment</u>

The Authorized Users to an Environment report displays users who are authorized to migrate objects to an Environment. This information is based on the Approval profiles, PREDICT profiles, and 3GL/OTHER profiles assigned to users in N2O Security. This report is not available for sites using the SECURITRE interface.

To display the Authorized Users to an Environment input screen, enter "A" on the Environment Reporting menu.

```
Enter the Target Environment
 01-12-31               N-2-O ENVIRONMENT REPORTING              TSI0373
 11:38:00              AUTHORIZED USERS TO AN ENVIRONMENT        TSI1




              Env Def       :  ____
              Library       :  _____
              Detailed Report: N (Batch Only)
              Mode          :  O









Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ ENV DEF (required)	An environment defined by the N2O Administrator.
LIBRARY (optional)	Limits the report to NATURAL and SYSERR target environments only.
DETAILED REPORT (required)	Indicates whether detailed information should be displayed when executed in batch.
	Y Display all detail information for reports when executed in batch (similar to entering X next to a User-ID on-line).
	N Display information as the online summary report screen. (Default: N)
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Authorized Users to an Environment Selection screen.

```
Type X to view User Definition
 01-12-31              N-2-O PROFILE REPORT                      TSIO373
 11:38:00              APPROVAL PROFILE  - ALL-APPR              TSI1
                                                      Page:  1
                X   User-ID   Description
                -   --------  -----------------------------
                _   TSIO371   DBA
                _   TSIO372   PROJECT LEADER
                _   TSIO373   DEVELOPER




                      5 Users assigned this profile
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

The Profile Report identifies profiles that enable users to migrate objects to an Environment, as well as the users assigned to those profiles. Selecting one or more users displays the User Definition(s) of the selected user(s).

Field	Description
X (optional)	"X" in the select field displays the User Definition of the User-ID.
USER-ID (supplied)	The User-ID of the user assigned to the profile.
DESCRIPTION (supplied)	A description of the User-ID.

IV.2.2 <u>Node Definition Usage</u>

The Node Definition Usage report displays Environment Definitions and Archive Definitions that reference a Node Definition.

To display the Node Definition Usage input screen, enter "B" on the Environment Reporting menu.

```
 01-12-31                      N-2-O ENVIRONMENT REPORTING                 TSI0373
 11:38:00                      NODE DEFINITION USAGE                       TSI1




                              Node:  ____

                              Mode:  O










 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ NODE (required)	A node defined by the N2O Administrator.
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Node Definition Usage report.

```
Press Enter to continue
  01-12-31              N-2-O ENVIRONMENT REPORTING                TSI0373
  11:38:00              NODE DEFINITION USAGE                      TSI1
                        Node:  CPUL                         Page:  1

        Arch Def ARC1          Env Def DEV         Env Def PROD
        ENV Def TEST




















Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ---- ---- END    ---- ---- ---- ---- ---- ---- ---- ---- STOP
```

Field	Description
NODE (supplied)	A node defined by the N2O Administrator.
ARCH DEF (supplied)	An Archive Environment defined by the N2O Administrator.
ENV DEF (supplied)	An Environment defined by the N2O Administrator.

IV.2.3   Archive Definition Usage

The Archive Definition Usage report displays Environment Definitions that reference an Archive Definition.

To display the Archive Definition Usage input screen, enter "C" on the Environment Reporting menu.

```
 01-12-31                  N-2-O ENVIRONMENT REPORTING             TSI0373
 11:38:00                  ARCHIVE DEFINITION USAGE                TSI1




                  Arch Def:  ____

                  Mode   :  O








 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ ARCH DEF (required)	An Archive Environment defined by the N2O Administrator.
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Archive Definition Usage report.

```
 Press Enter to continue
  01-12-31                   N-2-O ENVIRONMENT REPORTING                  TSI0373
  11:38:00                   ARCHIVE DEFINITION USAGE                     TSI1
                             Arch Def:  ARC1                         Page:  1


          Env Def                  Env Def                  Env Def
          -------                  -------                  -------
          PROD










 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        ---- ---- END   ---- ---- ---- ---- ---- ---- ---- ---- STOP
```

Field	**Description**
∞ ARCHIVE DEF (supplied)	An Archive Environment defined by the N2O Administrator.
ENV DEF (supplied)	An Environment defined by the N2O Administrator.

∞ indicates field-level help is available.

IV.2.4   Environment Definition Usage

The Environment Definition Usage report displays Migration Profiles that reference an Environment Definition or an Archive Definition.

To display the Environment Definition Usage input screen, enter "D" on the Environment Reporting menu.

```
 01-12-31              N-2-O ENVIRONMENT REPORTING              TSI0373
 11:38:00              ENVIRONMENT DEFINITION USAGE             TSI1




                 Env Def:  ____

                 Mode  :  O









 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ ENV DEF (required)	An Environment defined by the N2O Administrator.
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Environment Definition Usage report.

```
Press Enter to continue
 01-12-31                 N-2-O ENVIRONMENT REPORTING              TSI0373
 11:38:00                 ENVIRONMENT DEFINITION USAGE                TSI1
                          Env Def:  DEV                          Page:  1

         Migration Profile     Migration Profile     Migration Profile
         -----------------     -----------------     -----------------
            RC1  DEV              DEV   DEV             DEV    TEST
            PROD DEV              TEST  DEV




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
ENV DEF (supplied)	An Environment defined by the N2O Administrator.
MIGRATION PROFILE (supplied)	A Migration Profile defined by the N2O Administrator.

IV.2.5   Users Related to a Group-ID

The Users Related to a Group-ID report displays users that are assigned a Group-ID.

To display the Users Related to a Group-ID input screen, enter "E" on the Environment Reporting menu.

```
 01-12-31                 N-2-O ENVIRONMENT REPORTING              TSI0373
 11:38:00                 USERS RELATED TO A GROUP-ID              TSI1




                        Group-ID:  _____

                        Mode    :  O








 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
GROUP-ID (required)	A Group-ID defined by the N2O Administrator.
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

Entering the necessary information in the input screen and pressing Enter displays the Users Related to a Group-ID report.

```
Press Enter to continue
 01-12-31              N-2-O ENVIRONMENT REPORTING               TSI0373
 11:38:00              USERS RELATED TO A GROUP-ID               TSI1
                       Group-ID:  PAY                    Page:  1

          User-ID                User-ID               User-ID
          --------               --------              --------
          TSIO373                TSIO374               TSIO375










 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
GROUP-ID (supplied)	A Group-ID defined by the N2O Administrator.
USER-ID (supplied)	The users related to the Group-ID.

IV.2.6   Environment Reporting in Batch

Sample reporting JCL is provided in the MVSREPT, VMREPT, BSREPT and VSEREPT members located in the Natural library N2OBATCH.

The following table illustrates the JCL and EXECs modifications necessary to execute Environment reports in batch.

REPORT	&REPORT	&INPUT
Authorized Users to an Environment	N2OENVA	ENV-DEF,LIBRARY,DETAILED-REPORT
Node Definition Usage	N2OENVB	NODE
Archive Definition Usage	N2OENVC	ARCH DEF
Environment Definition Usage	N2OENVD	ENV DEF or ARCH DEF
Users Related to a Group-ID	N2OENVE	GROUP-ID

The &INPUT parameter list by default is delimited by commas with no spaces following the commas.   To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

For descriptions of &INPUT fields, refer to field descriptions in corresponding sections of Environment Reporting.

Note: The batch reports from the N2O Reporting Subsystem and the Documentation Tools require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).

IV.3   Event Reporting

Event Reporting provides reports that display information about Events. Each report allows users to view a list of Events based on specific requirements.

To display the Event Reporting menu, enter "B" on the Reporting Subsystem menu or enter the direct command REP EVNT on any menu.

```
 01-12-31                 N-2-O EVENT REPORTING MENU                TSI0373
 11:38:00                                                           TSI1

                          Code  Function
                          ----  ------------------------------------
                           A    Events Requiring Further Authorization
                           B    Chronology of Events
                           C    Events Related by Change Control
                           D    Event Details
                           E    Events Processed by Date
                           F    Events with Warning Messages
                           G    Events Pending Move
                           H    Events Pending Autocompile
                           I    Autocompile Summary for Events
                           .    Terminate Event Reporting
                          ----  ------------------------------------

            Enter Code:  _


 Direct Command: _____           REP EVNT
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

A **Events Requiring Further Authorization**
Displays Events that require authorization or servicing.

B **Chronology of Events**
Displays the history of Events.

C **Events Related by Change Control**
Displays Events associated with a change request.

D **Event Details**
Displays all Events created using N2O.

E **Events Processed by Date**
Displays Events migrated within a specified date range.

F **Events with Warning Messages**
Displays Events that received warning messages.

G **Events Pending Move**
Displays deferred move Events.

(continued from previous page)

Field	Description

H	**Events Pending Autocompile**	
	Displays Events that contain programs to be compiled.	
I	**Autocompile Summary for Events**	
	Displays compile information about Events and programs.	

IV.3.1 Events Requiring Further Authorization

The Events Requiring Further Authorization report displays Events that require authorization or servicing. This report displays the added Date/User-ID and authorized Date/User-ID of pending Events.

To display the Events Requiring Further Authorization input screen, enter "A" on the Event Reporting menu.

```
 01-12-31                  N-2-O EVENT REPORTING                    TSI0373
 11:38:00            EVENTS REQUIRING FURTHER AUTHORIZATION         TSI1




            Delay         :  ____
            Detailed Report: N (Batch Only)
            Mode          :  O






 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
DELAY (required)	Indicates whether Events require either Authorization or service.
	AUTH displays Events requiring Authorization.
	SERV displays Events requiring service.
DETAILED REPORT (required)	Indicates whether detailed information should be display when executed in batch.
	Y Display all detail information for reports when executed in batch (similar to entering E and O on the Events Requiring Further Authorization Selection screen.)
	N Display information similar to the Events Requiring Further Authorization screen. (Default: N)
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

Entering the necessary information in the input screen and pressing Enter displays the Events Requiring Further Authorization Selection screen.

```
Valid Values:  A - Autocompile  E - Event  O - Object
 01-12-31                  N-2-O EVENT REPORTING                    TSI0373
 11:38:00                  EVENTS REQUIRING FURTHER AUTHORIZATION      TSI1
                           Delay: SERV                       Page:  1


                    Change  From To  Event ----- Added ---- --- Authorized ---
 S Event    Seq    Control Env  Env  Type  Date     User-ID  Date     User-ID
 - -------- -----  ------- ---- ---- ----- -------- -------- -------- --------
 _ PAYIN    1      E125    TEST PROD N     01-12-31 TSIO373  01-12-31 TSIO373
 _ PAYIN    2      E039    TEST PROD N     01-06-01 TSIO373  01-12-31 TSIO424
 _ PAYIN    3      B127    TEST PROD N     01-06-01 TSIO373  01-12-31 TSIO373








 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
DELAY (supplied)	The value specified to execute this report.
S (optional)	The function to be executed. Valid values are as follows: A displays autocompile details (if available) E displays Event details. O displays object details.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	The source Environment Definition of the Event.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.
EVENT TYPE (supplied)	The types of objects requested for the Event. Valid values are as follows: N Indicates NATURAL. S Indicates SYSERR. P Indicates PREDICT. O Indicates 3GL/OTHER. D Indicates DDM. M Indicates METADATA.

(continued from previous page)

Field	Description
ADDED DATE (supplied)	The date the Event was added.
ADDED USER-ID (supplied)	The user who added the Event.
AUTHORIZED DATE (supplied)	The date the Event was last authorized.
AUTHORIZED USER-ID (supplied)	The user who last authorized the Event.

IV.3.2 **Chronology of Events**

The Chronology of Events report displays the history of Events. This report displays the dates and times Events were added, authorized, and closed.

To display the Chronology of Events input screen, enter "B" on the Event Reporting menu.

```
 01-12-31                 N-2-O ADMINISTRATIVE REPORTING              TSI0373
 11:38:00                 CHRONOLOGY OF EVENTS                        TSI1




               Event          :  _____
               Sequence       :  _____

               Date           :  ____ - __ - __   (YYYY-MM-DD)

               Detailed Report: N (Batch Only)
               Mode           : 0






Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ---- END   ---- ---- ---- ---- ---- ---- ---- ---- ----
```

	Field	Description
∞	EVENT (optional)	A Master Event that identifies the starting value of the report.
	SEQUENCE (optional)	The sequence number of the Event.
	DETAILED REPORT (required)	Indicates whether detailed information should be displayed when executed in batch.
		Y Display all detail information for reports when executed in batch. (Similar to entering E and O next to an Event on the Chronology of Events selection screen.)
		N Display information similar to the Chronology of Events selection screen. (Default: N)
	DATE (optional)	Date the Event(s) were run.
	MODE (required)	Indicates how the job is executed (batch or on-line).
		B Submits JCL to the internal reader that processes the function in batch.
		O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Chronology of Events selection screen.

```
Valid Values:  A - Autocompile  E - Event  O - Object
 01-12-31                N-2-O EVENT REPORTING              TSI0373
 11:38:00               CHRONOLOGY OF EVENTS                TSI1
                                                            Page: 1
                   ---- Added-------- --- Authorized --- ---- Closed ------
 S  Event     Seq  Date     Time      Date     Time      Date     Time
 -  --------  ---- --------  --------  --------  --------  --------  --------
 _  PAYOUT    1    01-12-14  13:40:17  01-12-14  13:47:14  01-12-14  13:47:22
 _  PAYOUT    2    01-12-22  13:05:08  01-12-22  13:10:22  01-12-22  13:10:27
 _  PAYOUT    3    01-12-19  10:41:08  01-12-19  10:42:17  01-12-19  10:42:42
 _  PAYOUT    4    01-12-21  15:40:46  01-12-21  15:46:19  ********  ********




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows:
	A displays autocompile details (if available)
	E displays Event details.
	O displays object details.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
ADDED DATE (supplied)	The date the Event was added.
ADDED TIME (supplied)	The time the Event was added.
AUTHORIZED DATE (supplied)	The date the Event was last authorized. Asterisks in the Authorized Date field represent Events without authorization.
AUTHORIZED TIME (supplied)	The time the Event was last authorized. Asterisks in the Authorized Time field represent Events without authorization.
CLOSED DATE (supplied)	The date the Event was closed. Asterisks in the Closed Date field represent Events pending migration.
CLOSED TIME (supplied)	The time the Event was closed. Asterisks in the Closed Time field represent Events pending migration.

IV.3.3   Events Related by Change Control

The Events Related by Change Control report displays Events associated with a change request. A Change Control value relates multiple Events to a single change request throughout the application life cycle.

To display the Events Related by Change Control input screen, enter "C" on the Event Reporting menu.

```
 01-12-31                  N-2-O EVENT REPORTING               TSI0373
 11:38:00                  EVENTS RELATED BY CHANGE CONTROL     TSI1




                    Change Control :  _____
                    Added User-ID  :  _____
                    Date Range     :  _____  - _____
                    Detailed Report:  N (Batch Only)
                    Mode           :  O







Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

	Field	Description
	CHANGE CONTROL (optional)	Limits the report to Events with the specified Change Control value.
∞	ADDED USER-ID (optional)	Limits the report to Events added by the user with the specified User-ID.
	DATE RANGE (optional)	Limits the report to Events migrated within the range of dates. Dates must be formatted YYYYMMDD.
	DETAILED REPORT (required)	Indicates whether detailed information should be displayed when executed in batch.
		Y Display all detail information for reports when executed in batch (similar to entering E and O next to an Event on the Events Related by Change Control selection screen).
		N Display information similar to the Events Related by Change Control selection screen. (Default: N)
	MODE (required)	Indicates how the job is executed (batch or on-line).
		B Submits JCL to the internal reader that processes the function in batch.
		O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Events Related by Change Control selection screen.

```
Valid Values:  A - Autocompile  E - Event  O - Object
 01-12-31                    N-2-O EVENT REPORTING                    TSI0373
 11:38:00                 EVENTS RELATED BY CHANGE CONTROL            TSI1
                                                          Page:  1

   Change                    From To    Event        -------- Closed ---------
-
 S  Control   Event    Seq   Env  Env   Type  Extr  Date      Time     User-ID
 -  --------  -------- ----- ---- ----  ----- ----  --------  -------- -------
-
 _  A12345    PAYOUT   1     PROD DEV   N     NO    01-10-01 11:34:55 TSIO373
 _  A12345    PAYTEST  2     DEV  TEST  N     NO    01-10-05 08:43:21 TSIO373
 _  A12345    PAYIN    1     TEST PROD  N     NO    ******** ******** *******




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows:
	A displays autocompile details (if available) E displays Event details. O displays object details.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
FROM ENV (supplied)	The source Environment Definition of the Event.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.
EVENT TYPE (supplied)	The types of objects requested for the Event. Valid values are as follows:
	N Indicates NATURAL. S Indicates SYSERR. P Indicates PREDICT. O Indicates 3GL/OTHER. D Indicates DDM. M Indicates METADATA.

(continued from previous page)

Field	Description
EXTR (supplied)	Indicates whether the Event is an Extract Event or not. YES Indicates the Event is an Extract Event. NO Indicates the Event is not an Extract Event.
CLOSED DATE (supplied)	The date the Event was closed. Asterisks in the Closed Date field represent Events pending migration.
CLOSED TIME (supplied)	The time the Event was closed. Asterisks in the Closed Time field represent Events pending migration.
CLOSED USER_ID (supplied)	The user who closed the Event. Asterisks in the Closed User-ID field represent Events pending migration.

IV.3.4   Event Details

The Event Details report displays all Events created using N2O. The optional fields displayed below can limit the list of Events.

To display the Event Details input screen, enter "D" on the Event Reporting menu.

```
 01-12-31              N-2-O EVENT REPORTING                 TSI0373
 11:38:00              EVENT DETAILS                         TSI1




                                    Name       Seq.
                                    --------   -----
                        Starting Event :  _____  _____  (Wildcard/Single)
                        Ending Event   :  _____  _____  (Both Blank=All)

                        From Env.    :   ____
                        To Env       :   ____
                        Added User-ID  :   _____
                        Event Status   :   _
                        DB2 Status     :   _

                        Detailed Report: N (Batch Only)
                        Mode         :  O



 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ STARTING EVENT (optional)	A Master Event that identifies the starting value of the report. Partial names and wildcards (e.g., AAP*) may be entered.
STARTING SEQUENCE (optional)	The starting sequence number of the Event entered in Starting Event. If this field is left blank, all Event Sequences ranging from 1 to the number entered in Ending Event Sequence for the Event will be reported.
∞ ENDING EVENT (optional)	A Master Event that identifies the ending value of the report. Wildcards (e.g., AAP9*) may be entered. To report on a single Event, leave this field, Starting Event Sequence and Ending Event Sequence blank and enter the Master Event in the Starting Event field.
ENDING SEQUENCE (optional)	The ending sequence number of the Event entered in Ending Event. To report on a single Event/Sequence, leave the Ending Event and this field blank, enter the Event in the Starting Event field and enter the Event Sequence in the Starting Event Sequence field.
∞ FROM ENV (optional)	Limits the report to Events with the specified From Environment Definition.

∞ indicates field-level help is available.

(continued from previous page)

Field	Description
∞ TO ENV (optional)	Limits the report to Events with the specified To Environment Definition.
∞ ADDED USER-ID (optional)	Limits the report to Events that were added by the User with the specified User-ID.
EVENT STATUS (optional)	Limits the report to Events with the specified Event status. For valid values refer to Appendix B N20 Event Status.
DB2 STATUS (optional)	Limits the report to Events with the specified DB2 Status. Valid values are as follows: D Indicates DBRM Ready. P Indicates Plan Ready. S Indicates Static. C Indicates Canceled.
DETAILED REPORT (required)	Indicates whether detailed information should be displayed when executed in batch. Y Display all detail information for reports when executed in batch (similar to entering E and O next to an Event on the Event Details Selection screen). N Display information similar to the Event Details Selection screen (Default: N).
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Event Details selection screen.

```
Valid Values:  A - Autocompile  E - Event  O - Object
 01-12-31              N-2-O EVENT REPORTING              TSIO373
 11:38:00                EVENT DETAILS                    TSI1
                                                  Page:  1


                    Change  From To   Event         Added     Event
 S  Event    Seq    Control  Env  Env  Type   Extr  User-ID   Status  Warning
 -  -------- -----  -------- ---- ---- -----  ----  --------  ------  -------
 _
 _  PAYOUT   1      ******** PROD DEV  N      NO    TSIO373   O       ******
 _  PAYOUT   2      E20000   PROD DEV  N      NO    TSIO373   C       ******
 _  PAYOUT   3      ******** PROD DEV  N      NO    TSIO373   O       ******
 _  PAYOUT   4      ******** PROD DEV  N      NO    TSIO373   O       ******
 _  PAYOUT   6      ******** DEV  TEST N      NO    TSIO373   O       ******
 _  PAYTEST  1      E065     DEV  TEST N      NO    TSIO373   C       ******
 _  PAYTEST  2      HELP     DEV  TEST N      NO    TSIO373   O       ******
 _  PAYTEST  3      E129     TEST *    N      NO    TSIO373   O       ******




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  DB2   ----  ----  ----  ----  ----  ----  STOP
```

Pressing PF5 will toggle the output between Event Status and DB2 Status.

Field	Description
S (optional)	The function to be executed. Valid values are as follows: A displays autocompile details (if available) E displays Event details. O displays object details.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request. An asterisk (*) indicates that Change Control was not required.
FROM ENV (supplied)	The source Environment Definition of the Event.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates that the Event is a multiple target Event.
EVENT TYPE (supplied)	The types of objects requested for the Event. Valid values are as follows: N Indicates NATURAL. S Indicates SYSERR. P Indicates PREDICT. O Indicates 3GL/OTHER. D Indicates DDM. M Indicates METADATA.

(continued from previous page)

Field	Description
EXTR (supplied)	Indicates whether the Event is an Extract Event or not.
	YES Indicates the Event is an Extract Event.
	NO Indicates the Event is not an Extract Event.
ADDED USER-ID (supplied)	The user who added the Event.
EVENT STATUS (supplied)	The status of the Event. For valid values refer to Appendix B N2O Event Status.
WARNING (supplied)	Events may contain one of the following warning messages:
	OVERRIDE Indicates the Event migrated to an environment without proper authorization.
	AC-ERROR Indicates programs within the Event received compile errors during the Autocompile process.
	RECOVERD Indicates programs within the Event received compile errors and the Event was automatically recovered.
DB2 STATUS (supplied)	The status of the DB2 processing of the Event. Valid values are as follows:
	D Indicates DBRM Ready.
	P Indicates Plan Ready.
	S Indicates Static.
	C Indicates Canceled.

Entering "E" in the S field on the previous screen and pressing Enter displays the Event Details screen.

```
 Press ENTER to continue
  01-12-31                  N-2-O EVENT DETAILS                   TSI0373
  11:38:00              Event:  PAYOUT   Sequence:  1             TSI1
                               EXTRACT EVENT


        From Env        :  PROD         From Library  :  PAYPROD
        To Env          :  DEV          To Library    :  PAYDEV
        Event Status    :  O




     C   _____
     o   _____
     m   _____
     m   _____
     e   _____
     n   _____
     t   _____
     s   _____
         _____
         _____
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
EVENT (supplied)	The Master Event of the migration.
SEQUENCE (supplied)	The sequence number of the Event.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library of the migration for NATURAL objects and/or SYSERR messages.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates that the Event is a multiple target Event.
TO LIBRARY (supplied)	The target library of the migration for NATURAL objects and/or SYSERR messages.
EVENT STATUS (supplied)	The Status of the Event. For valid values refer to **Appendix B N2O Event Status**.
COMMENTS (supplied)	A 10-line comment area describing the Event.

To display further Event information, press Enter on the Event Details screen.

```
Press ENTER to continue
  01-12-31              N-2-O EVENT DETAILS                    TSI0373
  11:38:00              Event: PAYOUT    Sequence: 1           TSI013
                        Warning: AC-ERROR

                Added        :  01-03-13  09:15:17   TREE04
                Modified     :  ******    ******     ******
                Authorized   :  ******    ******     ******
                Closed       :  01-03-16  14:18:07   BATCH03
                Autocompiled :  01-03-16  14:18:07   BATCH03
                DBRM Generated: ******    ******     ******
                Plan Bind    :  ******    ******     ******


                        Migration Options
                        -----------------

                Event Type  : N      Delay            : NONE
                Verify Object: NO    Levels of Auth   : 0
                Migrate XREF : N     Migration Method : COPY
                Program Doc  : NO    Deferred Time    : 0    hrs.

 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
 -
      ---- ---- END   ---- ---- ---- ---- ---- ---- ---- ---- STOP
```

Field	Description
EVENT (supplied)	The Master Event of the migration.
SEQUENCE (supplied)	The sequence number of the Event.
WARNING (supplied)	Events may contain one of the following warning messages (does not appear if Event has no warnings):
	OVERRIDE — Indicates the Event migrated to an environment without proper authorization.
	AC-ERROR — Indicates programs within the Event received compile errors during the Autocompile process.
	RECOVERD — Indicates programs within the Event received compile errors and the Event was automatically recovered.
ADDED (supplied)	Lists the User-ID of the user who added the Event and the date and time that action occurred.
MODIFIED (supplied)	Lists the User-ID of the user who last modified the Event and the date and time that action occurred.
AUTHORIZED (supplied)	Lists the User-ID of the user who authorized the Event and the date and time that action occurred.
CLOSED (supplied)	Lists the User-ID of the user who closed the Event and the date and time that action occurred.
AUTOCOMPILED (supplied)	Lists the User-ID of the user who Autocompiled the Event and the date and time that action occurred.

(continued from previous page)

Field	Description
DBRM GENERATED (supplied)	Lists the User-ID of the user who generated a DBRM for the Event and the date and time that action occurred.
PLAN BIND (supplied)	Lists the User-ID of the user who last bound the DB2 plan for the Event and the date and time that action occurred.
EVENT TYPE (supplied)	Specifies the type of Event.
DELAY (supplied)	Indicates whether Events require either Authorization or service.
	NONE Indicates the migration may proceed immediately without authorization.
	AUTH Indicates the migration must be authorized through the Authorize Event menu.
	SERV Indicates the migration must be authorized through the Authorize Event menu and serviced through the Service Event menu.
VERIFY OBJECT (supplied)	Indicates whether NATURAL object code will be verified before the program migrates or not.
	YES Indicates NATURAL object code must exist for a program and that the timestamp of the object code must be greater than the timestamp of the source code or the program will be prevented from migrating.
	NO Indicates NATURAL object code will not be verified before the program migrates.
LEVELS OF AUTH (supplied)	The number of authorizations required when AUTH or SERV is specified in the delay field.
MIGRATE XREF (supplied)	Indicates whether PREDICT Cross-Reference data should be migrated or not.
	N Indicates the migration does not migrate PREDICT Cross-Reference data.
	S Indicates the migration should migrate all PREDICT Cross-Reference data whenever it exists.
	Y Indicates PREDICT Cross-Reference data must exist for a NATURAL object before the object may be selected for migration.

(continued from previous page)

Field	Description
MIGRATION METHOD (supplied)	Indicates whether the object will be deleted from the source after migration.
	COPY Indicates an object at the source of the migration will be placed at the target.
	MOVE Indicates an object at the source of the migration will be placed at the target and then deleted from the source of the migration.
PROGRAM DOC (supplied)	Indicates whether the existence of PREDICT program documentation is checked or not.
	N Indicates the existence of PREDICT program documentation is not checked for a NATURAL object migration. This is the default value.
	Y Indicates PREDICT program documentation must exist in the FROM ENV for a NATURAL object to migrate.
DEFERRED TIME (supplied)	Indicates the minimum number of hours between the migration process and the deletion process of a MOVE. This field must be 0 when COPY is specified for the Method field (Default: 0).

Entering "O" in the S field on the Event Details Selection screen and pressing Enter displays the Object Details for an Event screen.

```
01-12-31              N-2-O OBJECT DETAILS                      TSI0373
11:38:00              Event: PAYOUT  Sequence: 1  Total Objects: 2    TSI1

From Env:  PROD  From Library:  PAYPROD  To Env:  DEV   To Library:  PAYDEV

X   Object    Type     Rn  X   Object    Type     Rn  X   Object    Type     Rn
--  --------  -------  --  --  --------  -------  --  --  --------  -------  --
_   A-TEST    SOURCE       _   A-TEST    ARC-SRC      _   A-TEST    ARC-OBJ
X   CPROG001  SOURCE   *   _   CPROG001  ARC-SRC      _   CPROG001  ARC-OBJ
_   CPROG002  SOURCE       _   CPROG002  ARC-SRC      _   CPROG002  ARC-OBJ
_   MENU      SOURCE       _   MENU      ARC-SRC      _   MENU      ARC-OBJ




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
EVENT (supplied)	The Master Event of the migration.
SEQUENCE (supplied)	The sequence number of the Event.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library of the migration for NATURAL objects and/or SYSERR messages.
TO ENV (supplied)	The target Environment Definition for the Event.
TO LIBRARY (supplied)	The target library of the migration for NATURAL objects and/or SYSERR messages.
X (optional)	"X" in the Select field displays additional details about an object.
OBJECT (supplied)	The name of the NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.

(continued from previous page)

Field	Description
TYPE (supplied)	Valid values are as follows: ARC-EXT — Indicates Archive expanded error message. ARC-OBJ — Indicates Archive object. ARC-SHRT — Indicates Archive short error message. ARC-SRC — Indicates Archive source. EXT-MSG — Indicates expanded error. OBJECT — Indicates cataloged module. PURG-EXT — Indicates purge expanded error message from Archive. PURG-OBJ — Indicates purge object from Archive. PURG-SHT — Indicates purge short error message from Archive. PURG-SRC — Indicates purge source from Archive. SHORT — Indicates short error message. SOURCE — Indicates source module.
RN (Renamed) (supplied)	A '*' in this field indicates the object was renamed during an Extract Event. Valid for NATURAL Extract Events only.

Entering "X" in the select field on the Object Details for an Event screen and pressing Enter displays the Object Details report.

```
01-12-31                 N-2-O OBJECT DETAILS                        TSIO373
11:38:00                                                             TSI1

   Object    : CPROG001   Date Saved: 01-02-01   Terminal-ID  : TSIO373
   Type      : Source     Time Saved: 11:38:25   NAT Version  : 2.14
   Object Type: LOCAL     User-ID   : TSIO373    XREF Migrated: NO
   Renamed To : LOCAL1A
           Event        : E-TEST       Sequence   :   25000
           From Env     : TEST         From Library: PAYTEST
           To Env       : ARC1         To Library  : PAYPROD

           Added        : 01-11-17    11:36:10    TSIO373
           Modified     : ******      ******      ******
           Authorized   : ******      ******      ******
           Closed       : 01-11-17    11:37:50    TSIO373
           Autocompiled : ******      ******      ******
           Move Completed: ******      ******      ******


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   DISP  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
OBJECT (supplied)	The name of the NATURAL object.
DATE SAVED (supplied)	The date the object was saved.
TERMINAL-ID (supplied)	The Terminal-ID used to save the object.
TYPE (supplied)	Valid values are as follows:

	ARC-EXT	Indicates Archive expanded error message.
	ARC-OBJ	Indicates Archive object.
	ARC-SHRT	Indicates Archive short error message.
	ARC-SRC	Indicates Archive source.
	EXT-MSG	Indicates expanded error.
	OBJECT	Indicates cataloged module.
	PURG-EXT	Indicates purge expanded error message from Archive.
	PURG-OBJ	Indicates purge object form Archive.
	PURG-SHT	Indicates purge short error message from Archive.
	PURG-SRC	Indicates purge source from Archive.
	SHORT	Indicates short error message.
	SOURCE	Indicates source module.

(continued from previous page)

Field	Description
TIME SAVED (supplied)	The time the object was saved.
NAT VERSION (supplied)	The NATURAL version under which the object was saved.
OBJECT TYPE (supplied)	The NATURAL object type.

PARM	Indicates Parameter data area.
COPYCODE	Indicates Copycode.
GLOBAL	Indicates Global data area.
HELP-RTN	Indicates Helproutine.
LOCAL	Indicates Local data area.
MAP	Indicates Map.
SUB-PGM	Indicates Subprogram.
PROGRAM	Indicates Program.
SUB-RTN	Indicates Subroutine.
TEXT	Indicates Text.
MACRO	Indicates Macro.
REPORT	Indicates Report.
EXP-MDL	Indicates ExpertModel.
RECORD	Indicates Recording.
DIALOG	Indicates Dialog.
CLASS	Indicates Class.
CMD-PROC	Indicates Processor.
SERVER	Indicates Server.
FUNCTION.	Indicates Function.
ADAPTER.	Indicates Adapter.
MACRO.	Indicates Macro.

Field	Description
USER-ID (supplied)	The User-ID of the user who saved the object.
XREF MIGRATED (supplied)	Indices whether the PREDICT XREF data migrated with the NATURAL object or not.

YES	Indicates PREDICT XREF data migrated with the NATURAL object.
NO	Indicates PREDICT XREF did not migrate with the NATURAL object.

Field	Description
RENAMED TO (supplied)	The new object name if the object was renamed in a NATURAL Extract Event.
EVENT (supplied)	The Master Event of the migration.
SEQUENCE (supplied)	The sequence number of the Event.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library of the migration for NATURAL objects and/or SYSERR messages.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.

(continued from previous page)

Field	Description
TO LIBRARY (supplied)	The target library of the migration for NATURAL objects and/or SYSERR objects.
ADDED (supplied)	Lists the User-ID of the user who added the Event and the date and time that action occurred.
MODIFIED (supplied)	Lists the User-ID of the user who modified the Event and the date and time that action occurred.
AUTHORIZED (supplied)	Lists the User-ID of the user who authorized the Event and the date and time that action occurred.
CLOSED (supplied)	Lists the User-ID of the user who closed the Event and the date and time that action occurred.
AUTOCOMPILED (supplied)	Lists the User-ID of the user who Autocompiled the Event and the date and time that action occurred.
MOVE COMPLETED (supplied)	Lists the User-ID of the user who deleted objects from the source of the Event and the date and time that action occurred.

IV.3.5   Events Processed by Date

The Events Processed by Date report displays Events migrated within a   specified date range.

Note that program N2OREPD will permit sites to execute a regularly scheduled batch job that will generate a report of all Events that processed on the previous day. N2OREPD will calculate yesterday's date and call N2OEVNTE (Events Processed by Date report), passing the calculated date. A site may customize N2OREPD to specify the detail level of the Events Processed by Date report. The default is to provide summary information. For details, refer to the program N2OREPD in the N2OLIB Library.

N2OREPD should be run in place of N2OEVNTE in a batch job.

To display the Events Processed by Date input screen, enter "E" on the Event Reporting menu.

```
01-12-31                    N-2-O EVENT REPORTING                    TSI0373
11:38:00                    EVENTS PROCESSED BY DATE                 TSI1



                    Event          :  _____
                    Sequence       :  _____
                    Date Range     :  _____ - _____
                    Added User-ID  :  _____

                    Detailed Report:  N (Batch Only)
                    Mode           :  O





Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
EVENT (required)	The master Event of the migration.
SEQUENCE (optional)	The sequence number of the Event.
DATE RANGE (optional)	Limits the report to Events that migrated within the range of dates. Dates must be formatted YYYYMMDD.
ADDED USER-ID (optional)	Limits the report to Events added by a User-ID.
DETAILED REPORT (required)	Indicates whether detailed information should be display when executed in batch.
	Y Display all detail information for reports when executed in batch (similar to entering E and O next to an Event on the Events Processed by Date selection screen).
	N Display information similar to the Events Processed by Date selection screen. (Default: N)

(continued from previous page)

Field	Description
MODE (required)	Indicates how the job is executed (batch or on-line).

<blockquote>

B   Submits JCL to the internal reader that processes the function in batch.

O   Processes the function on-line. (Default: O)

</blockquote>

Entering the necessary information in the input screen and pressing Enter displays the Events Processed by Date selection screen.

```
01-12-31                    N-2-O EVENT REPORTING                    TSI0373
11:38:00                    EVENTS PROCESSED BY DATE                  TSI1
                            Date Range 19991001 - 19991005     Page:  1


                  Change   From To   Event -------- Closed ---------
  S Event    Seq  Control  Env  Env  Type  Date     Time     User-ID  Warning
  - -------- ---- -------- ---- ---- ----- -------- -------- -------- --------
  _ PAYOUT   30   A12345   PROD DEV  N     01-10-01 11:34:55 TSIO373  ******
  _ PAYOUT   38   A12345   PROD DEV  N     01-10-03 12:14:16 TSIO373  ******
  _ PAYTEST  45   A12345   DEV  TEST N     01-10-05 08:43:21 TSIO373  ******










Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
DATE RANGE (supplied)	Date range specified on previous screen.
S (optional)	The function to be executed. Valid values are as follows: A Displays autocompile details (if available) E Displays Event details. O Displays object details.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	The source Environment Definition of the Event.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.

(continued from previous page)

Field	Description
EVENT TYPE (supplied)	The types of objects requested for the Event. Valid values are as follows:
	N Indicates NATURAL.
	S Indicates SYSERR.
	P Indicates PREDICT.
	O Indicates 3GL/OTHER.
	D Indicates DDM.
	M Indicates METADATA.
CLOSED DATE (supplied)	The date the Event was closed. Asterisks in the Closed Date field represent Events pending migration.
CLOSED TIME (supplied)	The time the Event was closed. Asterisks in the Closed Time field represent Events pending migration.
CLOSED USER-ID (supplied)	The user who closed the Event. Asterisks in the Closed User-ID field represent Events pending migration.
WARNING (supplied)	Events may contain one of the following warning messages:
	OVERRIDE Indicates the Event migrated to an environment without proper authorization.
	AC-ERROR Indicates programs within the Event received compile errors during the Autocompile process.
	RECOVERD Indicates programs within the Event received compile errors and the Event was automatically recovered.
	****** Indicates Events with no warning messages.

IV.3.6   Events With Warning Messages

The Events with Warning Messages report displays Events that received one of the following warning messages:

OVERRIDE   The Event migrated to an Environment without proper authorization or the user who created the Event also authorized the Event.

AC-ERROR   Programs within the Event received compile errors during the Autocompile process.

RECOVERD   The Event was automatically recovered after programs within the Event received compile errors during the Autocompile process.

To display the Events with Warning Messages input screen, enter "F" on the Event Reporting menu.

```
 01-12-31                 N-2-O EVENT REPORTING                    TSI0373
 11:38:00                 EVENTS WITH WARNING MESSAGES             TSI1



                               Name      Seq.
                               --------  -----
                Starting Event :  _____  _____   (Wildcard/Single)
                Ending Event   :  _____  _____   (Both Blank=All)

                Warning        :  _____
                Date Range     :  _____ - _____

                Detailed Report:  N (Batch Only)
                Mode           :  O




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ STARTING EVENT (optional)	A Master Event that identifies the starting value of the report. Partial names and wildcards (e.g., AAP*) may be entered.
STARTING SEQUENCE (optional)	The starting sequence number of the Event entered in Starting Event. If this field is left blank, all Event Sequences ranging from 1 to the number entered in Ending Event Sequence for the Event will be reported.
∞ ENDING EVENT (optional)	A Master Event that identifies the ending value of the report. Wildcards (e.g., AAP9*) may be entered. To report on a single Event, leave this field, Starting Event Sequence and Ending Event Sequence blank and enter the Master Event in the Starting Event field.

∞ indicates field-level help is available.

(continued from previous page)

Field	Description
ENDING SEQUENCE (optional)	The ending sequence number of the Event entered in Ending Event. To report on a single Event/Sequence, leave the Ending Event and this field blank, enter the Event in the Starting Event field and enter the Event Sequence in the Starting Event Sequence field.
WARNING (optional)	Limits the report to Events that received the specified warning. Valid values are as follows:

OVERRIDE   Indicates the Event migrated to an environment without proper authorization.

AC-ERROR   Indicates programs within the Event received compile errors during the Autocompile process.

RECOVERD   Indicates programs within the Event received compile errors and the Event was automatically recovered.

| DATE RANGE (optional) | Limits the report to Events that migrated within the specified range of dates. Dates must be formatted YYYYMMDD. |
| DETAILED REPORT (required) | Indicates whether detailed information should be display when executed in batch. |

Y   Display all detail information for reports when executed in batch (similar to entering E and O next to an Event on the Events with Warning Messages selection screen).

N   Display information similar to the Events with Warning Messages selection screen. (Default: N)

| MODE (required) | Indicates how the job is executed (batch or on-line). |

B   Submits JCL to the internal reader that processes the function in batch.

O   Processes the function on-line. (Default: O)

Entering the necessary information in the input screen and pressing Enter displays the Events with Warning Messages selection screen.

```
Valid Values:  A - Autocompile  E - Event  O - Object
 01-12-31                 N-2-O EVENT REPORTING                  TSI0373
 11:38:00              EVENTS WITH WARNING MESSAGES              TSI1
                                                        Page:  1


               Change   From To   Event       ---- Closed -----
 S Event   Seq  Control  Env  Env  Type Extr  Date     Time     Warning
 - -------- ----- -------- ---- ---- ----- ----  -------- -------- --------
 _ PAYOUT  1   A12345   PROD DEV  N    NO    01-10-01 11:34:55 AC-ERROR
 _ PAYTEST 2   A12345   DEV  TEST N    NO    01-10-05 08:43:21 *******
 _ PAYIN   1   A12345   TEST PROD N    NO    ******** ******** *******










Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows:
	A displays autocompile details (if available)
	E Displays Event details.
	O Displays object details.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	The source Environment Definition of the Event.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.
EVENT TYPE (supplied)	The types of objects requested for the Event. Valid values are as follows:
	N Indicates NATURAL.
	S Indicates SYSERR.
	P Indicates PREDICT.
	O Indicates 3GL/OTHER.
	D Indicates DDM.
	M Indicates METADATA.

(continued from previous page)

Field	Description
EXTR (supplied)	Indicates whether the Event is an Extract Event or not. YES Indicates the Event is an Extract Event. NO Indicates the Event is not an Extract Event.
CLOSED DATE (supplied)	The date the Event was closed. Asterisks in the Closed Date field represent Events pending migration.
CLOSED TIME (supplied)	The time the Event was closed. Asterisks in the Closed Time field represent Events pending migration.
WARNING (supplied)	Events may contain one of the following warning messages: OVERRIDE Indicates the Event migrated to an environment without proper authorization. AC-ERROR Indicates programs within the Event received compile errors during the Autocompile process. RECOVERD Indicates programs within the Event received compile errors and the Event was automatically recovered.

IV.3.7   **Events Pending Move**

The Events Pending Move report displays Events that contain objects to be deleted.

To display the Events Pending Move input screen, enter "G" on the Event Reporting menu.

```
 ┌──────────────────────────────────────────────────────────────────────┐
 │ 01-12-31              N-2-O EVENT REPORTING                 TSI0373    │
 │ 11:38:00              EVENTS PENDING MOVE                   TSI1       │
 │                                                                        │
 │                                                                        │
 │                                                                        │
 │                       Added User-ID:  _____                        │
 │                       From Library :  _____                        │
 │                                                                        │
 │                       Mode   :  O                                      │
 │                                                                        │
 │                                                                        │
 │                                                                        │
 │                                                                        │
 │                                                                        │
 │                                                                        │
 │                                                                        │
 │ Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--- │
 │      HELP  ----  END  ----  ----  ----  ----  ----  ----  ----  ----  ---- │
 └──────────────────────────────────────────────────────────────────────┘
```

Field	Description
∞ ADDED USER-ID (optional)	Limits the report to Events added by the user with the specified User-ID.
FROM LIBRARY (optional)	Limits the report to Events that migrated from the specified library.
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the
Events Pending Move report.

```
 01-12-31                 N-2-O EVENT REPORTING                 TSI0373
 11:38:00                 EVENTS PENDING MOVE                    TSI1
                                                           Page:  1


                 ----From----    ----Closed------  ----Deferred----
   Event   Seq   Env   Library    Date      Time     Date      Time
  -------  -----  ----  --------  --------  --------  --------  --------
  PAYTEST    3    TST0  PAYDEV    01-12-15  11:36:19  01-12-31  12:00:00
  PAYTEST    2    PRD2  PAYDEV    01-10-28  04:21:36  01-12-15  12:00:00













Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library of the migration for NATURAL objects and/or SYSERR messages.
CLOSED DATE (supplied)	The date the Event was closed.
CLOSED TIME (supplied)	The time the Event was closed.
DEFERRED DATE (supplied)	The date the deletion process can be initiated for the Event.
DEFERRED TIME (supplied)	The time the deletion process can be initiated for the Event.

IV.3.8 Events Pending Autocompile

Events Pending Autocompile displays Events that have migrated, but have not been compiled.

To display the Events Pending Autocompile input screen, enter "H" on the Event Reporting menu.

```
01-12-31                N-2-O EVENT REPORTING                TSI0373
11:38:00                EVENTS PENDING AUTOCOMPILE           TSI1



               Event        :  _____
               Sequence     :  ____
               Date Range   :  _____  -  _____

               Detailed Report:  N (Batch Only)
               Mode         :  O




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ EVENT (optional)	A Master Event that identifies the starting value for the report.
SEQUENCE (optional)	The sequence number of the Event.
DATE RANGE (optional)	Limits the report to Events that migrated within the specified range of dates. Dates must be formatted YYYYMMDD.
DETAILED REPORT (required)	Indicates whether detailed information should be displayed when executed in batch.
	Y Display all detail information for reports when executed in batch (similar to entering E and O next to an Event on the Events Pending Autocompile selection screen).
	N Display information similar to the Event Pending Autocompile selection screen. (Default: N)
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Events Pending Autocompile selection screen.

```
Valid Values:  A - Autocompile  E - Event  O - Object
 01-12-31                   N-2-O EVENT REPORTING                  TSI0373
 11:38:00                 EVENTS PENDING AUTOCOMPILE               TSI1
                                                          Page:  1


                 Change  From To  Event        -------- Closed ----------
 S   Event   Seq  Control  Env  Env  Type  Extr  Date      Time     User-ID
 -   -------- ----- -------- ---- ---- ----- ----  -------- -------- --------
 _   PAYIN   1    A12345  TEST PROD N     NO    01-10-01 11:34:55 TSIO375
 _   PAYIN   3    A12345  TEST PROD N     NO    01-10-05 08:43:21 TSIO375
 _   PAYIN   4    A12345  TEST PROD N     NO    01-10-06 09:23:21 TSIO375
 _   PAYIN   5    A12345  TEST PROD N     NO    01-10-03 12:14:16 TSIO375











 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
S (optional)	The function to be executed. The valid values are as follows:
	A displays autocompile details (if available)
	E Displays Event details.
	O Displays object details.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	The source Environment Definition of the Event.
TO ENV (supplied)	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.
EVENT TYPE (supplied)	The object types requested for an Event. Valid values are as follows:
	N Indicates NATURAL.
	S Indicates SYSERR.
	P Indicates PREDICT.
	O Indicates 3GL/OTHER.
	D Indicates DDM.
	M Indicates METADATA.

(continued from previous page)

Field	Description
EXTR (supplied)	Indicates whether the Event is an Extract Event or not.
	YES Indicates the Event is an Extract Event.
	NO Indicates the Event is not an Extract Event.
CLOSED DATE (supplied)	The date the Event was closed. Asterisks in the Closed Date field represent Events pending migration.
CLOSED TIME (supplied)	The time the Event was closed. Asterisks in the Closed Time field represent Events pending migration.
CLOSED USER-ID (supplied)	The user who closed the Event. Asterisks in the Closed User-ID field represent Events pending migration.

IV.3.9   Autocompile Summary for Events

The Autocompile Summary for Events report displays the results of all Autocompiles performed by N2O.

To display the Autocompile Summary input screen, enter "I" on the Event Reporting menu.

```
 01-12-31                   N-2-O EVENT REPORTING                  TSI0373
 11:38:00                   AUTOCOMPILE SUMMARY FOR EVENTS          TSI1


                                   Name      Seq.
                                   --------  -----
                      Starting Event :  _____   _____  (Wildcard/Single)
                      Ending Event   :  _____   _____  (Both Blank=All)

                      Date Range     :  _____  - _____

                      Detailed Report:  N (Batch Only)
                      Mode           :  O




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ STARTING EVENT (optional)	A Master Event that identifies the starting value of the report. Partial names and wildcards (e.g., AAP*) may be entered.
STARTING SEQUENCE (optional)	The starting sequence number of the Event entered in Starting Event. If this field is left blank, all Event Sequences ranging from 1 to the number entered in Ending Event Sequence for the Event will be reported.
∞ ENDING EVENT (optional)	A Master Event that identifies the ending value of the report. Wildcards (e.g., AAP9*) may be entered. To report on a single Event, leave this field, Starting Event Sequence and Ending Event Sequence blank and enter the Master Event in the Starting Event field.
ENDING SEQUENCE (optional)	The ending sequence number of the Event entered in Ending Event. To report on a single Event/Sequence, leave the Ending Event and this field blank, enter the Event in the Starting Event field and enter the Event Sequence in the Starting Event Sequence field.
DATE RANGE (optional)	Limits the report to Events compiled within the range of dates. Dates must be formatted YYYYMMDD.

∞ indicates field-level help is available.

(continued from previous page)

Field	Description
DETAILED REPORT (required)	Indicates whether detailed information should be displayed when executed in batch.
	Y Display all detail information for reports when executed in batch (similar to entering X next to an Event onto the Autocompile Summary for Events selection screen).
	N Display information similar to the Autocompile Summary for Events selection screen (Default: N).
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

Entering the necessary information in the input screen and pressing Enter displays the Autocompile Summary for Events selection screen. This report shows all Events that required Autocompile.

```
Valid Values: X - Autocompile Details
 01-12-31               N-2-O EVENT REPORTING                   TSI0373
 11:38:00                 AUTOCOMPILE SUMMARY                   TSI1
                                                        Page:  1


                    Change    ---- Closed -----  --Autocompiled --
  X    Event    Seq  Control   Date     Time      Date     Time     Warning
  -    --------  -----  --------  --------  --------  --------  --------  --------
  _    PAYIN    1     ******   01-11-05 17:00:46  01-11-05 17:05:49  OVERRIDE
  _    PAYIN    3     ******   01-12-04 10:45:07  01-12-04 11:27:47  ******
  _    PAYIN    4     ******   01-12-04 11:04:32  01-12-04 11:26:05  ******
  _    PAYIN    5     ******   01-12-15 12:14:48  01-12-15 12:46:39  ******






 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
X (optional)	"X" in the select field displays Autocompile Details about the Event.
EVENT (supplied)	The Master Event of the migration.
SEQ (supplied)	The sequence number of the Event.
CHANGE CONTROL (supplied)	A value that relates multiple Events to a specific change request.
CLOSED DATE (supplied)	The date the Event was closed.
CLOSED TIME (supplied)	The time the Event was closed.
AUTOCOMPILED DATE (supplied)	The date the Event was Autocompiled. "Canceled" indicates the Autocompile process was canceled for the Event.
AUTOCOMPILED TIME (supplied)	The time the Event was Autocompiled. "Canceled" indicates the Autocompile process was canceled for the Event.

(continued from previous page)

Field	Description
WARNING (supplied)	Event contains one of the following warning messages:

	OVERRIDE	Indicates the Event migrated to an environment without proper authorization.
	AC-ERROR	Indicates programs within the Event received compile errors during the Autocompile process.
	RECOVERD	Indicates programs within the Event received compile errors and the Event was automatically recovered.

Selecting an Event on the previous screen (using an 'X') displays the Autocompile Details report.

```
 01-12-31                   N-2-O AUTOCOMPILE DETAILS                 TSI0373
 11:38:00               Event:  PAYIN     Sequence:  3                TSI1

 From Env:  TEST From Library:  PAYTEST    To Env:  PROD To Library:  PAYPROD

         Target            Object    -------- Autocompiled ------
         XREF     Object   Type      Date      Time      User-ID
         ------   -------- --------  --------  --------  --------
           *      CINCLUDE COPYCODE  01-03-15  10:17:32  TSIO373
           *      PROGRAM1 PROGRAM   01-03-15  10:17:35  TSIO373
                  LOCAL1   LOCAL     01-03-15  10:17:40  TSIO373
           *      SUBRTN1  SUB-RTN   Error     82        1060




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
EVENT (supplied)	The Master Event of the migration.
SEQUENCE (supplied)	The sequence number of the Event.
FROM ENV (supplied)	The source Environment Definition of the Event.
FROM LIBRARY (supplied)	The source library of the migration for NATURAL objects and/or SYSERR messages.
TO ENV (supplied)	The target Environment Definition of the Event.
TO LIBRARY (supplied)	The target library of the migration for NATURAL objects and/or SYSERR messages.
TARGET XREF (supplied)	(*) indicates the program was not migrated but was compiled using the XREF at the target feature.
OBJECT (supplied)	The NATURAL object compiled by Autocompile.

(continued from previous page)

Field	Description
OBJECT TYPE (supplied)	The NATURAL object type.

PARM	Indicates Parameter data area.
COPYCODE	Indicates Copycode.
GLOBAL	Indicates Global data area.
HELP-RTN	Indicates Helproutine.
LOCAL	Indicates Local data area.
MAP	Indicates Map.
SUB-PGM	Indicates Subprogram.
PROGRAM	Indicates Program.
SUB-RTN	Indicates Subroutine.
TEXT	Indicates Text.
MACRO	Indicates Macro.
REPORT	Indicates Report.
EXP-MDL	Indicates ExpertModel.
RECORD	Indicates Recording.
DIALOG	Indicates Dialog.
CLASS	Indicates Class.
CMD-PROC	Indicates Processor.
SERVER	Indicates Server.
FUNCTION.	Indicates Function.
ADAPTER.	Indicates Adapter.
MACRO.	Indicates Macro.

Field	Description
AUTOCOMPILED DATE (supplied)	The date the NATURAL object was Autocompiled. "Error" indicates an error occurred during the compilation process.
AUTOCOMPILED TIME (supplied)	The time the NATURAL object was Autocompiled. Also displays the error number received during the compile process.
AUTOCOMPILED USER-ID (supplied)	The user who Autocompiled the NATURAL object. Also displays the line number of the error.

IV.3.10   Event Reporting in Batch

Sample reporting JCL is provided in the MVSREPT, VMREPT, BSREPT and VSEREPT members located in the Natural library N2OBATCH.

Note that program N2OREPD will permit sites to execute a regularly scheduled batch job that will generate a report of all Events that processed on the previous day. N2OREPD will calculate yesterday's date and call N2OEVNTE (Events Processed by Date report), passing the calculated date. A site may customize N2OREPD to specify the detail level of the Events Processed by Date report. The default is to provide summary information. For details, refer to the program N2OREPD in the N2OLIB Library.

N2OREPD should be run in place of N2OEVNTE in a batch job.

The following table illustrates the JCL and EXECs modifications necessary to execute Event reports in batch.

REPORT	&REPORT	&INPUT
Events Requiring Further Authorization	N2OEVNTA	DELAY,DETAILED-REPORT
Chronology of Events	N2OEVNTB	EVENT,SEQUENCE,START-DATE, DETAILED-REPORT
Events Related by Change Control	N2OEVNTC	CHANGE CONTROL,ADDED USER-ID, DATE-1,DATE-2,DETAILED-REPORT
Event Details	N2OEVNTD	STARTING-EVENT,STARTING-SEQ, ENDING-EVENT,ENDING-SEQ,FROM-ENV, TO-ENV,ADDED-USER-ID EVENT-STATUS, DB2-STATUS,DETAILED-REPORT
Events Processed by Date – *To generate a report of the previous day's migrations, use N2OREPD as noted above*	N2OEVNTE	EVENT,SEQUENCE,DATE-1,DATE-2, ADDED-USER-ID,DETAILED-REPORT
Events with Warning Messages	N2OEVNTF	STARTING-EVENT,STARTING-SEQ, ENDING-EVENT,ENDING-SEQ,WARNING, DATE-1,DATE-2,DETAILED-REPORT

REPORT	&REPORT	&INPUT
Events Pending Move	N2OEVNTG	ADDED USER-ID,FROM LIBRARY
Events Pending Autocompile	N2OEVNTH	EVENT,SEQUENCE,DATE-1,DATE-2, DETAILED-REPORT
Autocompile Summary for Events	N2OEVNTI	STARTING-EVENT,STARTING-SEQ, ENDING-EVENT,ENDING-SEQ,DATE-1, DATE-2,DETAILED-REPORT

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

For descriptions of &INPUT fields, refer to field descriptions in corresponding sections of Event Reporting.

> **Note:** The batch reports from the N2O Reporting Subsystem and the Documentation Tools require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).

IV.4   Object Reporting

Object Reporting provides reports that display information about NATURAL objects, PREDICT objects, 3GL/OTHER objects, and SYSERR messages.

To display the Object Reporting menu, enter "C" on the Reporting Subsystem menu or enter the direct command REP OBJ on any menu.

```
 01-12-31                   N-2-O OBJECT REPORTING MENU                TSI0373
 11:38:00                                                              TSI1

                        Code  Function
                        ----  ---------------------------
                         A    History of an Environment
                         B    History of an Object
                         C    Directory List
                         D    Directory Compare
                         E    Cross Reference
                         F    Checked Out Objects
                         G    Objects Archived by N2OPURGE
                         H    Archive Version Summary
                         I    Events Pending for an Object
                         .    Terminate Object Reporting
                        ----  ---------------------------


              Enter Code: _    Type  :  N


 Direct Command: _____              REP OBJ
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

	A	**History of an Environment** Displays objects migrated to an environment.
	B	**History of an Object** Displays the complete audit trail of an object.
	C	**Directory List** Displays a list of objects from an environment.
	D	**Directory Compare** Displays the differences between two environments.
	E	**Cross Reference** Displays objects that are related to an object.
	F	**Checked Out Objects** Displays objects checked out from a BASE environment.
	G	**Objects Archived by N2OPURGE** Displays NATURAL objects archived using the N2OPURGE utility.
	H	**Archive Version Summary** Displays Events which performed archiving for an object.
	I	**Events Pending for an Object** Displays Events pending for an object.

Field	Description
∞ TYPE (required)	One of four object types can be selected. Valid values include the following:

N	Indicates NATURAL.
P	Indicates PREDICT.
S	Indicates SYSERR.
O	Indicates 3GL/OTHER.
D	Indicates DDM.
M	Indicates METADATA.

∞ indicates field-level help is available.

IV.4.1   **History of an Environment**

The History of an Environment report displays objects that migrated to an environment.

To display the History of an Environment input screen for NATURAL objects, enter "A" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```
 01-12-31                    N-2-O OBJECT REPORTING              TSI0373
 11:38:00                    HISTORY OF AN ENVIRONMENT           TSI1




                    Library       :  _____
                    Env Def       :  ____
                    Date Range    :  _____  -  _____

                    Detailed Report:  N (Batch Only)
                    Mode          :  O









 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
LIBRARY (required)	N,S	The target library of the migration for NATURAL objects and/or SYSERR messages.
∞ ENV DEF (optional)	N,S,P,O,D,M	Limits the report to objects migrated to the specified Environment Definition.
DATE RANGE (optional)	N,S,P,O,D,M	Limits the report to objects migrated within the specified range of dates. Dates must be formatted YYYYMMDD.
DETAILED REPORT (required)	N,S,P,O,D,M	Indicates whether detailed information should be (when executed in batch.
		Y Display all detail information for reports when ex batch (similar to entering X next to an object on the l an Environment selection screen).
		N Display information similar to the History of an Env selection screen (Default: N).
MODE (required)		Indicates how the job is executed (batch or on-line).
		B Submits JCL to the internal reader that processes the function in batch.
		O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the History of an Environment report.

```
Type X for Info or D for Event Details
 01-12-31              N-2-O OBJECT REPORTING                  TSI0373
 11:38:00              HISTORY OF AN ENVIRONMENT               TSI1
                       LIBRARY:  PAYDEV                    Page:  1

                    Object     To              Mig
 S Date      Object     Type      Env    Message    S/C   Extr   Event     Seq
 - --------  --------   ---------  ----   --------   ---   ----   --------  -----
 _ 01-04-10  PAY5210S   SUB-RTN    DEV    REPLACE    S     NO     PAYOUT    250
 _ 01-04-10  PAYRECV3   PROGRAM    DEV    REPLACE    S     NO     PAYOUT    249
 _ 01-04-10  PAY19721   MAP        DEV    REPLACE    S     NO     PAYREJ    52
 _ 01-04-10  PAY19711   MAP        DEV    REPLACE    S     NO     PAYREJ    52
 _ 01-04-06  PAY3150S   SUB-RTN    DEV    REPLACE    S     YES    EXTRACT   3251
 _ 01-04-06  PAY1146N   SUB-PGM    DEV    REPLACE    S     YES    EXTRACT   3251
 _ 01-04-06  PAY1510S   SUB-RTN    DEV    REPLACE    S     NO     PAYOUT    248
 _ 01-04-06  PAY138D1   MAP        DEV    REPLACE    S     NO     PAYOUT    247
 _ 01-04-06  PAY19981   MAP        DEV    REPLACE    S     NO     PAYOUT    246
 _ 01-04-06  PAY19951   MAP        DEV    REPLACE    S     NO     PAYOUT    246
 _ 01-04-06  PAY19911   MAP        DEV    REPLACE    S     NO     PAYOUT    246
 _ 01-04-06  PAY19901   MAP        DEV    REPLACE    S     NO     PAYOUT    246
 _ 01-04-06  PAY1998S   SUB-RTN    DEV    REPLACE    S     NO     PAYREJ    51

 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
LIBRARY (supplied)	N,S	The name of the NATURAL library.
CATEGORY (supplied)	O	The 3GL/OTHER category.
DATE (supplied)	N,S,P,O,D,M	The date an object was migrated to the environment.
OBJECT (supplied)	N,S,P,O,D,M	The name of the NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
S (optional)	N,S,P,O,D,M	"X" displays information about the Event/Utility. "D" displays the Event Details report for that event.
OBJECT TYPE (supplied)	N	The NATURAL object type.

PARM	Indicates Parameter data area.
COPYCODE	Indicates Copycode.
GLOBAL	Indicates Global data area.
HELP-RTN	Indicates Helproutine.
LOCAL	Indicates Local data area.
MAP	Indicates Map.
SUB-PGM	Indicates Subprogram.
PROGRAM	Indicates Program.
SUB-RTN	Indicates Subroutine.
TEXT	Indicates Text.
MACRO	Indicates Macro.
REPORT	Indicates Report.
EXP-MDL	Indicates ExpertModel.
RECORD	Indicates Recording.
DIALOG	Indicates Dialog.
CLASS	Indicates Class.
CMD-PROC	Indicates Processor.
SERVER	Indicates Server.
FUNCTION.	Indicates Function.
ADAPTER.	Indicates Adapter.
MACRO.	Indicates Macro.

(continued from previous page)

Field	Type	Description
	P	The PREDICT object type.

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

Field	Type	Description
	O	The 3GL/OTHER object type of a category. Specific object types are determined when an object is enrolled.

ASMB	Indicates all types of Assembler.
COBOL	Indicates all types of COBOL.
FORT	Indicates all types of FORTRAN.
PL/I	Indicates all PL/I types.
RPG	Indicates RPG.
DATA	Indicates DATA FILES.
JCL	Indicates JCL, CLIST, CNTL.
OTHER	Indicates all other types.

Field	Type	Description
LANGUAGES (supplied)	S	The SYSERR messages migrated.
FILE TYPE (supplied)	P	The PREDICT file type (e.g., A is ADABAS, C is Conceptual, etc.).

(continued from previous page)

Field	Type	Description
TO ENV (supplied)	N,S,P,O,D,M	The target Environment Definition of the migrated object.
MESSAGE (supplied)	N,S,P,O,D,M	Valid messages are: ADD, REPLACE, WARNING, and RECOVERED.
MIG S/C (supplied)	N,O	The form of the object migrated. S Indicates only the source form of the program may be selected. C Indicates only the cataloged form of the program may be selected. S/C Indicates both forms of the program may be selected.
MIG S/L (supplied)	S	The form of the migrated SYSERR message.
EXTR (supplied)	N,S,P,O,D,M	Indicates whether the Event is an Extract Event or not. YES Indicates the Event is an Extract Event. NO Indicates the Event is not an Extract Event.
EVENT (supplied)	N,S,P,O,D,M	The Master Event of the migration.
SEQ (supplied)	N,S,P,O,D,M	The sequence number of the Event.

IV.4.2 <u>History of an Object</u>

The History of an Object report displays a complete audit trail of an object. This report identifies Events that migrated and archived the object and utilities that updated the Checkout/Checkin status of the object.

To display the History of an Object input screen for NATURAL objects, enter "B" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```
01-12-31                N-2-O OBJECT REPORTING              TSI0373
11:38:00                HISTORY OF AN OBJECT                TSI1



            Object        :  _____
            Library       :  _____
            Date Range    :  _____  -  _____

            List Events   :  A (All/Closed/Open)
            Detailed Report: N (Batch Only)
            Mode          :  O








Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
OBJECT (required)	N,S,P,O,D,M	Displays the history of a DDM, METADATA, NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
LIBRARY (optional)	N,S	Limits the report to NATURAL objects or SYSERR messages for the library.
DATE RANGE (optional)	N,S,P,O,D,M	Limits the report to objects migrated within the specified range of dates. Dates must be formatted YYYYMMDD.
List Events	N,S,P,O,D,M	Limit the history displayed to 'A'll, 'O'pen, or 'C'losed Events
DETAILED REPORT (required)	N,S,P,O,D,M	Indicates whether detailed information should be displayed when executed in batch.
		Y Display all detail information for reports when executed in batch (similar to entering X next to an object on the History of an Object selection screen).
		N Display information similar to the History of an Object selection screen (Default: N).
MODE (required)	N,S,P,O,D,M	Indicates how the job is executed (batch or on-line).
		B Submits JCL to the internal reader that processes the function in batch.
		O Processes the function on-line (Default: O).

(continued from previous page)

Field	Type	Description
∞ OBJECT TYPE (required)	P	Limits the report to PREDICT objects for the specified PREDICT object type. Valid values are as follows:

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

Field	Type	Description
∞ CATEGORY (required)	O	Limits the report to 3GL/OTHER objects from the specified 3GL category. Valid values are as follows:

ASMB	Indicates all types of Assembler.
COBOL	Indicates all types of COBOL.
FORT	Indicates all types of FORTRAN.
PL/I	Indicates all PL/I types.
RPG	Indicates RPG.
DATA	Indicates DATA FILES.
JCL	Indicates JCL, CLIST, CNTL.
OTHER	Indicates all other types.

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the History of an Object selection screen.

```
 01-12-31               N-2-O OBJECT REPORTING                  TSI0373
 11:38:00               HISTORY OF AN OBJECT                    TSI1
                        Object: MENU                            Page:  1
                         Open and Closed Events


              Event/             From  To                Mig  Arch Purg  Added
 X  Date      Utility    Seq     Env   Env   Message     S/C  S/C  S/C   User-ID
 -  --------  --------   -----   ----  ----  -------     ---- ---- ----  -------
 _  01-10-16  PAYIN        67    TEST  PROD  REPLACE     S    S    ***   TSIO374
 _  01-10-14  EXTRACT    3209    PROD  TEST  REPLACE     S    S    ***   TSIO376
 _  01-10-13  PAYQA       112    DEV   TEST  REPLACE     S    S    ***   TSIO376
 _  01-08-13  PAYOUT      205    PROD  DEV   REPLACE     S    S    ***   TSIO374
 _  01-08-12  CANCEL             PROD  DEV   REPLACE     ***  ***  ***   TSIO374
 _  01-08-11  CHECKOUT          PROD  DEV   ******      ***  ***  ***   TSIO376
 _  01-05-13  EXTRACT    3122    PROD  TEST  ******      S    ***  ***   TSIO374
 _  01-05-08  EXTRACT    3116    PROD  TEST  REPLACE      C   ***  ***   TSIO374
 _  01-05-03  PAYIN        20    TEST  PROD  REPLACE     S    S/C  ***   TSIO374
 _  01-03-19  PAYQA        30    DEV   TEST  REPLACE     S/C  C    ***   TSIO376
 _  01-03-19  PAYOUT       99    PROD  DEV   REPLACE     S    ***  S     TSIO376
 _  01-02-23  EXTRACT    2980    DEV   TEST  REPLACE      C   C    ***   TSIO374
 _  01-02-22  EXTRACT    2978    PROD  TEST  REPLACE      C   ***   C    TSIO374

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  OPEN  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
OBJECT (supplied)	N,S,P,O,D,M	The name of the NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
3GL CATEGORY (supplied for 3GL only)	O	The 3GL/OTHER object category.
X (optional)	N,S,P,O,D,M	"X" displays information about the Event/Utility.
		"D" displays the Event Details report for that event.
		"X" next to a utility displays details about the utility.
DATE (supplied)	N,S,P,O,D,M	The migration date of an Event or the date a utility was executed.
EVENT/ UTILITY (supplied)	N,S,P,O,D,M	The Event that migrated the object or the utility that updated the Checkout/Checkin status of the object.
SEQ (supplied)	N,S,P,O,D,M	The sequence number of the Event.
FROM ENV (supplied)	N,S,P,O,D,M	The source Environment Definition of the Event.
TO ENV (supplied)	N,S,P,O,D,M	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.
MESSAGE (supplied)	N,S,P,O,D,M	Valid messages are: ADD, REPLACE, WARNING, RENAME, and RECOVERED.

(continued from previous page)

Field	Type	Description
MIG S/C (supplied)	N,S,P,O,D,M	The form of the object migrated.
		S Indicates only the source form of the program may be selected.
		C Indicates only the cataloged form of the program may be selected.
		S/C Indicates both forms of the program may be selected.
ARCH S/C (supplied)	N,S,O	The form of the object archived.
		S Indicates only the source form of the program may be selected.
		C Indicates only the cataloged form of the program may be selected.
		S/C Indicates both forms of the program may be selected.
PURG S/C (supplied)	N,S,O	The form of the object purged.
		S Indicates only the source form of the program may be selected.
		C Indicates only the cataloged form of the program may be selected.
		S/C Indicates both forms of the program may be selected.
ADDED USER-ID (supplied)	N,S,P,O,D,M	The User-ID of the user who added the Event or executed the utility.

PF5 is available to toggle between displaying Open and Closed Events, Open Events only or Closed Events only.

IV.4.3 __Directory List__

The Directory List report displays objects of an environment along with the date and time of the source and object code for each object.

To display the Directory List input screen for NATURAL objects, enter "C" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```
 01-12-31                    N-2-O OBJECT REPORTING                    TSI0373
 11:38:00                    DIRECTORY LIST                            TSI1




                      Env Def      :   ____
                      Library      :   _____
                      Starting Value:  _____
                      Ending Value :   _____

                      Mode         :  O







 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

	Field	Type	Description
∞	ENV DEF (required)	N,S,P,O,D,M	The source Environment Definition serving for the report.
	LIBRARY (required)	N,S	The library containing the NATURAL objects or SYSERR messages.

∞ indicates field-level help is available.

(continued from previous page)

Field	Type	Description
∞ OBJECT TYPE (required)	P	The PREDICT object type for PREDICT objects. Valid values are as follows:

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

Field	Type	Description
∞ CATEGORY (required)	O	The 3GL/OTHER category for 3GL/OTHER objects. Valid values are as follows:

ASMB	Indicates	all types of Assembler.
COBOL	Indicates	all types of COBOL.
FORT	Indicates	all types of FORTRAN.
PL/I	Indicates	all PL/I types.
RPG	Indicates	RPG.
DATA	Indicates	DATA FILES.
JCL	Indicates	JCL, CLIST, CNTL.
OTHER	Indicates	all other types.

Field	Type	Description
STARTING VALUE (optional)	N,S,P,O,D,M	The starting value of the object list.

∞ indicates field-level help is available.

(continued from previous page)

Field	Type	Description
ENDING VALUE (optional)	N,S,P,O,D,M	The ending value of the object list.
MODE (required)	N,S,P,O ,D,M	Indicates how the job is executed (batch or on-line).
	B	Submits JCL to the internal reader that processes the function in batch.
	O	Processes the function on-line. (Default: O)

Entering the necessary information in the input screen and pressing Enter displays the Directory List report.

```
01-12-31                    N-2-O OBJECT REPORTING                    TSI0373
11:38:00                    DIRECTORY LIST                            TSI1
                            Env Def:  DEV    Library:  PAYDEV        Page: 1

           Object      --------- Source ---------    --------- Object ---------
 Object    Type        Date      Time     User-ID    Date      Time     User-ID
 --------  --------    --------  --------  --------   --------  --------  --------
 ACE       PROGRAM     01-09-30  14:47:47  TREE06     ********  ********  ********
 BENWORK   MAP         01-04-13  17:24:44  TREE08     ********  ********  ********
 B1        PROGRAM     01-04-11  15:59:55  TREE08     01-04-11  15:59:55  TREE08
 CADAERRD  COPYCODE    01-03-31  16:39:48  BATCH02    ********  ********  ********
 CADDREP   COPYCODE    01-03-31  16:39:49  BATCH02    ********  ********  ********
 CALSAVE   MAP         01-04-13  12:12:15  TREE04     01-03-31  18:09:34  BATCH02
 CARARCH   PROGRAM     01-03-20  15:36:07  TREE04     01-03-31  18:59:10  BATCH02
 CAROUT    PROGRAM     ********  ********  ********    01-12-22  13:47:38  TREE04
 TEST      PROGRAM     01-04-11  14:13:32  TREE04     01-03-31  18:59:20  BATCH02
 TEST      PROGRAM     01-03-30  17:01:40  TREE04     01-03-31  18:59:34  BATCH02
 TEST      PROGRAM     01-04-11  17:04:55  TREE04     ********  ********  ********
 CCDATE    COPYCODE    01-03-31  16:39:51  BATCH02    ********  ********  ********
 CDELDTLS  COPYCODE    01-03-31  16:39:53  BATCH02    ********  ********  ********

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12-
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
ENV DEF (supplied)	N,S,P,O,D,M	The source Environment Definition for the report.
LIBRARY (supplied)	N,S	The library containing the NATURAL objects or SYSERR messages.
OBJECT (supplied)	N,S,P,O,D,M	The name of the NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
OBJECT TYPE (supplied)	N	The NATURAL object type

PARM	Indicates Parameter data area.
COPYCODE	Indicates Copycode.
GLOBAL	Indicates Global data area.
HELP-RTN	Indicates Helproutine.
LOCAL	Indicates Local data area.
MAP	Indicates Map.
SUB-PGM	Indicates Subprogram.
PROGRAM	Indicates Program.
SUB-RTN	Indicates Subroutine.
TEXT	Indicates Text.
MACRO	Indicates Macro.
REPORT	Indicates Report.
EXP-MDL	Indicates ExpertModel.
RECORD	Indicates Recording.
DIALOG	Indicates Dialog.
CLASS	Indicates Class.
CMD-PROC	Indicates Processor.
SERVER	Indicates Server.
FUNCTION.	Indicates Function.
ADAPTER.	Indicates Adapter.
MACRO.	Indicates Macro.

(continued from previous page)

Field	Type	Description
	P	PREDICT object type

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

Field	Type	Description
	O	3GL category

ASMB	Indicates Assembler.	
COBOL	Indicates COBOL.	
FORT	Indicates FORTRAN.	
PL/I	Indicates PL/I.	
RPG	Indicates RPG.	
DATA	Indicates DATA FILES.	
JCL	Indicates JCL.	
OTHER	Indicates all other objects.	

Field	Type	Description
SOURCE DATE (supplied)	N	The date the source code was saved.
SOURCE TIME (supplied)	N	The time the source code was saved.
SOURCE USER-ID (supplied)	N	The User-ID of the user who saved the source code.

(continued from previous page)

Field	Type	Description
OBJECT DATE (supplied)	N	The date the object code was compiled.
OBJECT TIME (supplied)	N	The time the object code was compiled.
OBJECT USER-ID (supplied)	N	The User-ID of the user who compiled the object code.
SYSERR LANGUAGE (supplied)	S	The SYSERR languages available for the SYSERR message.
FILE TYPE (supplied)	P	The PREDICT file type (e.g., A is ADABAS, U is ADABAS Userview, etc.). Only displays when object type "FI" is selected.
DATE (supplied)	P	The date the PREDICT object was saved.
CATEGORY (supplied)	O	The 3GL/OTHER Category of the 3GL/OTHER objects.
DDM Dbid (supplied)	D	Database number that the DDM will point to.
DDM Fnr (supplied)	D	File number that the DDM will point to.
DDM ADA 6 Support (supplied)	D	Marked with an X if the DDM was created in NATURAL 2.3 or above and will allow a Dbid and/or Fnr greater than 255.
Description (supplied)	M	Description of the UDE – User Defined Entities

IV.4.4   Directory Compare

The Directory Compare report displays the differences between two environments.

To display the Directory Compare input screen for NATURAL objects, enter "D" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```
  01-12-31                   N-2-O OBJECT REPORTING                    TSI0373
  11:38:00                   DIRECTORY COMPARE                         TSI1



                                   Base        Compare
                      Env Def      :  ____        ____
                      Library      :  _____    _____
                      Source/Object :  _           _
                      Starting Value:  _____
                      Ending Value  :  _____

                      Verify Timestamps:  N
                      Verify Existence :  N

                      Mode          :  O




  Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

	Field	Type	Description
∞	ENV DEF (required)	N,S,P,O,D,M	The Environment Definitions serving as the source for the report.
	LIBRARY (required)	N,S	The libraries containing the NATURAL objects or SYSERR messages.
	SOURCE/ OBJECT (required)	N	The forms of the NATURAL objects to be compared: S Indicates source code. C Indicates object code.
	STARTING VALUE (optional)	N,S,P,O,D,M	The starting value of the object list.
	ENDING VALUE (optional)	N,S,P,O,D,M	The ending value of the object list.
	VERIFY TIMESTAMPS (required)	N,P	Limits the report to objects that have different dates and times (defaults to "N").
	VERIFY EXISTENCE (required)	N,S,P,O,D,M	Limits the report to objects that exist in one environment but not in another environment (defaults to "N").

∞ indicates field-level help is available.

(continued from previous page)

Field	Type	Description
MODE (required)	N,S,P,O	Indicates how the job is executed (batch or on-line).

B	Submits JCL to the internal reader that processes the function in batch.
O	Processes the function on-line (Default: O).

∞	OBJECT TYPE (required)	P	The PREDICT object type for PREDICT objects. Valid values are as follows:

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

∞	CATEGORY (required)	O	The 3GL/OTHER category for 3GL/OTHER objects. Valid values are as follows:

ASMB	Indicates Assembler.
COBOL	Indicates COBOL.
FORT	Indicates FORTRAN.
PL/I	Indicates PL/I types.
RPG	Indicates RPG.
DATA	Indicates DATA FILES.
JCL	Indicates JCL, CLIST, CNTL.
OTHER	Indicates all other types.

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Directory Compare report.

```
 01-12-31                   N-2-O OBJECT REPORTING                TSI0373
 11:38:00                   DIRECTORY COMPARE                     TSI1
                                                          Page:  1

                              PAYD  PAYDEV              PAYD  PAYPROD
                  Object    -------- Source ----------  --------- Object ---------
       Object     Type      Date     Time     User-ID   Date     Time     User-ID
       --------   --------  -------- -------- --------  -------- -------- --------
       ACE761     PROGRAM   01-09-30 14:47:47 TSIO376   ******   ******   ******
       BENWORK    MAP       01-04-13 17:24:44 TSIO378   ******   ******   ******
       B1OOM      PROGRAM   01-04-11 15:59:55 TSIO378   ******   ******   ******
       PAYERRD    COPYCODE  01-03-31 16:39:48 BATCH02   01-01-31 17:42:06 BATCH01
       PAYFREP    COPYCODE  01-03-31 16:39:49 BATCH02   01-01-31 17:42:13 BATCH01
       PAYLSAVE   SUB-PGM   01-04-13 12:12:15 TSIO374   ******   ******   ******
       PAYARCH    PROGRAM   01-03-20 15:36:07 TSIO374   ******   ******   ******
       PAYR       PROGRAM   01-04-11 14:13:32 TSIO374   ******   ******   ******
       PAYR       PROGRAM   01-03-30 17:01:40 TSIO374   ******   ******   ******
       PAYR       PROGRAM   01-04-11 17:04:55 TSIO374   ******   ******   ******
       PAY        COPYCODE  01-03-31 16:39:51 BATCH02   ******   ******   ******
       PAYT       COPYCODE  ******   ******   ******    01-01-31 17:42:15 BATCH01

 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description	
OBJECT (supplied)	N,S,P,O	The NATURAL object compiled by Autocompile.	
OBJECT TYPE (supplied)	N	The NATURAL object type.	
		PARM	Indicates Parameter data area.
		COPYCODE	Indicates Copycode.
		GLOBAL	Indicates Global data area.
		HELP-RTN	Indicates Helproutine.
		LOCAL	Indicates Local data area.
		MAP	Indicates Map.
		SUB-PGM	Indicates Subprogram.
		PROGRAM	Indicates Program.
		SUB-RTN	Indicates Subroutine.
		TEXT	Indicates Text.
		MACRO	Indicates Macro.
		REPORT	Indicates Report.
		EXP-MDL	Indicates ExpertModel.
		RECORD	Indicates Recording.
		DIALOG	Indicates Dialog.
		CLASS	Indicates Class.
		CMD-PROC	Indicates Processor.
		SERVER	Indicates Server.
		FUNCTION.	Indicates Function.
		ADAPTER.	Indicates Adapter.
		MACRO.	Indicates Macro.

(continued from previous page)

Field	Type	Description
	P	The PREDICT object type of the PREDICT objects.

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

Field	Type	Description
	O	The actual object type of a category. Specific member types are determined when an object is enrolled.

ASMB	Indicates Assembler.
COBOL	Indicates COBOL.
FORT	Indicates FORTRAN.
PL/I	Indicates PL/I.
RPG	Indicates RPG.
DATA	Indicates DATA FILES.
JCL	Indicates JCL.
OTHER	Indicates all other objects.

Field	Type	Description
SOURCE DATE (supplied)	N	The date the source code was saved.
SOURCE TIME (supplied)	N	The time the source code was saved.

(continued from previous page)

Field	Type	Description
SOURCE USER-ID (supplied)	N	The User-ID of the user who saved the source code.
OBJECT DATE (supplied)	N	The date the object code was compiled.
OBJECT TIME (supplied)	N	The time the object code was compiled.
OBJECT USER-ID (supplied)	N	The User-ID of the user who compiled the object code.
SYSERR LANGUAGE (supplied)	S	The languages found for the SYSERR message (e.g., E, F, G, etc.).
FILE TYPE (supplied)	P	The PREDICT file type (e.g., A is ADABAS, U is ADABAS userviews, etc.).
DATE (supplied)	P	The date the PREDICT object was saved.
CATEGORY (supplied)	O	The 3GL/OTHER category.

ASMB   Indicates Assembler.
COBOL   Indicates COBOL.
FORT   Indicates FORTRAN.
PL/I   Indicates PL/I.
RPG   Indicates RPG.
DATA   Indicates DATA FILES.
JCL   Indicates JCL.
OTHER   Indicates all other objects.

Field	Type	Description
DDM Dbid (supplied)	D	Database number that the DDM will point to.
DDM Fnr (supplied)	D	File number that the DDM will point to.
DDM ADA 6 Support (supplied)	D	Marked with an X if the DDM was created in NATUR above and will allow a Dbid and/or Fnr greater than 2
Description (supplied)	M	Description of the UDE – User Defined Entities

IV.4.5 Cross-Reference

The Cross-Reference report identifies external references to programs of a NATURAL or 3GL object.

To display the Cross-Reference input screen for NATURAL objects, enter "E" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```
01-12-31                   N-2-O OBJECT REPORTING                    TSI0373
11:38:00                   CROSS REFERENCE                           TSI1




                    Env Def:  ____
                    Library:  _____
                    Object :  _____

                    Mode   :  O









Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

	Field	Type	Description
∞	ENV DEF (required)	N,O	An environment defined to N2O.
	LIBRARY (required)	N	The library containing the NATURAL object.
	OBJECT (required)	N,O	The NATURAL or 3GL/OTHER object.
	MODE (required)	N,O	Indicates how the job is executed (batch or on-line).
			B Submits JCL to the internal reader that processes the function in batch.
			O Processes the function on-line (Default: O).
∞	CATEGORY (required)	O	Identifies the 3GL/OTHER category for 3GL/OTHER objects. Valid values are as follows:
			ASMB Indicates all types of Assembler.
			COBOL Indicates all types of COBOL.
			FORT Indicates all types of FORTRAN.
			PL/I Indicates all PL/I types.
			RPG Indicates RPG.
			DATA Indicates DATA FILES.
			JCL Indicates JCL, CLIST, CNTL.
			OTHER Indicates all other types.

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Cross-Reference report.

```
Press ENTER to display invoked programs
 01-12-31               N-2-O OBJECT REPORTING                    TSI0373
 11:38:00               CROSS REFERENCE                           TSI1
                                                            Page:  1


        The following programs are affected by changes to MENU

      PAYMENU     PAYERROR     PAYREAD










 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

A list of affected programs is displayed.

If source is available, pressing enter displays a list of invoked, stacked and called programs.

```
Press ENTER to display invoked programs
 01-12-31               N-2-O OBJECT REPORTING                    TSI0373
 11:38:00               CROSS REFERENCE                           TSI1
                                                            Page:  2

        The following programs are invoked by MENU

      N2O111N     N20112N     N2O113N     N2O114N     N20115N     N2O116N
      N20116N     N2O117N     N20118N     N20119N     N20120N     PAYREAD
      PAYERROR









 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

IV.4.6   Checked-out Objects

The Checked-out Objects report displays objects checked out from a BASE environment or all BASE environments. This report identifies programs a user has checked out.

To display the Checked-out Objects input screen for NATURAL objects, enter "F" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```
 01-12-31                    N-2-O OBJECT REPORTING                  TSI0373
 11:38:00                    CHECKED-OUT OBJECTS                     TSI1




                        BASE Env       :   ____
                        BASE Library   :   _____
                        Object         :   _____
                        Current Env    :   ___
                        Current Library :  _____
                        Checkout User-ID:  TSIO373__
                        Checkout Date  :   _____

                        Mode           :   O




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

	Field	Type	Description
∞	BASE ENV (optional)	N,S,P,O,D,M	The Environment Definition used to check out objects. When blank, all objects checked out to the specified user-ID will be reported.
	BASE LIBRARY (optional)	N,S	Limits the report to NATURAL objects or SYSERR messages checked out of the BASE library.
	OBJECT (optional)	N,S,P,O,D,M	Limits the report to the NATURAL objects, PREDICT objects, 3GL/OTHER objects, or SYSERR messages specified. An (*) may be used as a wildcard character to start the report with objects prefixed by a string.
∞	CURRENT ENV (optional)	N,S,P,O,D,M	Limits the report to objects checked out to an Environment Definition.
	CURRENT LIBRARY (optional)	N,S	Limits the report to NATURAL objects or SYSERR messages checked out to a library.
∞	CHECKOUT USER-ID (optional)	N,S,P,O,D,M	Limits the report to objects checked out by the user with the specified User-ID. (Defaults to current User-ID)
	CHECKOUT DATE (optional)	N,S,P,O, ,D,M	Limits the report to objects checked out on the specified date. Dates must be formatted YYYYMMDD.

∞ indicates field-level help is available.

(continued from previous page)

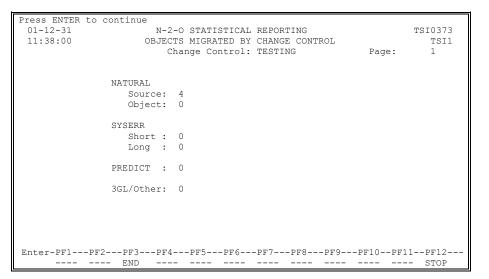|	Field	Type	Description
	MODE (required)	N,S,P,O,D,M	Indicates how the job is executed (batch or on-line).
			B Submits JCL to the internal reader that processes the function in batch.
			O Processes the function on-line (Default: O).
∞	OBJECT TYPE (required)	P	Identifies the PREDICT object type for PREDICT objects. Valid values are as follows:

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

	Field	Type	Description
∞	CATEGORY (required)	O	Identifies the 3GL/OTHER category for 3GL/OTHER objects. Valid values are as follows:

ASMB	Indicates Assembler.
COBOL	Indicates COBOL.
FORT	Indicates FORTRAN.
PL/I	Indicates PL/I types.
RPG	Indicates RPG.
DATA	Indicates DATA FILES.
JCL	Indicates JCL, CLIST, CNTL.
OTHER	Indicates all other types.

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Checked-out Objects report. When a BASE environment is specified on the Checked-Out Objects Input screen, the following report is generated.

```
Type X to display additional details
 01-12-31                 N-2-O OBJECT REPORTING                TSI0373
 11:38:00                 CHECKED-OUT OBJECTS                   TSI1
                                                        Page:  1


               Object    Checkout  --- BASE ----  - Previous --  -- Current  --
 X  Object     Type      User-ID   Env  Library   Env  Library   Env  Library
 -  --------   --------  --------  ----  --------  ----  --------  ----  --------
 _  CMIGUTIL   COPYCODE  TREE06    PROD PAYPROD    DEV  PAYDEV    TEST PAYTEST
 _  PAYDCOCI   PROGRAM   TREE06    PROD PAYPROD    PROD PAYPROD   DEV  PAYDEV
 _  PAYENVA    PROGRAM   TREE06    PROD PAYPROD    DEV  PAYDEV    TEST PAYTEST
 _  PAYENVB    PROGRAM   TREE06    PROD PAYPROD    DEV  PAYDEV    TEST PAYTEST
 _  PAYENVC    PROGRAM   TREE06    PROD PAYPROD    DEV  PAYDEV    TEST PAYTEST
 _  PAYENVD    PROGRAM   TREE06    PROD PAYPROD    DEV  PAYDEV    TEST PAYTEST
 _  PAYENVE    PROGRAM   TREE06    PROD PAYPROD    DEV  PAYDEV    TEST PAYTEST
 _  PAYEVNTA   PROGRAM   TREE06    PROD PAYPROD    DEV  PAYDEV    TEST PAYTEST
 _  PAYEVNTB   PROGRAM   TREE06    PROD PAYPROD    DEV  PAYDEV    TEST PAYTEST
 _  PAYEVNTC   PROGRAM   TREE06    PROD PAYPROD    DEV  PAYDEV    TEST PAYTEST
 _  PAYEVNTD   PROGRAM   TREE06    PROD PAYPROD    DEV  PAYDEV    TEST PAYTEST
 _  PAYEVNTE   PROGRAM   TREE06    PROD PAYPROD    DEV  PAYDEV    TEST PAYTEST
 _  PAYEVNTF   PROGRAM   TREE06    PROD PAYPROD    DEV  PAYDEV    TEST PAYTEST

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
X (optional)	N,S,P,O,D,M	"X" selects an object for additional details.
OBJECT (supplied)	N,S,P,O,D,M	The DDMS, METADATA, NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
OBJECT TYPE (supplied)	N	The NATURAL object type.

	PARM	Indicates Parameter data area.
	COPYCODE	Indicates Copycode.
	GLOBAL	Indicates Global data area.
	HELP-RTN	Indicates Helproutine.
	LOCAL	Indicates Local data area.
	MAP	Indicates Map.
	SUB-PGM	Indicates Subprogram.
	PROGRAM	Indicates Program.
	SUB-RTN	Indicates Subroutine.
	TEXT	Indicates Text.
	MACRO	Indicates Macro.
	REPORT	Indicates Report.
	EXP-MDL	Indicates ExpertModel.
	RECORD	Indicates Recording.
	DIALOG	Indicates Dialog.
	CLASS	Indicates Class.
	CMD-PROC	Indicates Processor.
	SERVER	Indicates Server.
	FUNCTION.	Indicates Function.
	ADAPTER.	Indicates Adapter.
	MACRO.	Indicates Macro.
S		The SYSERR messages (e.g., E, G, F, etc.).

(continued from previous page)

Field	Type	Description
	P	The PREDICT object type.

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

Field	Type	Description
CHECKOUT USER-ID (supplied)	N,S,P,O	The User-ID of the user who has the object checked-out.
BASE ENV (supplied)	N,S,P,O	The BASE Environment Definition.
BASE LIBRARY (supplied)	N,S	The BASE library.
PREVIOUS ENV (supplied)	N,S,P,O	The previous checkout Environment Definition.
PREVIOUS LIBRARY (supplied)	N,S	The previous checkout library.
CURRENT ENV (supplied)	N,S,P,O	The current checkout Environment Definition.

(continued from previous page)

Field	Type	Description
CURRENT LIBRARY (supplied)	N,S	The current checkout library.
CATEGORY (supplied)	O	The 3GL/OTHER category.

ASMB	Indicates Assembler.
COBOL	Indicates COBOL.
FORT	Indicates FORTRAN.
PL/I	Indicates PL/I.
RPG	Indicates RPG.
DATA	Indicates DATA FILES.
JCL	Indicates JCL.
OTHER	Indicates All other objects.

Selecting an object on the previous screen (using an 'X') and pressing Enter displays additional details for a checked-out object.

```
 01-12-31                 N-2-O OBJECT REPORTING               TSI0373
 11:38:00                 CHECKED-OUT OBJECTS                   TSI1


          Object   Checkout  ---- BASE ----  -- Previous --  -- Current ---
 Object   Type     User-ID   Env   Library   Env   Library   Env   Library
 --------  --------  --------  ----  --------  ----  --------  ----  --------
 CDELDTLS  COPYCODE  TREE06    PROD  PAYPROD   DEV   PAYDEV    TEST  PAYTEST


                 -------------- Checkout --------------
                 Event     Sequence  Date      Time
                 --------  --------  --------  --------
                 PAYOUT    232       01-03-29  08:34:19




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
OBJECT (supplied)	N,S,P,O, D,M	The NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
OBJECT TYPE (supplied)	N	The NATURAL object type.
		PARM Indicates Parameter data area.
		COPYCODE Indicates Copycode.
		GLOBAL Indicates Global data area.
		HELP-RTN Indicates Helproutine.
		LOCAL Indicates Local data area.
		MAP Indicates Map.
		SUB-PGM Indicates Subprogram.
		PROGRAM Indicates Program.
		SUB-RTN Indicates Subroutine.
		TEXT Indicates Text.
		MACRO Indicates Macro.
		REPORT Indicates Report.
		EXP-MDL Indicates ExpertModel.
		RECORD Indicates Recording.
		DIALOG Indicates Dialog.
		CLASS Indicates Class.
		CMD-PROC Indicates Processor.
		SERVER Indicates Server.
		FUNCTION. Indicates Function.
		ADAPTER. Indicates Adapter.
		MACRO. Indicates Macro.
CHECKOUT USER-ID (supplied)	N,S,P,O,D,M	The User-ID of the user who has the object checked-out.
BASE ENV (supplied)	N,S,P,O,D,M	The BASE Environment Definition.

(continued from previous page)

Field	Type	Description
BASE LIBRARY (supplied)	N,S	The BASE library.
PREVIOUS ENV (supplied)	N,S,P,O,D,M	The previous checkout Environment Definition.
PREVIOUS LIBRARY (supplied)	N,S	The previous checkout library.
CURRENT ENV (supplied)	N,S,P,O, ,D,M	The current checkout Environment Definition.
CURRENT LIBRARY (supplied)	N,S	The current checkout library.
CHECKOUT EVENT (supplied)	N,S,P,O, ,D,M	The Master Event that checked out the object.
CHECKOUT SEQUENCE (supplied)	N,S,P,O, ,D,M	The sequence number of the Event used to check out the utility.
CHECKOUT DATE (supplied)	N,S,P,O, ,D,M	The date the object was checked out.
CHECKOUT TIME (supplied)	N,S,P,O,D,M	The time the object was checked out.
CATEGORY (supplied)	O	The 3GL/OTHER category.

ASMB   Indicates Assembler.
COBOL   Indicates COBOL.
FORT   Indicates FORTRAN.
PL/I   Indicates PL/I.
RPG   Indicates RPG.
DATA   Indicates DATA FILES.
JCL   Indicates JCL.
OTHER   Indicates all other objects.

When no BASE Environment is specified on the Checked-Out Objects Input screen, the user is notified with the following message:

```
01-12-31                    N-2-O OBJECT REPORTING                   TSI0373
11:38:00                    CHECKED-OUT OBJECTS                       TSI1



            |-----------------------------------------|
            | NO BASE ENVIRONMENT SPECIFIED.          |
            | ALL OBJECTS IN ALL ENVIRONMENTS         |
            | WILL BE DISPLAYED FOR USER MLS1 .       |
            |                                         |
            | HIT ENTER TO CONTINE OR PF3 TO EXIT.    |
            |-----------------------------------------|







Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Pressing PF3 returns the user to the Checked-Out Objects entry screen. Pressing enter generates the following report of all checked-out objects in all environments for a User-Id:

```
01-12-31                    N-2-O Object Reporting                   TSI0373
11:38:00                 All Checked Out Objects for                  TSI1
                         User Id:  MLS1                    Page: 1
                         Typ --- Base ---- -- Current -- -- Checkout --
    Object Name              Env  Library  Env  Library   Event    Seq
------------------------------ - ------------ ------------ --------------
PAY0001                        S  PROD PAYPROD  DEV  PAYDEV   PAYOUT   29
PAY0002                        P  PROD PAYPROD  DEV  PAYDEV   PAYOUT   29
PAY0003                        P  PROD PAYPROD  DEV  PAYDEV1  PAYOUT    1









Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
USER ID (supplied)	N,S,P,O, ,D,M	The User-ID of the user who has the object checked-out.
OBJECT NAME (supplied)	N,S,P,O, ,D,M	The DDMS, METADATA, NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
TYP (supplied)	N	The NATURAL object type.

A	Indicates Parameter data area.
C	Indicates Copycode.
G	Indicates Global data area.
H	Indicates Helproutine.
L	Indicates Local data area.
M	Indicates Map.
N	Indicates Subprogram.
P	Indicates Program.
S	Indicates Subroutine.
T	Indicates Text.
O	Indicates Macro.
R	Indicates Report.
Y	Indicates ExpertModel.
Z	Indicates Recording.
3	Indicates Dialog.
4	Indicates Class.
5	Indicates Processor.
K	Indicates Server.
7	Indicates Function.
8	Indicates Adapter.
O	Indicates Macro.

	S	The SYSERR messages (e.g., E, G, F, etc.).

(continued from previous page)

Field	Type	Description
	P	The PREDICT object type.

Type	Indicates	Predict Version
DA	Database	
DC	Dataspace	
ET	Extract	
FI	File	
IE	Interface	V4.1.2 and above
KY	Keyword	
LS	Library Structure	
MD	Method	V4.1.2 and above
MO	Module	V3.4.2 and below
NO	Node	
NW	Network	
PG	PackageList	
PR	Program	
PY	Property	V4.1.2 and above
RL	Relationship	
RP	Report	V3.4.2 and below
RT	Report Listing	
SC	Storagespace	
SV	Server	
SY	System	
US	User	
VE	Verification	
VM	Virtual Machine	

Field	Type	Description
BASE ENV (supplied)	N,S,P,O,D,M	The BASE Environment Definition.
BASE LIBRARY (supplied)	N,S	The BASE library.
CURRENT ENV (supplied)	N,S,P,O,D,M	The current checkout Environment Definition.
CURRENT LIBRARY (supplied)	N,S	The current checkout library.
CHECKOUT EVENT (supplied)	N,S,P,O,D,M	The Event or Utility used to check out the object.
CHECKOUT SEQ (supplied)	N,S,P,O,D,M	The Sequence Number associated with the Check-out Event.

IV.4.7 Objects Archived by N2OPURGE

The Objects Archived by N2OPURGE report displays NATURAL objects archived using the N2OPURGE utility. This report is only available for NATURAL objects (N).

To display the Objects Archived by N2OPURGE input screen, enter "G" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```
 01-12-31                    N-2-O OBJECT REPORTING                  TSI0373
 11:38:00                    OBJECTS ARCHIVED BY N2OPURGE            TSI1




                       Object   :  _____
                       Env Def  :  ____
                       Library  :  _____
                       Date Range:  _____ - _____
                       Mode     :  O









 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

	Field	Type	Description
	OBJECT (optional)	N	The name of a NATURAL object.
∞	ENV DEF (optional)	N	The Environment Definition that contained the NATURAL object.
	LIBRARY (optional)	N	The library that contained the NATURAL object.
	DATE RANGE (optional)	N	Limits the report to objects migrated within the specified range of dates. Dates must be formatted YYYYMMDD.
	MODE (required)	N	Indicates how the job is executed (batch or on-line).
			B Submits JCL to the internal reader that processes the function in batch.
			O Processes the function on-line (Default: O).

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Objects Archived by N2OPURGE report.

```
 01-12-31                 N-2-O OBJECT REPORTING               TSI0373
 11:38:00                 OBJECTS ARCHIVED BY N2OPURGE          TSI1
                                                        Page:  1


            Object     -----From------    Arch   Arch
 S Object   Type       Env   Library      Def    S/C    Date      Time
 - --------  --------   ----  --------    ----   ----   --------  --------
 _ MENU      PROGRAM    TEST  PAYTEST     ARC1   S/C    01-08-19  17:10:08
 _ MENU      PROGRAM    TEST  PAYTEST     ARC1   S      01-10-05  08:22:14
 _ MENU      PROGRAM    DEV   PAYDEV      ARC1   S/C    01-11-15  15:50:43
 _ MENU      PROGRAM    DEV   PAYDEV      ARC1   S      01-09-16  15:20:34




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
S (optional)	N	"X" selects an object for additional details.
OBJECT (supplied)	N	The NATURAL object archived and deleted.
OBJECT TYPE (supplied)	N	The NATURAL object type.
		PARM Indicates Parameter data area.
		COPYCODE Indicates Copycode.
		GLOBAL Indicates Global data area.
		HELP-RTN Indicates Helproutine.
		LOCAL Indicates Local data area.
		MAP Indicates Map.
		SUB-PGM Indicates Subprogram.
		PROGRAM Indicates Program.
		SUB-RTN Indicates Subroutine.
		TEXT Indicates Text.
		MACRO Indicates Macro.
		REPORT Indicates Report.
		EXP-MDL Indicates ExpertModel.
		RECORD Indicates Recording.
		DIALOG Indicates Dialog.
		CLASS Indicates Class.
		CMD-PROC Indicates Processor.
		SERVER Indicates Server.
		FUNCTION. Indicates Function.
		ADAPTER. Indicates Adapter.
		MACRO. Indicates Macro.
FROM ENV (supplied)	N	The Environment Definition that contained the NATURAL object.
FROM LIBRARY (supplied)	N	The library that contained the NATURAL object.

(continued from previous page)

Field	Type	Description
ARCH DEF (supplied)	N	The Archive Definition used to archive the NATURAL object.
ARCH S/C (supplied)	N	The form of the object archived and deleted.
		S Indicates only the source form of the program may be selected.
		C Indicates only the cataloged form of the program may be selected.
		S/C Indicates both forms of the program may be selected.
DATE (supplied)	N	The date the NATURAL object was archived and deleted.
TIME (supplied)	N	The time the NATURAL object was archived and deleted.

IV.4.8   Archive Version Summary

The Archive Version Summary report displays all Events that archived an object.

To display the Archive Version Summary input screen for NATURAL objects, enter "H" in the Enter Code field and "N" in the Type field on the Object Reporting menu.

```
 01-12-31                  N-2-O OBJECT REPORTING                  TSI0373
 11:38:00                  ARCHIVE VERSION SUMMARY                 TSI1




                 Object        :  _____
                 Library       :  _____
                 Date Range    :  _____  -  _____

                 Detailed Report:  N (Batch Only)
                 Mode          :  O








 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

This report is only available for NATURAL objects (N), 3GL/OTHER members (O), and SYSERR messages (S).

Field	Type	Description
OBJECT (required)	N,S,O	Displays the archive history of a NATURAL object, PDS object, or SYSERR message.
LIBRARY (optional)	N,S	Limits the report to NATURAL objects or SYSERR messages for the specified library.
DATE RANGE (optional)	N,S,O	Limits the report to objects migrated within the range of dates. Dates must be formatted YYYYMMDD.
DETAILED REPORT (required)		Indicates whether detailed information should be displayed when executed in batch.
		Y Display all detail information for reports when executed in batch (similar to entering X next to an object on the Archive Version Summary selection screen).
		N Display information similar to the Archive Version Summary selection screen (Default: N).
MODE (required)	N,S,O	Indicates how the job is executed (batch or on-line).
		B Submits JCL to the internal reader that processes the function in batch.
		O Processes the function on-line (Default: O).

Entering the necessary information in the input screen and pressing Enter displays the Archive Version Summary selection screen.

```
Type X to display Event Details or Utility Details
  01-12-31              N-2-O OBJECT REPORTING                    TSI0373
  11:38:00              ARCHIVE VERSION SUMMARY                   TSI1
                        Object:  PAYROLL                       Page:  1

                 Event/                Change    From   To    Arch  Added
   X    Date     Utility    Seq        Control   Env    Env   S/C   User-ID
   -    --------  --------  -----      --------   ----   ----  ---   --------
   _    01-11-01  PAYIN        99      ******     PROD   ARC1  S     TSIO374
   _    01-11-01  EXTRACT      98      ******     TEST   ARC1   C    TSIO374
   _    01-09-01  PAYTEST       1      ******     TEST   ARC1  S/C   TSIO375
   _    01-09-25  PAYOUT     3307      ******     DEV    ARC1  S/C   TSIO374
   _    01-07-10  PAYIN      3261      ******     PROD   ARC1  S/C   TSIO375
   _    01-06-20  PAYTEST    3068      ******     TEST   ARC1  S/C   TSIO374
   _    01-06-16  EXTRACT       1      ******     TEST   ARC1  S     TSIO375
   _    01-05-20  PAYIN        70      ******     PROD   ARC1  S/C   TSIO375
   _    01-05-14  PAYTEST    2697      ******     TEST   ARC1  S     TSIO374
   _    01-04-22  PAYOUT     1924      ******     TEST   ARC1  S/C   TSIO375
   _    01-03-04  EXTRACT     965      ******     TEST   ARC1  S     TSIO375
   _    01-01-04  EXTRACT     964      ******     TEST   ARC1  S     TSIO374


 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
OBJECT (supplied)	N,S,O	The name of the object for executing this report.
X (optional)	N,S,O	"X" displays Event/Utility Details.
DATE (supplied)	N,S,O	The migration date of an Event or the date the utility was executed.
EVENT/ UTILITY (supplied)	N,S,O	The Master Event of the migration.
SEQ (supplied)	N,S,O	The sequence number of the Event.
CHANGE CONTROL (supplied)	N,S,O	A value that relates multiple Events to a specific change request.
FROM ENV (supplied)	N,S,O	The source Environment Definition of the Event.
TO ENV (supplied)	N,S,O	The target Environment Definition of the Event.

(continued from previous page)

Field	Type	Description
ARCH S/C (supplied)	N,S,O	The form of the object archived.
		S Indicates only the source form of the program may be selected.
		C Indicates only the cataloged form of the program may be selected.
		S/C Indicates both forms of the program may be selected.
ADDED USER-ID (supplied)	N,S,O	The user who added the Event or executed the utility.

IV.4.9   Events Pending for an Object

The Events Pending for an Object report displays all Events pending for an object.

To display the Events Pending for an Object input screen for NATURAL objects, enter "I" in the Enter Code field and "N" in the Type field on the Object Reporting menu and press Enter.

```
  01-12-31                  N-2-O OBJECT REPORTING                 TSI0373
  11:38:00                  EVENTS PENDING FOR AN OBJECT           TSI1




                        Object     :  _____
                        Added User-ID:  _____

                        Mode       :  O







  Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
         HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

	Field	Type	Description
	OBJECT (required)	N,S,P,O, ,D,M	The DDMS, METADATA, NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
∞	ADDED USER-ID (optional)	N,S,P,O, ,D,M	Limits the report to Events added by a user with the specified User-ID.
	MODE (required)	N,S,P,O, D,M	Indicates how the job is executed (batch or on-line).
			B Submits JCL to the internal reader that processes the function in batch.
			O Processes the function on-line (Default: O).

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Events Pending for an Object report.

```
 01-12-31                  N-2-O OBJECT REPORTING                  TSI0373
 11:38:00                  EVENTS PENDING FOR AN OBJECT            TSI1
                           Object:  PAY1111N                       Page:  1

                           Mig    From   To   --------- Added ------------
 Event       Seq   Extr    Type   Env    Env  Date      Time      User-ID
 --------    -----  ----   ----   ----   ---- --------  --------  --------
 PAYIN       83    NO      S      TEST   PROD 01-04-06  16:59:56  TSIO373








 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ---- END    ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
OBJECT (supplied)	N,S,P,O, ,D,M	The NATURAL object, PREDICT object, 3GL/OTHER object, or SYSERR message.
EVENT (supplied)	N,S,P,O, ,D,M	The Master Event of the migration.
SEQ (supplied)	N,S,P,O, ,D,M	The sequence number of the Event.
EXTR (supplied)	N,S,P,O, ,D,M	Indicates whether the Event is an Extract Event or not.
		YES Indicates the Event is an Extract Event.
		NO Indicates the Event is not an Extract Event.
MIG TYPE (supplied)	N,S,P,O, ,D,M	The form of the object migrated.
		S Indicates only the source form of the program may be selected.
		C Indicates only the cataloged form of the program may be selected.
		S/C Indicates both forms of the program may be selected.
FROM ENV (supplied)	N,S,P,O,D,M	The source Environment Definition of the Event.
TO ENV (supplied)	N,S,P,O,D,M	The target Environment Definition of the Event. An asterisk (*) indicates the Event is a multiple target Event.

(continued from previous page)

Field	Type	Description
ADDED DATE (supplied)	N,S,P,O,D,M	The date the Event was added.
ADDED TIME (supplied)	N,S,P,O,D,M	The time the Event was added.
ADDED USER-ID (supplied)	N,S,P,O,D,M	The User-ID of the user who added the Event.

Object Reporting in Batch

Sample reporting JCL is provided in the MVSREPT, VMREPT, BSREPT and VSEREPT members located in the Natural library N2OBATCH.

Note:	The batch reports from the N2O Reporting Subsystem and the Documentation Tools require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).

The following tables illustrate the JCL and EXECs modifications necessary to execute Object reports in batch.

History of an Environment

TYPE	&REPORT	&INPUT
N,S	N2OOBJA	TYPE,DETAILED-REPORT LIBRARY,ENV-DEF,DATE-1,DATE-2
P	N2OOBJA	TYPE,DETAILED-REPORT OBJECT-TYPE,ENV-DEF,DATE-1,DATE-2
O	N2OOBJA	TYPE,DETAILED-REPORT CATEGORY,ENV-DEF,DATE-1,DATE-2

History of an Object

TYPE	&REPORT	&INPUT
N,S	N2OOBJB	TYPE,DETAILED-REPORT OBJECT,LIBRARY,DATE-1,DATE-2
P	N2OOBJB	TYPE,DETAILED-REPORT OBJECT,OBJECT-TYPE,DATE-1,DATE-2
O	N2OOBJB	TYPE,DETAILED-REPORT OBJECT,CATEGORY,DATE-1,DATE-2

-------- indicates that inputs are on separate lines.

Directory List

TYPE	&REPORT	&INPUT
N,S	N2OOBJC	TYPE
		ENV-DEF,LIBRARY
		STARTING VALUE,ENDING VALUE
P	N2OOBJC	TYPE
		ENV-DEF,OBJECT-TYPE
		STARTING-VALUE,ENDING-VALUE
O	N2OOBJC	TYPE
		ENV-DEF,CATEGORY
		STARTING-VALUE,ENDING-VALUE, ENDEVOR-SYSTEM,ENDEVOR-SUBSYSTEM

Directory Compare

TYPE	&REPORT	&INPUT
N	N2OOBJD	TYPE
		BASE-ENV-DEF,COMPARE-ENV-DEF,BASE-LIBRARY, COMPARE-LIBRARY,BASE-SOURCE-OBJECT, COMPARE-SOURCE-OBJECT
		STARTING-VALUE,ENDING-VALUE, VERIFY-TIMESTAMPS,VERIFY-EXISTENCE
S	N2OOBJD	TYPE
		BASE-ENV-DEF,COMPARE-ENV-DEF,BASE-LIBRARY, COMPARE-LIBRARY
		STARTING VALUE,ENDING VALUE,VERIFY-EXISTENCE
P	N2OOBJD	TYPE
		BASE-ENV-DEF,COMPARE-ENV-DEF,OBJECT TYPE
		STARTING-VALUE,ENDING-VALUE, VERIFY-TIMESTAMPS,VERIFY-EXISTENCE
O	N2OOBJD	TYPE
		BASE-ENV-DEF,COMPARE-ENV-DEF,CATEGORY
		STARTING-VALUE,ENDING-VALUE,VERIFY-EXISTENCE
		BASE-ENDEVOR-SYSTEM,BASE-ENDEVOR-SUBSYSTEM
		COMPARE-ENDEVOR-SYSTEM, COMPARE-ENDEVOR-SUBSYSTEM

Cross-Reference

TYPE	&REPORT	&INPUT
N	N2OOBJE	TYPE
		ENV-DEF,LIBRARY,OBJECT
O	N2OOBJE	TYPE
		ENV-DEF,CATEGORY,OBJECT

-------- indicates that inputs are on separate lines.

Checked-out Objects

TYPE	&REPORT	&INPUT
A	N2OOBJF	TYPE,CHECKOUT-USERID
N,S	N2OOBJF	TYPE BASE-ENV,BASE-LIBRARY,OBJECT,CURR-ENV CURR-LIBRARY,CHECKOUT-USERID,CHECKOUT-DATE
P	N2OOBJF	TYPE BASE-ENV,OBJECT-TYPE,OBJECT,CURR-ENV CHECKOUT-USERID,CHECKOUT-DATE
O	N2OOBJF	TYPE BASE-ENV,CATEGORY,OBJECT,CURR-ENV CHECKOUT-USERID,CHECKOUT-DATE, ENDEVOR-SYSTEM,ENDEVOR-SUBSYSTEM

Objects Archived by N2OPURGE

TYPE	&REPORT	&INPUT
N	N2OOBJG	TYPE OBJECT,ENV-DEF,LIBRARY

-------- indicates that inputs are on separate lines.

Archive Version Summary

TYPE	&REPORT	&INPUT
N,S	N2OOBJH	TYPE,DETAILED-REPORT OBJECT,LIBRARY,DATE-1,DATE-2
O	N2OOBJH	TYPE,DETAILED-REPORT OBJECT,DATE-1,DATE-2

Events Pending for an Object

TYPE	&REPORT	&INPUT
N	N2OOBJI	TYPE OBJECT,CREATE-USERID

-------- indicates that inputs are on separate lines.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

For descriptions of &INPUT fields, refer to field descriptions in corresponding sections of Object Reporting.

IV.5   Statistical Reporting

Statistical Reporting provides numerical data about Events and objects.

To display the Statistical Reporting menu, enter "D" on the Reporting Subsystem menu or enter the direct command REP STAT on any menu.

```
 01-12-31                N-2-O STATISTICAL REPORTING MENU          TSI0373
 11:38:00                                                          TSI1

                        Code  Function
                        ----  ----------------------------------------
                         A    Events Pending Autocompile for a Library
                         B    Events Pending for an Environment
                         C    Objects Migrated
                         D    Objects Migrated by a User
                         E    Objects Migrated for an Event
                         F    Objects Migrated by Change Control
                         .    Terminate Statistical Reporting
                         -    ----------------------------------------


              Enter Code: _




 Direct Command: _____                            REP STAT
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

	A	**Events Pending Autocompile for a Library** Displays the number of Events pending Autocompile for libraries.
	B	**Events Pending for an Environment** Displays the number of Events pending a migration to an environment.
	C	**Objects Migrated** Displays the number of objects migrated within a range of dates.
	D	**Objects Migrated by a User** Displays the number of objects migrated by a user.
	E	**Objects Migrated for an Event** Displays the number of objects migrated with an Event.
	F	**Objects Migrated by Change Control** Displays the number of objects migrated for a specific change control number.

IV.5.1 <u>Events Pending Autocompile for a Library</u>

The Events Pending Autocompile for a Library report displays the number of Events pending Autocompile for all libraries in an environment.

To display the Events Pending Autocompile for a Library input screen, enter "A" on the Statistical Reporting menu.

```
 01-12-31                N-2-O STATISTICAL REPORTING              TSI0373
 11:38:00                EVENTS PENDING AUTOCOMPILE FOR A LIBRARY TSI1




                         Env Def:  ____

                         Mode  :  O








 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ ENV DEF (required)	An Environment defined to N2O.
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line (Default: O).

∞ indicates field-level help is available.

Entering the necessary information on the input screen and pressing Enter displays the Events Pending Autocompile for a Library report.

```
 01-12-31              N-2-O STATISTICAL REPORTING             TSI0373
 11:38:00              EVENTS PENDING AUTOCOMPILE FOR A LIBRARY   TSI1
                       Env Def:  PAYD                      Page:  1

                       Library  Nbr         Library  Nbr
                       -------  ---         -------  ---
                       PAYPROD  1           PAYTEST  1




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
ENV DEF (supplied)	An Environment defined to N2O.
LIBRARY (supplied)	The library with Events pending Autocompile.
NBR (supplied)	The number of Events pending Autocompile for a library.

IV.5.2   Events Pending for an Environment

The Events Pending for an Environment report displays the number of Events pending a migration to an environment.

To display the Events Pending for an Environment input screen, enter "B" on the Statistical Reporting menu.

```
01-12-31                  N-2-O STATISTICAL REPORTING              TSI0373
11:38:00                  EVENTS PENDING FOR AN ENVIRONMENT         TSI1
                                                             Page:  1


                          Env Def:  _____
                          Library:  _____
                          Mode   :  O












Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
∞ ENV DEF (required)	Limits the report to Events that migrate to the specified Environment Definition.
LIBRARY (optional)	Limits the report to Events that migrate to the specified library.
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line (Default: O).

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Events Pending for an Environment report.

```
Press ENTER to continue
  01-12-31               N-2-O STATISTICAL REPORTING              TSI0373
  11:38:00               EVENTS PENDING FOR AN ENVIRONMENT        TSI1
                         Env Def:  DEV                       Page:  1


                         Event Count:  10









 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
ENV DEF (supplied)	An N2O environment selected for the report.
EVENT COUNT (supplied)	The number of Events waiting to be processed for the specified environment.

IV.5.3 <u>Objects Migrated</u>

The Objects Migrated report displays the number of objects migrated within a range of dates. As this report is CPU intensive, it is recommended that this report be executed in batch.

To display the Objects Migrated input screen, enter "C" on the Statistical Reporting menu and press Enter.

```
 01-12-31                    N-2-O STATISTICAL REPORTING              TSI0373
 11:38:00                    OBJECTS MIGRATED                         TSI1




                    Date Range:  _____  -  _____

                    Mode    :  O










 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
DATE RANGE (optional)	Limits the report to objects migrated within the specified range of dates. Dates must be formatted YYYYMMDD.
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).

Entering the necessary information on the input screen and pressing Enter displays the Object Migrated report.

```
 01-12-31              N-2-O STATISTICAL REPORTING              TSI0373
 11:38:00                   OBJECTS MIGRATED                      TSI1
                       Date Range:  20010401 - 20010414     Page:    1


                NATURAL
                   Source: 1233
                   Object: 475

                SYSERR
                   Short : 16
                   Long  : 0

                PREDICT  :  0

                3GL/Other: 9



 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
DATE RANGE (supplied)	Selected range of dates for the report.
NATURAL SOURCE (supplied)	The number of objects with NATURAL source code migrated.
NATURAL OBJECT (supplied)	The number of objects with NATURAL object code migrated.
SYSERR SHORT (supplied)	The number of SYSERR short messages migrated.
SYSERR LONG (supplied)	The number of SYSERR extended messages migrated.
PREDICT (supplied)	The number of PREDICT objects migrated.
3GL/OTHER (supplied)	The number of 3GL/OTHER members migrated.

IV.5.4   <u>Objects Migrated by a User</u>

The Objects Migrated by a User report displays the number of objects migrated by a user. As this report is CPU intensive, it is recommended that this report be executed in batch.

To display the Objects Migrated by a User input screen, enter "D" on the Statistical Reporting menu and press Enter.

```
 01-12-31                    N-2-O STATISTICAL REPORTING              TSI0373
 11:38:00                    OBJECTS MIGRATED BY A USER               TSI1
                             USER-ID : TSI1



                      Added User-ID:  _____
                      Date Range   :  _____  - _____

                      Mode         :  O








 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
USER-ID (supplied)	The User-ID selected for the report.
∞ ADDED USER-ID (required)	The user who added the Events to migrate the objects.
DATE RANGE (optional)	Limits the report to objects that migrated within the specified range of dates. Dates must be formatted YYYYMMDD.
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Objects Migrated by a User report.

```
 01-12-31              N-2-O STATISTICAL REPORTING            TSI0373
 11:38:00              OBJECTS MIGRATED BY A USER             TSI1
                       USER-ID: TSI1                    Page:    1


              NATURAL
                 Source: 86
                 Object: 8

              SYSERR
                 Short : 1
                 Long  : 0

              PREDICT  :  0

              3GL/Other:  0




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
NATURAL SOURCE (supplied)	The number of objects with NATURAL source code migrated.
NATURAL OBJECT (supplied)	The number of objects with NATURAL object code migrated.
SYSERR SHORT (supplied)	The number of SYSERR short messages migrated.
SYSERR LONG (supplied)	The number of SYSERR extended messages migrated.
PREDICT (supplied)	The number of PREDICT objects migrated.
3GL/OTHER (supplied)	The number of 3GL/OTHER members migrated.

IV.5.5   Objects Migrated for an Event

The Objects Migrated for an Event report displays the number of objects migrated with an Event.

To display the Objects Migrated for an Event input screen, enter "E" on the Statistical Reporting menu and press Enter.

```
 01-12-31                  N-2-O STATISTICAL REPORTING              TSI0373
 11:38:00                  OBJECTS MIGRATED FOR AN EVENT            TSI1




                     Event   :  _____
                     Sequence:  _____

                     Mode    :  O









 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ EVENT (required)	The Master Event for the migration.
SEQUENCE (required)	The sequence number of the Event.
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Objects Migrated for an Event report.

```
 Press ENTER to continue
  01-12-31               N-2-O STATISTICAL REPORTING                  TSI0373
  11:38:00               OBJECTS MIGRATED FOR AN EVENT                TSI1
                         Event:PAYIN   Sequence :1              Page:     1


                 NATURAL
                    Source:  4
                    Object:  0

                 SYSERR
                    Short :  0
                    Long  :  0

                 PREDICT  :  0

                 3GL/Other:  0




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
EVENT (supplied)	The master event of the migration.
SEQUENCE (supplied)	The sequence number of the event.
NATURAL SOURCE (supplied)	The number of objects with NATURAL source code migrated.
NATURAL OBJECT (supplied)	The number of objects with NATURAL object code migrated.
SYSERR SHORT (supplied)	The number of SYSERR short messages migrated.
SYSERR LONG (supplied)	The number of SYSERR extended messages migrated.
PREDICT (supplied)	The number of PREDICT objects migrated.
3GL/OTHER (supplied)	The number of 3GL/OTHER members migrated.

IV.5.6   <u>**Objects Migrated by Change Control**</u>

The Objects Migrated by Change Control report displays the number of objects migrated with a specific change control number.

To display the Objects input screen, enter "F" on the Statistical Reporting menu and press Enter.

```
 01-12-31                N-2-O STATISTICAL REPORTING              TSI0373
 11:38:00               OBJECTS MIGRATED BY CHANGE CONTROL           TSI1




                   Change Control: _____

                        Mode    :  O








 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
         HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ CHANGE CONTROL (required)	The change control number to be reported on.
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line. (Default: O)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Objects by Change Control report.

```
Press ENTER to continue
 01-12-31              N-2-O STATISTICAL REPORTING              TSI0373
 11:38:00           OBJECTS MIGRATED BY CHANGE CONTROL            TSI1
                      Change Control: TESTING          Page:      1


                NATURAL
                  Source:  4
                  Object:  0

                SYSERR
                  Short :  0
                  Long  :  0

                PREDICT  :  0

                3GL/Other:  0




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ---- ---- END   ---- ---- ---- ---- ---- ---- ---- ---- STOP
```

Field	Description
CHANGE CONTROL (supplied)	The specified change control number.
NATURAL SOURCE (supplied)	The number of objects with NATURAL source code migrated.
NATURAL OBJECT (supplied)	The number of objects with NATURAL object code migrated.
SYSERR SHORT (supplied)	The number of SYSERR short messages migrated.
SYSERR LONG (supplied)	The number of SYSERR extended messages migrated.
PREDICT (supplied)	The number of PREDICT objects migrated.
3GL/OTHER (supplied)	The number of 3GL/OTHER members migrated.

IV.5.7 Statistical Reporting in Batch

Sample reporting JCL is provided in the MVSREPT, VMREPT, BSREPT and VSEREPT members located in the Natural library N2OBATCH.

Note: The batch reports from the N2O Reporting Subsystem and the Documentation Tools require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).

The following table illustrates the JCL and EXECs modifications necessary to execute Statistical reports in batch.

REPORT	&REPORT	&INPUT
Events Pending Autocompile for a Library	N2OSTATA	ENV-DEF
Events Pending for an Environment	N2OSTATB	ENV-DEF,LIBRARY
Objects Migrated	N2OSTATC	DATE-1,DATE-2
Objects Migrated by a User	N2OSTATD	ADDED USER-ID,DATE-1,DATE-2
Objects Migrated for an Event	N2OSTATE	EVENT,SEQUENCE

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

For descriptions of &INPUT fields, refer to field descriptions in corresponding sections of Statistical Reporting.

IV.6   Security Reporting

Security Reporting provides reports that display information about N2O Security definitions.

To display the Security Reporting menu, enter "E" on the Reporting Subsystem menu or enter the direct command REP SEC on any menu.

```
 01-12-31                    N-2-O SECURITY REPORTING MENU              TSI0373
 11:38:00                                                                 TSI1

                       Code  Function
                       ----  ---------------------------------------
                   A    N2O User Security
                       B    User Groups
                       C    Event Authorization
                       D    Approval Profiles
                       E    Function Profiles
                       F    Migration Profiles
                       G    Predict Profiles
                       H    3GL Profiles
                       .    Terminate Security Reporting
 -    ---------------------------------------

              Enter Code: _




   Direct Command: _____                       REP SEC
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

A   N2O User Security
Displays N2O User Definitions.

B   User Groups
Displays N2O Groups and Users Definitions defined to them.

C   Event Authorization
Displays a list of Events requiring Authorization and the users that can authorize them.

D   Approval Profiles
Displays N2O Approval Profiles.

E   Function Profiles
Displays N2O Function Profiles

F   Migration Profiles
Displays N2O Migration Profiles.

G   Predict Profiles
Displays N2O Predict Profiles.

H   3GL Profiles
Displays N2O 3GL Profiles.

IV.6.1   <u>N2O User Security</u>

The N2O User Security report displays the N2O User Definitions.

To display the N2O User Security input screen, enter "A" on the Security Reporting menu.

```
05-01-01                N-2-O SECURITY REPORTING             TSI0373
18:08:40                N2O USER SECURITY                    TSI1




                   Userid:   *_____  ( Wildcard / Single  )

                   Mode :   O

                   Batch Display Options
                   ---------------------------
                   Approval Status = YES Only. N
                   User Definitions........... N
                   Migration Profiles......... N




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

	Field	Description
∞	USERID (required)	Userids that are displayed by the report. (wildcard permitted)
	MODE (required)	Indicates how the job is executed (batch or on-line).
		B Submits JCL to the internal reader that processes the function in batch.
		O Processes the function on-line (Default: O).
	BATCH DISPLAY OPTIONS	
	APPROVAL STATUS = YES ONLY (required)	Indicates if only User Definitions that can authorize their own events should be displayed (Approval Status = YES in the USER Definition) .
		Y Display only User Definitions that can authorize their own events
		N Display All User Definitions (Default: N).
	USER DEFINITIONS (required)	Indicates amount of detail displayed for each User Definition.
		Y Display all User Definition details.
		N Display only User Definition's Userid and Description (Default: N).

∞ indicates field-level help is available.

(continued from previous page)

Field	Type	Description
MIGRATION PROFILES (required)		Indicates if the Migration Profiles that the user has access to should be displayed (determined from all Approval Profiles assigned to the specified user id).

	Y	Display the Migration Profiles the user has access to.
	N	Do not display the Migration Profiles the user has access to (Default: N).

Entering the necessary information on the input screen and pressing Enter displays the N2O User Security report.

```
Valid values: F- Function Prof, A- Approval Prof, U- User Def
05-02-11                 N-2-O SECURITY REPORTING               TSI0373
19:49:51                 N2O USER SECURITY                      TSI1

                                            Appl      Predict
   X User      Description                 Status Xref  View   Group
   - -------   ------------------------------  ---   ----  ----  --------
   _ N2OREPT   N2O REPORT USERIDS             NO    NONE  NONE
   _ USER      SYSTEM                         YES   NONE  NONE  ADMIN
   _ USER0     AUTH ONLY                      NO    NONE  NONE  AUTH
   _ USER1     AUTH ONLY                      NO    NONE  NONE  AUTH
   _ USER2     AUTH ONLY                      NO    NONE  NONE  AUTH
   _ USER3     AUTH ONLY                      NO    NONE  NONE  AUTH
   _ USER4     AUTH ONLY                      NO    NONE  NONE  AUTH
   _ USER5     AUTH ONLY                      NO    NONE  NONE  AUTH
   _ USER6     AUTH ONLY                      NO    NONE  NONE  AUTH
   _ USER7     AUTH ONLY                      NO    NONE  NONE  AUTH
   _ USER8     AUTH ONLY                      NO    NONE  NONE  AUTH
   _ USER9     AUTH ONLY                      NO    NONE  NONE  AUTH


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
X (optional)	The function to be executed. Valid values are as follows:
	F displays N2O Functions the specified userid has access to (determined from all Function Profiles assigned to the userid).
	A displays Approval Profiles the specified userid has access to
	U displays N2O User Definition.
User (supplied)	The User-ID of the User Definition.
Desc (supplied)	A description of the User.
Approval Status (supplied)	Valid values are as follows:
	YES The user can authorize his/her own Events.
	NO A user can not authorize his/her own Events.

(continued from previous page)

Field	Description
∞ XREF (supplied)	Determines if N2O will present an object selection list of cross referenced modules when requesting an Event. Possible values are as follows:

	LIST	An XREF selection list is displayed.
	NONE	A list of XREF'd objects is not displayed.
	BOTH	A user can decide between list and none when requesting a migration.

PREDICT Views (supplied)	Determines if N2O will present a PREDICT userview selection list when requesting an Event. Possible values are as follows:

	LIST	A PREDICT userview selection list is displayed.
	NONE	A list of PREDICT userviews is not displayed.
	BOTH	A user can decide between list and none when requesting a migration.

Group-ID (supplied)	A value that relates multiple users. This value links a group of users for authorization purposes.

IV.6.2 User Groups

The User Groups report displays information related to Groups assigned to N2O User Definitions.

To display the User Groups input screen, enter "B" on the Security Reporting menu.

```
05-02-11                    N-2-O SECURITY REPORTING              TSI0373
20:29:29                    N2O GROUP SECURITY                    TSI1




                      Group:   *_____  ( Wildcard / Single  )

                      Mode :   O


                      Batch Display Options
                      --------------------------
                      List Users................. N
                      User Definitions........... N
                      User Functions............. N
                      Migration Profiles......... N


 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
∞ GROUP (required)	Groups that are displayed by the report. (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line (Default: O).
BATCH DISPLAY OPTIONS	
LIST USERS (required)	Indicates if User Definitions defined to the displayed groups should be displayed.
	Y Display User Definitions defined to Group.
	N Display only the Groups. (Default: N).
USER DEFINITIONS (required)	Indicates the amount of detail displayed for each User Definition (Requires LIST USERs = Y)
	Y Display all User Definitions details.
	N Display only Userid and Description (Default: N).

∞ indicates field-level help is available.

(continued from previous page)

Field	Description
MIGRATION PROFILES (required)	Indicates if the Migration Profiles that the user has access to should be displayed (Requires LIST USERs = Y).

	Y	Display the Migration Profiles that the user has access to (determined from all Approval Profiles assigned to the userid).
	N	Do not display the Migration Profiles that the user has access to (Default: N).

Entering the necessary information in the input screen and pressing Enter displays the User Groups report.

```
Valid values: U - Users
 05-02-11                   N-2-O SECURITY REPORTING                  TSI0373
 21:04:08                   N2O GROUP SECURITY                        TSI1

                   Users in                Users in                Users in
          X   Group     Group X   Group     Group X   Group     Group
          -   --------  ------- -  --------  ------- -  --------  -------
          _   ADMIN       3
          _   AUTH        29














 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
X (optional)	The function to be executed. Valid values are as follows: U displays User Definitions that contain the group.
Group (supplied)	A value that relates multiple users.
Users in Group (supplied)	Number of User Definition that contain the Group.

IV.6.3   Event Authorization

The Event Authorization report displays events that require authorization or servicing.

This report will only show events that have the Master Event's Lock Event field set to ENV or ALL.

To display the Event Authorization input screen, enter "C" on the Security Reporting menu and press Enter.

```
05-02-11                  N-2-O SECURITY REPORTING                TSI3101
21:17:27                  N2O EVENT AUTHORIZATION                 TSI3




                    Event:   *_____ ( Wildcard / Single  )

                    Mode :   O

                    Batch Display Options
                    --------------------
                    Authorizers........ N
                    Master Event....... N
                    Migration Profiles. N




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ EVENT (required)	Event displayed requiring Authorization or Servicing. (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line (Default: O).
BATCH DISPLAY OPTIONS	
LIST USERS (required)	Indicates if User Definitions that can authorize or service the events should be displayed (determined from all Approval Profiles assigned to the userid).
	Y Display User Definitions that can authorize or service the event.
	N Display only the Events (Default: N).
MASTER EVENT (required)	Indicates amount of detail displayed for each Master Event.
	Y Display the Master Event details
	N Display only the Master Event and Description. (Default: N)
MIGRATION PROFILES (required)	Indicates if the Migration Profiles used by the event should be displayed.
	Y Display the Migration Profiles used by the event.
	N Do not display the Migration Profiles used by the event. (Default: N).

Entering the necessary information on the input screen and pressing Enter displays the Event Authorization report.

```
┌──────────────────────────────────────────────────────────────────────┐
│ Valid values: A - Authorizers, E - Event or M - Mig Profile          │
│  05-02-11                   N-2-O SELECT A MASTER EVENT        TSI0373│
│  22:33:49                                                       TSI1  │
│                       --- From ---     ---- To ----   Lock      Lvl   │
│           S    Event     Env Library   Env  Library   Evnt Delay Auth │
│           -   --------   ---- --------  ---- -------   ---- ---- --    │
│           _    AEVENT    DEV  PAYDEV    PROD PAYBAS     ALL  AUTH 4    │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│ Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--- │
│       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP   │
└──────────────────────────────────────────────────────────────────────┘
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows: A displays the User Definitions that can authorize the event (determined from all Approval Profiles assigned to the userid). E displays the Master Event. M displays the Migration Profiles used by the Master event.
Event (supplied)	The Master Event.
From Env (supplied)	The source Environment Definition (defined on the Master Event).
From Library (supplied)	The NATURAL library from which the NATURAL objects/SYSERR messages are migrated (defined on the Master Event).
To Env (supplied)	The target Environment Definition of the Event. An "*" indicates the Event is a Multiple Target Event (defined on the Master Event).
To Library (supplied)	The NATURAL library where the NATURAL objects/SYSERR messages are placed by the migration. An "*" indicates the Event is a Multiple Target Event (defined on the Master Event).
Lock Event (supplied)	Determines if the user can modify the From/To Environment and library information (defined on the Master Event) when requesting an Event. Possible values are as follows: ENV The From/To Environment fields cannot be modified by the user.

(continued from previous page)

Field	Description
	ALL The From/To Environment and library fields cannot be modified by the user.
	NO Indicates all From/To fields are modifiable.
	Note : Master Events defined with 'NO' are NOT displayed.
Delay (supplied)	Determines if a requested Event requires additional authorization before executing. Possible values are as follows: AUTH The Event must be authorized using the Authorize an Event function. SERV The Event must be authorized using the Authorize an Event function and serviced using the Service an Event function.
Levels of Auth (supplied)	The number of authorizations required when AUTH or SERV is specified.

IV.6.4   <u>Approval Profiles</u>

The Approval Profiles report displays the N2O Approval Profiles.

To display the Approval Profiles input screen, enter "D" on the Security Reporting menu and press Enter.

```
 05-02-14                    N-2-O SECURITY REPORTING              TSI0373
 14:55:42                    N2O Approval PROFILES                  TSI1



             Approval Profiles: *_____  ( Wildcard / Single  )

                     Mode            : O

                     Batch Display Options
                     --------------------
                     Approval Profile... N
                     Users............. N







 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ APPROVAL PROFILE (required)	Approval Profiles that are displayed by the report. (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line (Default: O).
BATCH DISPLAY OPTIONS	
APPROVAL PROFILE (required)	Indicates amount of detail displayed for each Approval Profile.
	Y Display all the details of the Approval Profiles.
	N Display only the Approval Profile and Description (Default: N).
USERS (required)	Indicates if the User Definitions that contain the Approval Profile should be displayed.
	Y Display the User Definitions that contain the Approval Profile.
	N Do not display the User Definitions that contain the Approval Profile. (Default: N)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Approval Profiles report.

```
Valid Values: I - Inquire, U - Users
 05-11-28            N-2-O SELECT AN APPROVAL PROFILE            VLM1
 15:29:25                                                       SC0TCP15

   S     Profile  Description                    Date     Time    User-ID
   -     -------- ------------------------------ -------- -------- --------
   _     N2OAPPR  N2O APPROVAL PROFILE           04-03-19 20:01:56 PDL1
   _     TREAPPR  TRE APPROVAL PROFILE           04-03-19 20:02:10 PDL1
   _     TRMAPPR  TRM APPROVAL PROFILE           04-03-19 20:02:26 PDL1













Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows: I display the Approval Profile. U display the Users assigned to the Approval Profile (in their User Definition).
Profile (supplied)	The Approval Profile.
Description (supplied)	A brief description of the Approval Profile.
Date (supplied)	Date that the Approval Profile was created or last updated.
Time (supplied)	Time that the Approval Profile was created or last updated.
User-ID (supplied)	User-ID of the user who created or last updated the Approval Profile.

IV.6.5   Function Profiles

The Function Profiles report displays the N2O Function Profiles.

To display the Function Profiles input screen, enter "E" on the Security Reporting menu and press Enter.

```
 ┌─────────────────────────────────────────────────────────────────────┐
 │                                                                       │
 │  05-02-14                N-2-O SECURITY REPORTING             TSI0373 │
 │  14:55:42                 N2O FUNCTION PROFILES               TSI1    │
 │                                                                       │
 │                                                                       │
 │                                                                       │
 │         Function Profiles:   *_____  ( Wildcard / Single  )         │
 │                                                                       │
 │         Mode            :   O                                         │
 │                                                                       │
 │         Batch Display Options                                         │
 │         --------------------                                          │
 │         Function Profile... N                                         │
 │         Users............. N                                          │
 │                                                                       │
 │                                                                       │
 │                                                                       │
 │                                                                       │
 │                                                                       │
 │                                                                       │
 │ Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--- │
 │      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ---- │
 └─────────────────────────────────────────────────────────────────────┘
```

Field	Description
∞ FUNCTION PROFILE (required)	Function Profiles that are displayed by the report. (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line). B Submits JCL to the internal reader that processes the function in batch. O Processes the function on-line (Default: O).
BATCH DISPLAY OPTIONS	
FUNCTION PROFILE (required)	Indicates amount of detail displayed for each Function Profile. Y Display all the details of the Function Profiles. N Display only the Function Profile and Description (Default: N).
USERS (required)	Indicates if the User Definitions that contain the Function Profile should be displayed. . Y Display the User Definitions assigned to the Function Profile. N Do not display the User Definitions assigned to the Function Profile. (Default: N)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the Function Profiles report.

```
Valid values: F - Function Profile or U - Users
 05-02-14              N-2-O SELECT A FUNCTION PROFILE            TSI0373
 15:17:13                                                            TSI1

    S     Profile  Description                    Date     Time    User-ID
    -     -------- ------------------------------ -------- -------- --------
    _     ALL-FUNC ALL FUNCTIONS ALLOWED          04-12-01 22:35:50 TSI1
    _     AUTHUSER AUTH ONLY                       04-10-04 21:42:29 TSI1
    _     INQFUNC  TEST                            04-10-13 17:19:05 TSI1
    _     NOAUTH   NO AUTH                         04-10-04 21:43:08 TSI1
    _     REPTONLY REPORTS ONLY                    04-10-22 21:40:21 TSI1




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows: F display the Function Profile. U display the Users assigned to the Function Profile (in the User Definition).
Profile (supplied)	The Function Profile.
Description (supplied)	A brief description of the Function Profile.
Date (supplied)	Date that the Function Profile was created or last updated.
Time (supplied)	Time that the Function Profile was created or last updated.
User-ID (supplied)	User-ID of the user who created or last updated the Function Profile.

IV.6.6   Migration Profiles

The Migration Profiles report displays the N2O Migration Profiles.

To display the Migration Profiles input screen, enter "F" on the Security Reporting menu and press Enter.

```
05-02-14                  N-2-O SECURITY REPORTING                    TSI0373
15:34:33                  N2O MIGRATION PROFILE                       TSI1




            Migration Profile:   *___ - *___  ( Wildcard / Single )

                      Mode :   O

                       Batch Display Options
                       ------------------------
                       Migration Profile Details: N
                       Migration Profile Users..: N






 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ MIGRATION PROFILE (required)	Migration Profiles that are displayed by the report. The source and target Environment Definitions (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line (Default: O).
BATCH DISPLAY OPTIONS	
MIGRATION PROFILE DETAILS (required)	Indicates amount of detail displayed for each Migration Profile.
	Y Display all the details of the Migration Profiles.
	N Display only the Migration Profile and Description (Default: N).
MIGRATION PROFILE USERS (required)	Determines if the User Definitions that are assigned an Approval Profile containing the requested Migration Profile are displayed. .
	Y Display the User Definitions assigned an Approval Profile containing the specific Migration Profile.
	N Do not display the User Definitions assigned an Approval Profile containing the specific Migraiton Profile (Default: N)

∞ indicates field-level help is available.

Entering the necessary information in the input screen and pressing Enter displays the
Migration Profile report.

```
Valid values: I - Inquire or U - Users
 05-02-14              N-2-O SELECT A MIGRATION PROFILE              TSI0373
 16:34:29                                                              TSI1

    From To                             Migration              Mig  Pgm Ver
 S  Env  Env   Mode      Type     Delay Method    Autocompile  XREF Doc Obj
 -  ---- ----  --------  -------- ----- --------- ----------   ---- --- ---
 _  ARC1 PROD  BOTH      BOTH     NONE  COPY          NO        N   NO  NO
 _  DEV  ARC1  BOTH      BOTH     NONE  COPY          NO        N   NO  NO
 _  DEV  PROD  BOTH      BOTH     NONE  BOTH         STOW       N   NO  NO
 _  PROD ARC1  BOTH      BOTH     NONE  COPY          NO        N   NO  NO
 _  PROD DEV   BOTH      SOURCE   NONE  COPY         STOW       N   NO  NO




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ---- ---- END   ---- ---- ---- ---- ---- ---- ---- ---- STOP
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows: I displays the Migration Profile. U displays the Users assigned an applicable Approval Profile.
From Env To Env (supplied)	The Migration Profile.
Mode (supplied)	Mode assigned to the Migration Profile. Possible values are as follows: ONLINE Indicates the migration will be performed on-line. BATCH Indicates the migration will be performed by a batch job. BOTH Indicates ONLINE or BATCH may be specified by the user at migration time.
Type (supplied)	Determines the type of code that will migrate when this migration profile is executed. Possible values are as follows: SOURCE source code will be migrated. OBJECT object code will be migrated. BOTH both source and object code will be migrated.

(continued from previous page)

Field	Description
Delay	Determines if a requested Event requires additional authorization before executing. Possible values are as follows:
(supplied)	AUTH The Event must be authorized using the Authorize an Event function.
	SERV The Event must be authorized using the Authorize an Event function and serviced using the Service an Event function.
	NONE The migration may proceed immediately without authorization.
Migration Method (supplied)	Indicates if the objects are copied or moved (deleted on the TO environment). Possible values are as follows:
	COPY An object at the source of a migration will be placed at the target (defaults to COPY).
	MOVE An object at the source of a migration will be placed at the target and then deleted from the source of the migration.
	BOTH The user may specify COPY or MOVE at migration time.
Autocompile (supplied)	Instructs N2O to catalog, stow, or take no action on the migrated objects. Possible values are as follows:
	CAT Autocompile will occur for Events that migrate NATURAL objects or 3GL members. NATURAL objects will be CATALOGed at the target.
	STOW Autocompile will occur for Events that migrate NATURAL objects or 3GL members. NATURAL objects will be STOWed at the target.
	NO Autocompile will not occur for Events using this Migration Profile.

(continued from previous page)

Field	Description
Migrate XREF (supplied)	Determines whether or not Predict Cross-Reference Data must exist before allowing an object to be selected for migration. Possible values are as follows:

Y PREDICT Cross-Reference data MUST exist and will be migrated. A message of 'No XREF' will appear on the Object Selection Screen if the object fails this test.

S PREDICT Cross-Reference data will be migrated if it exists.

N PREDICT Cross-Reference data will not be verified or migrated.

Program Doc (supplied)	Instructs N2O to validate that an object has been documented in Predict before allowing it to be selected for migration. Possible values are as follows:

YES PREDICT object documentation must exist in the From Environment before a NATURAL object may be selected to be migrated.

NO PREDICT object documentation will not be verified or migrated.

Verify Object (supplied)	N2O can insure that an object has object code that was created after the last source code timestamp. Possible values are as follows:

YES NATURAL compiled code with a timestamp greater than the source code must exist for the object to be migrated.

NO NATURAL compiled code timestamps will not be verified before the object migrates

IV.6.7   Predict Profiles

The Predict Profiles report displays N2O Predict Profiles.

To display the Predict Profiles input screen, enter "G" on the Security Reporting menu and press Enter.

```
05-02-14                 N-2-O SECURITY REPORTING                TSI0373
17:26:28                 N2O PREDICT PROFILES                     TSI1




              Predict Profiles:   *_____  ( Wildcard / Single  )

              Mode          :   O

              Batch Display Options
              ---------------------
              PREDICT Profile.... N
              Users............. N




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ PREDICT PROFILE (required)	Predict Profiles that are displayed by the report. (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line (Default: O).
BATCH DISPLAY OPTIONS	
PREDICT PROFILE (required)	Indicates amount of detail displayed for each Predict Profile.
	Y Display all the details of the Predict Profiles.
	N Display only the Predict Profile and Description (Default: N).
USERS (required)	Indicates if the User Definitions that contain the Predict Profile should be displayed.
	Y Display the User Definitions that contain the Predict Profiles.
	N Do not display the User Definitions that contain the Predict Profiles. (Default: N)

∞ indicates field-level help is available

Entering the necessary information in the input screen and pressing Enter displays the Predict Profiles report.

```
Valid Values: P - Predict Profile or U - Users
 05-02-14              N-2-O SELECT A PREDICT PROFILE              TSI0373
 17:54:04                                                         TSI1

   S    Profile  Description                     Date     Time   User-ID
   -    -------- ----------------------------- -------- -------- --------
   _    ALL-PRED ALL PREDICT PROFILES          04-03-02 15:21:45 TSI1






 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ---- ---- END   ---- ---- ---- ---- ---- ---- ---- ---- STOP
```

Field	Description
S (optional)	The function to be executed. Valid values are as follows: P displays the Predict Profile. U displays Users assigned the specific Predict Profile in their User Definition.
Profile (supplied)	The Predict Profile.
Description (supplied)	A brief description of the Predict Profile.
Date (supplied)	Date the Predict Profile was created or last updated.
Time (supplied)	Time the Predict Profile was created or last updated.
Updated (supplied)	User-ID of the user who created or last updated the Predict Profile.

IV.6.8   3GL Profiles

The 3GL Profiles report displays N2O 3GL Profiles.

To display the 3GL Profiles input screen, enter "H" on the Security Reporting menu and press Enter.

```
05-02-14                 N-2-O SECURITY REPORTING                 TSI0373
17:26:28                 N2O 3GL PROFILES                         TSI1




                 3GL Profiles:   *_____  ( Wildcard / Single  )

                 Mode      :   O

                 Batch Display Options
                 ---------------------
                 3GL Profile...    . N
                 Users.............. N




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ 3GL PROFILE (required)	3GL Profiles that are displayed by the report. (wildcard permitted)
MODE (required)	Indicates how the job is executed (batch or on-line).
	B Submits JCL to the internal reader that processes the function in batch.
	O Processes the function on-line (Default: O).
BATCH DISPLAY OPTIONS	
3GL PROFILE (required)	Indicates amount of detail displayed for each 3GL Profile.
	Y Display all the details of the 3GL Profiles.
	N Display only the 3GL Profile and Description (Default: N).
USERS (required)	Indicates if the User Definitions containing the 3GL Profile should be displayed.
	Y Display the User Definitions containing the 3GL Profiles.
	N Do not display the User Definitions containing the 3GL Profiles. (Default: N)

∞ indicates field-level help is available

Entering the necessary information in the input screen and pressing Enter displays the 3GL Profiles report.

```
Valid Values: 3 - 3GL Profile or U - Users
 05-02-14              N-2-O SELECT A 3GL PROFILE           TSI0373
 17:54:04                                                   TSI1

   S    Profile  Description                  Date    Time   User-ID
   -    -------- ---------------------------- -------- -------- --------
   _    ALL-3GL  ALL 3GL                      04-04-21 18:12:15 TSI1










 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ---- ---- END   ---- ---- ---- ---- ---- ---- ---- ---- STOP
```

Field	Description
X (optional)	The function to be executed. Valid values are as follows: 3 displays the 3GL Profile details. U displays the Users assigned the specific 3GL Profile in their User Definition.
Profile (supplied)	The 3GL Profile.
Description (supplied)	A brief description of the 3GL Profile.
Date (supplied)	Date the 3GL Profile was created or last updated.
Time (supplied)	Time the 3GL Profile was created or last updated.
Updated (supplied)	User-ID of the user who created or last updated the 3GL Profile.

IV.6.9 <u>**Security Reporting in Batch**</u>

Sample reporting JCL is provided in the MVSREPT, VMREPT, BSREPT and VSEREPT members located in the Natural library N2OBATCH.

Note:	The batch reports from the N2O Reporting Subsystem and the Documentation Tools require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).

The following table illustrates the JCL and EXECs modifications necessary to execute Statistical reports in batch.

REPORT	&REPORT	&INPUT
N2O User Security	N2OSECA	USERID
		APPL-STATUS,VIEW-USER-DEFS, MIGRATION-PROFILES (N,N,N,N)
User Groups	N2OSECB	GROUP
		VIEW-USERS,VIEW-USER-DEF, VIEW-MIGRATION-PROFILE (N,N,N,N)
Event Authorization	N2OSECC	EVENT
		AUTHORIZERS,VIEW-EVENT-DETAILS, VIEW-MIGRATION-PROFILE (N,N,N)
Approval Profiles	N2OSECD	Approval-Profile VIEW-APPROVAL-PROFILE,VIEW-USERS
Function Profiles	N2OSECE	FUNCTION-PROFILE
		VIEW-FUNCTION-PROFILE, VIEW-USERS (N,N)
Migration Profiles	N2OSECF	FROM-ENV,TO-ENV
		VIEW-MIGRATION-PROFILE, VIEW-USERS (N,N)
Predict Profiles	N2OSECG	PREDICT-PROFILE
		VIEW-PREDICT-PROFILE,VIEW-USERS (N,N)
3GL Profiles	N2OSECH	3GL-PROFILE
		VIEW-3GL-PROFILE,VIEW-USERS (N,N)

−−−−−−   indicates that inputs are on separate lines.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

For descriptions of &INPUT fields, refer to field descriptions in corresponding sections of Security Reporting.

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SECTION V

TOOLBOX SUBSYSTEM

V.1   Introduction

The Toolbox Subsystem supplies application development tools for the N2O Administrator and application programmers. The Toolbox Subsystem consists of four functions:

1. Documentation Tools
2. Maintenance Tools
3. Programmer Tools
4. Utility Tools

Documentation Tools assist in documenting and debugging NATURAL applications by providing utilities to display/print NATURAL objects, File Layouts, Descriptor X-REF (Cross-Reference) Information, Object Flow Analysis, Object X-REF, SYSERR Messages, and Archived 3GL Objects.

Maintenance Tools maintain NATURAL applications by providing utilities to delete and recover objects.

Programmer Tools aid in the development of NATURAL applications by providing utilities to compare, list, and scan objects in a NATURAL development environment.

Utility tools provide facilities to assist in resolving exception situations that may arise when using N2O.

To access the Toolbox Subsystem menu, enter "T" on the N2O Main menu. Entering the direct command TOL MENU or pressing PF7 on any menu also accesses the Toolbox Subsystem menu.

```
 01-12-31                    N-2-O MAIN MENU                        TSI0373
 11:38:00                                                           TSI1

                         Code  Function
                         ----  ----------------------
                          E    Environment Subsystem
                          M    Migration Subsystem
                          P    Project Tracking Subsystem
                          R    Reporting Subsystem
                          T    Toolbox Subsystem
                          .    Terminate N-2-O Session
                         ----  ----------------------


             Enter Code:   _






 Direct Command: _____              N2O MENU
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

```
 01-12-31                    N-2-O TOOLBOX SUBSYSTEM MENU                 TSI0373
 11:38:00                                                                 TSI1

                           Code  Function
                           ----  --------------------------
                            D    Documentation Tools
                            M    Maintenance Tools
                            P    Programmer Tools
                            T    Utility Tools
                            .    Terminate Toolbox Subsystem
                           ----  --------------------------

               Enter Code:  _








 Direct Command: _____             TOL MENU
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ENV   MIG   REP   ----  USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

D   Documentation Tools
Display/print NATURAL objects, File Layouts, Descriptor X-REF Information, Object Flow Analysis, Object X-REF, SYSERR Messages, and Archived 3GL Objects.

M   Maintenance Tools
Delete and recover objects.

P   Programmer Tools
Compare, list, and scan objects.

T   Utility Tools
Diagnostic programs for exception situations.

Additional security may be provided for all tools in the Toolbox Subsystem using User-Exit 12. Refer to the *N2O Administrator Manual* for details on User-Exit 12.

V.2 Documentation Tools

The N2O Documentation Tools provide utilities to display/print NATURAL objects, File Layouts, Descriptor X-REF information, Object Flow Analysis, Object X-REF, SYSERR Messages, and Archived 3GL Objects from a specified local/ archive environment.

To access the Documentation Tools menu, enter "D" on the Toolbox Subsystem menu or the direct command TOL DOC on any menu.

```
01-12-31               N-2-O DOCUMENTATION TOOLS MENU              TSI0373
11:38:00                                                          TSI1


                  Code      Function
                  ----      --------------------------------
                   A        Natural Object Listing
                   B        Map Listing
                   C        Data Area Listing
                   D        File Layouts
                   E        Descriptor X-REF Information
                   F        Object Flow Analysis
                   G        Object X-REF
                   H        Syserr Message Listing
                   I        Archived 3GL Object Listing
                   .        Terminate Documentation Tools
                   -        --------------------------------

         Enter Code: _




 Direct Command:_____          TOL DOC
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
         HELP  ----  END   ENV   MIG   REP   ----  USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

A   Natural Object Listing
Displays/prints NATURAL Source Code.

B   Map Listing
Displays/prints Map(s).

C   Data Area Listing
Displays/prints Data Area(s).

D   File Layouts
Displays/prints File Information from PREDICT or NATURAL DDMs.

E   Descriptor X-REF Information
Displays/prints X-REF Information for a file's Descriptor(s).

F   Object Flow Analysis
Displays/prints a breakdown of a NATURAL object's flow showing processing loops and statement blocks.

(Continued from previous page)

Field	Description

G	**Object X-REF**	
	Displays/prints X-REF Information for NATURAL object(s).	
H	**SYSERR Message Listing**	
	Displays/prints SYSERR messages.	
I	**Archived 3GLObject Listing**	
	Displays/prints Archived 3GL Objects.	

The following PF-keys are provided for all Documentation Tool options:

PF-key	Function	Description
PF1/PF13	HELP	Provide information about the current screen.
PF3/PF15	END	Return to the Documentation Tools Menu.
PF12/PF24	STOP	Return to the previous screen.

V.2.1   <u>Natural Object Listing</u>

The Natural Object Listing utility displays/prints NATURAL source code. Additionally, at the start of each object, NATURAL directory information and information about the archiving event (if applicable) is displayed/printed.

To enable the paging up/down in Natural Object Listing, ADAV7 should be specified in the NTDB macro. Refer to the N2O Administrator Manual **Section II.3.8 Installation Procedure step 8**.

To access the Natural Object Listing screen, enter "A" on the Documentation Tools menu.

```
01-12-31                    N-2-O DOCUMENTATION TOOLS                   TSI0373
11:38:00                      NATURAL OBJECT LISTING                    TSI1


             Print Object(s)
             - Env Def...............: TEST
             - Library...............: PAYTEST_
             - Starting Object.......: PAY*____   (Wildcard/Single)
             - Ending Object.........: _____   (Both Blank=All)

             Within Range, Exclude
             - Object Types..........: AGHLMT____

              Options
             - Explode Copycode.....: N (Yes/No)
             - Explode Data Areas...: N (Yes/No)
             - Format Maps..........: Y (Yes/No/Both)
             - Format Data Areas....: Y (Yes/No)
             - Display Object X-REF.: N (Yes/No)
             - Force Uppercase......: N (Yes/No)
             - Route Output.........: S (Screen/Printer)
             - Mode.................: O (On-line/Batch)

 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ ENV DEF	The Environment Definition containing the object(s) to be displayed/printed. Remote Environments Definitions are not valid.
LIBRARY (required)	The NATURAL library containing the object(s) to be displayed/printed.
STARTING OBJECT (optional)	The starting value of the object(s) to be displayed/printed. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING OBJECT (optional)	The ending value of the object(s) to be displayed/printed. Wildcards (e.g., AAP9*) may be entered. To display/print a single object, leave this field blank and enter the object's name in the Starting Object field.

∞ indicates field-level help is available.

(Continued from previous page)

Field	Description

∞ WITHIN RANGE,
    EXCLUDE OBJECT TYPES
    (optional)
	Identifies NATURAL object types to be excluded from being displayed/printed when specifying a range of objects. This option is ignored when a single object is displayed/printed. Valid values are as follows:
	
	P Program
	S Subroutine
	N Subprogram
	M Map
	H Helproutine
	L Local Data Area
	A Parameter Data Area
	G Global Data Area
	C Copycode
	T Text
	O Macro
	R Report
	Y ExpertModel
	Z Recording
	3 Dialog
	4 Class
	5 Processor
	K Server
	(default: "MHLAGT")

EXPLODE COPYCODE (required)	Y Embeds the source code of any copycode referenced within the displayed/printed object. N Does not embed the source code of copycode referenced within the displayed/printed object. (default: "N")
EXPLODE DATA AREAS (required)	Y Embeds the source of any data areas referenced within the displayed/ printed object. N Does not embed the source of data areas referenced within the displayed/printed object. (default: "N")

∞ indicate field-level help is available.

(continued from previous page)

Field		Description
FORMAT MAPS (required)	Y	Displays/prints the map as the NATURAL Map editor presents it. Displays/prints a list of variables used by the map, all helproutines used by the Map, and all processing/verification rules used by the Map (Similar to Map Listing Utility). (default: "Y")
	N	Displays/prints map(s) in source format (similar to NATURAL List command).
	B	Displays/prints map(s) as the NATURAL Map editor presents it and in source format.
FORMAT DATA AREAS (required)	Y	Displays/prints data area(s) in the format as they would appear in the NATURAL Data Area editor. (default: "Y")
	N	Displays/prints data area(s) in source format (similar to NATURAL List command).
DISPLAY OBJECT X-REF (required)	Y	Displays/prints PREDICT object X-REF information related to the object following the object listing (similar to Object X-REF utility).
	N	Does not display/print PREDICT object X-REF information related to the object. (default: "N")
FORCE UPPERCASE (required)	Y	Converts lowercase to uppercase.
	N	Does not convert lowercase to uppercase. (default: "N")
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

Note: When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by using the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error and termination of the current NATURAL session.

Field		Description
MODE (required)		Indicates how the job is to be executed (batch or on-line).
	B	Submits JCL to the internal reader that processes the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

When the Environment Definition entered is an N2O Archive Definition, a pop-up window is displayed. One of the following fields must be provided:

a) An Archive Date, which must be entered using the YYYYMMDD format.

   1) When printing a single object
       A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.

   2) When printing a range of objects
       Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.

b) An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

V.2.2   Map Listing

The Map Listing utility displays/prints NATURAL maps as they appear in the NATURAL Map editor. Maps may also be displayed/printed with the field table, a list of helproutines, and a list of processing/verification rules used by the map. Additionally, at the start of each map, NATURAL directory information and information about the archiving event (if applicable) is displayed/printed.

To access the Map Listing screen, enter "B" on the Documentation Tools menu.

```
 01-12-31                  N-2-O DOCUMENTATION TOOLS             TSIO373
 11:33:00                       MAP LISTING                      TSI1




              Print Map(s)
              - Env Def...............: TEST
              - Library...............: PAYTEST_
              - Starting Map..........: PAYM*___  (Wildcard/Single)
              - Ending Map............: _____  (Both Blank=All)


               Options
               - Show Fields & Rules..: N (Yes/No)
               - Force Uppercase......: N (Yes/No)
               - Route Output.........: S (Screen/Printer)
               - Mode.................: O (On-line/Batch)




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ ENV DEF	The Environment Definition containing the map(s) to be displayed/printed. Remote Environments Definitions are not valid.
LIBRARY (required)	The NATURAL library containing the map(s) to be displayed/printed.
STARTING MAP (optional)	The starting value of the map(s) to be displayed/printed. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING MAP (optional)	The ending value of the map(s) to be displayed/printed. Wildcards (e.g., AAP9*) may be entered. To display/print a single map, leave this field blank and enter the map name in the Starting Map field.

∞ indicate field-level help is available.

(Continued from previous page)

Field		Description
SHOW FIELDS AND RULES (required)	Y	Displays/prints the map as the NATURAL Map editor presents it. Includes a list of variables used by the map, a list of the map's helproutines and all processing/ verification rules used by the Map.
	N	Displays/prints only the map as the NATURAL Map editor presents it. (default: "N")
FORCE UPPERCASE (required)	Y	Converts lowercase to uppercase.
	N	Does not convert lowercase to uppercase. (default: "N")
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

Note: When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error and termination of the current NATURAL session.

MODE (required)		Indicates how the job is to be executed (batch or on-line).
	B	Submits JCL to the internal reader to process the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

The following is sample output from the Map Listing function. The Show Fields and Rules option was set to "Y". This sample shows how map fields, helproutines, and rules will be displayed when printing Formatted Maps using the N2O Documentation tools.

```
Alphanumeric Fields
  non-protected Input field    (INPUT-ALPHA)         AAAAAAAA
  modifiable Output field      (#OUTPUT-ALPHA)       XXXXXXXX
  write protected Output field (#PROTECT-ALPHA)      ZZZZZZZZ
Binary Fields
  non-protected Input field    (#INPUT-BINARY)       CCCCCCCC
  modifiable Output field      (#OUTPUT-BINARY)      HHHHHHHH
  write protected Output field (#PROTECT-BINARY)     BBBBBBBB
Numeric Fields
  non-protected Input field    (#INPUT-NUMERIC)      11111111
  modifiable Output field      (#OUTPUT-NUMERIC)     99999999
  write protected Output field (#PROTECT-NUMERIC)    00000000
Numeric Decimal Fields
  non-protected Input field    (#INPUT-NUM-DEC)      1111.111
  modifiable Output field      (#OUTPUT-NUM-DEC)     9999.999
  write protected Output field (#PROTECT-NUM-DEC)    0000.000
Packed Fields
  non-protected Input field    (#INPUT-PACKED)       44444444
  modifiable Output field      (#OUTPUT-PACKED)      88888888
  write protected Output field (#PROTECT-PACKED)     22222222
Packed Decimal Fields
  non-protected Input field    (#INPUT-PACKED-DEC)   4444.444
  modifiable Output field      (#OUTPUT-PACKED-DEC)  8888.888
  write protected Output field (#PROTECT-PACKED-DEC) 2222.222
Float Fields
  non-protected Input field    (#INPUT-FLOAT)        555555555555555555
  modifiable Output field      (#OUTPUT-FLOAT)       FFFFFFFFFFFFFFFFFF
  write protected Output field (#PROTECT-FLOAT)      333333333333333333
Integer Fields
  non-protected Input field    (#INPUT-INTEGER)      77777777
  modifiable Output field      (#OUTPUT-INTEGER)     IIIIIIII
  write protected Output field (#PROTECT-INTEGER)    66666666
Date Fields
  non-protected Input field    (#INPUT-DATE)         MMMMMMMM
  modifiable Output field      (#OUTPUT-DATE)        DDDDDDDD
  write protected Output field (#PROTECT-DATE)       YYYYYYYY
Time Fields
  non-protected Input field    (#INPUT-TIME)         SSSSSSSS
  modifiable Output field      (#OUTPUT-TIME)        TTTTTTTT
  write protected Output field (#PROTECT-TIME)       RRRRRRRR
Logical Fields
  non-protected Input field    (#INPUT-LOGICAL)      O
  modifiable Output field      (#OUTPUT-LOGICAL)     L
  write protected Output field (#PROTECT-LOGICAL)    N
```

```
Field                     Format  Occurrences   From
INPUT-ALPHA               A8                    TEST-DDM
#INPUT-BINARY             B4
#INPUT-DATE               D
#INPUT-FLOAT              F4
#INPUT-INTEGER            I4
#INPUT-LOGIC              L
#INPUT-NUM-DEC            N5.3
#INPUT-NUMERIC            N8
#INPUT-PACKED             P8
#INPUT-PACKED-DEC         P6.2
#INPUT-TIME               T
#OUTPUT-ALPHA             A8
#OUTPUT-BINARY            B4
#OUTPUT-DATE              D
#OUTPUT-FLOAT             F4
#OUTPUT-INTEGER           I4
#OUTPUT-LOGIC             L
```

(Continued from previous page)

```
#OUTPUT-NUM-DEC              N5.3
#OUTPUT-NUMERIC             N8
#OUTPUT-PACKED              P8
#OUTPUT-PACKED-DEC          P6.2
#OUTPUT-TIME                T
#PROTECT-ALPHA              A8
#PROTECT-BINARY             B4
#PROTECT-DATE               D
#PROTECT-FLOAT              F4
#PROTECT-INTEGER            I4
#PROTECT-LOGIC              L
#PROTECT-NUM-DEC            N5.3
#PROTECT-NUMERIC            N8
#PROTECT-PACKED             P8
#PROTECT-PACKED-DEC         P6.2
#PROTECT-TIME               T


+---------------------------------------------------------------------+
|Helproutines                                                         |
+---------------------------------------------------------------------+
|Field                            Helproutine                         |
+---------------------------------------------------------------------+
|Map Default                      'MAPHELP','MAP1PM                   |
|#INPUT-DATE                      'MAPFHLP'                           |
+---------------------------------------------------------------------+


+---------------------------------------------------------------------+
|Processing Rules                                                     |
+---------------------------------------------------------------------+
+---------------------------------------------------------------------+
|Field:  TEST-DDM.INPUT-ALPHA ------ Rank : 01                        |
+---------------------------------------------------------------------+
 Type.........: PREDICT Automatic (  Verification: INPUT-ALPHA  )
 Ver Status...: Automatic
 Comment(s)...: Example of an Automatic rule
 Description..:          ====================================
                        Verification additional description
                        ====================================
              Example Automatic rule extended description
 Ver. Type....: User-defined
 Code.........: IF & = ' '
              REINPUT 'FIELD CANNOT BE BLANK' MARK *&
              END-IF
+---------------------------------------------------------------------+
|Field:  OUTPUT-ALPHA ------ Rank : 10                               |
+---------------------------------------------------------------------+
 Type.........: PREDICT Free (  Verification: CHECK-UPPER  )
 Ver Status...: Free
 Comment(s)...: example of a free rule
 Description..:          ====================================
                        Verification additional description
                        ====================================
              Example free rule extended description
 Ver. Type....: Range of values
 Value(s).....: A
              Z
 Code:........: *
              *      PROCESSING RULE: CHECK-UPPER WAS GENERATED BY PREDICT
              *      VERIFICATION-TYPE: RANGE   ON: 99-12-31  AT: 14:24
              *
              IF NOT(& EQ 'A' THRU 'Z')
              REINPUT
                  'FIELD VALUES MUST BE IN RANGE FROM: A TO Z '
                MARK *&
              END-IF
```

The following are fields and descriptions for the Processing Rules section of the report.

Field	Description
FIELD (all types)	The name of the map field.
RANK (all types)	The rank of the corresponding processing/ verification rules.
TYPE (all types)	The manner in which the rule is defined to the map. Valid values are as follows: **PREDICT Automatic** The rule is a PREDICT Automatic Verification rule linked to the field through a DDM. Following this type, the PREDICT Verification name is displayed. **PREDICT Free** The rule is a PREDICT Verification rule linked to the field through the Map editor by using the Verification Name. Following this type, the PREDICT Verification name is displayed. **Inline** The rule was entered directly into the map using the map editor.

VER STATUS
(PREDICT types only)
	The Status of the Verification according to PREDICT.
	
	    Automatic
	    Free

	<table><tr><td>**Note:**</td><td>Automatic Verification rules can be shown as Type : PREDICT Free. This occurs when automatic rule is used as a free rule. (Refer to the *PREDICT Reference Manual* for more information.)</td></tr></table>
COMMENT(S) (PREDICT types only)	The PREDICT comments for the corresponding Verification.
DESCRIPTION (PREDICT types only)	The PREDICT extended description for the corresponding Verification.

Field	Description
VER TYPE (PREDICT types only)	The types of Verification. Valid values are as follows:

> Equal to
> Greater than
> Less than
> Not equal to
> Range of values
> Table of values
> User routine
> Range but not
> Not in range
> Unknown

Field	Description
VALUE(S) (PREDICT types only with value(s) defined)	The valid values used to perform the Verification. (Refer to the *PREDICT Reference Manual* for more information.)
CODE (all types)	The actual NATURAL code of the rule. For PREDICT types, this code is stored in PREDICT. For Inline type, this code is stored in the map.

When the Environment Definition entered is an N2O Archive Definition, a pop-up window is displayed. One of the following fields must be provided:

1. An Archive Date, which must be entered using the YYYYMMDD format.

    1) When printing a single object
        A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.

    2) When printing a range of objects
        Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.

    b) An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

V.2.3   Data Area Listing

The Data Area Listing Utility displays/prints NATURAL data areas (Global, Local, and Parameter) as they appear in the NATURAL Data Area editor. Additionally, at the start of each data area, NATURAL directory information and information about the archiving event (if applicable) is displayed/printed.

To enable the paging up/down in Data Area Listing, ADAV7 should be specified in the NTDB macro. Refer to the N2O Administrator Manual **Section II.3.8 Installation Procedure step 8**.

To access the Data Area Listing screen, enter "C" on the Documentation Tools menu.

```
 01-12-31                  N-2-O DOCUMENTATION TOOLS                TSI0373
 11:33:00                     DATA AREA LISTING                     TSI1




               Print Data Area(s)
               - Env Def...............: TEST
               - Library...............: PAYTEST_
               - Starting Data Area....: PAYL*___  (Wildcard/Single)
               - Ending Data Area......: _____  (Both Blank=All)



                Options
                - Force Uppercase......: N (Yes/No)
                - Route Output.........: S (Screen/Printer)
                - Mode.................: O (On-line/Batch)




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ ENV DEF	The Environment Definition containing the data area(s) to be displayed/printed. Remote Environments Definitions are not valid.
LIBRARY (required)	The NATURAL library containing the data area(s) to be displayed/printed.
STARTING DATA AREA (optional)	The starting value of the data area(s) to be displayed/printed. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING DATA AREA (optional)	The ending value of the data area(s) to be displayed/printed. Wildcards (e.g., AAP9*) may be entered. To display/print a single data area, leave this field blank and enter the data area name in the Starting Data Area field.
FORCE UPPERCASE (required)	Y Converts lowercase to uppercase.
	N Does not convert lowercase to uppercase. (default: "N")

∞ indicate field-level help is available.

(Continued from previous page)

Field		Description
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

Note:	When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.

Field		Description
MODE (required)		Indicates how the job is to be executed (batch or on-line).
	B	Submits JCL to the internal reader that processes the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

When the Environment Definition entered is an N2O Archive Definition, a pop-up window is displayed. One of the following fields must be provided:

a) An Archive Date, which must be entered using the YYYYMMDD format.

   1) When printing a single object
      A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.

   2) When printing a range of objects
      Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.

b) An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

V.2.4   **File Layouts**

The File Layouts utility displays/prints File Layouts from PREDICT or NATURAL DDMs.

The Dbid Nr displayed in the header of the File Layout Report, is the Database ID number found in the Data Repository.

If PREDICT is the Data Repository, the Dbid Nr is the number defined to the database object linked to the file. If no database is linked to the file, the Dbid Nr is "UNKN". If DDM is the Data Repository, the Dbid Nr is the number of the database defined in the DDM.

To access the File Layouts screen, enter "D" on the Documentation Tools menu.

```
01-12-31                    N-2-O DOCUMENTATION TOOLS                TSI0373
11:33:00                         FILE LISTING                        TSI1


        Print File(s)
        - Env Def........: TEST
        - Starting file..: PAYROLL-FILE_____ (Wildcard/Single)
        - Ending File....: _____ (Both Blank=All)
        - With Keyword...: _____ (Optional)

         Options
        - Detail Level...: E (Extended Description/Long/Short)
        - Data Repository: P (PREDICT/DDM)
        - Force Uppercase: N (Yes/No)
        - Route Output...: S (Screen/Printer)
        - Mode...........: O (On-line/Batch)




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ ENV DEF	The Environment Definition containing the file(s) to be displayed/printed. Remote Environments and Archive Definitions are not valid.
STARTING FILE (optional)	The starting value of the file(s) to be displayed/printed. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING FILE (optional)	The ending value of the file(s) to be displayed/printed. Wildcards (e.g., AAP9*) may be entered. To display/print a single file, leave this field blank and enter the filename in the Starting File field.
WITH KEYWORD (optional)	PREDICT file descriptions with this keyword will be selected. This option is ignored when data repository is equal to "D".

∞ indicate field-level help is available.

(Continued from previous page)

Field		Description
DETAIL LEVEL (required)	E	Displays/prints extended descriptions, all file and field comments, keywords, and owners. (default: "E")
	L	Displays/prints all file and field comments, keywords, and owners.
	S	Displays/prints all file comments and the first line of field comments.
DATA REPOSITORY (required)	P	Reads file information from PREDICT. (default: "P")
	D	Reads file information from NATURAL DDMs. Information obtained from the DDM does not have extended descriptions, file comments, keywords, and owners. Field comments will be shown only if the DDM(s) was generated with them.
FORCE UPPERCASE (required)	Y	Converts lowercase to uppercase.
	N	Does not convert lowercase to uppercase. (default: "N")
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

Note: When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.

MODE (required)		Indicates how the job is to be executed (batch or on-line).
	B	Submits JCL to the internal reader to process the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

V.2.5   Descriptor X-REF Information

The Descriptor X-REF Information utility produces a report on descriptor usage using PREDICT Cross-Reference data. This report will only show NATURAL objects that were compiled with XREF=ON. Since this report is CPU intensive, it is recommended that this report be executed in batch.

The Dbid Nr displayed in the header of the Descriptor X-REF Report is the Database ID number defined to the database object linked to the file. If no database is linked to the file, the Dbid Nr is "UNKN".

To access the Descriptor X-REF Information screen, enter "E" on the Documentation Tools menu.

```
 01-12-31                 N-2-O DOCUMENTATION TOOLS                  TSI0373
 11:33:00                DESCRIPTOR X-REF INFORMATION                  TSI1




        Print X-REF Info for File(s)
         - Env Def........: TEST
         - Starting file..: PAYROLL-FILE_____ (Wildcard/Single)
         - Ending File....: _____ (Both Blank=All)


         Options
         - Report Type....: S (Summary/Detail)
         - Force Uppercase: N (Yes/No)
         - Route Output...: S (Screen/Printer)
         - Mode...........: O (On-line/Batch)



 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ ENV DEF	The Environment Definition containing the file(s) to be cross-referenced. Remote Environments and Archive Definitions are not valid.
STARTING FILE (optional)	The starting value of the file(s) to be cross-referenced. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING FILE (optional)	The ending value of the file(s) to be cross-referenced. Wildcards (e.g., AAP9*) may be entered. To display/print a single file, leave this field blank and enter the filename in the Starting File field.

"∞" indicate field-level help is available.

(Continued from previous page)

Field		Description
REPORT TYPE	S	Provides a Summary report including the file name, descriptor type, field name, field format, and field length. It also lists the number of times each descriptor is used in a search, update, read, delete, and view. (default: "S")
	D	Provides a Detail report including the above information with the addition of up to 660 object names in which the descriptor is used.
FORCE UPPERCASE (required)	Y	Converts lowercase to uppercase.
	N	Does not convert lowercase to uppercase. (default: "N")
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

Note: When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.

MODE (required)		Indicates how the job is to be executed (batch or on-line).
	B	Submits JCL to the internal reader to process the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

V.2.6   Object Flow Analysis

The Object Flow Analysis utility displays/prints NATURAL object(s) and will identify processing loops and statement blocks. For DEFINE DATA /Data areas, the lengths of all fields for each level are accumulated and displayed/printed.   Refer to the example in this sub-section. Additionally, at the start of each object, NATURAL directory information and information about the archiving event (if applicable) is displayed/printed.

To access the Object Flow Analysis screen, enter "F" on the Documentation Tools menu.

```
 01-12-31                    N-2-O DOCUMENTATION TOOLS                 TSI0373
 11:33:00                      OBJECT FLOW ANALYSIS                     TSI1



               Print Flow Analysis Object(s)
               - Env Def...............: TEST
               - Library...............: PAYTEST_
               - Starting Object.......: PAY*____  (Wildcard/Single)
               - Ending Object.........: _____  (Both Blank=All)


                Options
                - Force Uppercase......: N (Yes/No)
                - Route Output.........: S (Screen/Printer)
                - Mode.................: O (On-line/Batch)




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP ----  END   ---- ---- ---- ---- ---- ---- ---- ---- ----
```

Field	Description
∞ ENV DEF	The Environment Definition containing the object(s) to be analyzed. Remote Environments Definitions are not valid.
LIBRARY (required)	The NATURAL library containing the object(s) to be analyzed.
STARTING OBJECT (optional)	The starting value of the object(s) to be analyzed. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING OBJECT (optional)	The ending value of the object(s) to be analyzed. Wildcards (e.g., AAP9*) may be entered. To analyze a single object, leave this field blank and enter the object's name in the Starting Object field.
FORCE UPPERCASE (required)	Y Converts lowercase to uppercase.
	N Does not convert lowercase to uppercase. (default: "N")

∞ indicate field-level help is available.

(Continued from previous page)

Field		Description
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

Note:	When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.

Field		Description
MODE (required)		Indicates how the job is to be executed (batch or on-line).
	B	Submits JCL to the internal reader that processes the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

When the Environment Definition entered is an N2O Archive Definition, a pop-up window is displayed. One of the following fields must be provided:

a) An Archive Date, which must be entered using the YYYYMMDD format.

   1) When printing a single object
   A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.

   2) When printing a range of objects
   Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.

b) An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

The following is sample output from the Object Flow Analysis utility:

```
                          0010 ** Example Object Flow Analysis
+1-----2-----3----DEFINE   0020 DEFINE DATA LOCAL
|4                         0030 1 #I   (N4)
|8                         0040 1 #J   (N4)
|1008                      0050 1 #A   (A10/1:100)
|2008                      0060 1 #B   (A10/1:100)
+1-----2-----3END-DEFINE   0070 END-DEFINE
                          0080 **
+----------------REPEAT     0090 REPEAT
| +----------------FOR      0100   FOR #I EQ 1 TO 100
| | +---------------IF      0110     IF #A(#I) GT #B(#I)
| | |                      0120        MOVE #A(#I) TO #B(#I)
| | +-------------ELSE      0130     ELSE
| | |                      0140        WRITE 'DATA ERROR'
| | | <<--ESCAPE ROUTINE    0150        ESCAPE ROUTINE
| | +------------END-IF     0160     END-IF
| |                        0170     ADD 1 TO #J
| +------------END-FOR      0180   END-FOR
+------------END-REPEAT     0190 END-REPEAT
                          0200 **
                          0210 ...
```

+---+
Note:	The Object Analysis Flow utility relies on the mode (Report or Structured) defined to the object to determine the beginning and ending of the Looping/Control structures.
	An object containing Structured mode code, but saved in Report mode, will be analyzed as a Report mode object (i.e., IFs use DO/DOEND, and Processing Loops are closed with LOOP).
	An object containing Report mode code but saved in Structured mode will be analyzed as a Structured mode object (i.e., IFs end with END-IF, and Processing Loops are closed with the appropriate END- Statement).
	The NATURAL compiler will not allow the user to stow an object with either of the cases above. Copycode is not stowed, therefore it can contain the opposite mode of code than the saved mode of the object.
	To receive the correct results, change the mode of the Copycode to match the current programming mode and resave it.
+---+

+---+
| **Note:** | The accumulation of level field lengths for DEFINE DATA / data areas requires a valid field length after the field name. Fields from views without a valid field length are ignored for the accumulation. |
| | Arrays that define the array index notation with a constant will return "CONST" as the length. |
+---+

V.2.7 **Object X-REF**

The Object X-REF utility displays/prints PREDICT Cross-Reference information for NATURAL object(s) identifying copycode, data areas, DDMs, files, programs, subroutines, subprograms, SYSERRs, and views referenced. Variables within data areas, DDMs, and views are also identified. This report requires that all NATURAL objects are compiled with XREF=ON. Additionally, at the start of each object, NATURAL directory information and the first block of comments found in the object is displayed/printed.

To access the Object X-REF screen, enter "G" on the Documentation Tools menu.

```
01-12-31                     N-2-O DOCUMENTATION TOOLS                   TSI0373
11:33:00                          OBJECT X-REF                           TSI1



              Print Object X-REF(s)
              - Env Def...............: TEST
              - Library...............: PAYTEST_
              - Starting Object.......: PAY*____  (Wildcard/Single)
              - Ending Object.........: _____  (Both Blank=All)



               Options
               - Force Uppercase......: N (Yes/No)
               - Route Output.........: S (Screen/Printer)
               - Mode.................: O (On-line/Batch)




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ ENV DEF	The Environment Definition containing the object(s) to be cross-referenced. Remote Environments and Archive Definitions are not valid.
LIBRARY (required)	The NATURAL library containing the object(s) to be cross-referenced.
STARTING OBJECT (optional)	The starting value of the object(s) to be cross-referenced. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING OBJECT (optional)	The ending value of the object(s) to be cross-referenced. Wildcards (e.g., AAP9*) may be entered. To cross-reference a single object, leave this field blank and enter the object's name in the Starting Object field.
FORCE UPPERCASE (required)	Y Converts lowercase to uppercase.
	N Does not convert lowercase to uppercase. (default: "N")

∞ indicate field-level help is available.

(Continued from previous page)

Field	Description	
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

Note:	When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.

Field	Description	
MODE (required)	Indicates how the job is to be executed (batch or on-line).	
	B	Submits JCL to the internal reader that processes the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

The following is a sample Object X-REF Report.

```
Modules used  :+-------------------------------------------------------------------+
               | PERFORM    FEDTAXS                                                 |
               | PERFORM    CTYTAXS    CALCULATE-CITY-TAX                           |
               | PERFORM    *UNKNOWN   CALCULATE-LOCAL-TAX                          |
               | CALLNAT    PAYCHKP                                                 |
               | MAP        PAYTAXM                                                 |
               +-------------------------------------------------------------------+
```

The first column of the output specifies what NATURAL statement invokes the referenced module. For external subroutines, the next column will show the actual (or short) subroutine name. If the subroutine is performed using the long name, the long name appears in the third column.   If N2O cannot locate a subroutine containing the long name, *UNKNOWN will appear. For all other NATURAL statements, the object referenced is identified in the second column. The third column is blank.

V.2.8   **SYSERR Message Listing**

The SYSERR Message Listing Utility displays/prints NATURAL SYSERR(s) (Long, Short, or Both).

To access the SYSERR Message Listing screen, enter "H" on the Documentation Tools menu.

```
01-12-31                 N-2-O DOCUMENTATION TOOLS            TSI0373
11:33:00                   SYSERR MESSAGE LISTING             TSI1



            Print SYSERR(s)
            - Env Def...........: TEST
            - Library...........: PAYTEST_
            - Starting SYSERR...: 1*__     (Wildcard/Single)
            - Ending SYSERR.....: ____     (Both Blank=All)
            - SYSERR Type.......: US       (U/US/UL)
            - SYSERR Language...: *_____ (1-8, *=All)


            Options
            - Force Uppercase...: N (Yes/No)
            - Route Output......: S (Screen/Printer)
            - Mode..............: O (On-line/Batch)



 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ ENV DEF	The Environment Definition containing the SYSERR(s) to be displayed/printed. Remote Environments Definitions are not valid.
LIBRARY (required)	The NATURAL library containing the SYSERR(s) to be displayed/printed.
STARTING SYSERR (optional)	The starting value of the SYSERR(s) to be displayed/printed. Partial names and wildcards (e.g., 11*) may be entered.
ENDING SYSERR (optional)	The ending value of the SYSERR(s) to be displayed/printed. Wildcards (e.g., 11*) may be entered. To display/print a single SYSERR, leave this field blank and enter the SYSERR number in the Starting SYSERR field.
SYSERR TYPE (required)	The type of SYSERR message to be displayed/printed. Valid values are as follows: US User-supplied short message. UL User-supplied long message. U Both short and long messages.

∞ indicate field-level help is available.

(Continued from previous page)

Field	Description
SYSERR LANGUAGE (required)	The language(s) of SYSERR message to be displayed/printed. Valid values are single alphanumeric characters in the ranges 1 - 9, A - Z and a - y. These values are equivalent to the values available for the *LANGUAGE system variable. (* can be used to display all languages)

FORCE UPPERCASE (required)	Y	Converts lowercase to uppercase.
	N	Does not convert lowercase to uppercase. (default: "N")
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

> **Note:** When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.

MODE (required)		Indicates how the job is to be executed (batch or on-line).
	B	Submits JCL to the internal reader that processes the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

When the Environment Definition entered is an N2O Archive Definition, a pop-up window is displayed. One of the following fields must be provided:

    a)   An Archive Date, which must be entered using the YYYYMMDD format.

          1)   When printing a single object
               A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.

          2)   When printing a range of objects
               Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.

    b)   An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

V.2.9   Archived 3GL Object Listing

The Archived 3GL Object Listing utility displays/prints Archived 3GL code. Additionally, at the start of each object, information about the archiving event is displayed/printed.

To enable the paging up/down in Archived 3GL Object Listing, ADAV7 should be specified in the NTDB macro. Refer to the N2O Administrator Manual **Section II.3.8 Installation Procedure step 8**.

To access the Archived 3GL Object Listing, enter "I" on the Documentation Tools menu.

Note:	This utility can only be used by N2O/3GL customers.

```
01-12-31                   N-2-O DOCUMENTATION TOOLS                 TSI0373
11:37:57                  ARCHIVED 3GL OBJECT LISTING                TSI1



                Print Archived 3GL Object(s)
                - Archive Def....: ____
                - Category.......: _____
                - Starting Object: _____  (Wildcard/Single)
                - Ending Object..: _____  (Both Blank=All)
                - Archive Date...: _____  (YYYYMMDD or -NN)

                Options
                - Count Lines....: Y (Yes/No)
                - Force Uppercase: N (Yes/No)
                - Route Output...: S (Screen/Printer)
                - Mode...........: O (On-line/Batch)




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
∞ ARCHIVE DEF	The Archive Definition containing the object(s) to be printed.
∞ CATEGORY (required)	The 3GL/Other category of the Object to be printed. Valid values are as follows:

	ASMB	Indicates all types of Assembler.
	COBOL	Indicates all types of COBOL.
	FORT	Indicates all types of FORTRAN.
	PL/I	Indicates all PL/I types.
	RPG	Indicates RPG.
	DATA	Indicates DATA FILES.
	JCL	Indicates JCL, CLIST, CNTL.
	OTHER	All other types.

Field	Description
STARTING OBJECT (optional)	The starting value of the object(s) to be printed. Partial names and wildcards (e.g., AAP*) may be entered.
ENDING OBJECT (optional)	The ending value of the object(s) to be printed. Wildcards (e.g., AAP9*) may be entered. To print a single object, leave this field blank and enter the object's name in the Starting Object field.

∞ indicate field-level help is available.

(Continued from previous page)

Field	Description
∞ ARCHIVE DATE (required)	The version of the archived to be displayed
	Valid values are as follows:
	An Archive Date, The Archive Date must be entered using the YYYYMMDD format.
	When printing a single object:
	A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.
	When printing a range of objects:
	Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.
	An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

Field		Description
COUNT LINES (required)	Y	Generates line numbers on the left side of the output. (default: "Y")
	N	Displays output without generating line numbers.
FORCE UPPERCASE (required)	Y	Converts lowercase to uppercase.
	N	Does not convert lowercase to uppercase. (default: "N")
ROUTE OUTPUT (required)	S	Routes output to screen. (default: "S")
	P	Routes output to NATURAL Printer 1 (CMPRT01).

∞ indicate field-level help is available.

> **Note:** When printing to CMPRT01 (NATURAL printer 1) during an on-line session, it is recommended that the user determine if CMPRT01 is available. This can be done by use of the NATURAL "GLOBALS" and/or "SYSFILE" command (refer to the *NATURAL Utilities Manual* for more information). The N2O Documentation Tools will detect that CMPRT01 is unavailable on the first attempt to write the output. A subsequent attempt to print to the unavailable CMPRT01 may result in a NAT954 or similar error, and termination of the current NATURAL session.

(Continued from previous page)

Field	Description
MODE (required)	Indicates how the job is to be executed (batch or on-line).

	B	Submits JCL to the internal reader that processes the function in batch. In Batch Mode, the output is automatically routed to NATURAL Printer 1.
	O	Processes the function on-line. (default: "O")

V.2.10   Batch Documentation Process

The following is an example of OS/390 (MVS) JCL used to run the Batch Documentation process. JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively. (JCL and EXECs will need to be tailored to accommodate site-specific needs.) The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

OS/390 (MVS) JCL:

MVSREPT
```
//BATCHREP JOB (nnn),'N-2-O Batch Report',CLASS=A,NOTIFY=&USERID
//REPORT   EXEC PGM=NATL
//CMPRT01  DD  SYSOUT=A
//CMSYNIN  DD  *
LOGON N2OLIB
&REPORT
&INPUT
FIN
/*
//
```

> **Note:** The batch reports from the N2O Reporting Subsystem and the Documentation Tools require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).

The following table illustrates the names of the variables (for &INPUT) whose values will be replaced in the input stream by the on-line submit function of N2O. These values are required in order to execute Documentation reports in batch.

REPORT	&REPORT	&INPUT
Natural Object Listing	N2ODYPPP	ENV-DEF,LIB,START-OBJ,END-OBJ, ARCHIVE-DATE,EXCLUDE-TYPES, EXPLODE-COPYCODE, EXPLODE-DATAAREAS,FORMAT-MAPS, FORMAT-DATAAREAS,DISPLAY-XREF, MAKE-UPPER
Map Listing	N2ODYMPP	ENV-DEF,LIB,START-MAP,END-MAP, ARCHIVE-DATE,SHOW-FIELDS, MAKE-UPPER
Data Area Listing	N2ODYVPP	ENV-DEF,LIB,START-DATAAREA, END-DATAAREA,ARCHIVE-DATE, MAKE-UPPER
File Layouts	N2ODYFPP	ENV-DEF,START-FILE,END-FILE KEYWORD,DETAIL-LEVEL, DATA-REPOS,MAKE-UPPER

REPORT	&REPORT	&INPUT
Descriptor X-REF Information	N2ODYDPP	ENV-DEF,START-FILE,END-FILE, REPORT-TYPE,MAKE-UPPER
Object Flow Analysis	N2ODYAPP	ENV-DEF,LIBRARY,START-OBJ, END-OBJ,ARCHIVE-DATE, MAKE-UPPER
Object X-REF	N2ODYXPP	ENV-DEF,LIBRARY,START-OBJ, END-OBJ,MAKE-UPPER
SYSERR Message Listing	N2ODYSPP	ENV-DEF,LIBRARY,START-ERR, END-ERR,ERR-TYPE,ERR-LANG, ARCHIVE-DATE,MAKE-UPPER
Archived 3GL Object Listing	N2ODYOPP	ARCH-DEF,LIBRARY,START-OBJ, END-OBJ, ARCHIVE-DATE, COUNT-LINES,MAKE-UPPER

−−−−−− indicates that inputs are on separate lines.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

For descriptions of &INPUT fields, refer to field descriptions in corresponding sections of Documentation Tools.

V.3　Maintenance Tools

Maintenance Tools provide utilities to delete and recover objects.

To display the Maintenance Tools menu, enter "M" on the Toolbox Subsystem menu or enter the direct command TOL MAIN on any menu.

```
 01-12-31                 N-2-O MAINTENANCE TOOLS MENU            TSIO373
 11:38:00                                                         TSI1

                       Code  Function
                       ----  ----------------------------
                        A    N2OPURGE Utility
                        B    Recover from an Archive Backup
                        C    Archive Backup Report
                        D    Recover from an Event Backup
                        .    Terminate Maintenance Tools
                       ----  ----------------------------

               Enter Code:  _     Type:  N




 Direct Command: _____         TOL MAIN
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

A　**N2OPURGE Utility**
Archives and deletes a NATURAL object and provides an audit trail.

B　**Recover from an Archive Backup**
Recovers NATURAL objects, PDS objects, and SYSERR messages purged from an N2O Archive file.

C　**Archive Backup Report**
Provides a report of all objects stored on an Archive Backup file.

D　**Recover from an Event Backup**
Recovers Events purged from the N2O Migration file.

Field	Description
TYPE (required)	Valid values for the N2OPURGE utility are Natural objects (N), 3GL/OTHER (PDS objects only) (O), SYSERR messages (S), and Predict(P).
	Valid values for the Recover from an Archive Backup are NATURAL objects (N), 3GL/OTHER objects (PDS only) (O), and SYSERR messages (S).

V.3.1 N2OPURGE Utility

The N2OPURGE utility deletes objects from the N2O Master Catalog and the following:

1. NATURAL objects or NATURAL SYSERRs from the NATURAL FUSER
2. NATURAL DDMs from the PREDICT FDIC
3. 3GL Objects from a PDS

If specified, the Natural object, SYSERR, or 3GL PDS source will also be archived to the N2O-Archive File, providing an audit trail of the purge.

To access the N2OPURGE Utility screen, enter "A" on the Maintenance Tools menu.

```
 01-12-31                    N-2-O MAINTENANCE TOOLS                 TSI0373
 11:38:00                       N2OPURGE UTILITY                     TSI1




                      Env Def:   PROD
                      Library:   PAYLIB
                       Object:   PAYPGMA
                      Archive:   Y
                         Mode:   O




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
         HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
∞ ENV DEF (required)	N,S,D,O	The Environment Definition where the object is located.
LIBRARY (required)	N,S	The library where the NATURAL object or SYSERR is located.
OBJECT (required)	N,S,D,O	The object to be purged. "*"Generates a selection list of all objects in the library. The "*"may also be used as a wildcard character to select objects prefixed by a string (e.g.,N2O*).
CATEGORY (required)	O	The 3GL/Other category of the number to be recovered. Valid values are as follows: ASMB Indicates all types of Assembler. COBOL Indicates all types of COBOL. FORT Indicates all types of FORTRAN. PL/I Indicates all PL/I types. RPG Indicates RPG. DATA Indicates DATA FILES. JCL Indicates JCL, CLIST, CNTL. OTHER All other types.
OBJECT (required)	N,S,D,O	The object to be purged.

ARCHIVE
(required)

N,S,O

Indicates whether the object should be archived before it is purged or not. This option is not available for DDMs

Y   Indicates the object should be archived before it is purged.

> **Note:** Objects archived by N2OPURGE have an archive event name of N2OPURGE and a sequence number 1.

N   Indicates no archiving should be performed.

∞ indicates field-level help is available.

MODE
(required)

N,S,D,O

Indicates how the job is executed (batch or on-line).

B   Submits JCL to the internal reader, which processes the function in batch. (required for 3GL PDS Objects)

O   Processes the function on-line. (default: O)

Entering the necessary information in the input screen and pressing Enter displays the N2OPURGE Utility report. A sample N2OPURGE Utility report screen is shown below.

```
 01-12-31                 N-2-O MAINTENANCE TOOLS                 TSI0373
 11:38:00                    N2OPURGE UTILITY                     TSI1


        +-------------------------------------------------------------+
        |                                                             |
        |     PROG3A Source Archived from PROD PAYPROD                |
        |     PROG3A Object Archived from PROD PAYPROD                |
        |     PROG3A Source Deleted from PROD PAYPROD                 |
        |     PROG3A Object Deleted from PROD PAYPROD                 |
        |     N2O Catalog Master not found for PROG3A in PAYPROD      |
        |                                                             |
        |                                                             |
        |                                                             |
        +-------------------------------------------------------------+




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

To return to the N2OPURGE Utility screen, press Enter.

When wildcarding is specified (*in the Object field) and Enter is pressed on the initial N2OPURGE Utility screen, the popup below is displayed.

```
 01-12-31                 N-2-O MAINTENANCE TOOLS                 TSI0373
 11:38:00                    N2OPURGE UTILITY                     TSI1
                    +---------------------------------------+
                    |                                       |
                    |  N2OPURGE mass purge has been Invoked |
                    |       for the Environment: PROD       |
                    |                                       |
                    |   All Objects in the Library: PAYPROD |
                    |            will be Purged             |
                    |                                       |
                    |  Would you like a selection list: Y   |
                    |                                       |
                    |  Enter=Continue PF3=Abort             |
                    |                                       |
                    +---------------------------------------+



Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Entering an "N" for the selection list in the popup and pressing Enter will invoke the N2OPURGE Utility to purge all objects that match the wildcard.

Entering a "Y" for the selection list in the popup and pressing Enter displays the N2OPURGE Utility Object Selection List screen. A sample N2OPURGE Utility Object Selection List screen is shown below.

```
Select Objects to Purge
 01-12-31              N2OPURGE Object Selection List              TSI0373
 11:38:24              Env:  PROD  Library:  PAYXPROD              TSI1

                Object        Purge                   Object        Purge
   X  Object    Type    S/C   Result    X  Object    Type    S/C   Result
   -  --------  --------  ---  -------   -  --------  --------  ---  -------
   _  CITYTAXC  COPYCODE  S             _  CITYTAXM  MAP       S/C
   _  CITYTAXP  PROGRAM   S/C           _  FEDTAXC   COPYCODE  S
   _  FEDTAXM   MAP       S/C           _  FEDTAXP   PROGRAM   S/C
   _  FICAC     COPYCODE  S             _  FICAM     MAP       S/C
   _  FICAP     PROGRAM   S/C           _  KAH0100M  MAP       S/C
   _  KAH0100P  PROGRAM   S/C           _  KAH1080   PROGRAM   S/C
   _  KHBIBM    MAP       S/C           _  LIFEINSC  COPYCODE  S
   _  LIFEINSM  MAP       S/C           _  LIFEINSP  PROGRAM   S/C
   _  PAYBATCH  PROGRAM   S/C           _  PAYCOPY   COPYCODE  S
   _  PAYKH     PROGRAM   S/C           _  PAYROLL   PROGRAM   S/C
   _  PAY0100M  MAP       S/C           _  PAY0100P  PROGRAM   S/C
   _  PAY0100T  MAP       S/C           _  PAY0110M  MAP       S/C
   _  PAY0110P  PROGRAM   S/C           _  PAY0110T  MAP       S/C
   _  PAY0120M  MAP       S/C           _  PAY0120P  PROGRAM   S/C

 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12 -
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  STOP
```

Field	Type	Description
ENV (supplied)	N,S,D,O	The Environment Definition where the NATURAL object is located.
LIBRARY (supplied)	N,S	The library where the NATURAL object is located.
CATEGORY (required)	O	The 3GL/Other category of the object to be recovered. Valid values are as follows:
		ASMB Indicates all types of Assembler.
		COBOL Indicates all types of COBOL.
		FORT Indicates all types of FORTRAN.
		PL/I Indicates all PL/I types.
		RPG Indicates RPG.
		DATA Indicates DATA FILES.
		JCL Indicates JCL, CLIST, CNTL.
		OTHER All other types.
X (optional)	N,S,D,O	"X" in the Select field purges the object.
OBJECT (supplied)	N,S,D,O	The object to be purged.
OBJECT TYPE (supplied)	N	Identifies the type of NATURAL object.
S/C (supplied)	N	S Indicates only the source form of the program may be selected.
		C Indicates only the cataloged form of the program may be selected.
		S/C Indicates both forms of the program may be selected.

(Continued from previous page)

Field	Type	Description
PURGE RESULT (supplied)	N	Indicates the success or failure of the requested purge:

Chkout	Indicates the purged was prevented because the object is checked out.
Error	Indicates a failed purge.
No ARCH	Indicates a failed purge because Archiving is specified and Environment Definition does not have an Archive Definition.
Uexit12	Indicates the purge was prevented by user-exit 12.
3GL ENV	Indicates a failed purge because Environment Definition is a 3GL Environment.
Column 1	"S" indicates Object's source code has been purged
Column 2	"C" indicates Object's object code has been purged
Column 3	"S" indicates Object's source code has been archived
Column 4	"C" indicates Object's object code has been archived
Column 5	"X" indicates Object's XREF data has been purged
Column 6	"M" indicates Object's master record has been purged

Job Steps for the Batch N2OPURGE Utility
The job steps for the Batch N2OPURGE utility are described below.

N2OPURGE of Natural, SYSERR, and DDMs
>**N2OPURGE**
>This step is controlled by card image input. Control cards specify which object is to be purged.
>
>N2OPURGE is a NATURAL object that verifies security in User-Exit 12, checks for a valid environment, and builds the output parameter file CMWKF01. Refer to the *N2O Administrator Manual* for details on User-Exit 12.
>
>This step must be executed from a NATURAL FUSER that is local to the N2O Installation.
>
>**PURGE and ARCHIVE**
>N2OPURG1 is a NATURAL object that inputs CMWKF01, the output parameter file from N2OPURGE. This step must be executed from a NATURAL FUSER local to where the object is located. N2OPURG1 reads the input cards, which identify the Environment Definition where the NATURAL object is located and the object to be purged. An output dataset of acknowledgment records is created as CMWKF02.
>
>**N2OPURGE ACKNOWLEDGMENT**
>N2OPURG2 is a NATURAL object that must be executed from a NATURAL FUSER that is local to the N2O installation. Acknowledgment records created by step N2OPURG1 are input as CMWKF02 to update the N2O Migration file.

N2OPURGE of 3GL PDS objects
>The standard N2O3GL JCL program (executing N2OSELT) located in the N2O JCL library is used to build/submit the N2OPURGE of 3GL PDS objects (uses member PDSPURGE). N2O3GL processing is documented in the N2O Administrator Manual Section V.5.1 Overview of 3GL Batch Processing.
>
>IEBTPCH is used to write the specified objects to the SYSUT1 work file. An IDCAMS delete step is used to delete the objects.
>N2OPURG3 is a Natural object that must be executed from a Natural FUSER that is local to the N2O installation. N2O is updated with an acknowledgement of the delete by reading the IDCAMS delete output.
>
>**Note: Sites that have N2OPURGE'd objects that were not archived, should execute program CONV531P to update existing N2OPURGE'd detail records, allowing them to be displayed on the History of an Environment and History of an Object reports. CONV531P can be executed online or batch. It should be run in an environment that has access to the N2O Migration file.**

Batch N2OPURGE Utility JCL – Natural, SYSERR, and DDMs
JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively.

The following sample JCL may be used to execute the N2OPURGE utility in batch. The sample assumes that both the N2O files and NATURAL FUSER file where the object is to be purged are on the same node. Sample Batch N2OPURGE JCL is provided on the N2O installation tape in the library N2OBATCH as object "MVSPURGE".

When submitting the JCL manually, replace the &INPUT with the Object Type, Environment Definition, library, object name, and the archive option (Y or N) for each object to be purged (separated by ' '). Valid values for Object Type are N (NATURAL), S (SYSERR messages), and P (PREDICT).

Multiple records may be specified when manually submitted. "9999" must be specified for the Environment Definition to terminate input.

MVSPURGE
```
//N2OPURGE JOB (20000),'BATCH N2OPURGE',CLASS=T,NOTIFY=&USERID
//*
//N2OPURGE EXEC PGM=NATBATCH
//CMWKF01  DD  DSN=N2OPURGE.LIST,DISP=(,CATLG),
//             DCB=(RECFM=VB,LRECL=123,BLKSIZE=127),
//             UNIT=SYSDA,SPACE=(TRK,(12,12))
//CMPRINT  DD  SYSOUT=*
//CMSYNIN  DD  *
LOGON N2OLIB
N2OPURGE
&INPUT
FIN
/*
//N2OPURG1 EXEC PGM=NATBATCH
//CMWKF01  DD  DSN=N2OPURGE.LIST,DISP=(OLD,DELETE)
//CMWKF02  DD  DSN=N2OPURGE.ACKN,DISP=(,CATLG),
//             DCB=(RECFM=VB,LRECL=290,BLKSIZE=294),
//             UNIT=SYSDA,SPACE=(TRK,(12,12))
//CMPRINT  DD  SYSOUT=*
//CMSYNIN  DD  *
LOGON SYSTEM
N2OPURG1
FIN
/*
//N2OPURG2 EXEC PGM=NATBATCH
//CMWKF02  DD  DSN=N2OPURGE.ACKN,DISP=(OLD,DELETE)
//CMPRINT  DD  SYSOUT=*
//CMSYNIN  DD  *
LOGON N2OLIB
N2OPURG2
FIN
/*
```

Batch 3GL PDS N2OPURGE Utility JCL
Available for z/OS sites only.

The following sample JCL may be used to execute the 3GL PDS N2OPURGE utility in batch. The sample assumes that both the N2O files and 3GL PDS where the object is to be purged are on the same node. Sample Batch 3GL PDS N2OPURGE JCL is provided on the N2O installation tape in the library N2OBATCH as object "MVS3PRGE". It is required the JCL be renamed to PDSPURGE and customized for site standards. Note that the NPACKN step in PDSPURGE should execute using a Natural Nucleus where N2O is installed.

User exit, N2OUE33N is called to customize the N2OPURGE of 3GL PDS objects.

The following job will be submitted using the standard N2O3GL JCL (executes N2OSELT) program located in the N2O JCL library.

```
MVS3PRGE
//PDSPURG  JOB (ACCOUNTING),'PDS N2OPURGE',CLASS=A,NOTIFY=&SYSUID
//*
//**********************************************************************
//***
//*  THIS IS SAMPLE JCL FOR THE 3GL N2OPURGE UTILITY
//*  THIS SHOULD BE RENAMED TO PDSPURGE
//***
//****
//**********************************************************************
//*
//* &INCLUDE PRTPCH will be automatically replaced with the IEBPTPCH
//* commands necessary to punch the members to a workfile.
//*
//NPPUNCH      EXEC PGM=IEBPTPCH
//SYSPRINT DD  SYSOUT=*
//SYSUT1   DD  DSNAME=&PDS,DISP=(SHR,KEEP),UNIT=SYSDA
//SYSUT2   DD  DSNAME=&&TEMP,DISP=(NEW,PASS,DELETE),
//             UNIT=SYSDA,SPACE=(TRK,(15,15))
//SYSIN    DD  *
&INCLUDE PRTPCH
/*
//**********************************************************************
//*
//* &INCLUDE DELETE will be replaced automatically by N2O with
//*      IDCAMS cards to delete each member that were migrated
//*      if MOVE is specified for the Migration Profile.
//*
//NPDELETE   EXEC PGM=IDCAMS,COND=(8,LT)
//SYSPRINT DD  DSN=&&DELOUT,
//             DCB=(RECFM=VB,LRECL=125,BLKSIZE=129),
//             DISP=(NEW,PASS,DELETE),
//             UNIT=SYSDA,SPACE=(TRK,(5,5))
//DD1      DD  DISP=SHR,DSN=&PDS
//SYSIN    DD *
&INCLUDE DELETE
/*
//**********************************************************************
//*  N2OPURG3 RUNS ON THE FUSER WHERE N2O IS INSTALLED.
//*  IT REQUIRES A NATURAL NUC WITH ACCESS TO THE N2O-ADMINISTRATION
//*  N2O-MIGRATION FILES AND ANY N2O-ARCHIVE FILE DEFINED TO THE 3GL
//*  ENVIRONMENT WHERE THE 3GL N2OPURGE OCCURS.
//**********************************************************************
//NPACKN   EXEC NATBATCH
//CMWKF01  DD  *
&N2OPURGE
/*
//CMWKF02  DD  DSN=&&TEMP,DISP=(OLD,PASS,DELETE)
//CMWKF03  DD  DSN=&&DELOUT,DISP=(OLD,PASS,DELETE)
//CMPRINT  DD  SYSOUT=*
//CMSYNIN  DD  *
LOGON N2OLIB
N2OPURG3
FIN
/*
//**********************************************************************
```

V.3.2   Recover from an Archive Backup (Batch Only)

The Recover from an Archive Backup recovers NATURAL objects, PDS objects, and SYSERR messages purged from an Archive file.

To access the Recover from an Archive Backup screen, enter "B" on the Maintenance Tools menu.

If Checkout/Checkin is active, then the Checkout/Checkin rules are verified before recovery.

```
 01-12-31                   N-2-O MAINTENANCE TOOLS              TSI0373
 11:38:00                 RECOVER FROM AN ARCHIVE BACKUP         TSI1



                    Event       :  _____
                    Sequence    :  _____
                    Object      :  _____
                    From Env    :  ____
                    From Library :  _____
                    To Env      :  ____
                    To Library  :  _____
                    Source/Object:  ___

                    Backup DSN  :  _____




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
∞ EVENT (required)	N,S,O	The name of the Event that archived the NATURAL object, PDS object, or SYSERR message.
SEQUENCE (required)	N,S,O	The sequence number of the Event.
OBJECT (required)	N,S,O	The name of the NATURAL object, PDS object, or SYSERR message.
∞ FROM ENV (required)	N,S,O	The source environment of the recovery for NATURAL objects, PDS objects, or SYSERR messages.
FROM LIBRARY (required)	N,S,O	The source library of the recovery for NATURAL objects or SYSERR messages.
∞ TO ENV (required)	N,S,O	The target environment of the recovery for NATURAL objects, PDS objects, or SYSERR messages.
TO LIBRARY (required)	N,S	The target library of the recovery for NATURAL objects or SYSERR messages.

∞ indicates field-level help is available.

(Continued from previous page)

Field	Type	Description
SOURCE/ OBJECT (required)	N,O	The type of NATURAL object to be recovered. Valid values are as follows:
		S — NATURAL source code or PDS object.
		C — NATURAL object code.
		S/C — Both source and object code for NATURAL objects.
SYSERR TYPE (required)	S	The type of SYSERR message to be recovered. Valid values are as follows:
		US — User-supplied short message.
		UL — User-supplied long message.
		U — Both short and long messages.
CATEGORY (required)	O	The 3GL/Other category of the number to be recovered. Valid values are as follows:
		ASMB — Indicates all types of Assembler.
		COBOL — Indicates all types of COBOL.
		FORT — Indicates all types of FORTRAN.
		PL/I — Indicates all PL/I types.
		RPG — Indicates RPG.
		DATA — Indicates DATA FILES.
		JCL — Indicates JCL, CLIST, CNTL.
		OTHER — All other types.
BACKUP DSN (required)	N,S,O	The name of the Archive backup dataset to be used in the recovery.

Job Steps for the Recover from an Archive Backup Utility

The Recover from an Archive Backup process recovers an object from an Archive Backup dataset created by the Archive Purge utility. This process is executed in batch. If Checkout/Checkin is active, the Recover from an Archive Backup utility validates checkout rules before recovering the object. Following the recovery, this utility updates the N2O Migration file with the results of the recovery.

N2ORAB1

N2ORAB1 is a NATURAL object that performs the first step of the Recover from an Archive Backup utility. This step must be executed from the NATURAL FUSER that is local to the N2O installation. N2ORAB1 reads a control card from the input workfile CMWKF01. The control card specifies which Object is to be recovered.

If a user submits the recovery through a system internal reader, N2O replaces &INPUT in CMWKF01 with the correct control card. If a user submits the recovery manually, the user must create the control cards in the workfile.

N2ORAB1 verifies the control card parameters and the recovery rules for Checkout/Checkin. If the object can be recovered, an output record is written to CMWKF02.

N2ORAB2

N2ORAB2 is a NATURAL object that recovers NATURAL objects and SYSERR messages from an Archive Backup.

This step must be executed from the NATURAL FUSER that is the target of the recovery. N2ORAB2 reads the N2ORAB1 output records from CMWKF01 and locates the correct Object in the backup dataset, CMWKF02.

If a user submits the recovery through a system internal reader, N2O replaces &BACKUP with the dataset name. If a user submits the recovery manually, the dataset name must be placed in the JCL and EXECs.

N2ORAB2 recovers the object from the backup dataset to the target FUSER, and writes an acknowledgment record to CMWKF03.

N2ORAB2T

N2ORAB2T is a NATURAL object that recovers PDS objects from an Archive Backup. This step must be executed from the environment that is the target of the recovery. N2ORAB2T reads the N2ORAB1 output records from CMWKF01 and locates the correct member in the backup dataset, CMWKF02.

If a user submits the recovery through a system internal reader, N2O replaces &BACKUP with the dataset name. If a user submits the recovery manually, the dataset name must be placed in the JCL and EXECs.

N2ORAB2T recovers the object from the backup dataset to the correct PDS member, CMWKF05. If a user submits the recovery through a system internal reader, N2O replaces &MEMBER with the PDS member name. If a user submits the recovery manually, the member name must be placed in the JCL.

N2ORAB2T recovers the member from the backup dataset to a PDS member, and writes an acknowledgment record to CMWKF03.

N2ORAB3
N2ORAB3 is a NATURAL object that performs the third step of the Recover from an Archive Backup utility. This step must execute from a NATURAL FUSER that is local to the N2O installation. N2ORAB3 reads the acknowledgment records from N2ORAB2 or N2ORAB2T, and creates a record of the recovery that can be identified as RCVR-BKP on the History of an Object report.

Archive Back Up Recovery JCL for NATURAL Objects and SYSERR Messages
JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively.

The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified. In step 2 of the JCL below, the name of workfile 2 must be changed to the name of the Archive Backup dataset. The name of workfile 2 may also be found by selecting Object Details on the Event Details Report.

MVSRAB
```
//N2ORAB   JOB (ACCT),'RECOVER ARCH BACKUP',CLASS=A,NOTIFY=&USERID
//*
//* &INPUT will be replaced automatically by N2O with:
//* - Type of Object (N, S)
//* - Name of Event which archived the Object
//* - Sequence of Event which archived the Object
//* - Environment where Object was archived from
//* - Library where Object was archived from
//* - Environment where Object should be recovered to
//* - Library where Object should be recovered to
//* - Object name (NATURAL program, SYSERR number)
//* - US, UL, or U
//* Examples:
//* N CHECKIN 271 PROD N2OPROD TEST N2OTEST PAYROLLP S
//* S CHECKIN 271 PROD N2OPROD TEST N2OTEST 1015 US
//*
//N2ORAB1  EXEC  PGM=NATBATCH
//CMWKF01  DD   *
&INPUT
/*
//CMWKF02  DD   DSN=REC.PARMS,DISP=(NEW,PASS,DELETE),
//              SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
//              DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
//CMPRINT  DD   SYSOUT=*
//CMSYNIN  DD   *
LOGON N2OLIB
N2ORAB1
FIN
/*
//N2ORAB2  EXEC PGM=NATBATCH
//CMWKF01  DD   DSN=REC.PARMS,DISP=(OLD,DELETE,CATLG)
//CMWKF02  DD   DSN=&BACKUP,DISP=(OLD,KEEP,KEEP),
//CMWKF03  DD   DSN=REC.ACKN,DISP=(NEW,PASS,DELETE),
//              SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
//              DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
//CMPRINT  DD   SYSOUT=*
//CMSYNIN  DD   *
LOGON SYSTEM
N2ORAB2
FIN
/*
//N2ORAB3  EXEC  PGM=NATBATCH
//CMWKF01  DD   DSN=REC.ACKN,DISP=(OLD,DELETE,CATLG)
//CMPRINT  DD   SYSOUT=*
//CMSYNIN  DD   *
LOGON N2OLIB
N2ORAB3
FIN
/*
```

Recovery JCL for PDS Objects
MVSRAB

```
//N2ORAB   JOB (ACCT),'RECOVER ARCH BACKUP',CLASS=A,NOTIFY=&USERID
//*
//* &INPUT will be replaced automatically by N2O with:
//* - O for 3GL/Other Member
//* - Name of Event which archived the Member
//* - Sequence of Event which archived the Member
//* - Environment where Member was archived from
//* - Environment where Member should be recovered to
//* - Member name
//* - Category
//* - S for Source
//* Examples:
//* O CHECKIN 271 PROD TEST COBPROG COBOL S
//*
//N2ORAB1  EXEC  PGM=NATBATCH
//CMWKF01  DD   *
&INPUT
/*
//CMWKF02  DD   DSN=REC.PARMS,DISP=(NEW,PASS,DELETE),
//              SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
//              DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
//CMPRINT  DD   SYSOUT=*
//CMSYNIN  DD   *
LOGON N2OLIB
N2ORAB1
FIN
/*
//*
//N2ORAB2T EXEC PGM=NATBATCH
//CMWKF01  DD   DSN=REC.PARMS,DISP=(OLD,DELETE,CATLG)
//CMWKF02  DD   DSN=&BACKUP,DISP=(OLD,KEEP,KEEP),
//CMWKF03  DD   DSN=REC.ACKN,DISP=(NEW,PASS,DELETE),
//              SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
//              DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
//CMWKF05  DD   DSN=&PDS(&MEMBER),DISP=SHR
//CMPRINT  DD   SYSOUT=*
//CMSYNIN  DD   *
LOGON SYSTEM
N2ORAB2T
FIN
/*
//*
//N2ORAB3  EXEC  PGM=NATBATCH
//CMWKF01  DD   DSN=REC.ACKN,DISP=(OLD,DELETE,CATLG)
//CMPRINT  DD   SYSOUT=*
//CMSYNIN  DD   *
LOGON N2OLIB
N2ORAB3
FIN
/*
```

V.3.3 <u>Archive Backup Report (Batch Only)</u>

The Archive Backup Report displays all objects stored on an Archive Backup dataset.   The Archive Backup Report is available in batch only.

To access the Archive Backup Report submit screen, enter "C" on the Maintenance Tools menu.

```
 01-12-31                N-2-O MAINTENANCE TOOLS                  TSI0373
 11:38:00                ARCHIVE BACKUP REPORT                    TSI1



        Backup Data Set Name: _____

                    This Report Available in Batch Only








 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
BACKUP DSN (required)	N,S,O	The name of the Archive backup dataset to be reported.

Entering the Backup Dataset Name on the input screen and pressing Enter submits JCL to the internal reader, which produces the report in batch.

```
01-12-31                  N-2-O OBJECT REPORTING                      Page
11:39:52                   ARCHIVE BACKUP REPORT                       1
        BACKUP DATA SET: PROD.ARC.BKUP
Event/            From  Archive   Backup    Arc  Library/  Object      Seq/ Arch
Utility   Seq     Env   Date      Date      S/C  3GL Type  Name        Lng  Def
--------  -----   ----  --------  --------  ---  --------  ----------  ---- ----
DEV2PROD   6      PROD  20000211  01-02-21  S    PAYDEV    MSLOC1T     0001 ARCP
DEV2PROD   6      PROD  20000211  01-02-21  S    PAYDEV    MSLOC2T     0001 ARCP
DEV2PROD   6      PROD  20000211  01-02-21  S    PAYDEV    MSPGM1T     0001 ARCP
DEV2PROD   6      PROD  20000211  01-02-21  S    PAYDEV    MSPGM1T     0002 ARCP
DEV2PROD   6      PROD  20000211  01-02-21  S    PAYDEV    MSPGM1T     0003 ARCP
DEV2PROD   6      PROD  20000211  01-02-21  S    PAYDEV    MSPGM1T     0004 ARCP
DEV2PROD   6      PROD  20000211  01-02-21  S    PAYDEV    MSPGM1T     0005 ARCP
DEV2PROD   6      PROD  20000211  01-02-21  S    PAYDEV    MSPGM2T     0006 ARCP
DEV2PROD   6      PROD  20000211  01-02-21  S    PAYDEV    MSPGM2T     0007 ARCP
DEV2PROD   9      PROD  20000213  01-02-21  S    PAYDEV    0001        0001 ARCP
DEV2PROD   9      PROD  20000213  01-02-21  S    PAYDEV    0002        0001 ARCP
DEV2PROD   9      PROD  20000213  01-02-21  S    PAYDEV    0003        0001 ARCP
DEV2PROD   9      PROD  20000213  01-02-21  S    PAYDEV    0004        0001 ARCP
DEV2PROD   9      PROD  20000213  01-02-21  L    PAYDEV    0001        0001 ARCP
DEV2PROD   9      PROD  20000213  01-02-21  L    PAYDEV    0002        0001 ARCP
DEV2PROD   9      PROD  20000213  01-02-21  L    PAYDEV    0004        0001 ARCP
```

Field	Type	Description
BACKUP DATA SET (supplied)	N,S,O	The name of the Archive backup dataset being reported.
Event/Utility (supplied)	N,S,O	The Master Event of the migration.
SEQ (supplied)	N,S,O	The sequence number of the Event.
FROM ENV (supplied)	N,S,O	The source Environment Definition of the Event.
ARCHIVE DATE (supplied)	N,S,O	The date the object was Archived.
BACKUP DATE (supplied)	N,S,O	The date the Archive file was backed up.
ARCH S/C (supplied)	N,S,O	The form of the object archived.
		S indicates only the source form of the Program was archived.
		C indicates only the object form of the Program was archived.
		S/C indicates both forms of the program were Archived.
LIBRARY/3GL TYPE (supplied)	N,S	The library that contained the Natural object or SYSERR message.
	O	The category of the 3GL object.
OBJECT NAME (supplied)	N,S,O	The name of the archived object.
ARCH DEF (supplied)	N,S,O	The Archive Definition used to archive the object.

Work File Reporting in Batch

The following JCL is an example of OS/390 (MVS) JCL used to support the Batch Reporting process when a work file is used as input. A JCL example is shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively. JCL and EXECs should be tailored to accommodate site-specific needs. The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

OS/390 (MVS) JCL:

MVSWKRP
```
//BATCHREP JOB (nnn),'N-2-O Batch Report',CLASS=A,NOTIFY=&USERID
//REPORT   EXEC PGM=NATL
//CMPRINT  DD  SYSOUT=*
//CMPRT01  DD  SYSOUT=*
//CMSYNIN  DD  *
LOGON N2OLIB
N2OTOLC
&INPUT
FIN
//CMWKF01  DD  DSN=&BACKUP,DISP=SHR
/*
//
```

The following tables illustrate the JCL and EXECs modifications necessary to execute the Archive Backup Report in batch.

Archive Backup Report

&Report	&INPUT	&BACKUP
N2OTOLC	Backup Data Set Name	Backup Data Set Name

V.3.4 Recover from an Event Backup (Batch Only)

The Recover from an Event Backup recovers events purged from the N2O Migration file.

To access the Recover from an Event Backup screen, enter "D" on the Maintenance Tools menu.

```
05-02-14                    N-2-O MAINTENANCE TOOLS                    TSI0373
21:27:20                    RECOVER FROM AN EVENT BACKUP               TSI1




            Backup DSN   :   _____






Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
BACKUP DSN (required)	N	The name of the event backup dataset created by the Event Purge process to be used in the recovery.

Job Steps for the Recover from an Event Backup Utility

The Recover from an Event Backup process recovers events to the N2O Migration file from an Event Backup dataset created by the Event Purge utility. This process is executed in batch.

N2OREB

N2OREB is a NATURAL object that recovers events from an Event Backup.

This step must be executed from the NATURAL FUSER where N2O is installed. N2OREB reads the events from the backup dataset, CMWKF01.

If a user submits the recovery through a system internal reader, N2O replaces &BACKUP with the dataset name. If a user submits the recovery manually, the dataset name must be placed in the JCL and EXECs.

N2OREB recovers the events from the backup dataset to the migration file.

Event Back Up Recovery JCL

JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively.

The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified. In step 1 of the JCL below, the name of workfile 1 must be changed to the name of the Archive Backup dataset.

MVSREB

```
//N2OREB   JOB (ACCT),'RECOVER EVENT BACKUP',CLASS=A,NOTIFY=&USERID
//*
//N2OREB1  EXEC  PGM=NATBATCH
//CMWKF01  DD   DSN=&BACKUP,DISP=SHR
//CMPRINT  DD   SYSOUT=*
//CMPRT01  DD   SYSOUT=*
//CMSYNIN  DD   *
LOGON N2OLIB
N2OREB
FIN
/*
//
```

V.4   Programmer Tools

Programmer Tools provides utilities to compare, list, and scan NATURAL objects.

To access the Programmer Tools menu, enter "P" on the Toolbox Subsystem menu or the direct command TOL PROG on any menu.

```
 01-12-31                N-2-O PROGRAMMER TOOLS MENU              TSI0373
 11:38:00                                                         TSI1

                     Code   Function
                     ----   ------------------------
                       C    Object Compare
                       D    Source Compare
                       S    N2OSCAN Utility
                       .    Terminate Programmer Tools
                     ----   ------------------------

             Enter Code: _     Type: _









 Direct Command: _____                    TOL PROG
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   USR   PRJ   ----  ----  EXIT
```

Field	Type	Description
ENTER CODE (required)		The function to be executed. Valid values are as follows:
	N	**C** **Object Compare** Displays the differences between the object code of two NATURAL objects.
	N	**D** **Source Compare** Displays the differences between the source code of two NATURAL objects.
	N	**S** **N2OSCAN Utility** Allows execution of scans of NATURAL source code and the viewing and maintaining of scan output.
TYPE (supplied)		The type of objects to be compared and listed. Valid values are as follows:
	N	Indicates NATURAL.

V.4.1 <u>Object Compare</u>

The Object Compare utility displays the differences between the object code of two NATURAL objects. These objects may be located in any FUSER or any N2O Archive file.

To access the Object Compare utility, enter "C" on the Programmer Tools menu.

```
 01-12-31                    N-2-O PROGRAMMER TOOLS              TSI0373
 11:38:00                    OBJECT COMPARE UTILITY              TSI1


                         Base            Compare
                         Object          Object

                Env Def:   ____            ____
                Library:  _____         _____
                 Object:  _____         _____


                            Options
                 ---------------------------
                 Mode.......................O




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Type	Description
∞ ENV DEF (required)	N	The Environment Definitions/Archive Definitions where the NATURAL objects are located.
LIBRARY (required)	N	The libraries where the NATURAL objects are located.
OBJECT (required)	N	The name of the NATURAL objects to be compared.
MODE (required)	N	Indicates how the job is executed (batch or on-line).
	B	Submits JCL to the internal reader, which processes the function in batch.
	O	Processes the function on-line. (default: O)

∞ indicates field-level help is available.

When either the base or compare object resides in an N2O Archive file, a pop-up window is displayed. One of the following fields must be provided:

a) An Archive Date, which generates and displays a list of archive versions starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list. The Archive Date must be entered using the YYYYMMDD format.

b) An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

The screen below displays information about the two object codes.

```
01-12-31                 OBJECT COMPARE UTILITY                    TSI0373
11:38:00                                                          TSI1


PAYPROD  / MENU        Type      :  PROGRAM     Structured Mode
Library   :  PAYPROD  User-ID   :  BATCH02  Jobname    :  BATCH02
Date Catalg:  01-07-23 Time Catalg:  01:37:14 Terminal-ID:  BATCH02
NATURAL Ver:  2.16                           GDA Name   :  PAYGDA
Size in user   area (USIZE) :  5234  Bytes   GDA Date   :  01-07-22
Size in buffer pool         :  7564  Bytes   GDA Time   :  22:34:58
Size in source area (ESIZE) :  7704  Bytes
Number subroutines (PERFORM):  1                LS= 132 PS= 60
-----------------------------------------------------------------------------
PAYTEST  / MENU        Type      :  PROGRAM     Structured Mode
Library   :  PAYTEST  User-ID   :  BATCH01  Jobname    :  BATCH01
Date Catalg:  01-07-23 Time Catalg:  19:41:34 Terminal-ID:  BATCH01
NATURAL Ver:  2.16                           GDA Name   :  PAYGDA
Size in user   area (USIZE) :  5234  Bytes   GDA Date   :  01-07-23
Size in buffer pool         :  7564  Bytes   GDA Time   :  22:31:31
Size in source area (ESIZE) :  7704  Bytes
Number subroutines (PERFORM):  1                LS= 132 PS= 60

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Pressing Enter on the previous screen displays the result of the Object Compare utility.

```
01-12-31                 OBJECT COMPARE UTILITY                    TSI0373
11:38:00                                                          TSI1




                        DBID   FNR   Pgm Name  Library
                        ----   ---   --------  --------
             Base
             Object:  1     231    MENU      PAYPROD
             -----------------------------------
             Compare
             Object:  1     231    MENU      PAYTEST

       The two object codes do not match.




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

This screen is displayed at the end of each object comparison. The message indicates the results of the comparison.

V.4.2   Source Compare

The Source Compare utility identifies differences between the source code of NATURAL objects located on an FUSER or an N2O Archive file local to N2O. The ability to compare a single pair of objects, a range of objects or two NATURAL libraries is provided. If a range of objects or NATURAL libraries is compared, any unique objects (objects existing in only one location) are ignored. To access the Source Compare Utility screen, enter "D" on the Programmer Tools menu.

```
01-12-31               N-2-O PROGRAMMER TOOLS                    TSI0373
11:38:00               SOURCE COMPARE UTILITY                    TSI1

                          Base          Compare
         Env Def........:    ____          ____
         Library........:    _____      _____
         Starting Object:   _____      _____  (Wildcard/Single)
         Ending Object..:   _____      _____  (Both Blank=All)

                          Option(s)
         ----------- Ignore -------------- ----------- Show ------------
Object Comments......... Y (Yes/No)        Statistics Only... N( Yes/No)
      Spacing.......... N (Yes/No)         Source code Only.. N (Yes/No)
Range  Positions........ _____          Missing Objects... N(Yes/No)
      Identical Objects N  (Yes/No/Show) Range Statistics.. N (Yes/No)
      -------------------------------- ----------------------------
      Minimum number of lines for a MATCHING Block 0 (0-9)
      Maximum number of lines compared........ 120 (0-9999 0=No Limit)
      Expand Matching.. N (Yes/No)       Mode............. O (On-line/Batch)


Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11-PF12---
      HELP  ---- END   ---- ---- ---- ---- ---- ---- ---- ---- ----
```

Field	Type	Description
∞ BASE/COMPARE ENV DEF (required)	N	The Environment Definitions/Archive Definitions where the NATURAL objects are located.
BASE /COMPARE LIBRARY (required)	N	The libraries where the NATURAL objects are located.
BASE STARTING OBJECT (optional)	N	The starting value of the NATURAL object(s) in the base library to be compared. Partial names and wildcards (e.g., AAP*) may be entered. Wildcards and Ranges do not work against a Remote environment.
BASE ENDING OBJECT (optional)	N	The ending value of the NATURAL object(s) in the base library to be compared. Partial names and wildcards (e.g., AAP*) may be entered. To compare a single object, leave this field blank and enter the object's name in the Starting Object field.

"∞" indicates field-level help is available.

(Continued from previous page)

Field	Type	Description
COMPARE STARTING OBJECT (optional)	N	The value of the NATURAL object(s) in the compare library to be compared. If the Compare Starting Object field is left blank, the Base Starting Object and Compare Starting Object are considered the same.
COMPARE ENDING OBJECT (optional)	N	The ending value of the NATURAL object(s) in the compare library to be compared. Partial names and wildcards (e.g., AAP*) may be entered. If the Compare Ending Object field is left blank, the Base Ending Object and Compare Ending Object are considered the same.
IGNORE COMMENTS (required)	N	Indicates whether comment lines are included when comparing each pair of objects. Y Ignores all comment lines when comparing a pair of objects. A comment line contains "*", "**", or "/*" in the first two non-blank positions of any line. Inline comments (comments at the end of a source line) are ignored. (default: Y) N Includes comment lines when comparing a pair of objects.
SHOW STATISTICS ONLY (required)	N	Indicates whether all differences in each pair of objects are displayed. Y Displays a page of statistics without viewing a listing of line by line differences between a pair of objects. N Displays a listing of line by line differences in a pair of objects followed by a page of statistics. (default: N)
IGNORE SPACING (required)	N	Indicates whether spacing is ignored when comparing a pair of objects. Y Ignores spacing when comparing a pair of objects. Before comparing objects, all spaces are extracted from each line. Spaces between two single quotes are not removed. N Includes spacing when comparing a pair of objects. (default: N)

(Continued from previous page)

Field	Type	Description
SHOW SOURCE CODE ONLY (required)	N	Indicates whether the page of statistics for each pair of objects is displayed.
		Y Displays line by line differences in a pair of objects without a page of statistics.
		N Displays line by line differences in a pair of objects followed by a page of statistics. (default: N)
IGNORE POSITIONS (optional)	N	Indicates which positions are ignored for synchronizing objects in the specified range between the base and compare libraries. This parameter is valid if a range is entered.
		12345678 The number(s) of the position(s) ignored for the synchronization of object names (e.g., APGM12 equals BPGM22 when IGNORE POSITIONS is set to position 1 and 5 e.g., IGNORE POSITION is set to 15).
		(default: None except when two wildcards are entered. Under that condition, the positions that are not equal in the wildcards will be automatically set (e.g., wildcards PGM* & BAK* would cause IGNORE POSITIONS to set at 123 and wildcards PGM1* & PGM2* would cause IGNORE POSITIONS to set at 4. This is in addition to any positions entered).
SHOW MISSING OBJECTS (required)	N	Indicates whether missing objects within the specified range are displayed in a pop-up window on-line or CMPRT01 in BATCH. This parameter is valid only if a range is entered.
		Y Displays the missing objects within the specified range in the base and compare libraries.
		N Ignores missing objects within the specified range, in the base and compare libraries. (default: N)
IGNORE IDENTICAL OBJECTS (required)	N	Indicates whether identical objects within the specified range are displayed or not. This parameter is valid if a range is entered.
		Y Ignores objects within the specified range that are identical.
		S Displays the names of objects within the specified range that are identical in a popup window online or CMPRT01 in BATCH.
		N Displays all information about all objects within the specified range that are identical. (default: N)

(Continued from previous page)

Field	Type	Description	
SHOW RANGE STATISTICS (required)	N	Indicates whether cumulative statistics totals for a range of objects are displayed. This parameter is valid if a range is entered.	
		Y	Collects and displays the cumulative statistics totals for all objects within the specified range in the base and compare libraries.
		N	Does not collect and display the cumulative statistics totals for all objects within the specified range in the base and compare libraries. (default: N)
MINIMUM NUMBER OF LINES FOR A MATCHING BLOCK (required)	N	0 - 9	Indicates the minimum number of concurrent lines that must match for a block of code to be considered matching. (default: 0)
MAXIMUM NUMBER OF LINES COMPARED (required)	N	0 - 9999	Indicates the maximum number of concurrent lines that will be scanned in a pair of objects to locate matching code. (default: 120)
EXPAND MATCHING (required)	N	Indicates whether matching source code in each pair of objects will be expanded.	
		Y	Displays all code in a block of matching source code.
		N	Displays only the first and last line of a block of matching source code. (default: N)
MODE (required)	N	Indicates how the job is executed (batch or on-line).	
		B	Submits JCL to the internal reader, which processes the function in batch.
		O	Processes the function on-line. (default: O)

When either the base or compare object resides in an N2O Archive file, a pop-up window is displayed. One of the following fields must be provided:

a) An Archive Date, The Archive Date must be entered using the YYYYMMDD format.

   1) When comparing a single object

   A list of archive versions is generated and displayed, starting at the most recent archive and continuing until the specified Archive Date. One of the versions must be chosen from this list.

   2) When comparing a range of objects

   Displays the first version of each object located on the archive file for the specified range archived before or at the specified date.

b) An Archive Version Number, which allows N2O to go directly to the Archive file and read the specified version. The Archive Version Number may be between -1 and -99.

The screen below is displayed to show the differences found between a pair of objects.

```
01-12-31               N-2-O SOURCE COMPARE UTILITY           Report Page:   1
11:38:00                       Source Code                    Object Page:   1
Base >>>>: Env Def: D230 Library: LIB-ONE     PROGRAM : PGM-ONE Mode: REPORT
>>>> Comp: Env Def: D230 Library: LIB-TWO     PROGRAM : PGM-TWO Mode: REPORT
==== ==== ....+....1....+....2....+....3....+....4....+....5....+....6....+....
a)  0010 0010 * THIS IS A PROGRAM IN THE PAYROLL SYSTEM WHICH
    .... ....               <<< MATCHING BLOCK >>>
    0050 0050 MOVE 1 TO #INDEX

b)  0060 ---- ADD 3 TO #TOTAL
    0070 ---- IF #TAX-1 = #TAX-2
    0080 ----    DO
    0090 ----       WRITE 'THE FIGURES DO NOT MATCH' DOEND
c)  ---- 0060 ADD 2 TO #TOTAL

d)  0100 0070 * CALCULATION ROUTINE
    … …                     <<< MATCHING BLOCK >>>
    0140 0110 SUBTRACT 1 FROM #REMAINDER

e)  0150 --- RESET #I #J

f)  0160 0120 *
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   INFO  ----  ----  ----  ----  ----  LEFT  RIGHT ----
```

The first and second columns contain line numbers from the base object and compare object respectively. The remainder of the screen is used to display the source associated with each line number. The footnotes below highlight the differences in the sample comparison.

    a)/d)   Represent Matching Blocks. A Matching Block begins when the Compare utility finds a line from the base object that matches a line from the compare object. It continues until the Compare utility finds a line from the base object that does not have a corresponding match in the compare object. The message <<< MATCHING BLOCK >>> is displayed between the first and last matching lines of the Matching Block when EXPAND MATCHING is set to "N".

    b)/e)   Represent lines that exist in the base object, but have no matches in the Compare Program.

    c)   Represents a line that exists in the compare object, but has no match in the base object.

    f)   Represents a Matching Block with only one line.

PF-Key	Function	Description
PF3/PF15	END	Return to Source Compare Screen.
PF4/PF16	INFO	Display date and time saved, User-ID, Terminal ID, and NATURAL version for the base and compare objects.
PF10/PF22	LEFT	Scroll screen left.
PF11/PF23	RIGHT	Scroll screen right.

The following screen(s) display summary statistics generated by the Source Compare utility. Information is provided about the NATURAL objects being compared, the number of NATURAL source lines and comment lines and the total number of lines in each object. These screens also indicate which options were in effect for this comparison.

For non-Archive Environments, the screen below is displayed.

```
  01-12-31                     N-2-O SOURCE COMPARE UTILITY      Report Page:    2
  11:38:00                            Statistics                 Object Page:    2

          Env  Dbid  Fnr   Library  Object   Type      Date       Time      Ver
          ----  -----  -----  --------  --------  --------  ----------  --------  -----
 Base   : D230   230     54 LIB-ONE  PGM-ONE  PROGRAM  2001/01/13 10:47:54 2.2.8
 Compare: D230   230     54 LIB-TWO  PGM-TWO  PROGRAM  2001/02/08 09:23:21 2.2.8
          Mode       Terminal Userid    OS        TP Mon   Trans    Size
          --------  --------  --------  --------  --------  --------  ------
 Base   : STRUCT    TSITERM  TSI300C  MVS/ESA  TSO       TDEV      1,470 Bytes
 Compare: STRUCT    TSITERM  TSI300D  MVS/ESA  TSO       TPRD      1,873 Bytes
          Source   Comment Total
          Lines    Lines   Lines
          ------   ------- -----
 Base   :    7 +     9  =   16
 Compare:    4 +     8  =   12

    11 Lines match in both objects

  Options were as follows:  Ignore Comments - Y   Ignore Positions  - 123
                            Ignore Spacing  - Y   Ignore Identical Objects - Y
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Comparing Archive Environments produces the statistical page shown below.   The additional information of Archive Date, Archive Time, Archive Event, Archive Event Sequence, and Original Environment is displayed.

```
  01-12-31                     N-2-O SOURCE COMPARE UTILITY      Report Page:    2
  11:38:00                            Statistics                 Object Page:    2

          Env  Dbid  Fnr   Library  Object   Type      Date       Time      Ver
          ----  -----  -----  --------  --------  --------  ----------  --------  -----
 Base   : A230   230     55 LIB-ONE  PGM-ONE  PROGRAM  2001/01/13 10:47:54 2.2.8
 Compare: A230   230     55 LIB-TWO  PGM-TWO  PROGRAM  2001/02/08 09:23:21 2.2.8
          Mode       Terminal Userid    OS        TP Mon   Trans    Size
          --------  --------  --------  --------  --------  --------  ------
 Base   : STRUCT    TSITERM  TSI300C  MVS/ESA  TSO       TDEV      1,470 Bytes
 Compare: STRUCT    TSITERM  TSI300D  MVS/ESA  TSO       TPRD      1,873 Bytes
          Source   Comment Total Archive     Archive  Archive  Event Org
          Lines    Lines   Lines Date        Time     Event    Seq   Env
          ------   ------- ----- ----------  --------  --------  ----- ----
 Base   :    7 +     9  =   16 2001/01/06 14:19:37 DEV2PROD     138  D230
 Compare:    4 +     8  =   12 2001/01/06 14:18:54 DEV2PROD     135  D230

    11 Lines match in both objects

Options were as follows:  Ignore Comments - Y
                          Ignore Spacing  - Y

 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       ----  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

The following screens display range statistics generated by the Source Compare utility. In BATCH, the following screens are combined.

```
 01-12-31                  N-2-O SOURCE COMPARE UTILITY      Report Page:    4
 11:38:00                      Range Statistics             Object Page:    1

              Env  Dbid  Fnr   Library  Start Object End Object
              ---- ----- ----- -------- ------------ ----------
 Base    :    D230  230    54  LIB-ONE  PGM*
 Compare:    D230  230    54  LIB-TWO  BAK*
 ------------------------------------------------------------------------------
              Unique           Compared Objects            Total
              Objects       Identical Different Total      Objects
              -------       --------- --------- ------      -------
 Base    :      28            30         7       37           65
 Compare :       1                                            38
                              Compared Lines
                        Source     Comment     Total
                        --------- --------- ---------
 Base    :               568 +      122 =       690
 Compare :               568 +      122 =       690
   503 Lines match in both Libraries
  Options were as follows:  Ignore Comments - Y   Ignore Positions  - 123
                            Ignore Spacing  - Y   Ignore Identical Objects - Y
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ---- ---- END   ---- ---- ---- ---- ---- ---- ---- ---- ----
```

If a range of objects is entered and the Range Statistics option is set to "Y", the screen shown above is displayed. The total number of identical, changed, and unique NATURAL objects being compared, the total number of NATURAL source lines and comment lines, and the total number of lines for the range of objects are displayed. This screen also indicates what range was entered and which options were in effect for the comparison.

```
 01-09-05                  N-2-O SOURCE COMPARE UTILITY      Report Page:    9
 16:04:47               Range Statistics by Object Type    Object Page:    2
              Env  Dbid  Fnr   Library  Start Object End Object
              ---- ----- ----- -------- ------------ ----------
 Base   :     LBAS    3     9  LYNNP1
 Compare:     LDEV    3     9  LYNNT1

 ------------------------------------------------------------------------------
             GDA   PDA   LDA   COPY  TEXT  SRTN  SPGM  HELP  MAP   PGM   MAC   REP
 Identical    0     0     0     0     0     0     2     0     0     5     0
              +     +     +     +     +     +     +     +     +     +     +
 Different    0     0     0     0     0     0     0     0     0     0     0
              =     =     =     =     =     =     =     =     =     =     =
 In Both      0     0     0     0     0     0     2     0     0     5     0
 Unique       +     +     +     +     +     +     +     +     +     +     +
  Base   :    0     0     0     0     0     0     0     0     0     0     0
  Compare:    0     0     0     0     0     2     0     0     4    19     0
 Total        =     =     =     =     =     =     =     =     =     =     =
  Base   :    0     0     0     0     0     0     2     0     0     5     0
  Compare:    0     0     0     0     0     2     2     0     4    24     0

 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      ---- ---- END   ---- ---- ---- ---- ---- ---- ---- RIGHT ----
```

If a range of objects is entered and the Range Statistics option is set to "Y", the screen shown above is also displayed. Statistics for the total number of identical, changed, and unique NATURAL objects for each NATURAL object type being compared is displayed. This screen also indicates what range was entered for the comparison. PF11 will scroll the screen to the right, PF10 will scroll the screen to the left.

<u>Job Step for the Batch Source Compare Utility</u>
The automated submission of JCL for a batch comparison is provided as an alternative to on-line NATURAL object comparisons. Batch comparisons provide hard copy output and can be executed when on-line activity is at a minimum.

The following is a description of the job step for a batch source compare:

N2O3110B
The JCL and EXECs used for manual submission of batch comparisons varies slightly from the sample JCL. The &INPUT card must be replaced with three input cards for which a description and example are provided below. When submitting the comparison through an internal reader, these input cards are automatically placed in the JCL and EXECs.

1. The first input card supplies information about the base object and must include the following parameters separated by commas:

    •   BASE ENVIRONMENT or ARCHIVE Definition

    •   BASE LIBRARY

    •   BASE STARTING OBJECT name (not required)

    •   BASE ENDING OBJECT name (Blank for printing of one Object) (not required)

    •   ARCHIVE DATE or ARCHIVE VERSION (Blank if BASE ENVIRONMENT is not an ARCHIVE Definition)

2. The second input card supplies information about the compare object and must include the following parameters separated by commas:

    •   COMPARE ENVIRONMENT or ARCHIVE Definition

    •   COMPARE LIBRARY

    •   COMPARE STARTING OBJECT name (not required)

    •   COMPARE ENDING OBJECT name (Blank for printing of one Object) (not required)

    •   ARCHIVE DATE or ARCHIVE VERSION (Blank if COMPARE ENVIRONMENT is not an ARCHIVE Definition)

3. The last input record supplies information for the following options:

• IGNORE COMMENTS	(Y/N)
• SHOW STATISTICS ONLY	(Y/N)
• IGNORE SPACING	(Y/N)
• SHOW SOURCE CODE ONLY	(Y/N)
• IGNORE POSITIONS	(12345678) (Blank for single object)
• SHOW MISSING OBJECTS	(Y/N) (N for single object)
• IGNORE IDENTICAL OBJECTS	(Y/N) (N for single object)
• SHOW RANGE STATISTICS	(Y/N) (N for single object)
• MINIMUM NUMBER OF LINES FOR A MATCHING BLOCK	(0-9)
• MAXIMUM NUMBER OF LINES COMPARED	(0-9999)
• EXPAND MATCHING	(Y/N)

The following is an example of what the three input records might contain:

```
ARC1,PAYROLL,MENU,,–1
PRD1,PAYROLL,MENU,,
Y,N,N,N,,N,N,N,0,120,N
```

In this example, the base object is found in the Archive file and is the most recent Archive version of object MENU. The compare object is found on the PRD1 Environment. All default options have been selected.

Batch Source Compare JCL (for local environments)
The following JCL is an example of JCL used to execute batch source compare. JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively. JCL and EXECs should be tailored to accommodate site-specific needs. The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

OS/390 (MVS) JCL:

MVSCOMPS
```
//N2OCOMPS JOB (ACCOUNTING),'COMPSOURCE',CLASS=A,TIME=40
//*
//N2OCOMPS EXEC PGM=NATBATCH
//*
//CMPRINT  DD SYSOUT=*
//CMPRT01  DD SYSOUT=*
//CMPRT02  DD SYSOUT=*
//CMSYNIN  DD *
LOGON N2OLIB
N2O3110B
&INPUT
FIN
/*
//
```

Note:	The BATCH report from the N2O Source Compare utility require that the NATURAL Parameter IM (Input Mode) be set to "IM=D" (Delimiter Mode).

Batch Source Compare JCL (for Remote Environments)
The following JCL is an example of JCL used to execute batch source compare against remote environments. JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively. JCL and EXECs should be tailored to accommodate site-specific needs. The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

OS/390 (MVS) JCL:

MVSCOMPR
```
//N2OCMPR  JOB 'REMOTE SOURCE COMPARE' MSGLEVEL=1,
//     CLASS=C,MSGCLASS=X,REGION=4M,NOTIFY=&SYSUID
//*
//***
//*  THIS IS SAMPLE JCL FOR N2O SOURCE COMPARE BETWEEN TWO REMOTE
//*  ENVIRONMENTS
//*  This step must be executed where N2O is installed
//***
```

Continued from previous page

```
//GCPARM   EXEC PGM=NATBATCH
//CMPRINT  DD   SYSOUT=*
//CMPRT01  DD   SYSOUT=*
//CMPRT02  DD   SYSOUT=*
//CMWKF01  DD   DSN=N2O.SRCCR.PARMA1,DISP=(NEW,PASS,DELETE),
//              DCB=(RECFM=FB,LRECL=80,BLKSIZE=84),
//              UNIT=SYSDA,SPACE=(TRK,(1,1))
//CMWKF02  DD   DSN=N2O.SRCCR.PARMA2,DISP=(NEW,PASS,DELETE),
//              DCB=(RECFM=FB,LRECL=80,BLKSIZE=84),
//              UNIT=SYSDA,SPACE=(TRK,(1,1))
//CMSYNIN  DD   *
LOGON N2OLIB
N2O3110B
&INPUT
FIN
/*
//*
//*  This step must be executed on base environment
//*
//RRTM1    EXEC PGM=NATBATCH
//CMPRINT  DD   SYSOUT=*
//CMPRT01  DD   SYSOUT=*
//CMPRT02  DD   SYSOUT=*
//CMWKF01  DD   DSN=N2O.SRCCR.PARMA1,DISP=(OLD,DELETE,DELETE)
//CMWKF02  DD   DSN=N2O.SRCCR.PARMB1,DISP=(NEW,PASS,DELETE),
//              DCB=(RECFM=FB,LRECL=187,BLKSIZE=191),
//              UNIT=SYSDA,SPACE=(TRK,(1,1))
//CMWKF03  DD   DSN=N2O.SRCCR.OUTPT1,DISP=(NEW,PASS,DELETE),
//              DCB=(RECFM=FB,LRECL=133,BLKSIZE=137),
//              UNIT=SYSDA,SPACE=(TRK,(1,1))
//CMSYNIN  DD   *
LOGON SYSTEM
N2O3110C
FIN
/*
//*
//*  This step must be executed on compare environment
//*
//RRTM2    EXEC PGM=NATBATCH
//CMPRINT  DD   SYSOUT=*
//CMPRT01  DD   SYSOUT=*
//CMPRT02  DD   SYSOUT=*
//CMWKF01  DD   DSN=N2O.SRCCR.PARMA2,DISP=(OLD,DELETE,DELETE)
//CMWKF02  DD   DSN=N2O.SRCCR.PARMB2,DISP=(NEW,PASS,DELETE),
//              DCB=(RECFM=FB,LRECL=187,BLKSIZE=191),
//              UNIT=SYSDA,SPACE=(TRK,(1,1))
//CMWKF03  DD   DSN=N2O.SRCCR.OUTPT2,DISP=(NEW,PASS,DELETE),
//              DCB=(RECFM=FB,LRECL=133,BLKSIZE=137),
//              UNIT=SYSDA,SPACE=(TRK,(1,1))
//CMSYNIN  DD   *
LOGON SYSTEM
N2O3110C
FIN
/*
//*
//*  This step must be executed where N2O is installed
//*
//COMPW    EXEC PGM=NATBATCH
//CMPRINT  DD   SYSOUT=*
//CMPRT01  DD   SYSOUT=*
//CMPRT02  DD   SYSOUT=*
//CMWKF01  DD   DSN=N2O.SRCCR.PARMB1,DISP=(OLD,DELETE,DELETE)
//CMWKF02  DD   DSN=N2O.SRCCR.OUTPT1,DISP=(OLD,DELETE,DELETE)
//CMWKF03  DD   DSN=N2O.SRCCR.PARMB2,DISP=(OLD,DELETE,DELETE)
//CMWKF04  DD   DSN=N2O.SRCCR.OUTPT2,DISP=(OLD,DELETE,DELETE)
//CMSYNIN  DD   *
LOGON SYSTEM
N2O3110D
FIN
/*
```

V.4.3   N2OSCAN Utility

The N2OSCAN Utility performs a scan of NATURAL source code for a set of user-specified strings over a user-specified range of NATURAL objects and stores scan results on the N2O-MIGRATION file for subsequent on-line query and batch reporting.

Input to N2OSCAN - *Scan Parm Set*
Prior to a scan, the user must specify:

1.   the environment/library range/object range to scan
2.   string(s) for which to scan

by entering these values into a Scan Parm Set. Scan Parm Sets are created, edited, and saved in the NATURAL Program Editor as standard NATURAL Text objects. (Sample Scan Parm Sets delivered with the N2OSCAN Utility may be found in library N2OSCAN.)

A Scan Parm Set consists of a set of Header Parms, defining the default scan range, and at least one Detail Line, specifying string(s) which to scan. Refer to **Section V.4.3.1 Scan Parm Sets** for more detailed information.

Output from N2OSCAN - *Scan Output Set*
Upon execution, N2OSCAN scans for the strings over the range specified in the selected Scan Parm Set and outputs the results into a Scan Output Set (a set of records physically stored on the N2O-MIGRATION file). A Scan Output Set consists of:

1.   detailed recording of all "hits" (indicating strings-found and line-specific location of strings-found)
2.   summary data -- outlining scan statistics at the object, library, and full Scan Output Set level.

All levels of summary and detail in Scan Output Sets may be viewed on-line and in batch reports. Additionally, the source of a scanned NATURAL object may be viewed on-line with "hits" highlighted or may be printed in batch with "hits" highlighted or underlined.

Note: A glossary of N2OSCAN terminology may be found in **Appendix J N2OSCAN Glossary**.

V.4.3.1   Scan Parm Sets

Prior to executing a scan using the N2OSCAN Utility, a user must specify:

1. the environment/library/object range to scan
2. string(s) for which to scan

by entering these values into a Scan Parm Set.

Scan Parm Sets are created, edited, and saved in the NATURAL Program Editor as standard NATURAL Text Objects. The library N2OSCAN is the default library for Scan Parm Sets.

The following is a sample Scan Parm Set:

```
0010 ENV=PROD,START-LIB=LIB01,END-LIB=LIB99,
0020 START-OBJ=PGM1000P,END-OBJ=PGM1999P,DELIM=< >
0020 *
0030 I,Y,DATE
0040 E,N,UPDATE
```

When the Scan Parm Set is submitted for execution, it will result in a scan of all NATURAL source objects in the N2O Environment, PROD, from Library LIB01 through LIB99, Objects PGM1000P through PGM1999P.

A Scan Parm Set consists of a set of Header Parms (defining the default scan range) and at least one Detail Line (specifying string(s) to scan).

HEADER PARMS
Header Parms are entered onto a maximum of the first six non-N2OSCAN comment lines of a Scan Parm Set. They consist of the following:

REQUIRED HEADER PARM

    Environment Header Parm
    Only the Environment Header Parm is required; all other Header Parms are optional. The Environment Header Parm is entered in the format

        ENV=xxxx   or   ENVIRONMENT=xxxx

    where xxxx is a valid N2O Environment on a local Node.

> **Note:** The Environment Header Parm must be entered at the beginning of the first non-N2OSCAN comment line. NATURAL Text objects that do not have this value at the beginning of the first non-comment line will not be recognized by the N2OSCAN Utility as Scan Parm Sets.

OPTIONAL HEADER PARMS
Any of the following, separated by a comma, may appear following the required Environment Header Parm:

Start Library Parm
Entered in the format:

START-LIB=xxxxxxxx   or   START-LIBRARY=xxxxxxxx

where xxxxxxxx is the starting value of the library range to be scanned.

End Library Parm
Entered in the format:

END-LIB=xxxxxxxx   or   END-LIBRARY=xxxxxxxx

where xxxxxxxx is the ending value of the library range to be scanned.

> **Note:** If a Start Library Parm is specified but an End Library Parm is not, only the single library specified in the Start Library Parm will be scanned.

Start Object Parm
Entered in the format:

START-OBJ=xxxxxxxx   or   START-OBJECT=xxxxxxxx

where xxxxxxxx is the starting value of the object range to be scanned.

End Object Parm
Entered in the format:

END-OBJ=xxxxxxxx   or   END-OBJECT=xxxxxxxx

where xxxxxxxx is the ending value of the object range to be scanned.

> **Note:** If a Start Object Parm is specified but an End Object Parm is not, only the single object specified in the Start Object Parm will be scanned.

Delimiter Override Parm
Entered in the format:

DELIM=<xxxxxxxx>   or   DELIMITER=<xxxxxxxx>
or   DELIMITERS=<xxxxxxxx>

where xxxxxxxx is a set of up to 32 special characters to serve as the override delimiter set for a scan. If omitted, the default NATURAL delimiter set (all characters with hexadecimal value less than the hexadecimal value of lower case 'a') will apply. This optional parameter may not be needed for many scans.

> **Note:** All range values (Start and End Parms) entered as Header Parms are default values only and may be overridden at scan execution time. The Delimiter Override Parm, if entered in the Scan Parm Set, cannot be overridden at scan execution time.

DETAIL LINES
At least one, and up to 50, Detail Lines may be entered following the Header Parms.

Detail Lines are entered in the format:

x,y,zzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzz

where x is the Include/Exclude Indicator, y is the Absolute Scan Indicator, and zzzzzzzz is the Scan String (of up to 32 characters).

Include/Exclude Indicator
Valid values are **I** ("include") or **E** ("exclude").

If the value is **I**, then the associated Scan String becomes an Inclusion String used in Inclusion Processing (see the following).

If the value is **E**, then the associated Scan String becomes an Exclusion String used in Exclusion Processing (see the following).

Absolute Scan Indicator
Valid values are **Y** ("yes") or **N** ("no").

If the value is **Y**, then the Scan Process will examine target source lines for the associated Scan String value, ignoring delimiters.

If the value is **N**, then the Scan Process will examine target source for the associated Scan String value surrounded by delimiters.

Scan String
A case-sensitive string (up to 32 characters in length) used as input to Scan Processing (see the following).

THE SCAN PROCESS
The Scan Process examines target source code one line at a time, performing the Inclusion Process followed by the Exclusion Process.

Inclusion Process
A target source line is examined for all Inclusion Strings defined in the Scan Parm Set. If an Inclusion String is found, then a Hit is registered and the complete space-delimited string identified in the target source line is designated as a Found String. A Found String is passed on to the Exclusion Process.

Exclusion Process
A Found String passed from the Inclusion Process is examined for all Exclusion Strings defined in the Scan Parm Set. If an Exclusion String is found, then the Hit is canceled. If no Exclusion String is found, then the Hit data is stored in the Scan Output Set.

V.4.3.2   N2OSCAN Utility

Entering an 'S' on the Programmer Tools Menu or entering the direct command TOL SCAN accesses the N2OSCAN Utility Menu.

```
01-12-31              N2OSCAN Utility
TSI0373
11:38:00                                                    TSI1


            Code  Function
            ----  -------------------------------
             A    Environment Scan
             B    Library Scan
             C    Select Scan Output Set
             D    Delete Scan Output Set
             E    Administrative Delete Scan Output Set
             .    Terminate Scan Utility
             -    -------------------------------

          Enter Code: _   User ID: _____

Direct Command: _____        TOL SCAN
Enter--PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
       HELP  ----- END   ENV   MIG   REP   TOL   USR   PRJ   ----- ----- EXIT
```

Field	Description
Enter Code (modifiable, required)	The function to be executed. A user's Function Profile determines the valid values. Valid values are as follows:
	A Environment Scan Execute, inquire on, or select a Scan Parm Set for a scan of an Environment.
	B Library Scan Execute, inquire on, or select a Scan Parm Set for a scan of a library.
	C Select Scan Output Set Select a Scan Output Set for which to view summary statistics or detail.
	D Delete Scan Output Set Select a Scan Output Set to delete. Only Scan Output Sets belonging to the user will be displayed.
	E Administrative Delete Scan Output Set Select a Scan Output Set to delete. This option will list ALL Scan Output Sets.
User ID (modifiable, optional)	If entered, serves as starting value of selection lists displayed with Code options C, D, or E above.

V.4.3.2.1   Environment Scan Utility

The Environment Scan Utility permits scans to be conducted on an entire Environment, a range of libraries, a single library, a range of objects, or a single object.

Entering an 'A' on the N2OSCAN Utility Menu accesses the Environment Scan Utility. (Refer to **Section V.4.3.2.2 Library Scan Utility** for details on all options.)

```
01-12-31                    N2OSCAN Utility                      TSI0373
11:38:00                                                         TSI1

                       Code  Function
                       ----  ------------------------------
                        C    Check a Scan Parm Set
                        E    Edit a Scan Parm Set (Exits N2O)
                        I    Inquire on Scan Parm Set
                        S    Select Scan Parm Set
                        X    Execute Scan
                        .    Terminate Scan Utility
                        -    ------------------------------

         Enter Code: _            Scan Parm Set: _____
                               Parm Set Library: N2OSCAN_

Direct Command: _____        TOL SCEN
Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9--PF10--PF11--PF12
        HELP  ----- END   ENV   MIG   REP   TOL   USR   PRJ  ----- ----- EXIT
```

Field	Description
Enter Code (modifiable, required)	The function to be executed. A user's Function Profile determines the valid values. Valid values are as follows:
	C Check a Scan Parm Set Validate the Header Parms and Detail Lines of a Scan Parm Set.
	E Edit a Scan Parm Set (exits N2O) Exit N2O and use the NATURAL program editor to edit a Scan Parm Set.
	I Inquire on Scan Parm Set View a Scan Parm Set.
	S Select Scan Parm Set Provides a list of Scan Parm Sets that may be inquired on, checked, edited, or executed.
	X Execute Scan Checks and executes the specified Scan Parm Set.
Scan Parm Set (modifiable, required for code 'C', 'E', 'I' or 'X')	A Scan Parm Set to be checked, edited, inquired on, selected, or executed. (If specified with Select option, the starting Scan Parm Set on the Select Screen.)
Parm Set Library (modifiable, required for code 'C', 'E', 'I' or 'X')	The library in which the Scan Parm Set is stored. (defaults to "N2OSCAN")

V.4.3.2.2   Library Scan Utility

The Library Scan Utility Menu permits scans to be conducted on an entire library, a range of objects, or a single object.

Entering a 'B' on the N2OSCAN Utility Menu accesses the Library Scan Utility.

```
01-12-31                N-2-O Library Scan Utility                TSI0373
11:38:00                                                          TSI1

                  Code  Function
                  ----  -------------------------------
                  C     Check a Scan Parm Set
                  E     Edit a Scan Parm Set (Exits N2O)
                  I     Inquire on Scan Parm Set
                  S     Select Scan Parm Set
                  X     Execute Scan
                  .     Terminate Scan Utility
                  -     -------------------------------


            Enter Code: _        Scan Parm Set: _____
                                Parm Set Library: N2OSCAN_

Direct Command: _____              TOL SCLI
Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
        HELP  ----- END   ENV   MIG   REP   TOL   USR   PRJ  ----- ----- EXIT
```

Field	Description
Enter Code (modifiable, required)	The function to be executed. A user's Function Profile determines the valid values. Valid values are as follows:
	C Check a Scan Parm Set Validate the Header Parms and Detail Lines of a Scan Parm Set.
	E Edit a Scan Parm Set (exits N2O) Exit N2O and use the NATURAL program editor to edit a Scan Parm Set.
	I Inquire on Scan Parm Set View a Scan Parm Set.
	S Select Scan Parm Set Provides a list of Scan Parm Sets that may be inquired on, checked, edited, or executed.
	X Execute Scan Checks and executes the specified Scan Parm Set.
Scan Parm Set (modifiable, required for code 'C', 'E', 'I' or 'X')	A Scan Parm Set to be checked, edited, inquired on, selected, or executed. (If specified with Select option, the starting Scan Parm Set on the Select Screen.)
Parm Set Library (modifiable, required for code 'C', 'E', 'I' or 'X')	The library in which the Scan Parm Set is found. (defaults to "N2OSCAN")

V.4.3.2.2.1 <u>Select Scan Parm Set Function</u>

The Select Scan Parm Set function provides a list of Scan Parm Sets that may be inquired on, checked, edited, or executed. This screen will display all Scan Parm Sets in the specified library.

Entering an 'S' on the Environment Scan Function Menu or the Library Scan Function Menu accesses the Select Scan Parm Set function.

```
Valid Values: I=Inquire, C=Check, X=Execute, E=Edit(exits N2O)
01-12-31            N-2-O Select Scan Parm Set                      TSI0373
11:38:00   Starting Scan Parm Set: SCANDEV  Library: N2OSCAN        TSI1

  Invalid    Scan         Start    End       Start    End
   Hdr   S Parm Set Env  Library  Library   Object   Object
  ------- - -------- ---- -------- -------- -------- --------
   ***   _ SCANDEV  DEV  PAY001   PAY001    CALC1    CALC2
         _ SCANPRD  PRD  TAX001   TAX002    PSTTAX   PSTX99




Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
        HELP  ----- END   ----- ----- ----- UP    DOWN  ----- LIB   ----- ----
```

PF10   List Scan Parm Sets in a different library. (A pop-up window permits user to specify the different library)

Field	Description
Starting Scan Parm Set (modifiable)	Value with which to begin the selection list.
Library (display-only)	Indicates library in which currently displayed Scan Parm Sets are stored. May be modified by using PF10 Key.
Invalid Hdr (display-only)	Indicates the validity of a Scan Parm Set's Header Parms. Valid values are as follows:
	Blank Valid Header Parms.
	*** Invalid Header Parms.

(continued from previous page)

Field	Description
S (modifiable)	The function to be executed. A user's Function Profile Security determines the user's valid values. Valid values are as follows:
	C **Check the Scan Parm Set** Validate the Header Parms and Detail Lines of a Scan Parm Set.
	E **Edit the Scan Parm Set (exits N2O)** Exit N2O and use the NATURAL program editor to edit a Scan Parm Set.
	I **Inquire on the Scan Parm Set** View a Scan Parm Set.
	X **Execute the Scan Parm Set** Check and Execute the specified Scan Parm Set.
Scan Parm Set (display-only)	Name of the Scan Parm Set.
Env (display-only)	N2O Environment on which the scan will be executed.
Start Library (display-only)	Scan Parm Set's default Start Library Default starting value for the range of libraries to be scanned.
End Library (display-only)	Scan Parm Set's default End Library Default ending value for the range of libraries to be scanned.
Start Object (display-only)	Scan Parm Set's default Start Object Default starting value for the range of objects to be scanned.
End Object (display-only)	Scan Parm Set's default End Object Default ending value for the range of objects to be scanned.

V.4.3.2.2.2   Check Scan Parm Set Function

The Check Scan Parm Set function verifies that the format of the Scan Parm Set is valid. The Header Parms are examined for a valid local N2O Environment, a valid range of libraries (if specified), and a valid range of objects (if specified). The pop-up window shown below details the results of the check function.

Note: The Check Scan Parm Set function can be accessed from outside of N2O by entering N2OSCANC at the NEXT prompt or on the command line in the NATURAL Program Editor.

Entering a 'C' ("check") on the Select Scan Parm Set function invokes the Check Scan Parm Set function. (The 'X' ("execute") option also invokes the Check Scan Parm Set function prior to performing a scan)

```
Valid Values: I=Inquire, C=Check, X=Execute, E=Edit(exits N2O)
01-12-31               N-2-O Select Scan Parm Set               TSI0373
11:38:00  Starting Scan Parm Set: _____   Library: _____      TSI1

            Scan Parm Set: SCANDEV  Library: N2OSCAN
                     Has the Following Errors

  Parm Set Header Errors        Detail Lines with Errors
  ------------------------      ----------------------------
    Invalid Scan Environment    0070  0080  0110  0200  0210
    Invalid Start Library       0250  0290  0300  0310  0320
    Invalid Start Object

                                ADDITIONAL  DETAIL  ERRORS  MAY  EXIST
```

The Check Scan Parm Set function pop-up window shown above displays the function's results to the user. The following messages may appear:

Scan Header Messages:

> **All Scan Header Info is Valid**
> > The Header Parms of the Scan Parm Set are valid.

> **Parm Set Header Errors**
> > The Scan Parm Set that was checked contains invalid Header Parm values. The messages below detail Header Parm errors that may be found.

> > **Invalid Scan Environment**
> > > The environment specified was not a local N2O Environment.

> > **Invalid Start Library**
> > > A range of libraries was specified and the starting library value was greater than the end library value.

> > **Invalid Start Object**
> > > A range of objects was specified and the starting object was greater than the end object.

Scan Detail Messages:

All Detail Lines are Valid
All Detail Lines in the Scan Parm Set are valid.

Detail Lines with Errors
The Scan Parm Set contains invalid Detail Lines. The line numbers of lines with invalid criteria are listed below this message.

Additional Detail Errors May Exist
The Scan Parm Set contained at least 10 Detail Lines with errors. The remaining Detail Lines were not checked and may also contain errors.

Parm Set contains more than 50 Detail Lines
A Scan Parm Set may contain no more than 50 Detail Lines of search criteria. A Scan may be executed with this Scan Parm Set, but additional Detail Lines over 50 will be ignored.

V.4.3.2.2.3 <u>Execute Scan Function</u>

The Execute Scan function executes a scan using the Scan Parm Set as input. Prior to execution, the Check Scan Parm Set function is invoked. If the Scan Parm Set contains no errors, a Scan Execution Parameters pop-up window appears so that the user may view the Scan Parm Set's default scan range values and modify the scan range, if desired. This window is shown below.

Entering an 'X' on the Select Scan Parm Set function screen or an 'X' on the Environment or Library Scan function screens invokes the Execute Scan function.

```
Valid Values : I = Inquire, C = Check, E = Edit, X = Execute
01-12-31              N-2-O Select Scan Parm Set                    TSI0373
11:38:00   Starting Scan Parm Set: SCANDEV Library: N2OSCAN        TSI1

Invalid  Sc
  Hdr  S Pa
------- - --       +------------------------------------------+
  ***    _ SC      |         N2O Scan Execution Parameters     |
         _ SC      |           Scan Parm Set: SCANPRD          |
         _ SC      |  ---------------------------------------- |
         _ SC      |         Environment: PRD1                 |
         _ SC      |       Start Library: TAX001__             |
         _ SC      |         End Library: TAX002__             |
         _ SC      |       Start Object: PSTTAX__              |
         _ SC      |         End Object: PSTX99__              |
         _ SC      |               Mode: O                     |
         _ SC      |     Press <Enter> to Scan, PF3 to Cancel  |
         _ SC      +------------------------------------------+
         X SCANPR
         _ SCANPR
         _ SCANPR
         _ SCANPR4    PRD         TAX001     TAX002    PSTTAX    PSTX99
         _ SCANPR5    PRD         TAX001     TAX002    PSTTAX    PSTX99

Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
        HELP  ----- END   ----- ----- ----- UP    DOWN  ----- LIB   ----- ----
```

Field	Description
Scan Parm Set (display-only)	Name of the Scan Parm Set.
Environment (modifiable *[if Environment Scan],* display-only *[if Library Scan]*)	N2O Environment on which the scan will be executed.
Start Library or Library (modifiable, *[required for Library Scan]*)	Either: (a) starting value for the range of libraries to be scanned (if Environment Scan), or (b) library to be scanned (if Library Scan or if End Library is blank).
End Library (modifiable, *[not available for Library Scan]*)	Ending value for the range of libraries to be scanned (if Environment Scan). If left blank, Start Library is the only library that will be scanned.

Field	Description
Start Object (modifiable)	Starting value for the range of objects to be scanned. If End Object is left blank, Start Object is the only object that will be scanned.
End Object (modifiable)	Ending value for the range of objects to be scanned. If left blank, Start Object is the only object that will be scanned.
Mode (modifiable)	Indicates how the job is to be executed (batch or on-line). Valid values are:

B   submits JCL to the internal reader, which processes the function in batch.

O   processes the function on-line. (default: O)

The fields that appear in the Scan Execution Parameters window vary, depending on whether the Environment Scan function or the Library Scan function was used to access this window. The Library Scan function requires a library value and does not permit overriding of the Environment, nor does it permit the specification of a library range.

The default scan range values from the Scan Parm Set may be overridden in this window based on the following rules.

Environment Level Scans

1. An "*" may be specified for wildcarding on both the Start and End Library values.

For example, if Start Library value is "MYLIB*" and End Library is left blank, the resultant scan range will be from "MYLIB" through "MYLIB999".

Additionally, if Start Library value is "MYLIB001" and End Library value is "PAYLIB*", the resultant scan range will be from "MYLIB001" through "PAYLIB99".

2. Both Start and End Library fields may be left blank.

This results in a scan of the entire environment.

Library Level Scans

A library is required. Wildcarding with an "*" is not permitted.

All Scans - Start and End Object values

1. An "*" may be specified for wildcarding on both the Start and End Object values.

For example, if Start Object value is "MYPGM*" and End Object is left blank, the resultant scan range will be from "MYPGM" through "MYPGM999".

Additionally, if Start Library value is "MYPGM001" and End Library value is "PAYPGM*", the resultant scan range will be from "MYPGM001" through "PAYPGM99".

2. Both Start and End Library fields may be left blank.

This results in a scan of the entire library.

Online Scan Execution
If the scan was selected to run on-line, pressing Enter begins the scan execution process. If a previous scan by the same user was based on the same scan criteria, a pop-up window will inform the user that an identical scan already exists and output from this scan will overlay it. The scan can be aborted by pressing PF3 or executed by pressing Enter.

The amount of time it takes a scan to execute is dependent on the scan range specified. Since some scans may take an extended period of time, a pop-up window showing the scan's progress will appear. **DO NOT PRESS ANY KEYS** while the scan is in progress. This will cause the scan to abort. (Aborted scans may be deleted using the Scan Output Set Delete functions.)

Scans may also be executed in batch.

Once the scan completes, a pop-up window will appear giving the user the choice to go directly to the Select Scan Output Screen (to view the scan's output) by pressing Enter, or to return to the N2OSCAN Utility Menu by pressing PF3.

Batch Scan Execution
If the scan was selected to run in batch, pressing Enter will submit JCL to the internal reader that will execute the scan function in batch. The output of the scan will be available as a Scan Output Set.

Manual Batch Scan Execution
The manual N2OSCAN Batch Scan Execution permits batch execution of either an Environment or Library scan using an existing Scan Parm Set. The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

The OS/390 (MVS) JCL to run this program is shown below.

MVSSCBX
```
//N2OSCBX EXEC PGM=NATBATCH
//*  CMPRINT CONTAINS ANY MESSAGES/ERRORS PRODUCED DURING
//*  EXECUTION OF N2OSCBX
//CMPRINT    DD SYSOUT=*
//CMSYNIN       DD *
LOGON N2OLIB
N2OSCBX
FIN
//CMWKF01       DD *
UID,SPS-LIB,SPS,ENV,STARTLIB,ENDLIB,STARTOBJ,ENDOBJ
/*
```

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

The layout for the record in CMWKF01 is as follows:
(All values are required)

Values	Description
Userid	User ID of the user who is to own the scan.
ScanParmSetLibrary	Library of the Scan Parm Set.
ScanParmSet	Scan Parm Set that is input to the scan.
Environment	N2O Environment in which the scan is to be executed.
Start Library	Starting value for the range of libraries to be scanned. If ENDLIB is blank, STARTLIB is the only library to be scanned.
End Library	Ending value for the range of libraries to be scanned. If blank, STARTLIB is the only library to be scanned.
Start Object	Starting value for the range of objects to be scanned. If ENDOBJ is blank, STARTOBJ is the only object to be scanned.
End Object	Ending value for the range of objects to be scanned. If blank, STARTOBJ is the only object to be scanned.

V.4.3.2.3   Select Scan Output Set Function

The Select Scan Output Set function provides a list of Scan Output Sets for scans that completed successfully. Summary statistics may be inquired on, or a list of libraries scanned may be selected.

Entering a 'C' on the N2OSCAN Utility Menu accesses the Select Scan Output Set function.

```
I=Inq, L=Lib Sel List, D=Online Del, B=Batch Del, S=String Found Rep
01-12-31                   N-2-O Select Scan Output Set              TSI0373
11:38:00                                                            TSI1
                        Starting User ID: TSI004__

            Scan        Start     End      Start     End      Date/Time
S User ID Parm Set Env Library   Library  Object    Object   Completed
- -------- -------- ---- -------- -------- -------- -------- --------------
_ TSI004   SCANDEV  DEV  PAY001   PAY001   CALC1     CALC2    01/08/01 11:34
_ TSI004   SCANPRD  PRD  TAX001   TAX002   PSTTAX    PSTX99   01/08/01 11:54




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
      HELP  ----- END   ----- ----- ----- UP    DOWN  ----- ----- ----- ----
```

Field	Description
Starting User ID (modifiable)	Value with which to begin the selection list.
S (modifiable)	The function to be executed. Valid values are as follows:
	I Inquire on the summary statistics of the Scan Output Set.
	L Lists all libraries scanned.
	B Batch Delete of the selected Scan Output Set.
	S String Found Report. Provides a hardcopy of all strings found in the selected Scan Output Set.
	D Online delete of the selected Scan Output Set.
User ID (display-only)	User ID of the user who submitted the scan.
Scan Parm Set (display-only)	Name of the Scan Parm Set.
Env (display-only)	N2O Environment on which the scan was executed.
Start Library (display-only)	Starting value for the range of libraries that were scanned. If End Library is blank, Start Library is the only library that was scanned.
End Library (display-only)	Ending value for the range of libraries that were scanned. If blank, Start Library is the only library that was scanned.

(continued from previous page)

Field	Description
Start Object (display-only)	Starting value for the range of objects that were scanned. If End Object is blank, Start Object is the only object that was scanned.
End Object (display-only)	Ending value for the range of objects that were scanned. If blank, Start Object is the only object that was scanned.
Date/Time Completed	Date and time at which the scan was completed.

V.4.3.2.3.1 <u>Summary of Scan Output (Inquire Function)</u>

The Summary of Scan Output pop-up window displays summary statistics for a Scan Output Set.

Entering an 'I' on the Select Scan Output Set screen accesses the Summary of Scan Output Set pop-up window.

```
Summary of Scan Output Set                     Completed:  2001/12/31
                                                            11:38:00
         User ID: TREE18   Start Library: PAY001       Status: C
  Scan Parm Set: SCPRD1      End Library:
    Environment: PROD      Start Object: PAYPGM1
                             End Object: PAYPGM6

    Libraries Libraries % Libs    Objects   Objects   % Objs
       Hit      Total    Hit        Hit      Total     Hit
    --------- --------- ------   --------- --------- ------
          3         6   50.0          50       100   50.0
   ┌────────────────────────────────────────────────────────┐
   │                    LINE DATA                            │
   │                                                         │
   │  Lines       Lines    % Lns  Non-Comment Non-Comment %NonCm│
   │   Hit        Total     Hit   Lines Hit  Lines Total Lns Hit│
   │ ----------- ----------- ------ ----------- ----------- ------│
   │    1,000       2,000   50.0        250       1,000   25.0 │
   └────────────────────────────────────────────────────────┘
```

Field	Description
Completed (display-only)	Date and time scan was completed.
User ID (display-only)	User ID of the user who submitted the scan.
Start Library (display-only)	Starting value for the range of libraries that were scanned. If End Library is blank, Start Library is the only library that was scanned.
Status (display-only)	Status of the scan. Only Scan Output Sets of status "C" (closed, scan completed successfully) are shown in this window.
Scan Parm Set (display-only)	Name of Scan Parm Set used as input for the scan.
End Library (display-only)	Ending value for the range of libraries that were scanned. If blank, Start Library is the only library that was scanned.
Environment (display-only)	N2O Environment the scan was executed in.
Start Object (display-only)	Starting value for the range of objects that were scanned. If End Object is blank, Start Object is the only object that was scanned.

(continued from previous page)

Field	Description
End Object (display-only)	Ending value for the range of objects that were scanned. If blank, Start Object is the only object that was scanned.
Libraries Hit (display-only)	The number of libraries scanned that contain at least one object with a Scan Hit.
Libraries Total (display-only)	The total number of libraries scanned.
% Libs Hit (display-only)	Libraries Hit expressed as a percentage of Libraries Total.
Objects Hit (display-only)	The number of objects scanned that contain at least one Scan Hit.
Objects Total (display-only)	The total number of objects scanned.
% Objs Hit (display-only)	Objects Hit expressed as a percentage of Objects Total.
Lines Hit (display-only)	The number of lines scanned that contain at least one Scan Hit.
Lines Total (display-only)	The total number of lines scanned.
% Lns Hit (display-only)	Lines Hit expressed as a percentage of Lines Total.
Non-Comment Lines Hit (display-only)	The number of non-comment lines scanned that contain at least one Scan Hit.
Non-Comment Lines Total (display-only)	The total number of non-comment lines scanned.
% NonCm Lns Hit (display-only)	Non-Comment Lines Hit expressed as a percentage of Non-Comment Lines Total.

V.4.3.2.3.2   <u>Select Library Scan Output Set (List Libs Scanned)</u>

The Select Library Scan Output Set function displays statistical information about the libraries that were scanned.

This screen is accessed by placing an 'L' in the 'S' (select) field on the Select Scan Output Screen and pressing Enter.

```
Valid values:  O=Object Selection List, R=Output Standard Report
01-12-31              N-2-O SELECT LIBRARY SCAN OUTPUT SET              TSI0373
11:38:00                                                               TSI1

            User ID: TREE18    Environment: PROD
     Scan Parm Set: SCPRD1   Start Library: PAY001   Start Object: PAYPGM1
                               End Library:            End Object: PAYPGM6
Start List at Library: _____

          Objcts Objcts %Objs  Lines    Lines   % Lns NonComm NonComm %NonC
S Library  Hit   Total  Hit    Hit      Total    Hit  Lns Hit Lns Tot LnHit
- -------- ------ ------ ----- -------- -------- ----- ------- ------- -----
_ TSSCAN      3      6   50.0      5       10   50.0      5      10   50.0




Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
        HELP  ----  END   ----  ----  ----  UP    DOWN  ----  >ZERO ---- ----
```

PF10   Toggles between (1) Display only libraries with Greater than Zero hits; and (2) Display all libraries.

Field	Description
User ID (display-only)	User ID of the user who submitted the scan.
Environment (display-only)	N2O Environment on which the scan was executed.
Scan Parm Set (display-only)	Name of Scan Parm Set used as input for the scan.
Start Library (display-only)	Starting value for the range of libraries that were scanned. If End Library is blank, Start Library is the only library that was scanned.
Start Object (display-only)	Starting value for the range of objects that were scanned. If End Object is blank, Start Object is the only object that was scanned.
End Library (display-only)	Ending value for the range of libraries that were scanned. If blank, Start Library is the only library that was scanned.
End Object (display-only)	Ending value for the range of objects that were scanned. If blank, Start Object is the only object that was scanned.

(continued from previous page)

Field	Description
Start List at Library (modifiable)	Value with which to begin the selection list.
S (modifiable)	The function to be executed. Valid value is:
	R Output Standard Report – Provides a hardcopy of all statistics and detail of a scan.
	O Object Selection List - lists all objects scanned in this library.
Library (display-only)	Library scanned.
Objcts Hit (display-only)	The number of objects scanned that contain at least one Scan Hit.
Objcts Total (display-only)	The total number of objects scanned.
% Objs Hit (display-only)	Objects Hit, expressed as a percentage of Objects Total.
Lines Hit (display-only)	The number of lines scanned that contain at least one Scan Hit.
Lines Total (display-only)	The total number of lines scanned.
% Lns Hit (display-only)	Lines Hit expressed as a percentage of Lines Total.
NonComm Lns Hit (display-only)	The number of Non-Comment Lines scanned that contain at least one Scan Hit.
NonComm Lns Tot (display-only)	The total number of Non-Comment Lines scanned.
% NonC Ln Hit (display-only)	Non-Comment Lines Hit expressed as a percentage of Non-Comment Lines Total.

V.4.3.2.3.2.1   Select Object Scan Output Set Function

The Select Object Scan Output Set function displays statistical information about the objects that were scanned.

This screen is accessed by placing an 'O' in the 'S' (select) field on the Select Library Scan Output Set screen and pressing Enter.

```
Valid Values: L=Strings found, S=Source View, B=Batch Source Disp
01-12-31            N-2-O SELECT OBJECT SCAN OUTPUT SET              TSI0373
11:38:00                                                            TSI1
          User ID: TREE18     Environment: PROD
    Scan Parm Set: SCPRD1   Start Library: SCANONE   Start Object: PAYPGM1
                              End Library:             End Object: PAYPGM6
Start List at Object: _____

                  Obj   Lines  Lines  % Lns NonCom NonCom %NonC
      S Object    Type   Hit   Total   Hit  LnsHit LnsTot LnHit
      - --------  ------ ------ ------ ----- ------ ------ -----
      _ PAYPGM1   P         3    600   0.5      5    500   1.0




Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
        HELP  ----- END   ----- ----- ----- UP    DOWN  ----- >ZERO ----- ----
```

PF10   Toggles between (1) Display only objects with Greater than Zero hits; and (2) Display all objects.

Field	Description
User ID (display-only)	User ID of the user who submitted the scan.
Environment (display-only)	N2O Environment on which the scan was executed.
Scan Parm Set (display-only)	Name of Scan Parm Set used as input for the scan.
Start Library (display-only)	Starting value for the range of libraries that were scanned. If End Library is blank, Start Library is the only library that was scanned.
Start Object (display-only)	Starting value for the range of objects that were scanned. If End Object is blank, Start Object is the only object that was scanned.
End Library (display-only)	Ending value for the range of libraries that were scanned. If blank, Start Library is the only library that was scanned.
End Object (display-only)	Ending value for the range of objects that were scanned. If blank, Start Object is the only object that was scanned.

(continued from previous page)

Field	Description
Start List at Object (modifiable)	Value with which to begin the selection list.
S (modifiable)	The function to be executed. Valid values are:

	L	List strings found
		Lists all strings found (i.e., all hits) in this Object.
	S	Source display
		Displays source of Object with strings found (i.e., hits) highlighted.
	B	Batch Source Display
		Provides a hardcopy of a specified object that was scanned.

Field	Description
Object (display-only)	Object scanned.
Obj Type (display-only)	Type of Object scanned. Valid values are:

	P	Program
	S	Subroutine
	N	Subprogram
	M	Map
	H	Helproutine
	L	Local Data Area
	A	Parameter Data Area
	G	Global Data Area
	C	Copycode
	T	Text
	O	Macro
	R	Report
	Y	ExpertModel
	Z	Recording
	3	Dialog
	4	Class
	5	Processor
	K	Server

Field	Description
Lines Hit (display-only)	The number of lines scanned that contain at least one Scan Hit.
Lines Total (display-only)	The total number of lines scanned.
% Lns Hit (display-only)	Lines Hit expressed as a percentage of Lines Total.

(continued from previous page)

Field	Description
NonCom LnsHit (display-only)	The number of Non-Comment Lines scanned that contain at least one Scan Hit.
NonCom LnsTot (display-only)	The total number of Non-Comment Lines scanned.
%NonC LnHit (display-only)	Non-Comment Lines Hit expressed as a percentage of Non-Comment Lines Total.

V.4.3.2.3.2.1.1 <u>Scan Output Detail Function (List Strings Found)</u>

The Scan Output Detail function displays strings found and the line numbers of the lines on which they were found in the object selected. (If the object selected is a data area, lines will be numbered sequentially)

This screen is accessed by placing an 'L' in the 'S' (select) field on the Select Object Scan Output Set screen and pressing Enter.

```
01-12-31              N-2-O SELECT OBJECT SCAN DETAIL               TSI0373
11:38:00                                                           TSI1
         User ID: TREE18     Environment: PROD
   Scan Parm Set: SCPRD1   Start Library: SCANONE  Start Object: PAYPGM1
                           End Library:            End Object: PAYPGM6
         Library: PAY001
          Object: PAYCL01  Type: P
Line
 Nbr C String Found
---- - ----------------------------------------------------------------
0250 * #DATE-FIELD-1
0300   #DATE-STORED




Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
        HELP  ----- END   ----- ----- ----- UP    DOWN  ----- ----- ----- ----
```

Field	Description
User ID (display-only)	User ID of the user who submitted the scan.
Environment (display-only)	N2O Environment on which the scan was executed.
Scan Parm Set (display-only)	Name of Scan Parm Set used as input for the scan.
Start Library (display-only)	Starting value for the range of libraries that were scanned. If End Library is blank, Start Library is the only library that was scanned.
Start Object (display-only)	Starting value for the range of objects that were scanned. If End Object is blank, Start Object is the only object that was scanned.
End Library (display-only)	Ending value for the range of libraries that were scanned. If blank, Start Library is the only library that was scanned.
End Object (display-only)	Ending value for the range of objects that were scanned. If blank, Start Object is the only object that was scanned.

(continued from previous page)

Field	Description
Library (display-only)	Library in which Object is stored.
Object (display-only)	Object scanned.
Type (display-only)	Type of Object scanned. Valid values are:

P	Program
S	Subroutine
N	Subprogram
M	Map
H	Helproutine
L	Local Data Area
A	Parameter Data Area
G	Global Data Area
C	Copycode
T	Text
O	Macro
R	Report
Y	ExpertModel
Z	Recording
3	Dialog
4	Class
5	Processor
K	Server

Field	Description
Line Nbr (display-only)	Number of the source line in which string was found. (Data areas are numbered sequentially.)
C (display-only)	Comment Line Indicator: An * will be displayed in this column if the source line in which the string was found is a comment line.
String Found (display-only)	The string found by the scan process.

V.4.3.2.3.2.1.2   Object Source View

The Object Source View function displays the source code of a scanned object with found strings ("hits") highlighted.

This screen is accessed by placing an 'S' in the 'S' (select) field on the Select Object Scan Output Set screen and pressing Enter.

```
                             > +  PROGRAM  : PAY0130P       Lib:
PAYTEST
     ....+....1....+....2....+....3....+....4....+....5....+...Mode: STRUCT
0010 DEFINE DATA
0020 LOCAL USING PAYEMPL
0030 LOCAL
0040 01 #I(P3)
0050 01 #MAP
0060 02 #ID(A8/1:10)
0070 02 #NAME(A45/1:10)
0080 02 #DATE-EMPLOYED(A6/1:10)
0090 02 #STAT(A1:1:10)
0100 02 #BIRTH(N6/1:10)
0110 END-DEFINE
0120 SET KEY PF1  = PGM NAME 'HELP'
0130         PF1  = HELP
0140         PF2  = PGM NAMED '    '
0150         PF3  = PGM NAMED 'EXIT'
0160         PF4  = PGM NAMED '    '
0170         PF5  = PGM NAMED '    '
0180         PF6  = PGM NAMED '    '
0190         PF7  = PGM NAMED '    '
0200         PF8  = PGM NAMED ' + '
                    PF3-EXIT        PF4-UPDATE INFO
```

PF4   Pop-up window displays Date, Time, User-ID, Terminal, and NATURAL SM level for both source-code and object-code of the displayed NATURAL object.

V.4.3.2.3.2.1.3 Batch Source Display

The N2OSCAN Batch Source Display provides a hardcopy of a specific object that was scanned. Any hits are shown by bolding or underlining the found string. Input parameters specify the bolding or underlining method to be used in the run. Any character may be used for underlining.

This screen is accessed by placing a 'B' in the 'S' (select) field on the Select Object Scan Output Set screen and pressing Enter.

```
Valid Values: L=Strings found, S=Source View, B=Batch Source Disp
  01-12-31            N-2-O SELECT OBJECT SCAN OUTPUT SET          TSI0373
  11:38:00                                                         TSI1
            Use +----------------------------------------+
      Scan Parm |                                        | bject: PAY7000P
                | N2O Scan Batch Source Display Parameters | bject: PAY8000P
             Li | ---------------------------------------- |
  Start List at O |              User: TSI0373           |
                |      Scan Parm Set: SCANPARM1          | NonC
          S  Ob |        Environment: PROD              | nHit
          - --- |     Start Library: PAYPROD           | ----
          b N2O |       End Library:                    |  0.0
                |      Start Object: PAY7000P           |
                |        End Object: PAY8000P           |
                |                                        |
                |           Library: PAYPROD           |
                |            Object: PAY7110P           |
                |         Underline: N                  |
                |    Underline Char: _                  |
                |                                        |
                +----------------------------------------+

 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  UP    DOWN  ----  >ZERO ----  ----
```

Field	Description
User (display-only)	User ID of the user who submitted the selected Scan Output Set.
ScanParmSet (display-only)	Scan Parm Set ID of the selected Scan Output Set.
Environment (display-only)	N2O Environment of the selected Scan Output Set.
Start Library (display-only)	Starting library of the selected Scan Output Set.
End Library (display-only)	Ending library of the selected Scan Output Set.
Start Object (display-only)	Starting object of the selected Scan Output Set.
End Object (display-only)	Ending object of the selected Scan Output Set.
Library (display-only)	Library in which selected Object to be printed is stored.
Object (display-only)	Selected Object to be printed.
Underline (optional)	Valid values are "Y" or "N" (default is "N"): Y = Underline strings-found. N = Do not underline (show strings-found in bold).
Underline Char (optional)	Character used for underlining if UNDLN = "Y".

Pressing ENTER will submit the report to the internal reader.

Manual Submission of Batch Source Display

> **Note:** LRECL for all CMPRINT and CMPRT01 datasets may be set to 133.

The following JCL is an example of OS/390 (MVS) JCL used to support the Batch Reporting process. JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively. JCL and EXECs should be tailored to accommodate site-specific needs. The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

The OS/390 (MVS) JCL to run this report is shown below.

MVSSCBSD
```
//N2OSCBSD EXEC PGM=NATBATCH
//*  CMPRINT CONTAINS ANY MESSAGES/ERRORS PRODUCED DURING
//*  EXECUTION OF N2OSCBSD
//CMPRINT    DD SYSOUT=*
//*  CMPRT01 CONTAINS SOURCE LISTING WITH HIGHLIGHTS OR
//*   UNDERLINES
//CMPRT01    DD SYSOUT=*
//CMSYNIN    DD *
LOGON N2OLIB
N2OSCBSD
FIN
//CMWKF01      DD *
*UID, *SPS,*ENV,*STARTLIB,*ENDLIB, *STARTOBJ, *ENDOBJ, *UNDLN, *CHAR
LIB,OBJ
/*
```

The layout for the record in CMWKF01 is as follows:
(Any value may be left blank by placing a "," with no value)

Line 1:

   *Userid, *Scan Parm Set, *Environment, *Start Library, *End Library, *Start Object, *End Object, *Underline, *Underline Char

Line 2:

   Multiple lines of the following may be specified, and "*" wildcarding is acceptable.

   Library, Object

> **Note:** * indicates the value should contain the same value as displayed on the Select Scan Output Set screen. This is the unique identifier of the scan.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

V.4.3.2.3.2.2 **Output Standard Report**

The N2OSCAN Output Standard Report provides a hardcopy of all statistics and detail of a scan. Suppression of specific levels of detail or statistical information is possible using the *ZEROSUPPRESS* and/or *SUPPRESSLEVEL* input parameters. Statistical information is supplied at the complete Scan Output Set Level, the Library Level, and the Object Level. For each object, strings found and line numbers of lines on which they were found are listed.

This screen is accessed by placing an 'R' in the 'S' (select) field on the Select Library Scan Output Set screen and pressing Enter.

```
Valid values:  O=Object Selection List, R=Output Standard Report
  01-12-31               N-2-O SELECT LIBRARY SCAN OUTPUT SET          TSI0373
  11:38:00                                                             TSI1
                +-------------------------------------------+
        Scan  |                                             | Object: PAY7000P
              | N2O Scan Output Standard Report Parameters  | Object: PAY8000P
   Start List a | ------------------------------------------ |
              |                                             |
          O | Report Start Library: PAYPROD               | m  NonComm  %NonC
  S Library |   Report End Library: PAYPROD               | t  Lns Tot  LnHit
  - -------- - | Report Start Object: _____             | -- -------- -----
  r PAYPROD |    Report End Object: _____             | 0      377   0.0
              |         Zero Suppress: _                    |
              |      Suppression Level: __                  |
              |                                             |
              | Press <Enter> to submit, PF3 to Cancel    |
                +-------------------------------------------+



  Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP  ----  END   ----  ----  ----  UP    DOWN  ----  >ZERO ----  ----
```

Field	Description
Report Start Library (optional)	Starting library of the report.
Report End Library (optional)	Ending library of the report.
Report Start Object (optional)	Starting object of the report.
Report End Object (optional)	Ending object of the report.
Zero Suppress (optional)	Zero Suppress - suppress objects with no hits. Valid value is:

On-line

Y   Zero Suppress – Suppress objects with no hits.

N   Do not suppress objects with no hits.

Batch

ZS   Zero Suppress - suppress objects with no hits.

(continued from previous page)

Field	Description
Suppression Level (optional)	Suppression Level - only one (or none) of the following may be specified. Valid values are:

    DS   Detail Suppress - suppress all object line (detail) information.

    OS   Object Suppress - suppress all object Summary and object line (detail) Information.

    LS   Library Suppress - suppress all library Summary, object summary, and object line (detail) information.

Pressing ENTER will submit the report to the internal reader.

Manual Submission of Output Standard Report

> **Note:** LRECL for all CMPRINT and CMPRT01 datasets may be set to 133.

The following JCL is an example of OS/390 (MVS) JCL used to support the Batch Reporting process. JCL examples are shown only for OS/390 (MVS) in this section. VSE JCL, VM EXECs, and BS2000 JCL are located in **Appendix E VSE JCL**, **Appendix F VM EXECs**, and **Appendix G BS2000 JCL** respectively. JCL and EXECs should be tailored to accommodate site-specific needs. The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

The OS/390 (MVS) JCL to run this report is shown below.

MVSSCB01

```
//N2OSCB01 EXEC PGM=NATBATCH
//*  CMPRINT CONTAINS ANY MESSAGES/ERRORS PRODUCED DURING
//*  EXECUTION OF N2OSCB01
//CMPRINT    DD SYSOUT=*
//*  CMPRT01 CONTAINS OUTPUT STANDARD REPORT
//CMPRT01    DD SYSOUT=*
//CMSYNIN       DD *
LOGON N2OLIB
N2OSCB01
FIN
//CMWKF01       DD *
*UID,*SPS,*ENV,*STARTLIB,*ENDLIB,*STARTOBJ,*ENDOBJ
RPTSTLIB,RPTENDLIB,RPTSTOBJ,RPTENDOBJ,ZEROSUPPRESS,SUPPRESSLEVEL
/*
```

The layout for the record in CMWKF01 is as follows:
(Any value may be left blank by placing a "," with no value)

Line 1:

> *Userid, *Scan Parm Set, *Environment, *Start Library, *End Library, *Start Object, *End Object

Line 2:

> Report Start Library, Report End Library, Report Start Object, Report End Object, Zero Suppress, Suppression Level

> **Note:** * indicates the value should contain the same value as displayed on the Select Scan Output Set screen. This is the unique identifier of the scan.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

V.4.3.2.4 <u>Delete Scan Output Set Function</u>

The Delete Scan Output Set function provides a list of Scan Output Sets that were submitted by the user. The user may delete any output sets that are listed.

Entering a 'D' on the N2OSCAN Utility Menu accesses the Delete Scan Output Set function.

```
Valid Values: D=Online Del, B=Batch Del
  01-12-31                N2O DELETE SCAN OUTPUT SET              TSI0373
  11:08:43                                                        TSI1


   S          Scan        Start     End      Start     End      Date/Time
 S t User ID  Parm Set Env Library  Library  Object    Object   Executed
 - - -------- -------- ---- -------- -------- -------- -------- --------------
 b C TSI0373  PAYSC+-----------------------------------------------------------+
              |                                                                |
              |                   *** Delete Scan Output Set ***               |
              |                                                                |
              |              User ID: TSI0373    Start Library: PAYPROD         |
              |       Scan Parm Set: PAYSCAN       End Library:                 |
              |         Environment: PROD         Start Object:                 |
              |                                     End Object:                 |
              |                                                                |
              |         Status: C  Executed on: 2000/09/22 18:01:10            |
              |                                                                |
              |      *** Press <ENTER> to delete, PF3 to cancel ***           |
              |                                                                |
              +----------------------------------------------------------------+
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  UP    DOWN  ----  NOT-C ----  ----
```

Pressing Enter will delete the Scan Output Set.

PF10   Toggles between (1) Display non-closed Scan Output Sets (those in status other than "closed"); and (2) Display all Scan Output Sets for scans submitted by the user.

Field	Description
S (modifiable)	The function to be executed. Valid value is as follows:
	D Delete the Scan Output Set On-line.
	B Delete the Scan Output Set in Batch.
St (display-only)	Status Indicator. Valid values are:
	C Closed, scan completed successfully.
	O Open, scan abended (captured abend).
	I In process (possibly uncaptured abend).
	D Deletion in progress.
User ID (display-only)	User ID of the user who submitted the scan.
Scan Parm Set (display-only)	Name of the Scan Parm Set that served as input to the scan.
Env (display-only)	N2O Environment on which the scan was executed.

(continued from previous page)

Field	Description
Start Library (display-only)	Starting value for the range of libraries that was scanned. If End Library is blank, Start Library is the only library that was scanned.
End Library (display-only)	Ending value for the range of libraries that was scanned. If blank, Start Library is the only library that was scanned.
Start Object (display-only)	Starting value for the range of objects that was scanned. If End Object is blank, Start Object is the only object that was scanned.
End Object (display-only)	Ending value for the range of objects that was scanned. If blank, Start Object is the only object that was scanned.
Date/Time Executed (display-only)	The date and time the scan was executed.

V.4.3.2.4.1 Batch Delete of Scan Output Set

The Batch Delete of a Scan Output Set allows the selected Scan Output Set to be deleted in batch.

Entering a 'B' on the Select Scan Output Set screen displays the Delete Scan Output Set confirmation pop-up window.

```
 Valid Values: D=Online Del, B=Batch Del
  01-12-31                  N2O DELETE SCAN OUTPUT SET                 TSI0373
  11:08:43                                                            TSI1


   S           Scan        Start     End     Start     End      Date/Time
  S t User ID Parm Set Env Library Library  Object   Object    Executed
  - - -------- -------- ---- -------- -------- -- +---------------------------+
  b C TSI0373  PAYS+--------------------------- |                           |
              |                                 |     Please verify that the |
              |                 *** Delete Scan |     information below is    |
              |                                 |     correct for submitting  |
              |                 User ID: TSI0373 |     this in  Batch.         |
              |           Scan Parm Set: PAYSCAN |                           |
              |            Environment: PROD     |   JCL Library: N2OJCL_     |
              |                                 |   JCL Program: N2OSCBD1     |
              |                                 |     JCL Exit: N2OUERJE      |
              |            Status: C  Executed o +---------------------------+
              |                                                              |
              |          *** Press <ENTER> to delete, PF3 to cancel ***      |
              |                                                              |
              +--------------------------------------------------------------+
  Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----   UP   DOWN  ----  NOT-C ----  ----
```

Pressing Enter will submit a batch job to delete the Scan Output Set.

V.4.3.2.4.2   <u>String Found Report</u>

The N2OSCAN String Found Report provides a hardcopy of all strings found in the selected Scan Output Set. This report is sorted by string-found. The library, object, line number, and number of hits of each string on the line is displayed.

Entering an 'S' on the Select Scan Output Set screen accesses the String Found Report pop-up window.

Pressing ENTER will submit the report to the internal reader.

Manual Submission of String Found Report

The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

The OS/390 (MVS) JCL to run this report is shown below.

Note: LRECL for all CMPRINT and CMPRT01 datasets may be set to 133.

<u>MVSSCB02</u>

```
//N2OSCB02 EXEC PGM=NATBATCH
//*  CMPRINT CONTAINS ANY MESSAGES/ERRORS PRODUCED DURING
//*  EXECUTION OF N2OSCB02
//CMPRINT   DD SYSOUT=*
//*  CMPRT01 CONTAINS STRING FOUND REPORT
//CMPRT01   DD SYSOUT=*
//CMSYNIN   DD *
LOGON N2OLIB
N2OSCB02
FIN
//CMWKF01      DD *
UID,SPS,ENV,STARTLIB,ENDLIB,STARTOBJ,ENDOBJ
/*
```

The layout for the record in CMWKF01 is as follows:
(Any value may be left blank by placing a "," with no value)

Values	Description
* UID	User ID of the user who submitted the scan.
* SPS	Scan Parm Set that served as input to the scan.
* ENV	N2O Environment on which the scan was executed.
* STARTLIB	Starting value for the range of libraries that was scanned. If ENDLIB is blank, STARTLIB is the only library that was scanned.
* ENDLIB	Ending value for the range of libraries that was scanned. If blank, STARTLIB is the only library that was scanned.
* STARTOBJ	Starting value for the range of objects that was scanned. If ENDOBJ is blank, STARTOBJ is the only object that was scanned.
* ENDOBJ	Ending value for the range of objects that was scanned. If blank, STARTOBJ is the only object that was scanned.

Note: * indicates the value should contain the same value as displayed on the Select Scan Output Set screen. This is the unique identifier of the scan.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

Manual Batch Delete for a Single Scan Output Set

The N2OSCAN Batch Delete for a Single Scan Output Set permits batch deletion of a single specified Scan Output Set. (See **N2OSCAN Batch Delete by Date and User-ID** for deletion of a range of Scan Output Sets)

The OS/390 (MVS) JCL to run this program is shown below.

```
//N2OSCBD1 EXEC PGM=NATBATCH
//*  CMPRINT CONTAINS ANY MESSAGES/ERRORS PRODUCED DURING
//*  EXECUTION OF N2OSCBD1
//CMPRINT    DD SYSOUT=*
//CMSYNIN    DD *
LOGON N2OLIB
N2OSCBD1
FIN
//CMWKF01       DD *
UID,SPS,ENV,STARTLIB,ENDLIB,STARTOBJ,ENDOBJ
/*
```

The layout for the record in CMWKF01 is as follows:
(Any start/end value may be left blank by placing a "," with no value)

Line 1:
    Userid, Scan Parm Set, Environment, Start Library, End Library, Start
    Object, End Object

Note:	These values should contain the same values as displayed on the Select Scan Output Set screen. This is the unique identifier of the scan.

Manual N2OSCAN Batch Delete by Date and User ID

The N2OSCAN Batch Delete by Date and User ID permits batch deletion of all Scan Output Sets executed on or before a specified date, either for all users or a specific user (denoted by User ID). (See **N2OSCAN Batch Delete for a Single Scan Output Set** for deletion of a specific Scan Output Set).

The N2O installation tape contains sample JCL in the library N2OBATCH for the program name specified.

The OS/390 (MVS) JCL to run this program is shown below.

MVSSCBD2

```
//N2OSCBD2 EXEC PGM=NATBATCH
//*  CMPRINT CONTAINS ANY MESSAGES/ERRORS PRODUCED DURING
//*  EXECUTION OF N2OSCBD2
//CMPRINT    DD SYSOUT=*
//CMSYNIN    DD *
LOGON N2OLIB
N2OSCBD2
FIN
//CMWKF01       DD *
DATE-EXECUTED,UID
/*
```

The layout for the record in CMWKF01 is as follows:

Values	Description
DATE-EXECUTED (required)	Date in the format YYYYMMDD. All Scan Output Sets for scans executed on or before this date will be deleted.
UID (optional)	User ID. If specified, limits deletion to Scan Parm Sets submitted by the user with this User ID.

The &INPUT parameter list by default is delimited by commas with no spaces following the commas. To override the default delimiter, modify the value of the jcl-delimiter field in User-Exit-22 (N2OUE22N).

V.4.3.2.5   Administrative Delete Scan Output Set Function

The Administrative Delete Scan Output Set function provides a list of ALL Scan Output Sets on the system. This screen will allow a user to delete any Scan Output Sets.

Entering an 'E' on the N2OSCAN Utility Menu accesses the Administrative Delete Scan Output Set function.

```
Valid value:  D=Online Delete,  B=Batch Delete
01-12-31               N-2-O Administrative Delete Scan Output Set      TSI0373
11:38:00                                                                TSI1
                            Starting User ID: _____

  S              Scan         Start     End      Start    End        Date/Time
S t User ID  Parm Set Env  Library  Library  Object   Object     Executed
- - -------- -------- ---- -------- -------- -------- -------- ---------------
_ C TSI004   SCANDEV  DEV  PAY001   PAY001   CALC1    CALC2    01/12/01 11:43
_ O TSI004   SCANPRD  PRD  TAX001   TAX002   PSTTAX   PSTX99   01/12/01 12:45
_ C TSI006   SCANTST  TST  TST001   TST999   *                 01/09/18 20:23
_ C TSI017   SCANTST  PRD  PAY001   PAY999   PGM001   PGM999   01/09/25 03:13




Enter---PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
        HELP  ----- END   ----- ----- ----- UP    DOWN  ----- NOT-C ----- ----
```

PF10   Toggles between (1) Display non-closed Scan Output Sets (those in status other than "closed"); and (2) Display all Scan Output Sets.

Field	Description
Starting User ID (modifiable)	Value with which to begin the selection list.
S (modifiable)	The function to be executed. Valid value is as follows:
	D Delete the Scan Output Set On-line.
	B Delete the Scan Output Set in Batch.
St (display-only)	Status Indicator. Valid values are:
	C Closed, scan completed successfully.
	O Open, scan abended (captured abend).
	I In process (possibly uncaptured abend).
	D Deletion in progress.
User ID (display-only)	User ID of the user who submitted the scan.
Scan Parm Set (display-only)	Name of the Scan Parm Set that served as input to the scan.
Env (display-only)	N2O Environment on which the scan was executed.

(continued from previous page)

Field	Description
Start Library (display-only)	Starting value for the range of libraries that was scanned. If End Library is blank, Start Library is the only library that was scanned.
End Library (display-only)	Ending value for the range of libraries that was scanned. If blank, Start Library is the only library that was scanned.
Start Object (display-only)	Starting value for the range of objects that was scanned. If End Object is blank, Start Object is the only object that was scanned.
End Object (display-only)	Ending value for the range of objects that was scanned. If blank, Start Object is the only object that was scanned.
Date/Time Executed (display-only)	The date and time the scan was executed.

V.5 **Utility Tools**

The N2O utility tools provide functions to aid in the diagnosis and resolution of exception situations.

To access the Utility Tools menu, enter 'U' on the Toolbox Subsystem menu or the direct command TOL UTIL on any menu.

```
13-12-31                  N-2-O UTILITY TOOLS                    TSI0373
11:38:00                                                         TSI1
                  Code  Function
                  ----  -------------------------------------------
                   A    Delete Checkout Records
                   B    Check for Duplicate Checkout Records
                   C    Change an Event Status
                   D    Display Header Record for an Event
                   E    Display Event detail records for an Object
                   F    Display All Records Related to an Event
                   G    Display all 0XXXXXXX libraries
                   H    Display all 0XXXXXXX programs in a library
                   I    Delete all 0XXXXXXX libraries
                   J    Unlock a Master Event
                   K    Delete a User Canceling all their Checkouts
                   L    Delete 3GL Master Records
                   .    Terminate Trouble Shooting Tools
                   -    -------------------------------------------


         Enter Code: _



 Direct Command: _____                        TOL UTIL
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
       HELP  ----  END   ENV   MIG   REP   TOL   ----  PRJ   ----  ----  EXIT
```

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows:

A **Delete Checkout Records**
Delete checkout records when the normal Migration Subsystem Checkout/Checkin Cancel option does not delete it.

B **Check for Duplicate Checkout Records**
Displays any possible orphaned checkout records.

C **Change an Event Status**
Modify the status of an Event to any other status.

D **Display Header Record for an Event**
Displays all the N2O-Migration fields used on the Event Header record.

E **Display Event Detail Records for an Object**

F **Display All Records Related to an Event**

(continued from previous page)

Field	Description

G   **Display all 0XXXXXXX libraries**
Displays all pending autocompile library records.

H   **Display all 0XXXXXXX programs in a library**
Display all pending autocompile records in a given library.

I   **Delete all 0XXXXXXX libraries**
Deletes all pending autocompile library records.

J   **Unlock a Master Event**
Unlocks an event's master record.

K   **Delete a User Canceling all their Checkouts**
Cancels all checkouts for a user and deletes the user.

L   **Delete 3GL Master Records**
Deletes 3GL master records.

.   **Terminate Trouble Shooting Tools**

V.5.1 **Delete Checkout Records**

The Delete Checkout Records function permits the cancellation of a checkout for any object.

This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Delete Checkout Records function, enter "A" on the Utility Tools menu.

```
 01-12-31              N-2-O UTILITY TOOLS                  TSI0373
 11:38:00                                                   TSI1
                  Code  Function
                  ----  -------------------------------------------
           +-----------------------------------------------------+
           |                                                     |
           |         *******************************             |
           |         Delete Checkout Records Utility             |
           |         *******************************             |
           | Object Type:    (NATURAL, SYSERR, PREDICT, OTHER)   |
           | Object Name:                                        |
           |        Node:                                        |
           |        DBID:      0                                 |
           |         FNR:      0                                 |
           |     Library:                                        |
           | **                                                  |
      Ente | PF5 - LOOKUP INFO. (REQUIRES OBJECT TYPE/NAME)      |
           | ENTER  '.' IN ANY FIELD OR PF3 TO CANCEL            |
           +-----------------------------------------------------+

 Direct Command: _____            TOL UTIL
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP  ----  END   ENV   MIG   REP   TOL   ----  PRJ   ----  ----  EXIT
```

Field	Type	Description
Object Type (required)	N,S,P,O	NATURAL, SYSERR, PREDICT, OTHER.
OBJECT Name (required)	N,S,P,O	Name of the checked out object to be cancelled.
Node (required)	N,S,P,O	The Node name assigned to the Checkout Environment. PF5 can be used to look up the value of this field.
Dbid (required)	N,S,P,O	The Database Id number assigned to the Checkout Environment. PF5 can be used to look up the value of this field.
FNR (required)	N,S,P,O	The FUSER File number assigned to the Checkout Environment. PF5 can be used to look up the value of this field.
Library (required)	N,S,P,O	The Library name assigned to the Checkout Environment. PF5 can be used to look up the value of this field.

V.5.2 Check for Duplicate Checkout Records

The Check for Duplicate Checkout Records function displays any objects that have multiple checkouts existing. This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Check for Duplicate Checkout Records function, enter "B" on the Utility Tools menu. Processing will begin as soon as the option is selected. It may take several minutes, then a display of all duplicate checkouts will be appear.

```
01-12-31              DISPLAY DUPLICATE CHECKOUT RECORDS
11:38:00                                                     PAGE:    1

  TYPE NODE  DBID   FNR    LIBRARY   OBJECT

   S   CPUL  00001  00231  TREE11C   1015
   S   CPUL  00001  00231  TREE11C   1015
   S   CPUL  00001  00231  TREE11C   1015
   S   CPUL  00001  00231  TREE26B   2030
   S   CPUL  00001  00231  TREE26B   2035
   S   CPUL  00001  00231  TREE26B   2035
   S   CPUL  00001  00231  TREE26B   2045
   S   CPUL  00001  00231  TREE26B   2045
   S   CPUL  00001  00231  TREE26B   2045
   S   CPUL  00001  00231  TREE26B   2045




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
                                                                         EXIT
```

V.5.3   Change an Event Status

The Change an Event Status function permits an Event's status to be modified to any status. This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective. An Event with a current status of 'C' (closed) cannot be modified.

To access the Change an Event Status function, enter "C" on the Utility Tools menu.

```
  01-12-31                  N-2-O Trouble-Shooting Tools              TSI0373
  11:38:00                     Update An Event Status                 TSI1


                            Event Name:            _____
                            Sequence Number:       _____
                            New Event Status:      _












 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  ----  END   ----  ----  ----  ----  ----  ----  ----  ----  ----
```

Field	Description
Event Name (required)	Name of the Event.
Sequence Number (required)	Sequence Number of the Event.
New Event Status (required)	The new status of the Event.

B   Batch Ready
I   In Progress
C   Closed
O   Open
H   Hold

V.5.4   Display Header Record for an Event

The Display Header Record for an Event displays all of the Event Header fields on the N2O Migration File for a specific Event. This report will aid in resolving exception situations within N2O for specific objects.

To access the Display Header Record for an Event function, enter "D" on the Utility Tools menu.

```
 01-12-31                    N-2-O UTILITY TOOLS                     TSI0373
 11:38:00                                                            TSI1
                  Code  Function
                  ----  -------------------------------------------
            +-----------------------------------------------------+
            |                                                     |
            |        ******************************               |
            |        DISPLAY EVENT HEADER RECORD                  |
            |        ******************************               |
            |        EVENT   :                                    |
            |        SEQUENCE:                                    |
            |                                                     |
            |        ENTER  '.' IN ANY FIELD OR PF3 TO CANCEL     |
            |        ******************************               |
            |                                                     |
            |                                                     |
       Ente +-----------------------------------------------------+



 Direct Command:  _____             TOL UTIL
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP  ----  END   ENV   MIG   REP   TOL   ----  PRJ   ----  ----  EXIT
```

Field	Description
Event Name (required)	Name of the Event.
Sequence Number (required)	Sequence Number of the Event.

V.5.5   Display Event Detail Records for an Object

The Display Event Detail Records for an object function shows all of the fields on the N2O Migration file that are related to a specific Event and object. This report will aid in diagnosing exception situations with in N2O for specific objects.

To access the Display Event Detail Records for an Object screen, enter "E" on the Utility Tools menu.

```
 01-12-31                    N-2-O UTILITY TOOLS                     TSI0373
 11:38:00                                                            TSI1
                  Code  Function
                  ----  --------------------------------------------
            +----------------------------------------------------+
            |                                                    |
            |       ******************************               |
            |       DISPLAY EVENT DETAIL RECORD                  |
            |       ******************************               |
            |       EVENT   :                                    |
            |       SEQUENCE:                                    |
            |       TYPE    :   (N,S,P,O)                        |
            |       OBJECT  :                                    |
            |                                                    |
            |       **  ENTER  '.' IN EVENT OR PF3 TO CANCEL     |
            |       ******************************               |
      Ente +----------------------------------------------------+



 Direct Command: _____                   TOL UTIL
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP  ----  END   ENV   MIG   REP   TOL   ----  PRJ   ----  ----  EXIT
```

Field	Description
Event Name (required)	Name of the Event.
Sequence (required)	Sequence Number of the Event.
Type (required)	Type of object. N Indicates Natural S Indicates SYSERR P Indicates PREDICT O Indicates Other
Object (required)	Object name.

V.5.6   Display All Records Related to an Event

The Display All Records Related to an Event function Displays all records on the N2O Migration file related to a specific Event. This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Change an Event Status function, enter "F" on the Utility Tools menu.

```
01-12-31                    N-2-O UTILITY TOOLS                    TSI0373
11:38:00                                                           TSI1
                  Code   Function
                  ----   -------------------------------------------
              +------------------------------------------------------+
              |                                                      |
              |        ******************************                |
              |        DISPLAY ALL RECORDS FOR EVENT                 |
              |        ******************************                |
              |        EVENT   :                                     |
              |        SEQUENCE:                                     |
              |                                                      |
              |        **  ENTER  '.' IN ANY FIELD OR PF3 TO CANCEL |
              |        ******************************                |
              |                                                      |
              |                                                      |
         Ente +------------------------------------------------------+


 Direct Command: _____                    TOL UTIL
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   ----  PRJ   ----  ----  EXIT
```

Field	Description
Event Name (required)	Name of the Event.
Sequence Number (required)	Sequence Number of the Event.

V.5.7   Display All 0XXXXXXX Libraries

The Display all 0XXXXXXX Libraries function displays all 0XXXXXXX libraries in a specific Environment. 0XXXXXXX libraries are created by N2O for use in the autocompile process. This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Display all 0XXXXXXX Libraries function, enter "G" on the Utility Tools menu.

V.5.8   Display All 0XXXXXXX Programs in a Library

The Display all 0XXXXXXX Programs function in a library displays all 0XXXXXXX programs in a specific Natural Library. 0XXXXXXX programs are created by N2O for use in the Autocompile process. This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Display all 0XXXXXXX programs function, enter "H" on the Utility Tools menu.

```
01-12-31                    N-2-O UTILITY TOOLS                       TSI0373
11:38:00                                                             TSI1
                 Code   Function
                 ----   --------------------------------------------
           +----------------------------------------------------------+
           |                                                          |
           | SEARCH FOR 0XXXXXXX PROGRAMS IN LIBRARY: _____        |
           | PF3 TO CANCEL                                            |
           +----------------------------------------------------------+
                  F    Display all Records related to an Event
                  G    Display all 0XXXXXXX libraries
                  H    Display all 0XXXXXXX programs in a library
                  I    Delete all 0XXXXXXX libraries
                  J    Unlock a Master Event
                  K    Delete a User Canceling all their Checkouts
                  L    Delete 3GL Master Records
                  .    Terminate Trouble Shooting Tools
                  -    --------------------------------------------

         Enter Code: h



 Direct Command: _____            TOL UTIL
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
     HELP  ----  END   ENV   MIG   REP   TOL  ----  PRJ  ----  ----  EXIT
```

Field	Description
Library (required)	Library to search for 0XXXXXXX records in.

V.5.9   Delete All 0XXXXXXX Libraries

The Delete all 0XXXXXXX Libraries function deletes all 0XXXXXXX libraries in a specific Environment. 0XXXXXXX libraries are created by N2O for use in the Autocompile process. This function will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Delete all 0XXXXXXX Libraries function, enter "I" on the Utility Tools menu.

V.5.10   Unlock a Master Event

The Unlock a Master Event function permits the unlocking of a master Event. This function should only be used when the customer encounters the error "Record is currently on hold - Please try later." when adding or modifying an event and no other user is currently defining an event. This problem may occur if an error occurred while defining an event.

To access the Unlock a Master Event function, enter "J" on the Utility Tools menu.

```
 01-12-31                  N-2-O UTILITY TOOLS                    TSI0373
 11:38:00                                                         TSI1
                 Code  Function
                 ----  -------------------------------------------
           +-----------------------------------------------------+
           |                                                     |
           |         ******************************              |
           |         UNLOCK EVENT MASTER RECORD                  |
           |         ******************************              |
           |         EVENT   :                                   |
           |                                                     |
           |         ENTER  '.' IN ANY FIELD OR PF3 TO CANCEL    |
           |         ******************************              |
           |                                                     |
           |                                                     |
      Ente +-----------------------------------------------------+



  Direct Command:  _____            TOL UTIL
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
       HELP  ----  END   ENV   MIG   REP   TOL   ----  PRJ   ----  ----  EXIT
```

Field	Description
Event Name (required)	Name of the Master Event to be unlocked.

V.5.11   Delete a User Canceling all their Checkouts

The Delete a User Canceling all their Checkouts function cancels all checkouts for a User
Definition and deletes the User Definition. This function should only be used when a User
Definition cannot be deleted due to open checkouts for the User.

To access the Delete a User Canceling all their Checkouts function, enter "K" on the Utility
Tools menu.

```
 14-01-14                  N-2-O UTILITY TOOLS                      VLM1
 14:37:04                                                           SC0TCP11
              Code  Function
              ----  -------------------------------------------
         +-------------------------------+
         !                               ! ckout Records
         ! User Definition: _____     !
         !                               ! or an Event
         ! PF3, Enter END or . to exit   ! cords for an Object
         !                               ! ated to an Event
         +-------------------------------+ braries
              H    Display all 0XXXXXXX programs in a library
              I    Delete all 0XXXXXXX libraries
              J    Unlock a Master Event
              K    Delete a User Canceling all their Checkouts
              L    Delete 3GL Master Records
              .    Terminate Trouble Shooting Tools
              -    -------------------------------------------


      Enter Code: k
 Direct Command: _____                           TOL UTIL



 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   ----  PRJ   ----  ----  EXIT
```

Field	Description
User Definition (required)	User Definition to be deleted.

V.5.12 Delete 3GL Master Records

The Delete 3GL Master Records function deletes 3GL master records.

This report will aid in resolving exception situations within N2O for specific objects. This function should only be used when all normal means have been ineffective.

To access the Delete Checkout Records function, enter "L" on the Utility Tools menu.

```
 14-01-08                  N-2-O UTILITY TOOLS                     VLM1
 14:48:34                                                          SC0TCP11
             Code  Function
             ----  ------------------------------------------
         +-----------------------------------------------------+
         !                                                     !
         ! *******************************************         !
         ! Delete 3GL Objects from N2O Master Catalog          !
         ! *******************************************         !
         ! 3GL Base Env:                                       !
         !     Category:                                       !
         !  Object Name:                                       !
         ! **                                                  !
         ! PF1 - HELP                                          !
         ! ENTER  '.' IN ANY FIELD OR PF3 TO CANCEL            !
         ! *******************************************         !
         +-----------------------------------------------------+
              -    ------------------------------------------

     Enter Code: l
 Direct Command: _____                        TOL UTIL




 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  ----  END   ENV   MIG   REP   TOL   ----  PRJ   ----  ----  EXIT
```

Field	Type	Description
3GL Base Env: (required)	O	Base Environment of the 3GL object of the Master Record to be deleted.
Category (required)	O	The 3GL/Other category of the 3GL object of the Master Record to be deleted. Valid values are as follows: ASMB Indicates all types of Assembler. COBOL Indicates all types of COBOL. FORT Indicates all types of FORTRAN. PL/I Indicates all PL/I types. RPG Indicates RPG. DATA Indicates DATA FILES. JCL Indicates JCL, CLIST, CNTL. OTHER, All other types.
OBJECT Name (required)	O	Name of the 3GL object of the Master Record to be deleted.

APPENDIX A
N2O Direct Commands

The following is a list of Direct Commands (screen names) and their descriptions.

SCREEN NAME	DESCRIPTION
MIG MENU	MIGRATION SUBSYSTEM MENU
MIG AUTH	• AUTHORIZE EVENTS MENU
MIG SUB	•BATCH JCL SUBMISSION MENU
MIG COCI	•CHECKOUT/CHECKIN UTILITIES MENU
MIG UTIL	• MIGRATION UTILITIES MENU
MIG REQ	• REQUEST EVENTS MENU
MIG SERV	• SERVICE EVENTS MENU
PRJ MENU	PROJECT TRACKING SUBSYSTEM MENU
PRJ PROJ	• PROJECT DEFINITION MENU
PRJ TASK	• TASK LIST MENU
PRJ SUGG	• SUGGESTION BOX MENU
PRJ TUTL	• TASK UTILITIES MENU
PRJ REP	•PROJECT TRACKING REPORTS MENU
REP MENU	REPORTING SUBSYSTEM MENU
REP ENV	• ENVIRONMENT REPORTING MENU
REP EVNT	• EVENT REPORTING MENU
REP OBJ	• OBJECT REPORTING MENU
REP STAT	• STATISTICAL REPORTING MENU
REP SEC	• SECURITY REPORTING MENU
TOL MENU	TOOLBOX SUBSYSTEM MENU
TOL DOC	• DOCUMENTATION TOOLS MENU
TOL MAIN	• MAINTENANCE TOOLS MENU
TOL PROG	• PROGRAMMER TOOLS MENU
TOL UTIL	•UTILITY TOOLS MENU
TOL SCAN	N2OSCAN UTILITY MENU
TOL SCEN	•N2OSCAN ENVIRONMENT FUNCTION MENU
TOL SCLI	•N2OSCAN LIBRARY FUNCTION MENU
TOL SCRP	•N2OSCAN SUBMIT BATCH REPORTS

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APPENDIX B

N2O EVENT STATUS

The following is a description of each Event status.

Status	Description
O	The Event is in an open status. An open Event can be an Event that still requires modifications, an Event that is pending migration, or an Event that requires authorization. Additionally, if the user does not complete the authorization process (presses PF3 before the migration occurs), the status of the Event will remain open and the Event will have to be authorized.
A	The Event has been authorized but still requires servicing.
B	The Event is a batch migration that is ready to be executed.
H	The Event is on hold by a user.
I	The Event is a batch migration that is in-progress.
C	The Event has completed and is closed.

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APPENDIX C

ERROR MESSAGES

N2O uses the following SYSERR messages. These messages are loaded into library N2OLIB when N2O is installed.

Error Number	Error Message
1010	Invalid function code
1015	Invalid PF KEY
1030	Value not found
1040	Value required
1050	Selection out of range
1060	Invalid selection
1070	Please choose one or press PF3 to quit
1080	No partial entries allowed in list
1090	At least one entry required in list
1100	Migration Profile not found
1110	Environment Definition not found
1120	Node Definition not found
1130	Select only one option
1135	Choose only one
1140	Date must be formatted YYYYMMDD
1145	Time must be formatted HH:MM:SS
1150	Valid values: A, B, C, H, I, O
1155	Invalid User-ID specified
1160	Invalid Environment Definition
1161	Environment Definition must contain FDIC information
1162	Environment Definition must contain FUSER information
1163	BASE Env does not define a NATURAL environment
1164	BASE Env does not define a 3GL environment
1165	Invalid 3GL Environment Definition
1169	Remote Environment Definition cannot be specified
1170	Please enter a Remote Environment Definition
1175	Please enter a BASE Environment Definition
1177	Cannot migrate an entire library with this function
1180	Object has already been selected
1185	Valid values: M, G, L, A, P, N, S, H, C, T, K, O, R, Y, Z, 3, 4, 5
1190	Valid values: ASMB, COBOL, FORT, PL/I, RPG, DATA, JCL, OTHER
1195	Not a valid PREDICT Type
1200	Top of available selection list displayed
1210	Last reviewed screen currently displayed
2010	Duplicate value
2015	Copycode/text cannot have object code
2017	DDM Generated only valid for ADABAS files

Error Number	Error Message
2020	Feature is not available
2025	Valid version numbers: -1 to -99
2030	Valid values: 1 - 255
2035	Valid values: Y or N
2040	Valid values: YES or NO
2042	Valid values: S, C
2045	Valid values: US, UL, U
2046	Valid values: 1, 2, 3, 4, 5, 6, 7, 8 or *
2050	Valid values: 0001 - 9999
2055	Valid values: O or B
2060	Environment must be a 3GL Environment
2070	Migration Profile within the same dataset is invalid
2075	Valid values: COPY or MOVE
2085	Profile contains inconsistent 3GL Environments
2086	From environments are inconsistent (NATURAL vs. 3GL)
2087	To environments are inconsistent (NATURAL vs. 3GL)
2090	Profile contains inconsistent environments
2130	No records found for search criteria
2150	Top of available data
2160	Bottom of available data
2170	Program does not exist
2180	Please select a valid type
2200	Please select an Environment Definition
2405	Please select a Category
3030	Invalid Library
3050	Event/Sequence not found
3060	Cannot delete non-selected object
3070	Cannot migrate programs within the same library
3075	Cannot migrate PREDICT objects within the same FDIC
3080	Valid values: A or D
3180	Type an X to select
3210	Cannot transfer to the same User-ID
3220	Current location cannot be a BASE Environment
3230	Archive Definition cannot be specified
3250	Cipher Code must be a number
3260	Days cannot be a negative number
4020	Program to be displayed could not be found
5000	Starting Error must be * or numeric
5030	Starting value outside Library range
6000	Invalid Scan Environment
6001	Invalid Start Library
6002	Start Library may not be greater than End Library
6003	Invalid Start Object
6004	Start Object may not be greater than End Object
7005	There are no Task Groups defined to this
7010	Project Definition not found
7015	Stage name reserved by N2O
7020	Valid Task Group required
9010	Type an X to view Source programs
9170	Type an X to submit the JCL

APPENDIX D

JCL samples

All JCL samples are included as part of the base N2O installation. The samples are loaded into the Natural library N2OBATCH.

D.1 – <u>Base N2O batch functions</u>

Archive Purge

```
Program     MVSARCHP Library N2OBATCH
 0010 //ARCHPURG JOB (ACCOUNTING),'ARCHIVE PURGE',CLASS=A,NOTIFY=&USERID
 0020 //**********
 0030 //*  THIS IS SAMPLE ARCHIVE PURGE JCL
 0040 //*  THIS JOB SHOULD BE RENAMED TO N2OPUARC
 0050 //**********
 0060 //* ARCHP1 RUNS WHERE N2O IS INSTALLED
 0070 //*
 0080 //ARCHP1   EXEC PGM=NATBATCH
 0090 //CMWKF02  DD  DSN=LIST.PARMS,DISP=(NEW,PASS,DELETE),
 0100 //              SPACE=(TRK,(1,1),RLSE),UNIT=SYSDA,
 0110 //              DCB=(RECFM=FB,BLKSIZE=84,LRECL=80)
 0120 //CMPRINT  DD  SYSOUT=*
 0130 //CMPRT02  DD  SYSOUT=*
 0140 //CMSYNIN  DD  *
 0150 LOGON N2OLIB
 0160 N2OPARC1
 0170 FIN
 0180 /*
 0190 //CMWKF01  DD  *
 0200 &INPUT
 0210 /*
 0220 //****
 0230 //* ARCHP2 RUNS ON AN FUSER THAT IS LOCAL TO THE ARCHIVE FILE
 0240 //****
 0250 //**   N2OV5.2 CHANGE CMWKF03 LRECL FROM 97 TO 99
 0260 //****
 0270 //ARCHP2   EXEC PGM=NATBATCH,COND=(9,LT)
 0280 //*
 0290 //CMWKF01  DD  DSN=LIST.PARMS,DISP=(OLD,PASS,CATLG)
 0300 //CMWKF03  DD  DSN=ARCHIVE.LIST,DISP=(NEW,PASS,CATLG),
 0310 //              SPACE=(TRK,(900,900),RLSE),UNIT=SYSDA,
 0320 //              DCB=(RECFM=FB,BLKSIZE=101,LRECL=99)
 0330 //CMPRINT  DD  SYSOUT=*
 0340 //CMPRT02  DD  SYSOUT=*
 0350 //CMSYNIN  DD  *
 0360 LOGON SYSTEM
 0370 N2OPARC2
 0380 FIN
 0390 /*
 0400 //*****
 0410 //*  ARCHP3 RUNS ON AN FUSER THAT IS LOCAL TO THE ARCHIVE FILE
 0420 //*****
 0430 //**  N2OV5.2 CHANGE CMWKF05 LRECL FROM 97 TO 99
 0440 //****
 0450 //ARCHP3   EXEC PGM=NATBATCH,COND=(9,LT)
 0460 //*
 0470 //CMWKF01  DD  DSN=LIST.PARMS,DISP=(OLD,DELETE,CATLG)
 0480 //CMWKF04  DD  DSN=ARCHIVE.LIST,DISP=(OLD,PASS,CATLG)
 0490 //CMWKF05  DD  DSN=ARCHIVE.PURGE,DISP=(NEW,CATLG,CATLG),
 0500 //              SPACE=(TRK,(900,900),RLSE),UNIT=SYSDA,
 0510 //              DCB=(RECFM=FB,BLKSIZE=101,LRECL=99)
```

```
0520 //CMWKF06  DD  DSN=&BACKUP,DISP=(NEW,CATLG,CATLG),
0530 //             SPACE=(CYL,(15,15),RLSE),UNIT=SYSDA,
0540 //             DCB=(RECFM=VB,BLKSIZE=6108,LRECL=6104)
0550 //CMPRINT  DD  SYSOUT=*
0560 //CMPRT02  DD  SYSOUT=*
0570 //CMPRT04  DD  SYSOUT=*
0580 //CMPRT06  DD  SYSOUT=*
0590 //CMSYNIN  DD  *
0600 LOGON SYSTEM
0610 N2OPARC3
0620 FIN
0630 /*
0640 //****
0650 //* ARCHP4 RUNS WHERE N2O IS INSTALLED
0660 //****
0670 //ARCHP4   EXEC PGM=NATBATCH,COND=(9,LT)
0680 //*
0690 //CMWKF05  DD  DSN=ARCHIVE.PURGE,DISP=(OLD,DELETE,CATLG)
0700 //*
0710 //CMPRINT  DD  SYSOUT=*
0720 //CMPRT02  DD  SYSOUT=*
0730 //CMSYNIN  DD  *
0740 LOGON N2OLIB
0750 N2OPARC4
0760 FIN
0770 /*
0780 //CMWKF03  DD  *
0790 &BACKUP
0800 /*
0810 //*
***** End of list *****
```

```
Program     BSARCHP  Library N2OBATCH
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE N2OPARC1 ***
0060 /SET-FILE-LINK LINK-NAME=W01,FILE-NAME=PURGE.PARMS
0070 /FILE LIST.PARMS,LINK=W02,RECFORM=FB,RECSIZE=80,BLKSIZE=84
0080 /FILE MASTER.LIST,LINK=P02
0090 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0100 /MODIFY-JOB-SWITCHES ON=(4,5)
0110 /START-PROGRAM FROM-FILE=$EDT
0120 LS=132,PS=60,MENU=OFF
0130 @WRITE 'N2O.PURGE.IPT.BATCH' OVERWRITE
0140 @HALT
0150 /MODIFY-JOB-SWITCHES OFF=(4,5)
0160 /ASSIGN-SYSIPT TO-FILE=N2O.PURGE.IPT.BATCH
0170 /MODIFY-JOB-SWITCHES ON=(2)
0180 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0190 LOGON N2OLIB
0200 N2OPARC1
0210 FIN
0220 /REMARK *** EXECUTE N2OPARC2 ***
0230 /REMARK *****
0240 /REMARK  N2OV5.2 CHANGE W03 LRECL FROM 97 TO 99 BLKSIZE 101 TO 103
0250 /REMARK *****
0260 /FILE LIST.PARMS,LINK=W01
0270 /FILE ARCHIVE.LIST,LINK=W03,RECFORM=FB,RECSIZE=99,BLKSIZE=103
0280 /FILE CONTROL.LIST,LINK=P02
0290 /SET-JOB-STEP
0300 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0310 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0320 LOGON SYSTEM
0330 N2OPARC2
0340 FIN
0350 /REMARK *** EXECUTE N2OPARC3 ***
0360 /REMARK *****
0370 /REMARK  N2OV5.2 CHANGE W05 LRECL FROM 97 TO 99 BLKSIZE 101 TO 103
0380 /REMARK *****
0390 /FILE LIST.PARMS,LINK=W01
0400 /FILE ARCHIVE.LIST,LINK=W04
0410 /FILE ARCHIVE.PURGE,LINK=W05,RECFORM=FB,RECSIZE=99,BLKSIZE=103
0420 /FILE &BACKUP,LINK=W06,RECFORM=VB,RECSIZE=6104,BLKSIZE=6108
0430 /FILE CONTROL.LIST,LINK=P02
0440 /FILE SUMMARY.LIST,LINK=P04
0450 /FILE SOURCE.LIST,LINK=P06
0460 /SET-JOB-STEP
0470 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0480 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0490 LOGON SYSTEM
0500 N2OPARC3
0510 FIN
0520 /REMARK *** EXECUTE N2OPARC4 ***
0530 /SET-FILE-LINK LINK-NAME=W03,FILE-NAME=BACKUP.DSN
0540 /FILE ARCHIVE.PURGE,LINK=W05
0550 /FILE CONTROL.LIST,LINK=P02
0560 /SET-JOB-STEP
0570 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0580 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0590 LOGON N2OLIB
0600 N2OPARC4
0610 FIN
0620 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0630 /DELETE-FILE FILE-NAME=N2O.TRANSFER.IPT.BATCH,
0640 /OPTION=DESTROY-ALL
0650 /LOGOFF NOSPOOL
***** End of list *****
```

```
Program     VMARCHP  Library N2OBATCH
0010 /* Execute N2OPARC1 */
0020 ADDRESS 'COMMAND'
0030 'ERASE N2OPARC1 CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OPARC1 CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OPARC1 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OPARC1 CMSYNIN A 2 F 80 (STRING N2OPARC1'
0080 'EXECIO 1 DISKW N2OPARC1 CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
0100 'FILEDEF CMWKF01 DISK N2OPARC1 CMWKF01 A'
0110 'FILEDEF CMWKF02 DISK N2OPARC1 LISTPARM A',
0120 ' RECFM FB LRECL 80 BLKSIZE 84'
0130 'FILEDEF CMSYNIN DISK N2OPARC1 CMSYNIN A'
0140 'FILEDEF CMPRINT PRINTER'
0150 'FILEDEF CMPRT02 PRINTER'
0160 'EXEC NAT BATCH'
0170 /* Execute N2OPARC2 */
0180 /*
0190 /*  N2OV5.2 CHANGE CMWKF03 LRECL FROM 97 TO 99 BLKSIZE FROM 101 TO 103
0200 /*
0210 'ERASE N2OPARC2 CMSYNIN A'
0220 'EXECIO 1 DISKW N2OPARC2 CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0230 'EXECIO 1 DISKW N2OPARC2 CMSYNIN A 2 F 80 (STRING N2OPARC2'
0240 'EXECIO 1 DISKW N2OPARC2 CMSYNIN A 3 F 80 (STRING FIN'
0250 'FILEDEF * CLEAR'
0260 'FILEDEF CMWKF01 DISK N2OPARC1 LISTPARM A'
0270 'FILEDEF CMWKF03 DISK N2OPARC2 ARCHLIST A',
0280 ' RECFM FB LRECL 99 BLKSIZE 103'
0290 'FILEDEF CMSYNIN DISK N2OPARC2 CMSYNIN A'
0300 'FILEDEF CMPRINT PRINTER'
0310 'FILEDEF CMPRT02 PRINTER
0320 'EXEC NAT BATCH'
0330 'ERASE N2OPARC2 CMSYNIN A'
0340 /* Execute N2OPARC3 */
0350 /*
0360 /*  N2OV5.2 CHANGE CMWKF05 LRECL FROM 97 TO 99 BLKSIZE FROM 101 TO 103
0370 /*
0380 'ERASE N2OPARC3 CMSYNIN A'
0390 'EXECIO 1 DISKW N2OPARC3 CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0400 'EXECIO 1 DISKW N2OPARC3 CMSYNIN A 2 F 80 (STRING N2OPARC3'
0410 'EXECIO 1 DISKW N2OPARC3 CMSYNIN A 3 F 80 (STRING FIN'
0420 'FILEDEF * CLEAR'
0430 'FILEDEF CMWKF01 DISK N2OPARC1 LISTPARM A'
0440 'FILEDEF CMWKF04 DISK N2OPARC2 ARCHLIST A'
0450 'FILEDEF CMWKF05 DISK N2OPARC3 ARCHPURG A',
0460 ' RECFM FB LRECL 99 BLKSIZE 103'
0470 'FILEDEF CMWKF06 DISK &BACKUP RECFM VB LRECL 6104 BLKSIZE 6108'
0480 'FILEDEF CMSYNIN DISK N2OPARC3 CMSYNIN A'
0490 'FILEDEF CMPRINT PRINTER'
0500 'FILEDEF CMPRT02 PRINTER'
0510 'FILEDEF CMPRT04 PRINTER'
0520 'FILEDEF CMPRT06 PRINTER'
0530 'EXEC NAT BATCH'
0540 'ERASE N2OPARC3 CMSYNIN A'
0550 /* Execute N2OPARC4 */
0560 'ERASE N2OPARC4 CMSYNIN A'
0570 'EXECIO 1 DISKW N2OPARC4 CMWKF03 A 1 F 80 (STRING &BACKUP'
0580 'EXECIO 1 DISKW N2OPARC4 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0590 'EXECIO 1 DISKW N2OPARC4 CMSYNIN A 2 F 80 (STRING N2OPARC4'
0600 'EXECIO 1 DISKW N2OPARC4 CMSYNIN A 3 F 80 (STRING FIN'
0610 'FILEDEF * CLEAR'
0620 'FILEDEF CMWKF03 DISK &BACKUP'
0630 'FILEDEF CMWKF05 DISK N2OPARC3 ARCHPURG A'
0640 'FILEDEF CMSYNIN DISK N2OPARC4 CMSYNIN A'
0650 'FILEDEF CMPRINT PRINTER'
0660 'FILEDEF CMPRT02 PRINTER'
0670 'EXEC NAT BATCH'
0680 'ERASE N2OPARC4 CMSYNIN A'
0690 exit
***** End of list *****
```

```
       Program      VSEARCHP Library N2OBATCH
  0010 * $$ JOB JNM=ARCHPURG,CLASS=A,USER=&USERID
  0020 * $$ LST CLASS=A,LST=SYSLST
  0030 * $$ LST CLASS=A,LST=02E,DISP=K,JSEP=0
  0040 // JOB ARCHPURG
  0050 // DLBL CMWKF01,'PURGE.INPUT.PARMS'
  0060 // EXTENT SYS001,,,,nnnnn,nnnnn
  0070 // EXEC IDCAMS,SIZE=AUTO
  0080   REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
  0090        OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(84)))
  0100 &INPUT
  0110 /*
  0120 * N2OPARC1 - FIND ARCHIVE PURGE PARAMETERS.
  0130 // ASSGN SYSIPT,SYSRDR
  0140 // ASSGN SYS001,DISK,SHR
  0150 // ASSGN SYS002,DISK,SHR
  0160 // ASSGN SYS009,SYSLIST
  0170 // ASSGN SYS042,02E
  0180 // DLBL CMWKF01,'PURGE.INPUT.PARMS'
  0190 // EXTENT SYS001,,,,nnnnn,nnnnn
  0200 // DLBL CMWKF02,'LIST.PARMS'
  0210 // EXTENT SYS002,,,,nnnnn,nnnnn
  0220 // EXEC NATBATCH
  0230 BWORKD=(1,1,80,FB,2,2,80,FB)
  0240 /*
  0250 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
  0260 /*
  0270 LOGON N2OLIB
  0280 N2OPARC1
  0290 FIN
  0300 /*
  0310 * N2OPARC2 - CREATE LIST OF OBJECTS TO BE PURGED
  0320 *
  0330 *   N2OV5.2 CHANGE CMWKF03 LRECL FROM 97 TO 99
  0340 *
  0350 // ASSGN SYS001,DISK,SHR
  0360 // ASSGN SYS003,DISK,SHR
  0370 // ASSGN SYS009,SYSLST
  0380 // ASSGN SYS042,02E
  0390 // DLBL CMWKF01,'LIST.PARMS'
  0400 // EXTENT SYS001,,,,nnnnn,nnnnn
  0410 // DLBL CMWKF03,'ARCHIVE.LIST'
  0420 // EXTENT SYS003,,,,nnnnn,nnnnn
  0430 // EXEC NATBATCH
  0440 /BWORKD=(1,1,80,FB,3,3,99,FB)
  0450 /*
  0460 ADARUN DB=XXX,SVC=YYY,DEVICE=ZZZZ
  0470 /*
  0480 LOGON SYSTEM
  0490 N2OPARC2
  0500 FIN
  0510 /*
  0520 * $$ LST CLASS=A,LST=04E,DISP=K,JSEP=0
  0530 * $$ LST CLASS=A,LST=06E,DISP=K,JSEP=0
  0540 * N2OPARC3 - PURGE PROGRAMS FROM ARCHIVE FILE
  0550 *
  0560 *   N2OV5.2 CHANGE CMWKF05 LRECL FROM 97 TO 99
  0570 *
  0580 // ASSGN SYS001,DISK,SHR
  0590 // ASSGN SYS004,DISK,SHR
  0600 // ASSGN SYS005,DISK,SHR
  0610 // ASSGN SYS006,DISK,SHR
  0620 // ASSGN SYS009,SYSLST
  0630 // ASSGN SYS042,02E
  0640 // ASSGN SYS044,04E
  0650 // ASSGN SYS046,06E
  0660 // DLBL CMWKF01,'LIST.PARMS'
  0670 // EXTENT SYS001,,,,nnnnn,nnnnn
  0680 // DLBL CMWKF04,'ARCHIVE.LIST'
```

```
0690 // EXTENT SYS004,,,,nnnnn,nnnnn
0700 // DLBL CMWKF05,'ARCHIVE.PURGE'
0710 // EXTENT SYS005,,,,nnnnn,nnnnn
0720 // DLBL CMWKF06,'&BACKUP'
0730 // EXTENT SYS006,,,,nnnnn,nnnnn
0740 // EXEC NATBATCH
0750 BWORKD=(1,1,80,FB,4,4,97,FB,5,5,99,FB,6,6,6104,VB)
0760 /*
0770 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0780 /*
0790 LOGON SYSTEM
0800 N2OPARC3
0810 FIN
0820 /*
0830 * N2OPARC4 - UPDATE MIGRATION FILE
0840 // DLBL CMWKF03,'DSNAME.INPUT'
0850 // EXTENT SYS003,,,,nnnnn,nnnnn
0860 // EXEC IDCAMS,SIZE=AUTO
0870   REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0880        OUTFILE(CMWKF03 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0890 &BACKUP
0900 /*
0910 // ASSGN SYSIPT,SYSRDR
0920 // ASSGN SYS003,DISK,SHR
0930 // ASSGN SYS004,DISK,SHR
0940 // ASSGN SYS009,SYSLST
0950 // ASSGN SYS042,02E
0960 // DLBL CMWKF03,'DSNAME.INPUT'
0970 // EXTENT SYS003,,,,nnnnn,nnnnn
0980 // DLBL CMWKF05,'ARCHIVE.PURGE'
0990 // EXTENT SYS005,,,,nnnnn,nnnnn
1000 // EXEC NATBATCH
1010 BWORKD=(3,3,80,FB,5,5,97,FB)
1020 /*
1030 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
1040 /*
1050 LOGON N2OLIB
1060 N2OPARC4
1070 FIN
1080 /*
1090 /&
1100 * $$ EOJ
***** End of list *****
```

Catalog Capture

```
Program     MVSCAPT  Library N2OBATCH
0010 //NATCAPT JOB (ACCOUNTING),'CATALOG CAPTURE',CLASS=A,NOTIFY=&USERID
0020 //**************
0030 //*  THIS IS SAMPLE CATALOG CAPTURE JCL
0040 //*  THIS JOB SHOULD BE RENAMED TO NATCAPT
0050 //**************
0060 //*  THE FIRST STEP (CAPTURE1) SHOULD RUN ON THE FUSER THAT
0070 //*  IS BEING CAPTURED
0080 //CAPTURE1 EXEC PGM=NATBATCH
0090 //CMWKF02  DD  DSN=N2O.CAPTURE.DATA,DISP=(,CATLG,DELETE),
0100 //              UNIT=SYSDA,SPACE=(CYL,(100,100),RLSE),
0110 //              DCB=(RECFM=VB,LRECL=127,BLKSIZE=131)
0120 //*
0130 //CMPRINT  DD  SYSOUT=*
0140 //CMPRT01  DD  SYSOUT=*
0150 //CMSYNIN  DD  *
0160 LOGON SYSTEM
0170 N2OCAPT1
0180 FIN
0190 /*
0200 //CMWKF01 DD   *
0210 &INPUT
0220 /*
0230 //*  THE CAPTURE2 STEP SHOULD BE RUN WHERE N2O IS INSTALLED
0240 //CAPTURE2 EXEC PGM=NATBATCH
0250 //CMWKF02  DD  DSN=N2O.CAPTURE.DATA,DISP=(OLD,DELETE,DELETE)
0260 //CMPRINT  DD  SYSOUT=*
0270 //CMSYNIN  DD  *
0280 LOGON N2OLIB
0290 N2OCAPT2
0300 FIN
0310 /*
0320 //CMWKF01  DD  *
0330 &INPUT
0340 /*
0350 //*
***** End of list *****
```

Program   BSCAPT   Library N2OBATCH
```
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE N2OCAPT1 ***
0060 /FILE CAPTURE.DATA,LINK=W02,RECFORM=VB,RECSIZE=127,BLKSIZE=131
0070 /FILE CAPT1.INPUT,LINK=W01
0080 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0090 /MODIFY-JOB-SWITCHES ON=(4,5)
0100 /START-PROGRAM FROM-FILE=$EDT
0110 LS=132,PS=60,MENU=OFF
0120 @WRITE 'N2O.CAPTURE.IPT.BATCH' OVERWRITE
0130 @HALT
0140 /MODIFY-JOB-SWITCHES OFF=(4,5)
0150 /ASSIGN-SYSIPT TO-FILE=N2O.CAPTURE.IPT.BATCH
0160 /MODIFY-JOB-SWITCHES ON=(2)
0170 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0180 LOGON SYSTEM
0190 N2OCAPT1
0200 FIN
0210 /REMARK *** EXECUTE N2OCAPT2 ***
0220 /SET-FILE-LINK LINK-NAME=W01,FILE-NAME=N2O.ENV.DEF
0230 /FILE CAPTURE.DATA,LINK=W02
0240 /SET-JOB-STEP
0250 /ASSIGN-SYSIPT TO-FILE=N2O.CAPTURE.IPT.BATCH
0260 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0270 LOGON N2OLIB
0280 N2OCAPT2
0290 FIN
0300 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0310 /DELETE-FILE FILE-NAME=N2O.CAPTURE.IPT.BATCH,
0320 /OPTION=DESTROY-ALL
0330 /LOGOFF NOSPOOL
***** End of list *****
```

```
Program      VMCAPT    Library N2OBATCH
0010 /* Execute N2OCAPT1 */
0020 address 'COMMAND'
0030 'ERASE N2OCAPT1 CMSYNIN A'
0040 'ERASE CAPTURE DATA A'
0050 'ERASE N2OCAPT1 CMWKF01 A'
0060 'EXECIO 1 DISKW N2OCAPT1 CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0070 'EXECIO 1 DISKW N2OCAPT1 CMSYNIN A 2 F 80 (STRING N2OCAPT1'
0080 'EXECIO 1 DISKW N2OCAPT1 CMSYNIN A 3 F 80 (STRING FIN'
0090 'EXECIO 1 DISKW N2OCAPT1 CMWKF01 A 1 F 80 (STRING &INPUT'
0100 'FILEDEF * CLEAR'
0110 'FILEDEF CMWKF02 DISK CAPTURE DATA A RECFM VB LRECL 127 BLKSIZE 131'
0120 'FILEDEF CMSYNIN DISK N2OCAPT1 CMSYNIN A'
0130 'FILEDEF CMWKF01 DISK N2OCAPT1 CMWKF01 A'
0140 'FILEDEF CMPRINT PRINTER'
0150 'EXEC NAT BATCH'
0160 'ERASE N2OCAPT1 CMSYNIN A'
0170 /* Execute N2OCAPT2 */
0180 'ERASE N2OCAPT2 CMSYNIN A'
0190 'ERASE N2O CMWKF01 A'
0200 'EXECIO 1 DISKW N2O CMWKF01 A 1 F 80 (STRING &INPUT'
0210 'EXECIO 1 DISKW N2OCAPT2 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0220 'EXECIO 1 DISKW N2OCAPT2 CMSYNIN A 2 F 80 (STRING N2OCAPT2'
0230 'EXECIO 1 DISKW N2OCAPT2 CMSYNIN A 3 F 80 (STRING FIN'
0240 'FILEDEF * CLEAR'
0250 'FILEDEF CMWKF01 DISK N2O CMWKF01 A'
0260 'FILEDEF CMWKF02 DISK CAPTURE DATA A'
0270 'FILEDEF CMSYNIN DISK N2OCAPT2 CMSYNIN A'
0280 'FILEDEF CMPRINT PRINTER'
0290 'EXEC NAT BATCH'
0300 'ERASE N2OCAPT2 CMSYNIN A'
0310 'ERASE N2O CMWKF01 A'
0320 'ERASE CAPTURE DATA A'
0330 exit
***** End of list *****
```

```
Program      VSECAPT  Library N2OBATCH
0010 * $$ JOB JNM=N2OCAPT1,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB N2OCAPT1
0040 /*
0050 * N2OCAPT1 - CAPTURE FUSER AND FDIC
0060 // DLBL CMWKF01,'N2O.CAPT1.INPUT'
0070 // EXTENT SYS001,,,,nnnnn,nnnnn
0080 // EXEC IDCAMS,SIZE=AUTO
0090    REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0100         OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0110 &INPUT
0120 /*
0130 // ASSGN SYSIPT,SYSRDR
0140 // ASSGN SYS001,DISK,SHR
0150 // ASSGN SYS002,DISK,SHR
0160 // ASSGN SYS000,SYSRDR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF02,'N2O.CAPTURE.DATA'
0190 // EXTENT SYS002,,,,NNNNN,NNNNN
0200 // DLBL CMWKF01,'N2O.CAPT1.INPUT'
0210 // EXTENT SYS001,,,,nnnnn,nnnnn
0220 // EXEC NATBATCH
0230 BWORKD=(1,1,80,FB,2,2,131,VB)
0240 /*
0250 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0260 /*
0270 LOGON SYSTEM
0280 N2OCAPT1
0290 FIN
0300 /*
0310 * N2OCAPT2 - UPDATE MIGRATION FILE
0320 // DLBL CMWKF01,'N2O.CAPT2.INPUT'
0330 // EXTENT SYS001,,,,nnnnn,nnnnn
0340 // EXEC IDCAMS,SIZE=AUTO
0350    REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0360         OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0370 &INPUT
0380 /*
0390 // ASSGN SYSIPT,SYSRDR
0400 // ASSGN SYS001,DISK,SHR
0410 // ASSGN SYS002,DISK,SHR
0420 // ASSGN SYS009,SYSLST
0430 // DLBL CMWKF01,'N2O.CAPT2.INPUT'
0440 // EXTENT SYS001,,,,nnnnn,nnnnn
0450 // DLBL CMWKF02,'N2O.CAPTURE.DATA'
0460 // EXTENT SYS002,,,,nnnnn,nnnnn
0470 // EXEC NATBATCH
0480 BWORKD=(1,1,80,FB,2,2,131,VB)
0490 /*
0500 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0510 /*
0520 LOGON SYSTEM
0530 N2OCAPT2
0540 FIN
0550 /*
0560 /&
0570 * $$ EOJ
***** End of list *****
```

Object Compare

Program   MVSCOMPO Library N2OBATCH
```
0010 //N2OCOMPO JOB (ACCOUNTING),'COMP OBJECT',CLASS=A,TIME=40,NOTIFY=&USERID
0020 //***
0030 //*   THIS IS SAMPLE JCL FOR THE TOOLBOX OPTION FOR OBJECT COMPARE
0040 //*   THIS JOB SHOULD BE RENAMED N2OCOMPO
0050 //***
0060 //*  N2OCOMPO RUNS WHERE N2O IS INSTALLED
0070 //***
0080 //N2OCOMPO EXEC PGM=NATBATCH
0090 //*
0100 //CMPRINT  DD  SYSOUT=*
0110 //CMPRT02  DD  SYSOUT=*
0120 //CMSYNIN  DD  *
0130 LOGON N2OLIB
0140 N2O3120B
0150 &INPUT
0160 FIN
0170 /*
0180 //*
***** End of list *****
```

Program   BSCOMPO Library N2OBATCH
```
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE SOURCE COMPARE ***
0060 /FILE N2O.COMPARE,LINK=P01
0070 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0080 /MODIFY-JOB-SWITCHES ON=(4,5)
0090 /START-PROGRAM FROM-FILE=$EDT
0100 LS=132,PS=60,MENU=OFF
0110 @WRITE 'N2O.COMPARE.IPT.BATCH' OVERWRITE
0120 @HALT
0130 /MODIFY-JOB-SWITCHES OFF=(4,5)
0140 /ASSIGN-SYSIPT TO-FILE=N2O.COMPARE.IPT.BATCH
0150 /MODIFY-JOB-SWITCHES ON=(2)
0160 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0170 LOGON N2OLIB
0180 N2O3110B
0190 &INPUT
0200 FIN
0210 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0220 /DELETE-FILE FILE-NAME=N2O.COMPARE.IPT.BATCH,
0230 /OPTION=DESTROY-ALL
0240 /LOGOFF NOSPOOL
***** End of list *****
```

Program   VMCOMPO Library N2OBATCH
```
0010 /* Execute Object compare */
0020 address 'COMMAND'
0030 'ERASE COMPOBJ CMSYNIN A'
0040 'EXECIO 1 DISKW COMPOBJ CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
0050 'EXECIO 1 DISKW COMPOBJ CMSYNIN A 2 F 80(STRING N2O3120B'
0060 'EXECIO 1 DISKW COMPOBJ CMSYNIN A 3 F 80(STRING &INPUT'
0070 'EXECIO 1 DISKW COMPOBJ CMSYNIN A 4 F 80(STRING FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMSYNIN DISK COMPOBJ CMSYNIN A'
0100 'FILEDEF CMPRINT PRINTER'
0110 'FILEDEF CMPRT01 PRINTER'
0120 'EXEC NAT BATCH'
0130 'ERASE COMPOBJ CMSYNIN A'
0140 exit
***** End of list *****
```

Program   VSECOMPO Library N2OBATCH

```
0010 * $$ JOB JNM=N2OCOMPO,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 * $$ LST CLASS=A,LST=02E,DISP=K,JSEP=0
0040 // JOB N2OCOMPO
0050 * N2OCOMPO - COMPARE NATURAL OBJECT CODE
0060 // ASSGN SYSIPT,SYSRDR
0070 // ASSGN SYS001,01E
0080 // ASSGN SYS002,02E
0090 // EXEC NATBATCH
0100 /*
0110 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0120 /*
0130 LOGON N2OLIB
0140 N2O3120B
0150 &INPUT
0160 FIN
0170 /*
0180 /&
0190 * $$ EOJ
***** End of list *****
```

Source Compare - remote environments

Program   MVSCOMPR Library N2OBATCH

```
0010 //N2OCMPR  JOB 'REMOTE SOURCE COMPARE' MSGLEVEL=1,
0020 //       CLASS=C,MSGCLASS=X,REGION=4M,NOTIFY=&SYSUID
0030 //*
0040 //***
0050 //*  THIS IS SAMPLE JCL FOR N2O SOURCE COMPARE BETWEEN TWO REMOTE
0060 //*  ENVIRONMENTS
0070 //*  This step must be executed where N2O is installed
0080 //***
0090 //GCPARM   EXEC PGM=NATBATCH
0100 //CMPRINT  DD  SYSOUT=*
0110 //CMPRT01  DD  SYSOUT=*
0120 //CMPRT02  DD  SYSOUT=*
0130 //CMWKF01  DD  DSN=N2O.SRCCR.PARMA1,DISP=(NEW,PASS,DELETE),
0140 //             DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),
0150 //             UNIT=SYSDA,SPACE=(TRK,(1,1))
0160 //CMWKF02  DD  DSN=N2O.SRCCR.PARMA2,DISP=(NEW,PASS,DELETE),
0170 //             DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),
0180 //             UNIT=SYSDA,SPACE=(TRK,(1,1))
0190 //CMSYNIN  DD  *
0200 LOGON N2OLIB
0210 N2O3110B
0220 &INPUT
0230 FIN
0240 /*
0250 //*
0260 //*  This step must be executed on base environment
0270 //*
0280 //RRTM1    EXEC PGM=NATBATCH
0290 //CMPRINT  DD  SYSOUT=*
0300 //CMPRT01  DD  SYSOUT=*
0310 //CMPRT02  DD  SYSOUT=*
0320 //CMWKF01  DD  DSN=N2O.SRCCR.PARMA1,DISP=(OLD,DELETE,DELETE)
0330 //CMWKF02  DD  DSN=N2O.SRCCR.PARMB1,DISP=(NEW,PASS,DELETE),
0340 //             DCB=(RECFM=FB,LRECL=189,BLKSIZE=189),
0350 //             UNIT=SYSDA,SPACE=(TRK,(1,1))
0360 //CMWKF03  DD  DSN=N2O.SRCCR.OUTPT1,DISP=(NEW,PASS,DELETE),
0370 //             DCB=(RECFM=FB,LRECL=133,BLKSIZE=133),
0380 //             UNIT=SYSDA,SPACE=(TRK,(1,1))
0390 //CMSYNIN  DD  *
0400 LOGON SYSTEM
0410 N2O3110C
0420 FIN
0430 /*
0440 //*
```

```
0450 //*  This step must be executed on compare environment
0460 //*
0470 //RRTM2    EXEC PGM=NATBATCH
0480 //CMPRINT  DD  SYSOUT=*
0490 //CMPRT01  DD  SYSOUT=*
0500 //CMPRT02  DD  SYSOUT=*
0510 //CMWKF01  DD  DSN=N2O.SRCCR.PARMA2,DISP=(OLD,DELETE,DELETE)
0520 //CMWKF02  DD  DSN=N2O.SRCCR.PARMB2,DISP=(NEW,PASS,DELETE),
0530 //             DCB=(RECFM=FB,LRECL=189,BLKSIZE=189),
0540 //             UNIT=SYSDA,SPACE=(TRK,(1,1))
0550 //CMWKF03  DD  DSN=N2O.SRCCR.OUTPT2,DISP=(NEW,PASS,DELETE),
0560 //             DCB=(RECFM=FB,LRECL=133,BLKSIZE=133),
0570 //             UNIT=SYSDA,SPACE=(TRK,(1,1))
0580 //CMSYNIN  DD  *
0590 LOGON SYSTEM
0600 N2O3110C
0610 FIN
0620 /*
0630 //*
0640 //*  This step must be executed where N2O is installed
0650 //*
0660 //COMPW    EXEC PGM=NATBATCH
0670 //CMPRINT  DD  SYSOUT=*
0680 //CMPRT01  DD  SYSOUT=*
0690 //CMPRT02  DD  SYSOUT=*
0700 //CMWKF01  DD  DSN=N2O.SRCCR.PARMB1,DISP=(OLD,DELETE,DELETE)
0710 //CMWKF02  DD  DSN=N2O.SRCCR.OUTPT1,DISP=(OLD,DELETE,DELETE)
0720 //CMWKF03  DD  DSN=N2O.SRCCR.PARMB2,DISP=(OLD,DELETE,DELETE)
0730 //CMWKF04  DD  DSN=N2O.SRCCR.OUTPT2,DISP=(OLD,DELETE,DELETE)
0740 //CMSYNIN  DD  *
0750 LOGON N2OLIB
0760 N2O3110D
0770 FIN
0780 /*
0790 //*********************
***** End of list *****
```

Program   BSCOMPR   Library N2OBATCH

```
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME= TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE SOURCE COMPARE ***
0060 /FILE N2O.COMPARE,LINK=P01
0070 /FILE N2OCOMPA.PARM,LINK=W01,RECFORM=FB,RECSIZE=80,BLKSIZE=80
0080 /FILE N2OCOMPB.PARM,LINK=W02,RECFORM=FB,RECSIZE=80,BLKSIZE=80
0090 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0100 /MODIFY-JOB-SWITCHES ON=(4,5)
0110 /START-PROGRAM FROM-FILE=$EDT
0120 LS=132,PS=60,MENU=OFF
0130 @WRITE 'N2O.COMPARE.IPT.BATCH' OVERWRITE
0140 @HALT
0150 /MODIFY-JOB-SWITCHES OFF=(4,5)
0160 /ASSIGN-SYSIPT TO FILE=N20.COMPARE.IPT.BATCH
0170 /MODIFY-JOB-SWITCHES ON=(2)
0180 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0190 LOGON N2OLIB
0200 N2O3110B
0210 &INPUT
0220 FIN
0230 REMARK *** READ BASE ENVIRONMENT ***
0240 /FILE N2OCOMPA.PARM,LINK=W01
0250 /FILE N2OCOMPA.PARM2,LINK=W02,RECFROM=FB,RECSIZE=189,BLKSIZE=189
0260 /FILE N2OCOMPA.OUT,LINK=W03,RECFROM=FB,RECSIZE=133,BLKSIZE=133
0270 /SET-JOB-STEP
0280 /ASSIGN-SYSIPT TO-FILE=N2O.COMPARE.IPT.BATCH
0290 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0300 LOGON SYSTEM
0310 N2O3110C
0320 FIN
```

```
0330 REMARK *** READ COMPARE ENVIRONMENT ***
0340 /FILE N2OCOMPB.PARM,LINK=W01
0350 /FILE N2OCOMPB.PARM2,LINK=W02,RECFROM=FB,RECSIZE=189,BLKSIZE=189
0360 /FILE N2OCOMPB.OUT,LINK=W03,RECFROM=FB,RECSIZE=133,BLKSIZE=133
0370 /SET-JOB-STEP
0380 /ASSIGN-SYSIPT TO-FILE=N2O.COMPARE.IPT.BATCH
0390 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0400 LOGON SYSTEM
0410 N2O3110C
0420 FIN
0430 REMARK *** COMPARE BASE AND COMPARE ENVIRONMENTS ***
0440 /FILE N2OCOMPA.PARM2,LINK=W01
0450 /FILE N2OCOMPA.OUT,LINK=W02
0460 /FILE N2OCOMPB.PARM2,LINK=W03
0470 /FILE N2OCOMPB.OUT,LINK=W04
0480 /SET-JOB-STEP
0490 /ASSIGN-SYSIPT TO-FILE=N2O.COMPARE.IPT.BATCH
0500 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0510 LOGON N2OLIB
0520 N2O3110D
0530 FIN
0540 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0550 /DELETE-FILE FILE-NAME=N2O.COMPARE.IPT.BATCH,
0560 /OPTION=DESTROY-ALL
0570 /LOGOFF NOSPOOL
***** End of list *****
```

Program   VMCOMPR Library N2OBATCH

```
0010 /* Execute Remote Source compare */
0020 address 'COMMAND'
0030 'ERASE COMPSRCA CMSYNIN A'
0040 'EXECIO 1 DISKW COMPSRC CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
0050 'EXECIO 1 DISKW COMPSRC CMSYNIN A 2 F 80(STRING N2O3110B'
0060 'EXECIO 1 DISKW COMPSRC CMSYNIN A 3 F 80(STRING &INPUT'
0070 'EXECIO 1 DISKW COMPSRC CMSYNIN A 4 F 80(STRING FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMWKF01 COMP PARMA A RECFM VB LRECL 80 BLKSIZE 80'
0100 'FILEDEF CMWKF02 COMP PARMB A RECFM VB LRECL 80 BLKSIZE 80'
0110 'FILEDEF CMSYNIN DISK COMPSRCA CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'EXEC NAT BATCH'
0150 'ERASE COMPSRCA CMSYNIN A'
0160 /* Execute read BASE Environment */
0170 'ERASE COMPSRCB CMSYNIN A'
0180 'EXECIO 1 DISKW COMPSRCB CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
0190 'EXECIO 1 DISKW COMPSRCB CMSYNIN A 2 F 80(STRING N2O3110C'
0200 'EXECIO 1 DISKW COMPSRCB CMSYNIN A 3 F 80(STRING FIN'
0210 'FILEDEF * CLEAR'
0220 'FILEDEF CMWKF01 COMP PARMA A'
0230 'FILEDEF CMWKF02 COMP PARMA2 A RECFM VB LRECL 189 BLKSIZE 189'
0240 'FILEDEF CMWKF03 COMP OUTPUTA A RECFM VB LRECL 133 BLKSIZE 133'
0250 'FILEDEF CMSYNIN DISK COMPSRCB CMSYNIN A'
0260 'FILEDEF CMPRINT PRINTER'
0270 'FILEDEF CMPRT01 PRINTER'
0280 'EXEC NAT BATCH'
0290 'ERASE COMPSRCB CMSYNIN A'
0300 'ERASE COMP PARMA A'
0310 /* Execute read COMPARE Environment */
0320 'ERASE COMPSRCC CMSYNIN A'
0330 'EXECIO 1 DISKW COMPSRCC CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
0340 'EXECIO 1 DISKW COMPSRCC CMSYNIN A 2 F 80(STRING N2O3110C'
0350 'EXECIO 1 DISKW COMPSRCC CMSYNIN A 3 F 80(STRING FIN'
0360 'FILEDEF * CLEAR'
0370 'FILEDEF CMWKF01 COMP PARMB A'
0380 'FILEDEF CMWKF02 COMP PARMB2 A RECFM VB LRECL 189 BLKSIZE 189'
0390 'FILEDEF CMWKF03 COMP OUTPUTB A RECFM VB LRECL 133 BLKSIZE 133'
0400 'FILEDEF CMSYNIN DISK COMPSRCC CMSYNIN A'
0410 'FILEDEF CMPRINT PRINTER'
0420 'FILEDEF CMPRT01 PRINTER'
```

```
0430 'EXEC NAT BATCH'
0440 'ERASE COMPSRCC CMSYNIN A'
0450 'ERASE COMP PARMB A'
0460 /* Execute compare BASE and COMPARE Environment */
0470 'ERASE COMPSRCD CMSYNIN A'
0480 'EXECIO 1 DISKW COMPSRCD CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
0490 'EXECIO 1 DISKW COMPSRCD CMSYNIN A 2 F 80(STRING N2O3110D'
0500 'EXECIO 1 DISKW COMPSRCD CMSYNIN A 3 F 80(STRING FIN'
0510 'FILEDEF * CLEAR'
0520 'FILEDEF CMWKF01 COMP PARMA2 A'
0530 'FILEDEF CMWKF02 COMP OUTPUTA A'
0540 'FILEDEF CMWKF03 COMP PARMB2 A'
0550 'FILEDEF CMWKF04 COMP OUTPUTB A'
0560 'FILEDEF CMSYNIN DISK COMPSRCD CMSYNIN A'
0570 'FILEDEF CMPRINT PRINTER'
0580 'FILEDEF CMPRT01 PRINTER'
0590 'EXEC NAT BATCH'
0600 'ERASE COMPSRCD CMSYNIN A'
0610 'ERASE CMWKF01 COMP PARMA2 A'
0620 'ERASE CMWKF02 COMP OUTPUTA A'
0630 'ERASE CMWKF03 COMP PARMB2 A'
0640 'ERASE CMWKF04 COMP OUTPUTB A'
0650 exit
***** End of list *****
```

Program   VSECOMPR Library N2OBATCH
```
0010 * JOB JNM=N2OCOMPR,CLASS=A,USER=&USERID
0020 * LST CLASS=A,LST=SYSLST
0030 // JOB N2OCOMPR
0040 * N2O3110B - VERIFY INPUT PARMS
0050 // ASSGN SYS001,DISK,SHR
0060 // ASSGN SYS002,DISK,SHR
0070 // ASSGN SYS009,SYSLST
0080 // DLBL CMWKF01,'N2OCOMPA.PARM'
0090 // EXTENT SYS001,,,,nnnnn,nnnnn
0100 // DLBL CMWKF02,'N2OCOMPB.PARM'
0110 // EXTENT SYS002,,,nnnnn,nnnnn
0120 // EXEC NATBATCH
0130 BWORKD=(1,1,80,FB,2,2,80,FB)
0140 /*
0150 ADARUN DB=XXX,SVC=YYY,DEVICE=ZZZZ
0160 /*
0170 N2OLIB,BATCH,BATCH
0180 N2O3110B
0190 &INPUT
0200 FIN
0210 /*
0220 * N2O3110C - READ BASE ENVIRONMENT
0230 // ASSGN SYS001,DISK,SHR
0240 // ASSGN SYS002,DISK,SHR
0250 // ASSGN SYS003,DISK,SHR
0260 // ASSGN SYS009,SYSLST
0270 // DLBL CMWKF01,'N2OCOMPA.PARM'
0280 // EXTENT SYS001,,,,nnnnn,nnnnn
0290 // DLBL CMWKF02,'N2OCOMPA.PARM2'
0300 // EXTENT SYS002,,,nnnnn,nnnnn
0310 // DLBL CMWKF03,'N2OCOMPA.OUTP'
0320 // EXTENT SYS003,,,nnnnn,nnnnn
0330 // EXEC NATBATCH
0340 BWORKD=(1,1,80,FB,2,2,189,FB,3,3,133,FB)
0350 /*
0360 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0370 /*
0380 SYSTEM,BATCH,BATCH
0390 N2O3110C
0400 FIN
0410 /*
0420 * N2O3110C - READ COMPARE ENVIRONMENT
0430 // ASSGN SYS001,DISK,SHR
0440 // ASSGN SYS002,DISK,SHR
```

```
0450 // ASSGN SYS003,DISK,SHR
0460 // ASSGN SYS009,SYSLST
0470 // DLBL CMWKF01,'N2OCOMPB.PARM'
0480 // EXTENT SYS001,,,,nnnnn,nnnnn
0490 // DLBL CMWKF02,'N2OCOMPB.PARM2'
0500 // EXTENT SYS002,,,nnnnn,nnnnn
0510 // DLBL CMWKF03,'N2OCOMPB.OUTP'
0520 // EXTENT SYS003,,,nnnnn,nnnnn
0530 // EXEC NATBATCH
0540 BWORKD=(1,1,80,FB,2,2,189,FB,3,3,133,FB)
0550 /*
0560 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0570 /*
0580 SYSTEM,BATCH,BATCH
0590 N2O3110C
0600 FIN
0610 /*
0620 * N2O3110D - COMPARE BASE AND COMPARE ENVIRONMENT
0630 // ASSGN SYS001,DISK,SHR
0640 // ASSGN SYS002,DISK,SHR
0650 // ASSGN SYS003,DISK,SHR
0660 // ASSGN SYS004,DISK,SHR
0670 // ASSGN SYS009,SYSLST
0680 // DLBL CMWKF02,'N2OCOMPA.PARM2'
0690 // EXTENT SYS002,,,nnnnn,nnnnn
0700 // DLBL CMWKF03,'N2OCOMPA.OUTP'
0710 // EXTENT SYS003,,,nnnnn,nnnnn
0720 // DLBL CMWKF02,'N2OCOMPB.PARM2'
0730 // EXTENT SYS002,,,nnnnn,nnnnn
0740 // DLBL CMWKF03,'N2OCOMPB.OUTP'
0750 // EXTENT SYS003,,,nnnnn,nnnnn
0760 // EXEC NATBATCH
0770 BWORKD=(1,1,189,FB,2,2,133,FB,3,3,189,FB,4,4,133,FB)
0780 /*
0790 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0800 /*
0810 N2OLIB,BATCH,BATCH
0820 N2O3110D
0830 FIN
0840 /*
0850 /&
0860 * EOJ
***** End of list *****
```

Source Compare – local environments

Program   MVSCOMPS Library N2OBATCH
```
0010 //N2OCOMPS JOB (ACCOUNTING),'COMP SOURCE',CLASS=A,TIME=40,NOTIFY=&USERID
0020 //***
0030 //*  THIS IS SAMPLE JCL FOR THE TOOLBOX OPTION SOURCE COMPARE
0040 //*  THIS JOB SHOULD BE RENAMED N2OCOMPS
0050 //***
0060 //*  N2OCOMPS SHOULD BE RUN WHERE N2O IS INSTALLED
0070 //N2OCOMPS EXEC PGM=NATBATCH
0080 //*
0090 //CMPRINT  DD  SYSOUT=*
0100 //CMPRT01  DD  SYSOUT=*
0110 //CMPRT02  DD  SYSOUT=*
0120 //CMSYNIN  DD  *
0130 LOGON N2OLIB
0140 N2O3110B
0150 &INPUT
0160 FIN
0170 /*
0180 //*
***** End of list *****
```

Program   BSCOMPS Library N2OBATCH

```
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE OBJECT COMPARE ***
0060 /FILE N2O.COMPOBJ,LINK=P01
0070 /FILE N2O.COMPARE,LINK=P02
0080 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0090 /MODIFY-JOB-SWITCHES ON=(4,5)
0100 /START-PROGRAM FROM-FILE=$EDT
0110 LS=132,PS=60,MENU=OFF
0120 @WRITE 'N2O.COMPARE.IPT.BATCH' OVERWRITE
0130 @HALT
0140 /MODIFY-JOB-SWITCHES OFF=(4,5)
0150 /ASSIGN-SYSIPT TO-FILE=N2O.COMPARE.IPT.BATCH
0160 /MODIFY-JOB-SWITCHES ON=(2)
0170 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0180 LOGON N2OLIB
0190 N2O3110B
0200 &INPUT
0210 FIN
0220 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0230 /DELETE-FILE FILE-NAME=N2O.COMPARE.IPT.BATCH,
0240 /OPTION=DESTROY-ALL
0250 /LOGOFF NOSPOOL
***** End of list *****
```

Program   VMCOMPS Library N2OBATCH

```
0010 /* Execute Source compare */
0020 address 'COMMAND'
0030 'ERASE COMPSRC CMSYNIN A'
0040 'EXECIO 1 DISKW COMPSRC CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
0050 'EXECIO 1 DISKW COMPSRC CMSYNIN A 2 F 80(STRING N2O3110B'
0060 'EXECIO 1 DISKW COMPSRC CMSYNIN A 3 F 80(STRING &INPUT'
0070 'EXECIO 1 DISKW COMPSRC CMSYNIN A 4 F 80(STRING FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMSYNIN DISK COMPSRC CMSYNIN A'
0100 'FILEDEF CMPRINT PRINTER'
0110 'FILEDEF CMPRT01 PRINTER'
0120 'FILEDEF CMPRT02 PRINTER'
0130 'EXEC NAT BATCH'
0140 'ERASE COMPSRC CMSYNIN A'
0150 exit
***** End of list *****
```

Program   VSECOMPS Library N2OBATCH

```
0010 * $$ JOB JNM=N2OCOMPS,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 * $$ LST CLASS=A,LST=02E,DISP=K,JSEP=0
0040 // JOB N2OCOMPS
0050 * N2OCOMPS - COMPARE NATURAL SOURCE
0060 // ASSGN SYSIPT,SYSRDR
0070 // ASSGN SYS001,01E
0080 // ASSGN SYS002,02E
0090 // ASSGN SYS009,SYSLST
0100 // EXEC NATBATCH
0110 /*
0120 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0130 /*
0140 LOGON N2OLIB
0150 N2O3110B
0160 &INPUT
0170 FIN
0180 /*
0190 /&
0200 * $$ EOJ
***** End of list *****
```

Deferred Moves

Program   MVSDMOVE Library N2OBATCH

```
0010 //N2ODMOVE JOB (20000),'DEFERRED MOVE',CLASS=A,NOTIFY=&USERID
0020 //***
0030 //*  THIS IS SAMPLE JCL FOR THE PROCESSING OF DEFERRED MOVES
0040 //***
0050 //*   N2ODSEL RUNS WHERE N2O IS INSTALLED
0060 //***
0070 //N2ODSEL  EXEC PGM=NATBATCH
0080 //CMWKF02  DD  DSN=N2O.DEFER,DISP=(NEW,PASS,DELETE),
0090 //             DCB=(RECFM=VB,LRECL=3147,BLKSIZE=3151),
0100 //             UNIT=SYSDA,SPACE=(TRK,(12,12))
0110 //CMPRINT  DD  SYSOUT=*
0120 //CMSYNIN  DD  *
0130 LOGON N2OLIB
0140 N2ODSEL
0150 FIN
0160 /*
0170 //CMWKF01  DD  *
0180 N2ODSEL ALL
0190 /*
0200 //***
0210 //* N2ODELT RUNS ON THE FROM (SOURCE) ENVIRONMENT FOR THE EVENT(S)
0220 //***
0230 //N2ODELT  EXEC PGM=NATBATCH
0240 //CMWKF01  DD  DSN=N2O.DEFER,DISP=(OLD,DELETE,DELETE)
0250 //CMWKF02  DD  DSN=N2O.DACKN,DISP=(NEW,PASS,DELETE),
0260 //             DCB=(RECFM=VB,LRECL=3147,BLKSIZE=3151),
0270 //             UNIT=SYSDA,SPACE=(TRK,(12,12))
0280 //CMPRINT  DD  SYSOUT=*
0290 //CMSYNIN  DD  *
0300 LOGON SYSTEM
0310 N2ODELT
0320 FIN
0330 /*
0340 //***
0350 //* N2ODACKN RUNS WHERE N2O IS INSTALLED
0360 //***
0370 //N2ODACKN EXEC PGM=NATBATCH
0380 //CMWKF01  DD  DSN=N2O.DACKN,DISP=(OLD,DELETE,DELETE)
0390 //CMPRINT  DD  SYSOUT=*
0400 //CMSYNIN  DD  *
0410 LOGON N2OLIB
0420 N2ODACKN
0430 FIN
0440 /*
0450 //*
***** End of list *****
```

```
Program      BSDMOVE  Library N2OBATCH
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE N2ODSEL ***
0060 /SET-FILE-LINK LINK-NAME=W01,FILE-NAME=N2O.SELECT
0070 /FILE N2O.DEFER,LINK=W02,RECFORM=(VB),RECSIZE=(3147),BLKSIZE=(3151)
0080 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0090 /MODIFY-JOB-SWITCHES ON=(4,5)
0100 /START-PROGRAM FROM-FILE=$EDT
0110 LS=132,PS=60,MENU=OFF
0120 @WRITE 'N2O.DMOVE.IPT.BATCH' OVERWRITE
0130 @HALT
0140 /MODIFY-JOB-SWITCHES OFF=(4,5)
0150 /ASSIGN-SYSIPT TO-FILE=N2O.MOVE.IPT.BATCH
0160 /MODIFY-JOB-SWITCHES ON=(2)
0170 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0180 LOGON N2OLIB
0190 N2ODSEL
0200 FIN
0210 /REMARK *** EXECUTE N2ODELT ***
0220 /FILE N2O.DEFER,LINK=W01,BLKSIZE=(STD,2)
0230 /FILE N2O.DACKN,LINK=W02,BLKSIZE=(STD,2)
0240 /SET-JOB-STEP
0250 /ASSIGN-SYSIPT TO-FILE=N2O.DMOVE.IPT.BATCH
0260 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0270 LOGON SYSTEM
0280 N2ODELT
0290 FIN
0300 /REMARK *** EXECUTE N2ODACKN ***
0310 /FILE N2O.DACKN,LINK=W01,RECFORM=VB,RECSIZE=3147,BLKSIZE=3151
0320 /SET-JOB-STEP
0330 /ASSIGN-SYSIPT TO-FILE=N2O.DMOVE.IPT.BATCH
0340 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0350 LOGON N2OLIB
0360 N2ODACKN
0370 FIN
0380 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0390 /DELETE-FILE FILE-NAME=N2O.DMOVE.IPT.BATCH,
0400 /OPTION=DESTROY-ALL
0410 /LOGOFF NOSPOOL
***** End of list *****
```

```
Program     VMDMOVE  Library N2OBATCH
 0010 /* Execute N2ODSEL */
 0020 address 'COMMAND'
 0030 'ERASE N2ODSEL CMWKF01 A'
 0040 'ERASE N2ODSEL CMSYNIN A'
 0050 'EXECIO 1 DISKW N2O CMWKF01 A 1 F 80(STRING N2ODSEL ALL'
 0060 'EXECIO 1 DISKW N2ODSEL CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
 0070 'EXECIO 1 DISKW N2ODSEL CMSYNIN A 2 F 80(STRING N2ODSEL'
 0080 'EXECIO 1 DISKW N2ODSEL CMSYNIN A 3 F 80(STRING FIN'
 0090 'FILEDEF * CLEAR'
 0100 'FILEDEF CMWKF01 DISK N2ODSEL CMWKF01 A'
 0110 'FILEDEF CMWKF02 DISK N2O DEFER A (RECFM VB LRECL 3147 BLKSIZE 3151'
 0120 'FILEDEF CMSYNIN DISK N2ODSEL CMSYNIN A'
 0130 'FILEDEF CMPRINT PRINTER'
 0140 'EXEC NAT BATCH'
 0150 'ERASE N2ODSEL CMSYNIN A'
 0160 /* Execute N2ODELT */
 0170 'ERASE N2ODELT CMSYNIN A'
 0180 'EXECIO 1 DISKW N2ODELT CMSYNIN A 1 F 80(STRING LOGON SYSTEM'
 0190 'EXECIO 1 DISKW N2ODELT CMSYNIN A 2 F 80(STRING N2ODELT'
 0200 'EXECIO 1 DISKW N2ODELT CMSYNIN A 3 F 80(STRING FIN'
 0210 'FILEDEF * CLEAR'
 0220 'FILEDEF CMWKF01 DISK N2O DEFER A'
 0230 'FILEDEF CMWKF02 DISK N2O DACKN A (RECFM VB LRECL 3147 BLKSIZE 3151'
 0240 'FILEDEF CMSYNIN DISK N2ODELT CMSYNIN A'
 0250 'FILEDEF CMPRINT PRINTER'
 0260 'EXEC NAT BATCH'
 0270 'ERASE N2ODELT CMSYNIN A'
 0280 'ERASE N2O DEFER A'
 0290 /* Execute N2ODACKN */
 0300 'ERASE N2ODACKN CMSYNIN A'
 0310 'EXECIO 1 DISKW N2ODACKN CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
 0320 'EXECIO 1 DISKW N2ODACKN CMSYNIN A 2 F 80(STRING N2ODACKN'
 0330 'EXECIO 1 DISKW N2ODACKN CMSYNIN A 3 F 80(STRING FIN'
 0340 'FILEDEF * CLEAR'
 0350 'FILEDEF CMWKF01 N2O DACKN A'
 0360 'FILEDEF CMSYNIN DISK N2ODACKN CMSYNIN A'
 0370 'FILEDEF CMPRINT PRINTER'
 0380 'EXEC NAT BATCH'
 0390 'ERASE N2ODACKN CMSYNIN A'
 0400 'ERASE N2O DACKN A'
 0410 exit
***** End of list *****
```

```
Program     VSEDMOVE Library N2OBATCH
0010 * $$ JOB JNM=NATMOVE,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB NATMOVE
0040 // DLBL CMWKF01,'N2ODSEL.INPUT.CARDS'
0050 // EXTENT SYS001,,,,nnnnn,nnnnn
0060 // EXEC IDCAMS,SIZE=AUTO
0070   REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0080         OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0090 N2ODSEL ALL
0100 /*
0110 * N2ODSEL - SELECT LIST OF PROGRAMS TO BE DELETED
0120 // ASSGN SYSIPT,SYSRDR
0130 // ASSGN SYS001,DISK,SHR
0140 // ASSGN SYS002,DISK,SHR
0150 // ASSGN SYS009,SYSLST
0160 // DLBL CMWKF01,'N2ODSEL.INPUT.CARDS'
0170 // EXTENT SYS001,...
0180 // DLBL CMWKF02,'N2O.DEFER'
0190 // EXTENT SYS002,...
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB,2,2,3140,VB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON N2OLIB
0260 N2ODSEL
0270 FIN
0280 /*
0290 * N2ODELT - DELETE PROGRAMS IN FROM ENV
0300 // ASSGN SYS001,DISK,SHR
0310 // ASSGN SYS002,DISK,SHR
0320 // ASSGN SYS009,SYSLST
0330 // DLBL CMWKF01,'N2O.DEFER'
0340 // EXTENT SYS001,...
0350 // DLBL CMWKF02,'N2O.DACKN'
0360 // EXTENT SYS002,...
0370 // EXEC NATBATCH
0380 BWORKD=(1,1,3151,VB,2,2,3151,VB)
0390 /*
0400 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0410 /*
0420 LOGON SYSTEM
0430 N2ODELT
0440 FIN
0450 /*
0460 * N2ODACKN - ACKNOWLEDGEMENT OF MOVE COMPLETION
0470 // ASSGN SYS001,DISK,SHR
0480 // ASSGN SYS009,SYSLST
0490 // DLBL CMWKF01,'N2O.DACKN'
0500 // EXTENT SYS001,...
0510 // EXEC NATBATCH
0520 BWORKD=(1,1,3151,VB)
0530 /*
0540 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0550 /*
0560 LOGON N2OLIB
0570 N2ODACKN
0580 FIN
0590 /*
0600 /&
0610 * $$ EOJ
***** End of list *****
```

Emergency Recovery in Batch

Program   MVSER   Library N2OBATCH
```
0010 //N2OER JOB (20100),'EXECUTE N2OER',CLASS=A,NOTIFY=&USERID
0020 //***
0030 //*  THIS IS SAMPLE JCL FOR EMERGENCY RECOVERY IN BATCH
0040 //***
0050 //*  RECOVERY RUNS
0060 //***
0070 //RECOVERY EXEC PGM=NATBATCH
0080 //CMWKF02  DD  DSN=N2O.3GL.OBJECT,DISP=SHR
0090 //CMPRINT  DD  SYSOUT=*
0100 //CMSYNIN  DD  *
0110 LOGON SYSTEM
0120 N2OER
0130 &INPUT
0140 FIN
0150 /*
0160 //*
***** End of list *****
```

Program   BSER   Library N2OBATCH
```
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE N2OER ***
0060 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0070 /MODIFY-JOB-SWITCHES ON=(4,5)
0080 /START-PROGRAM FROM-FILE=$EDT
0090 LS=132,PS=60,MENU=OFF
0100 @WRITE 'N2O.ER.IPT.BATCH' OVERWRITE
0110 @HALT
0120 /MODIFY-JOB-SWITCHES OFF=(4,5)
0130 /ASSIGN-SYSIPT TO-FILE=N2O.ER.IPT.BATCH
0140 /MODIFY-JOB-SWITCHES ON=(2)
0150 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0160 LOGON SYSTEM
0170 N2OER
0180 &INPUT
0190 FIN
0200 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0210 /DELETE-FILE FILE-NAME=N2O.ER.IPT.BATCH,
0220 /OPTION=DESTROY-ALL
0230 /LOGOFF NOSPOOL
***** End of list *****
```

Program   VMER   Library N2OBATCH
```
0010 /* Execute N2OER */
0020 address 'COMMAND'
0030 'ERASE N2OER CMSYNIN A'
0040 'EXECIO 1 DISKW N2OER CMSYNIN A 1 F 80(STRING LOGON SYSTEM'
0050 'EXECIO 1 DISKW N2OER CMSYNIN A 2 F 80(STRING N2OER'
0060 'EXECIO 1 DISKW N2OER CMSYNIN A 3 F 80(STRING &INPUT'
0070 'EXECIO 1 DISKW N2OER CMSYNIN A 4 F 80(STRING FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMSYNIN DISK N2OER CMSYNIN A'
0100 'FILEDEF CMWKF02 DISK N2OER CMWKF02 A'
0110 'FILEDEF CMPRINT PRINTER'
0120 'EXEC NAT BATCH'
0130 'ERASE N2OREPT CMSYNIN A'
0140 exit
***** End of list *****
```

```
Program      VSEER    Library N2OBATCH
0010 * $$ JOB JNM=N2OER,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB N2OER
0040 * N2ORECOVERY - N2O EMERGENCY RECOVERY
0050 // ASSGN SYSIPT,SYSRDR
0060 // ASSGN SYS009,SYSLST
0070 // EXEC NATBATCH
0080 /*
0090 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0100 /*
0110 LOGON SYSTEM
0120 N2OER
0130 &INPUT
0140 FIN
0150 /*
0160 /&
0170 * $$ EOJ
***** End of list *****
```

Emergency Recovery Acknowledgement

```
Program      MVSERAKN Library N2OBATCH
0010 //NATERAKN   JOB (ACCOUNTING),'EMERG REC ACKN',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //* THIS JOB PERFORMS THE ACKNOWLEDGEMENT STEP FOR EMERGENCY RECOVERY
0040 //* WHICH UPDATES THE N2O MIGRATION FILE WITH ALL OBJECTS RECOVERED
0050 //* WITH THE N2O EMERGENCY RECOVERY UTILITY
0060 //*
0070 //* THIS STEP IS RAN AGAINST AN ENVIRONMENT THAT IS LOCAL TO THE
0080 //* ARCHIVE FILE USED IN EMERGENCY RECOVERY
0090 //*
0100 //* ARCHIVE-DBID MUST BE REPLACED WITH THE DBID OF THE
0110 //* ARCHIVE FILE USED IN EMERGENCY RECOVERY
0120 //*
0130 //* ARCHIVE-FNR MUST BE REPLACED WITH THE FILE NUMBER OF THE
0140 //* ARCHIVE FILE USED IN EMERGENCY RECOVERY
0150 //*
0160 //N2OERAK1  EXEC PGM=NATBATCH
0170 //CMWKF01  DD  DSN=ARCHIVE.LIST.PARMS,DISP=(NEW,PASS,DELETE),
0180 //             SPACE=(TRK,(1,1),RLSE),UNIT=SYSDA,
0190 //             DCB=(RECFM=FB,BLKSIZE=152,LRECL=152)
0200 //CMPRINT  DD  SYSOUT=*
0210 //CMSYNIN  DD  *
0220 LOGON SYSTEM
0230 N2OERAK1
0240 ARCHIVE-DBID , ARCHIVE-FNR
0250 FIN
0260 /*
0270 //* THIS STEP IS RAN AGAINST AN ENVIRONMENT THAT IS LOCAL TO THE
0280 //* N2O MIGRATION FILE
0290 //*
0300 //N2OERAK2 EXEC PGM=NATBATCH
0310 //*
0320 //CMWKF01  DD  DSN=ARCHIVE.LIST.PARMS,DISP=(OLD,PASS,CATLG)
0330 //CMPRINT  DD  SYSOUT=*
0340 //CMSYNIN  DD  *
0350 LOGON N2OLIB
0360 N2OERAK2
0370 FIN
0380 /*
0390 //*
***** End of list *****
```

Program   BSERAKN   Library N2OBATCH
```
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE N2OERAK1 ***
0060 /FILE ARCHIVE.PARMS,LINK=W01,RECFORM=FB,RECSIZE=152,BLKSIZE=156
0070 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0080 /MODIFY-JOB-SWITCHES ON=(4,5)
0090 /START-PROGRAM FROM-FILE=$EDT
0100 LS=132,PS=60,MENU=OFF
0110 @WRITE 'N2O.ARCHIVE.IPT.BATCH' OVERWRITE
0120 @HALT
0130 /MODIFY-JOB-SWITCHES OFF=(4,5)
0140 /ASSIGN-SYSIPT TO-FILE=N2O.ARCHIVE.IPT.BATCH
0150 /MODIFY-JOB-SWITCHES ON=(2)
0160 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0170 LOGON SYSTEM
0180 N2OERAK1
0190 ARCHIVE-DBID , ARCHIVE-FNR
0200 FIN
0210 /REMARK *** EXECUTE N2OERAK2 ***
0220 /FILE ARCHIVE.PARMS,LINK=W01
0230 /SET-JOB-STEP
0240 /ASSIGN-SYSIPT TO-FILE=N2O.ARCHIVE.IPT.BATCH
0250 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0260 LOGON N2OLIB
0270 N2OERAK2
0280 FIN
0290 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0300 /DELETE-FILE FILE-NAME=N2O.ARCHIVE.IPT.BATCH,
0310 /OPTION=DESTROY-ALL
0320 /LOGOFF NOSPOOL
***** End of list *****
```

Program   VMERAKN   Library N2OBATCH
```
0010 /*
0020 /* THIS JOB PERFORMS THE ACKNOWLEDGEMENT STEP FOR EMERGENCY RECOVERY
0030 /* WHICH UPDATES THE N2O MIGRATION FILE WITH ALL OBJECTS RECOVERED
0040 /* WITH THE N2O EMERGENCY RECOVERY UTILITY
0050 /*
0060 /* THIS STEP IS RAN AGAINST AN ENVIRONMENT THAT IS LOCAL TO THE
0070 /* ARCHIVE FILE USED IN EMERGENCY RECOVERY
0080 /*
0090 /* ARCH-DBID MUST BE REPLACED WITH THE DBID OF THE
0100 /* ARCHIVE FILE USED IN EMERGENCY RECOVERY
0110 /*
0120 /* ARCH-FNR MUST BE REPLACED WITH THE FILE NUMBER OF THE
0130 /* ARCHIVE FILE USED IN EMERGENCY RECOVERY
0140 /*
0150 /* EXECUTE N2OERAK1 */
0160 address 'COMMAND'
0170 'ERASE N2OERAK1 CMSYNIN A'
0180 'ERASE ARCHIVE PARMS A'
0190 'EXECIO 1 DISKW N2OERAK1 CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0200 'EXECIO 1 DISKW N2OERAK1 CMSYNIN A 2 F 80 (STRING N2OERAK1'
0210 'EXECIO 1 DISKW N2OERAK1 CMSYNIN A 3 F 80 (STRING ARCH-DBID , ARCH-FNR'
0220 'EXECIO 1 DISKW N2OERAK1 CMSYNIN A 4 F 80 (STRING FIN'
0230 'FILEDEF * CLEAR'
0240 'FILEDEF CMWKF01 DISK ARCHIVE PARMS A RECFM FB LRECL 152 BLKSIZE 156'
0250 'FILEDEF CMSYNIN DISK N2OERAK1 CMSYNIN A'
0260 'FILEDEF CMPRINT PRINTER'
0270 'EXEC NAT BATCH'
0280 'ERASE N2OERAK1 CMSYNIN A'
0290 /*
0300 /* THIS STEP IS RAN AGAINST AN ENVIRONMENT THAT IS LOCAL TO THE
0310 /* N2O MIGRATION FILE
0320 /*
0330 /* EXECUTE N2OERAK2 */
0340 'ERASE N2OERAK2 CMSYNIN A'
```

```
0350 'EXECIO 1 DISKW N2OERAK2 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0360 'EXECIO 1 DISKW N2OERAK2 CMSYNIN A 2 F 80 (STRING N2OERAK2'
0370 'EXECIO 1 DISKW N2OERAK2 CMSYNIN A 3 F 80 (STRING FIN'
0380 'FILEDEF * CLEAR'
0390 'FILEDEF CMWKF01 DISK ARCHIVE PARMS A'
0400 'FILEDEF CMSYNIN DISK N2OERAK2 CMSYNIN A'
0410 'FILEDEF CMPRINT PRINTER'
0420 'EXEC NAT BATCH'
0430 'ERASE N2OERAK2 CMSYNIN A'
0440 exit
***** End of list *****
```

Program   VSEERAKN Library N2OBATCH

```
0010 * $$ JOB JNM=ERACKN,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB ERACKN
0040 /*
0050 * EXECUTE N2OERAK1
0060 *
0070 * THIS JOB PERFORMS THE ACKNOWLEDGEMENT STEP FOR EMERGENCY RECOVERY
0080 * WHICH UPDATES THE N2O MIGRATION FILE WITH ALL OBJECTS RECOVERED
0090 * WITH THE N2O EMERGENCY RECOVERY UTILITY
0100 *
0110 * THIS STEP IS RAN AGAINST AN ENVIRONMENT THAT IS LOCAL TO THE
0120 * ARCHIVE FILE USED IN EMERGENCY RECOVERY
0130 *
0140 * ARCH-DBID MUST BE REPLACED WITH THE DBID OF THE
0150 * ARCHIVE FILE USED IN EMERGENCY RECOVERY
0160 *
0170 * ARCH-FNR MUST BE REPLACED WITH THE FILE NUMBER OF THE
0180 * ARCHIVE FILE USED IN EMERGENCY RECOVERY
0190 *
0200 // ASSGN SYSIPT,SYSRDR
0210 // ASSGN SYS001,DISK,SHR
0220 // ASSGN SYS009,SYSLST
0230 // DLBL CMWKF01,'ARCHIVE.PARM'
0240 // EXTENT SYS001,,,,nnnnn,nnnnn
0250 // EXEC NATBATCH
0260 BWORKD=(1,1,152,FB)
0270 /*
0280 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0290 /*
0300 LOGON SYSTEM
0310 N2OERAK1
0320 ARCHIVE-DBID , ARCHIVE-FNR
0330 FIN
0340 /*
0350 * EXECUTE N2OERAK2
0360 *
0370 * THIS STEP IS RAN AGAINST AN ENVIRONMENT THAT IS LOCAL TO THE
0380 * N2O MIGRATION FILE
0390 *
0400 // ASSGN SYS009,SYSLST
0410 // DLBL CMWKF01,'ARCHIVE.PARM'
0420 // EXTENT SYS001,,,,nnnnn,nnnnn
0430 // EXEC NATBATCH
0440 BWORKD=(1,1,152,FB)
0450 /*
0460 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0470 /*
0480 LOGON N2OLIB
0490 N2OERAK2
0500 FIN
0510 /*
0520 /&
0530 * $$ EOJ
***** End of list *****
```

Event Purge

Program   MVSEVNTP Library N2OBATCH

```
0010 //EVNTPURG JOB (ACCOUNTING),'EVENT PURGE',CLASS=A,NOTIFY=&USERID
0020 //***
0030 //*  THIS IS SAMPLE JCL FOR THE EVENT PURGE PROCESS
0040 //*  THIS SHOULD BE RENAMED N2OPUEVT
0050 //***
0060 //* EVNTP1 RUNS WHERE N2O IS INSTALLED
0070 //***
0080 //**   N2OV5.1 &INPUT FORMAT CHANGED - SEE MANUAL
0090 //***
0100 //EVNTP1   EXEC PGM=NATBATCH
0110 /*
0120 //CMWKF01  DD  DSN=EVENT.LIST,DISP=(NEW,PASS,DELETE),
0130 //             SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
0140 //             DCB=(RECFM=FB,BLKSIZE=13,LRECL=13)
0150 //CMPRINT  DD  SYSOUT=*
0160 //CMPRT02  DD  SYSOUT=*
0170 //CMSYNIN  DD  *
0180 LOGON N2OLIB
0190 N2OPEVT1
0200 &INPUT
0210 FIN
0220 /*
0230 //***
0240 //* EVNTP2 RUNS WHERE N2O IS INSTALLED
0250 //***
0260 //***
0270 //**   N2OV5.1 CMWKF03 NEW FILE
0280 //***
0290 //EVNTP2   EXEC PGM=NATBATCH
0300 //*
0310 //CMWKF02  DD  DSN=EVENT.LIST,DISP=(OLD,DELETE,CATLG)
0320 //CMWKF03  DD  DSN=&BACKUP,
0330 //             DISP=(NEW,CATLG,CATLG),
0340 //             DCB=(RECFM=FB,BLKSIZE=1998,LRECL=1998),
0350 //             SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA
0360 //CMPRINT  DD  SYSOUT=*
0370 //CMPRT02  DD  SYSOUT=*
0380 //CMPRT04  DD  SYSOUT=*
0390 //CMSYNIN  DD  *
0400 LOGON N2OLIB
0410 N2OPEVT2
0420 FIN
0430 /*
0440 //*
***** End of list *****
```

Program   BSEVNTP   Library N2OBATCH
```
 0010 /.N2O LOGON
 0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
 0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
 0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
 0050 /REMARK *** EXECUTE N2OPEVT1 ***
 0060 /FILE EVENT.LIST,LINK=W01,RECFORM=FB,RECSIZE=13,BLKSIZE=1300
 0070 /FILE MASTER.LIST,LINK=P02
 0080 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
 0090 /MODIFY-JOB-SWITCHES ON=(4,5)
 0100 /START-PROGRAM FROM-FILE=$EDT
 0110 LS=132,PS=60,MENU=OFF
 0120 @WRITE 'N2O.PURGE.IPT.BATCH' OVERWRITE
 0130 @HALT
 0140 /MODIFY-JOB-SWITCHES OFF=(4,5)
 0150 /ASSIGN-SYSIPT TO-FILE=N2O.PURGE.IPT.BATCH
 0160 /MODIFY-JOB-SWITCHES ON=(2)
 0170 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
 0180 LOGON N2OLIB
 0190 N2OPEVT1
 0200 &INPUT
 0210 FIN
 0220 /REMARK *** EXECUTE N2OPEVT2 ***
 0230 /FILE EVENT.LIST,LINK=W02
 0240 /FILE &BACKUP,LINK=W03,RECFORM=FB,RECSIZE=1998,BLKSIZE=1998
 0250 /FILE CONTROL.LIST,LINK=P02
 0260 /FILE SUMMARY.LIST,LINK=P04
 0270 /SET-JOB-STEP
 0280 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
 0290 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
 0300 LOGON N2OLIB
 0310 N2OPEVT2
 0320 FIN
 0330 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
 0340 /DELETE-FILE FILE-NAME=N2O.TRANSFER.IPT.BATCH,
 0350 /OPTION=DESTROY-ALL
 0360 /LOGOFF NOSPOOL
***** End of list *****
```

Program   VMEVNTP   Library N2OBATCH
```
 0010 /* Execute N2OPEVT1 */
 0020 address 'COMMAND'
 0030 'ERASE N2OPEVT1 CMSYNIN A'
 0040 'EXECIO 1 DISKW N2OPEVT1 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
 0050 'EXECIO 1 DISKW N2OPEVT1 CMSYNIN A 2 F 80 (STRING N2OPEVT1'
 0060 'EXECIO 1 DISKW N2OPEVT2 CMSYNIN A 3 F 80 (STRING &INPUT'
 0070 'EXECIO 1 DISKW N2OPEVT1 CMSYNIN A 4 F 80 (STRING FIN'
 0080 'FILEDEF * CLEAR'
 0090 'FILEDEF CMWKF01 DISK EVENT LIST A RECFM FB LRECL 13 BLKSIZE 1300'
 0100 'FILEDEF CMSYNIN DISK N2OPEVT1 CMSYNIN A'
 0110 'FILEDEF CMPRINT PRINTER'
 0120 'FILEDEF CMPRT02 PRINTER'
 0130 'EXEC NAT BATCH'
 0140 'ERASE N2OPEVT1 CMSYNIN A'
 0150 /* Execute N2OPEVT2 */
 0160 'ERASE N2OPEVT2 CMSYNIN A'
 0170 'EXECIO 1 DISKW N2OPEVT2 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
 0180 'EXECIO 1 DISKW N2OPEVT2 CMSYNIN A 2 F 80 (STRING N2OPEVT2'
 0190 'EXECIO 1 DISKW N2OPEVT2 CMSYNIN A 3 F 80 (STRING FIN'
 0200 'FILEDEF * CLEAR'
 0210 'FILEDEF CMWKF02 DISK EVENT LIST A'
 0220 'FILEDEF CMWKF03 DISK &BACKUP RECFM FB LRECL 1998 BLKSIZE 1998'
 0230 'FILEDEF CMSYNIN DISK N2OPEVT2 CMSYNIN A'
 0240 'FILEDEF CMPRINT PRINTER'
 0250 'FILEDEF CMPRT02 PRINTER'
 0260 'FILEDEF CMPRT04 PRINTER'
 0270 'EXEC NAT BATCH'
 0280 'ERASE N2OPEVT2 CMSYNIN A'
 0290 exit
***** End of list *****
```

```
Program      VSEEVNTP Library N2OBATCH
0010 * $$ JOB JNM=EVNTPURG,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 * $$ LST CLASS=A,LST=02E,DISP=K,JSEP=0
0040 // JOB EVNTPURG
0050 /*
0060 * N2OPEVT1 - CREATE LIST OF EVENTS TO BE PURGED.
0070 // ASSGN SYSIPT,SYSRDR
0080 // ASSGN SYS001,DISK,SHR
0090 // ASSGN SYS002,02E
0100 // ASSGN SYS009,SYSLST
0110 // DLBL CMWKF01,'EVENT.LIST'
0120 // EXTENT SYS001,,,,nnnnn,nnnnn
0130 // EXEC NATBATCH
0140 BWORKD=(1,1,13,FB)
0150 /*
0160 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0170 /*
0180 LOGON N2OLIB
0190 N2OPEVT1
0200 &INPUT
0210 FIN
0220 /*
0230 * N2OPEVT2 - PURGE EVENTS FROM MIGRATION FILE
0240 * $$ LST CLASS=A,LST=04E,DISP=K,JSEP=0
0250 // ASSGN SYS002,DISK,SHR
0260 // ASSGN SYS003,DISK,SHR
0270 // ASSGN SYS004,04E
0280 // ASSGN SYS009,SYSLST
0290 // DLBL CMWKF02,'EVENT.LIST'
0300 // EXTENT SYS002,,,,nnnnn,nnnnn
0310 // DLBL CMWKF03,'&BACKUP'
0320 // EXTENT SYS003,,,,nnnnn,nnnnn
0330 // EXEC NATBATCH
0340 BWORKD=(2,2,13,FB,3,3,1998,1998)
0350 /*
0360 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0370 /*
0380 LOGON N2OLIB
0390 N2OPEVT2
0400 FIN
0410 /*
0420 /&
0430 * $$ EOJ
***** End of list *****
```

Batch Migration

Program   MVSMIG   Library N2OBATCH

```
0010 //NATMIGR JOB (20000),'NATURAL MIGRATION',CLASS=A,NOTIFY=&USERID
0020 //*******
0030 //*   THIS IS SAMPLE JCL TO PERFORM   BATCH NATURAL, SYSERR,
0040 //*  PREDICT 3.3 AND BELOW, PREDICT 3.4 AND 4.1 WITH
0050 //*  BUILD EXTRACT SET TO FALSE MIGRATIONS(N2OUE14N)
0060 //*  FOR PREDICT 3.4 AND ABOVE WITH BUILD EXTRACT (N2OUE14N)
0070 //*  SEE THE MVSMIGP EXAMPLE.
0080 //*  THIS JOB SHOULD BE RENAMED TO THE NAME SPECIFIED IN THE
0090 //*  MIGRATION PROFILE JCL PROGRAM NAME
0100 //*******
0110 //*  N2OSEL ALWAYS RUNS WHERE N2O IS INSTALLED
0120 //******
0130 //****
0140 //* N2OV5.2 CHANGE CMWKF02 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0150 //****
0160 //N2OSEL   EXEC PGM=NATBATCH
0170 //CMWKF01  DD  *
0180 &INPUT
0190 /*
0200 //CMWKF02  DD  DSN=N2O.PARM,DISP=(NEW,PASS,DELETE),
0210 //             DCB=(RECFM=VB,LRECL=3151,BLKSIZE=3155),
0220 //             UNIT=SYSDA,SPACE=(TRK,(12,12))
0230 //CMWKF03  DD  DUMMY
0240 //CMWKF04  DD  DUMMY
0250 //CMPRINT  DD  SYSOUT=*
0260 //CMSYNIN  DD  *
0270 LOGON N2OLIB
0280 N2OSEL
0290 FIN
0300 /*
0310 //*
0320 //*******
0330 //*  N2OSEND RUNS ON THE FROM FUSER (SOURCE FUSER)
0340 //******
0350 //N2OSEND  EXEC PGM=NATBATCH,COND=(9,LT)
0360 //CMWKF01  DD  DSN=N2O.PREDICT,DISP=(,CATLG,DELETE),
0370 //             DCB=(RECFM=VB,LRECL=1804,BLKSIZE=1808),
0380 //             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
0390 //CMWKF02  DD  DSN=N2O.SOURCE,DISP=(,CATLG,DELETE),
0400 //             DCB=(RECFM=VB,LRECL=9183,BLKSIZE=9187),
0410 //             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
0420 //CMWKF03  DD  DSN=N2O.PARM,DISP=(OLD,PASS,DELETE)
0430 //CMWKF05  DD  DUMMY
0440 //CMPRINT  DD  SYSOUT=*
0450 //CMSYNIN  DD  *
0460 LOGON SYSTEM
0470 N2OSEND
0480 FIN
0490 /*
0500 //*
0510 //*******
0520 //*  N2ORECV RUNS ON THE TO FUSER (TARGET)
0530 //******
0540 //****
0550 //* N2OV5.2 CHANGE CMWKF03 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0560 //****
0570 //N2ORECV  EXEC PGM=NATBATCH,COND=(9,LT)
0580 //CMWKF01  DD  DSN=N2O.PREDICT,DISP=SHR
0590 //CMWKF02  DD  DSN=N2O.SOURCE,DISP=SHR
0600 //CMWKF03  DD  DSN=N2O.ACKN,DISP=(NEW,PASS,DELETE),
0610 //             DCB=(RECFM=VB,LRECL=3151,BLKSIZE=3155),
0620 //             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
0630 //CMWKF04  DD  DSN=N2O.ACACKN,DISP=(NEW,PASS,DELETE),
0640 //             DCB=(RECFM=VB,LRECL=100,BLKSIZE=104),
0650 //             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
0660 //CMWKF05  DD  DSN=N2O.RECOVER,DISP=(NEW,PASS,DELETE),
0670 //             DCB=(RECFM=VB,LRECL=160,BLKSIZE=164),
```

```
0680 //              UNIT=SYSDA,SPACE=(TRK,(12,12))
0690 //CMPRINT  DD   SYSOUT=*
0700 //CMSYNIN  DD   *
0710 LOGON SYSTEM
0720 N2ORECV
0730 LOGON SYSTEM
0740 N2OBCOMP
0750 FIN
0760 /*
0770 //*
0780 //*   The following step is only necessary for sites using
0790 //*   the MOVE option.  If this step is removed for a COPY,
0800 //*   then change the N2OACKN step so that CMWKF01 references
0810 //*   N2O.ACKN.
0820 //*
0830 //*   N2ODELT RUNS ON THE FROM (SOURCE) FUSER
0840 //*      (THE SAME AS N2OSEND STEP)
0850 //****
0860 //* N2OV5.2 CHANGE CMWKF02 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0870 //****
0880 //N2ODELT  EXEC PGM=NATBATCH,COND=(9,LT)
0890 //CMWKF01  DD   DSN=N2O.ACKN,DISP=(OLD,DELETE,DELETE)
0900 //CMWKF02  DD   DSN=N2O.DACKN,DISP=(NEW,PASS,DELETE),
0910 //              DCB=(RECFM=VB,LRECL=3151,BLKSIZE=3155),
0920 //              UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
0930 //CMPRINT  DD   SYSOUT=*
0940 //CMSYNIN  DD   *
0950 LOGON SYSTEM
0960 N2ODELT
0970 FIN
0980 /*
0990 //*
1000 //*******
1010 //*   N2OACKN ALWAYS RUNS WHERE N2O IS INSTALLED
1020 //*      (THE SAME AS THE N2OSEL STEP)
1030 //*******
1040 //N2OACKN  EXEC PGM=NATBATCH
1050 //CMWKF01  DD   DSN=N2O.DACKN,DISP=(OLD,DELETE,CATLG)
1060 //CMWKF02  DD   DSN=N2O.ACACKN,DISP=(OLD,DELETE,CATLG)
1070 //CMWKF03  DD   DSN=N2O.RECOVER,DISP=(OLD,CATLG,DELETE)
1080 //CMPRINT  DD   SYSOUT=*
1090 //CMSYNIN  DD   *
1100 LOGON N2OLIB
1110 N2OACKN
1120 FIN
1130 /*
1140 //*
***** End of list *****
```

Program   BSMIG   Library N2OBATCH

```
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE N2OSEL ***
0060 /remark ***
0070 /remark N2OV5.2 CHANGE CMWKF02 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0080 /remark ***
0090 /SET-FILE-LINK LINK-NAME=W01,FILE-NAME=N2O.SELECT
0100 /FILE N2O.PARM,LINK=W02,RECFORM=VB,RECSIZE=3151,BLKSIZE=3155
0110 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0120 /MODIFY-JOB-SWITCHES ON=(4,5)
0130 /START-PROGRAM FROM-FILE=$EDT
0140 LS=132,PS=60,MENU=OFF
0150 @WRITE 'N2O.TRANSFER.IPT.BATCH' OVERWRITE
0160 @HALT
0170 /MODIFY-JOB-SWITCHES OFF=(4,5)
0180 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0190 /MODIFY-JOB-SWITCHES ON=(2)
0200 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
```

```
0210 LOGON N2OLIB
0220 N2OSEL
0230 FIN
0240 /REMARK *** EXECUTE N2OSEND ***
0250 /remark ***
0260 /remark N2OV5.2 CHANGE CMWKF03 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0270 /remark ***
0280 /FILE N2O.PREDICT,LINK=W01,RECFORM=VB,RECSIZE=1804,BLKSIZE=1808,
0290 /     SPACE=(6,6)
0300 /FILE N2O.SOURCE,LINK=W02,RECFORM=VB,RECSIZE=9183,BLKSIZE=9187,
0310 /     SPACE=(12,12)
0320 /FILE N2O.PARM,LINK=W03,RECFORM=VB,RECSIZE=3151,BLKSIZE=3155,
0330 /     SPACE=(12,12)
0340 /SET-JOB-STEP
0350 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0360 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0370 LOGON SYSTEM
0380 N2OSEND
0390 FIN
0400 /REMARK *** EXECUTE N2ORECV AND N2OBCOMP ***
0410 /remark ***
0420 /remark N2OV5.2 CHANGE CMWKF03 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0430 /remark ***
0440 /FILE N2O.PREDICT,LINK=W01
0450 /FILE N2O.SOURCE,LINK=W02,BLKSIZE=(STD,5)
0460 /FILE N2O.ACKN,LINK=W03,RECFORM=VB,RECSIZE=3151,BLKSIZE=3155,
0470 /     SPACE=(12,12)
0480 /FILE N2O.ACACKN,LINK=W04,RECFORM=VB,RECSIZE=100,BLKSIZE=104
0490 /FILE N2O.RECOVER,LINK=W05,RECFORM=VB,RECSIZE=160,BLKSIZE=164,
0500 /     SPACE=(12,12)
0510 /SET-JOB-STEP
0520 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0530 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0540 LOGON SYSTEM
0550 N2ORECV
0560 LOGON SYSTEM
0570 N2OBCOMP
0580 FIN
0590 /REMARK *** EXECUTE N2ODELT ***
0600 /remark ***
0610 /remark N2OV5.2 CHANGE CMWKF02 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0620 /remark ***
0630 /FILE N2O.ACKN,LINK=W01
0640 /FILE N2O.DACKN,LINK=W02,RECFORM=VB,RECSIZE=3151,BLKSIZE=3155
0650 /SET-JOB-STEP
0660 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0670 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0680 LOGON SYSTEM
0690 N2ODELT
0700 FIN
0710 /REMARK *** EXECUTE N2OACKN ***
0720 /FILE N2O.DACKN,LINK=W01
0730 /FILE N2O.ACACKN,LINK=W02
0740 /FILE N2O.RECOVER,LINK=W03
0750 /SET-JOB-STEP
0760 /ASSIGN-SYSIPT TO-FILE=N2O.TRANSFER.IPT.BATCH
0770 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
0780 LOGON N2OLIB
0790 N2OACKN
0800 FIN
0810 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0820 /DELETE-FILE FILE-NAME=N2O.TRANSFER.IPT.BATCH,
0830 /OPTION=DESTROY-ALL
0840 /LOGOFF NOSPOOL
***** End of list *****
```

```
Program     VMMIG     Library N2OBATCH
0010 /* Execute N2OSEL */
0020 /*
0030 /* N2OV5.2 CHANGE CMWKF02 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0040 /*
0050 address 'COMMAND'
0060 'ERASE N2O CMWKF01 A'
0070 'ERASE N2OSEL CMWSYNIN A'
0080 'EXECIO 1 DISKW N2O CMWKF01 A 1 F 80(STRING &INPUT'
0090 'EXECIO 1 DISKW N2OSEL CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
0100 'EXECIO 1 DISKW N2OSEL CMSYNIN A 2 F 80(STRING N2OSEL'
0110 'EXECIO 1 DISKW N2OSEL CMSYNIN A 3 F 80(STRING FIN'
0120 'FILEDEF * CLEAR'
0130 'FILEDEF CMWKF01 DISK N2O CMWKF01 A'
0140 'FILEDEF CMWKF02 DISK N2O PARM A RECFM VB LRECL 3151 BLKSIZE 3155'
0150 'FILEDEF CMSYNIN DISK N2OSEL CMSYNIN A'
0160 'FILEDEF CMPRINT PRINTER'
0170 'EXEC NAT BATCH'
0180 'ERASE N2O CMWKF01 A'
0190 'ERASE N2OSEL CMWSYNIN A'
0200 /* Execute N2OSEND */
0210 'ERASE N2OSEND CMSYNIN A'
0220 'ERASE N2O PREDICT A'
0230 'ERASE N2O PARM A'
0240 'EXECIO 1 DISKW N2OSEND CMSYNIN A 1 F 80(STRING LOGON SYSTEM'
0250 'EXECIO 1 DISKW N2OSEND CMSYNIN A 2 F 80(STRING N2OSEND'
0260 'EXECIO 1 DISKW N2OSEND CMSYNIN A 3 F 80(STRING FIN'
0270 'FILEDEF * CLEAR'
0280 'FILEDEF CMWKF01 DISK N2O PREDICT A RECFM VB LRECL 1804 BLKSIZE 1808'
0290 'FILEDEF CMWKF02 DISK N2O SOURCE A RECFM VB LRECL 9183 BLKSIZE 9187'
0300 'FILEDEF CMWKF03 DISK N2O PARM A'
0310 'FILEDEF CMSYNIN DISK N2OSEND CMSYNIN A'
0320 'FILEDEF CMPRINT PRINTER'
0330 'EXEC NAT BATCH NATPARMS FUSER=(&FROMFUSER) FDIC=(&FROMFDIC)'
0340 'ERASE N2OSEND CMSYNIN A'
0350 /* Execute N2ORECV */
0360 /*
0370 /* N2OV5.2 CHANGE CMWKF03 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0380 /*
0390 'ERASE N2ORECV CMSYNIN A'
0400 'EXECIO 1 DISKW N2ORECV CMSYNIN A 1 F 80(STRING LOGON SYSTEM'
0410 'EXECIO 1 DISKW N2ORECV CMSYNIN A 2 F 80(STRING N2ORECV'
0420 'EXECIO 1 DISKW N2ORECV CMSYNIN A 3 F 80(STRING LOGON SYSTEM'
0430 'EXECIO 1 DISKW N2ORECV CMSYNIN A 4 F 80(STRING N2OBCOMP'
0440 'EXECIO 1 DISKW N2ORECV CMSYNIN A 5 F 80(STRING FIN'
0450 'FILEDEF * CLEAR'
0460 'FILEDEF CMWKF01 DISK N2O PREDICT A'
0470 'FILEDEF CMWKF02 DISK N2O SOURCE A'
0480 'FILEDEF CMWKF03 DISK N2O ACKN A RECFM VB LRECL 3151 BLKSIZE 3155'
0490 'FILEDEF CMWKF04 DISK N2O ACACKN A RECFM VB LRECL 100 BLKSIZE 104'
0500 'FILEDEF CMWKF05 DISK N2O RECOVER A RECFM VB LRECL 160 BLKSIZE 164'
0510 'FILEDEF CMSYNIN DISK N2ORECV CMSYNIN A'
0520 'FILEDEF CMPRINT DISK N2ORECV OUTPUT A'
0530 'EXEC NAT BATCH NATPARMS FUSER=(&TOFUSER1) FDIC=(&TOFDIC1)'
0540 'ERASE N2O PREDICT A'
0550 'ERASE N2O SOURCE A'
0560 'ERASE N2ORECV CMSYNIN A'
0570 /* Execute N2ODELT */
0580 /*
0590 /* N2OV5.2 CHANGE CMWKF02 LRECL 3147 TO 3151, BLKSIZE 3151 TO 3155
0600 /*
0610 'ERASE N2ODELT CMSYNIN A'
0620 'EXECIO 1 DISKW N2ODELT CMSYNIN A 1 F 80(STRING LOGON SYSTEM'
0630 'EXECIO 1 DISKW N2ODELT CMSYNIN A 2 F 80(STRING N2ODELT'
0640 'EXECIO 1 DISKW N2ODELT CMSYNIN A 3 F 80(STRING FIN'
0650 'FILEDEF * CLEAR'
0660 'FILEDEF CMWKF01 DISK N2O ACKN A'
0670 'FILEDEF CMWKF02 DISK N2O DACKN A RECFM VB LRECL 3151 BLKSIZE 3155'
0680 'FILEDEF CMSYNIN DISK N2ODELT CMSYNIN A'
0690 'FILEDEF CMPRINT PRINTER'
0700 'EXEC NAT BATCH NATPARMS FUSER=(&FROMFUSER) FDIC=(&FROMFDIC)'
```

```
0710 'ERASE N2ODELT CMSYNIN A'
0720 'ERASE N2O ACKN A'
0730 /* Execute N2OACKN /*
0740 'ERASE N2OACKN CMSYNIN A'
0750 'EXECIO 1 DISKW N2OACKN CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
0760 'EXECIO 1 DISKW N2OACKN CMSYNIN A 2 F 80(STRING N2OACKN'
0770 'EXECIO 1 DISKW N2OACKN CMSYNIN A 3 F 80(STRING FIN'
0780 'FILEDEF * CLEAR'
0790 'FILEDEF CMWKF01 DISK N2O DACKN A'
0800 'FILEDEF CMWKF02 DISK N2O ACACKN A'
0810 'FILEDEF CMWKF03 DISK N2O RECOVER A'
0820 'FILEDEF CMSYNIN DISK N2OACKN CMSYNIN A'
0830 'FILEDEF CMPRINT PRINTER'
0840 'EXEC NAT BATCH'
0850 'ERASE N2OACKN CMSYNIN A'
0860 'ERASE N2O DACKN A'
0870 'ERASE N2O ACACKN A'
0880 'ERASE N2O AUTOREC A'
0890 exit
***** End of list *****
```

Program   VSEMIG   Library N2OBATCH
```
0010 * $$ JOB JNM=NATMIGR,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB NATMIGR
0040 // DLBL CMWKF01,'N2OSEL.INPUT.CARDS'
0050 // EXTENT SYS001,,,,nnnnn,nnnnn
0060 // EXEC IDCAMS,SIZE=AUTO
0070   REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0080        OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0090 &INPUT
0100 /*
0110 * N2OSEL - SELECT LIST OF PROGRAMS/OBJECTS TO BE MIGRATED
0120 *
0130 * N2OV5.2 CHANGE CMWKF02 3151 TO 3155
0140 *
0150 // ASSGN SYSIPT,SYSRDR
0160 // ASSGN SYS001,DISK,SHR
0170 // ASSGN SYS002,DISK,SHR
0180 // ASSGN SYS009,SYSLST
0190 // DLBL CMWKF01,'N2OSEL.INPUT.CARDS'
0200 // EXTENT SYS001,...
0210 // DLBL CMWKF02,'N2O.PARM'
0220 // EXTENT SYS002,...
0230 // EXEC NATBATCH
0240 BWORKD=(1,1,80,FB,2,2,3155,VB)
0250 /*
0260 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0270 /*
0280 LOGON N2OLIB
0290 N2OSEL
0300 FIN
0310 /*
0320 * N2OSEND - UNLOAD THE PROGRAMS TO BE MIGRATED
0330 *
0340 * N2OV5.2 CHANGE CMWKF02 3151 TO 3155
0350 *
0360 // ASSGN SYS001,DISK,SHR
0370 // ASSGN SYS002,DISK,SHR
0380 // ASSGN SYS003,DISK,SHR
0390 // ASSGN SYS009,SYSLST
0400 // DLBL CMWKF01,'N2O.PREDICT'
0410 // EXTENT SYS001,...
0420 // DLBL CMWKF02,'N2O.SOURCE'
0430 // EXTENT SYS002,...
0440 // DLBL CMWKF03,'N2O.PARM'
0450 // EXTENT SYS003,...
0460 // EXEC NATBATCH
0470 BWORKD=(1,1,1808,VB,2,2,9187,VB,3,3,3155,VB)
0480 /*
```

```
0490 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0500 /*
0510 LOGON SYSTEM
0520 N2OSEND
0530 FIN
0540 /*
0550 * N2ORECV - LOAD THE PROGRAMS TO THE TARGET FUSER/FDIC.
0560 *
0570 * N2OV5.2 CHANGE CMWKF03 3151 TO 3155
0580 *
0590 // ASSGN SYS001,DISK,SHR
0600 // ASSGN SYS002,DISK,SHR
0610 // ASSGN SYS003,DISK,SHR
0620 // ASSGN SYS004,DISK,SHR
0630 // ASSGN SYS005,DISK,SHR
0640 // ASSGN SYS009,SYSLST
0650 // DLBL CMWKF01,'N2O.PREDICT'
0660 // EXTENT SYS001,...
0670 // DLBL CMWKF02,'N2O.SOURCE'
0680 // EXTENT SYS002,...
0690 // DLBL CMWKF03,'N2O.ACKN'
0700 // EXTENT SYS003,...
0710 // DLBL CMWKF04,'N2O.ACACKN'
0720 // EXTENT SYS004,...
0730 // DLBL CMWKF05,'N2O.RECOVER'
0740 // EXTENT SYS005,...
0750 // EXEC NATBATCH
0760 BWORKD=(1,1,1808,VB,2,2,9187,VB,3,3,3155,VB,4,4,104,VB,5,5,164,VB)
0770 /*
0780 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0790 /*
0800 LOGON SYSTEM
0810 N2ORECV
0820 LOGON SYSTEM
0830 N2OBCOMP
0840 FIN
0850 /*
0860 * N2ODELT - DELETE PROGRAMS IN FROM ENV FOR MOVES.
0870 *
0880 * N2OV5.2 CHANGE CMWKF02 3151 TO 3155
0890 *
0900 // ASSGN SYS001,DISK,SHR
0910 // ASSGN SYS002,DISK,SHR
0920 // ASSGN SYS009,SYSLST
0930 // DLBL CMWKF01,'N2O.ACKN'
0940 // EXTENT SYS001,...
0950 // DLBL CMWKF02,'N2O.DACKN'
0960 // EXTENT SYS002,...
0970 // EXEC NATBATCH
0980 BWORKD=(1,1,3151,VB,2,2,3155,VB)
0990 /*
1000 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
1010 /*
1020 LOGON SYSTEM
1030 N2ODELT
1040 FIN
1050 /*
1060 * N2OACKN - ACKNOWLEDGEMENT OF EVENT COMPLETION
1070 // ASSGN SYS001,DISK,SHR
1080 // ASSGN SYS002,DISK,SHR
1090 // ASSGN SYS003,DISK,SHR
1100 // ASSGN SYS009,SYSLST
1110 // DLBL CMWKF01,'N2O.DACKN'
1120 // EXTENT SYS001,...
1130 // DLBL CMWKF02,'N2O.ACACKN'
1140 // EXTENT SYS002,...
1150 // DLBL CMWKF03,'N2O.RECOVER'
1160 // EXTENT SYS003,...
1170 // EXEC NATBATCH
1180 BWORKD=(1,1,3151,VB,2,2,104,VB,3,3,164,VB)
1190 /*
```

```
1200 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
1210 /*
1220 LOGON N2OLIB
1230 N2OACKN
1240 FIN
1250 /*
1260 /&
1270 * $$ EOJ
***** End of list *****
```

N2OPURGE

Program   MVSPURGE Library N2OBATCH
```
0010 //N2OPURGE JOB (20000),'N2OPURGE UTILITY',CLASS=A,NOTIFY=&USERID
0020 //***
0030 //*  THIS IS SAMPLE JCL FOR THE N2OPURGE UTILITY
0040 //*  THIS SHOULD BE RENAMED N2OPURGE
0050 //***
0060 //*  N2OPURGE RUNS ON FUSER WHERE OBJECTS ARE TO BE PURGED FROM
0070 //***
0080 //****
0090 //**   N2OV5.2 CHANGE CMWKF01 LRECL FROM 123 TO 150, BLKSIZE 127 TO 154
0100 //****
0110 //N2OPURGE EXEC PGM=NATBATCH
0120 //CMWKF01  DD  DSN=N2OPURGE.LIST,DISP=(,CATLG),
0130 //             DCB=(RECFM=VB,LRECL=150,BLKSIZE=154),
0140 //             UNIT=SYSDA,SPACE=(TRK,(12,12))
0150 //CMPRINT  DD  SYSOUT=*
0160 //CMSYNIN  DD  *
0170 LOGON N2OLIB
0180 N2OPURGE
0190 &INPUT
0200 FIN
0210 /*
0220 //*
0230 //****
0240 //**   N2OV5.2 CHANGE CMWKF02 LRECL FROM 290 TO 317, BLKSIZE 294 TO 321
0250 //****
0260 //*
0270 //N2OPURG1  EXEC PGM=NATBATCH
0280 //CMWKF01  DD  DSN=N2OPURGE.LIST,DISP=SHR
0290 //CMWKF02  DD  DSN=N2OPURGE.ACKN,DISP=(,CATLG),
0300 //             DCB=(RECFM=VB,LRECL=317,BLKSIZE=321),
0310 //             UNIT=SYSDA,SPACE=(TRK,(12,12))
0320 //CMPRINT  DD  SYSOUT=*
0330 //CMSYNIN  DD  *
0340 LOGON SYSTEM
0350 N2OPURG1
0360 FIN
0370 /*
0380 //***
0390 //*  N2OPURG2 RUNS WHERE N2O IS INSTALLED
0400 //***
0410 //N2OPURG2 EXEC PGM=NATBATCH
0420 //CMWKF02  DD  DSN=N2OPURGE.ACKN,DISP=SHR
0430 //CMPRINT  DD  SYSOUT=*
0440 //CMSYNIN  DD  *
0450 LOGON N2OLIB
0460 N2OPURG2
0470 FIN
0480 /*
0490 //*
***** End of list *****
```

```
Program      BSPURGE   Library N2OBATCH
 0010 /.N2O LOGON
 0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
 0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
 0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
 0050 /REMARK *** EXECUTE N2OPURGE ***
 0060 /remark **
 0070 /remark  N2OV5.2 CHANGE CMWKF01 LRECL FROM 123 - 150, BLKSIZE 127 - 154
 0080 /remark **
 0090 /FILE N2OPURGE.LIST,LINK=W01,RECFORM=VB,RECSIZE=150,BLKSIZE=154
 0100 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
 0110 /MODIFY-JOB-SWITCHES ON=(4,5)
 0120 /START-PROGRAM FROM-FILE=$EDT
 0130 LS=132,PS=60,MENU=OFF
 0140 @WRITE 'N2O.PURGE.IPT.BATCH' OVERWRITE
 0150 @HALT
 0160 /MODIFY-JOB-SWITCHES OFF=(4,5)
 0170 /ASSIGN-SYSIPT TO-FILE=N2O.PURGE.IPT.BATCH
 0180 /MODIFY-JOB-SWITCHES ON=(2)
 0190 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
 0200 LOGON N2OLIB
 0210 N2OPURGE
 0220 &INPUT
 0230 FIN
 0240 /REMARK *** EXECUTE N2OPURG1 ***
 0250 /remark **
 0260 /remark  N2OV5.2 CHANGE CMWKF02 LRECL FROM 290 - 317, BLKSIZE 294 - 321
 0270 /remark **
 0280 /FILE N2OPURGE.LIST,LINK=W01
 0290 /FILE N2OPURGE.ACKN,LINK=W02,RECFORM=VB,RECSIZE=317,BLKSIZE=321
 0300 /SET-JOB-STEP
 0310 /ASSIGN-SYSIPT TO-FILE=N2O.PURGE.IPT.BATCH
 0320 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
 0330 LOGON SYSTEM
 0340 N2OPURG1
 0350 FIN
 0360 /REMARK *** EXECUTE N2OPURG2 ***
 0370 /FILE N2OPURGE.ACKN,LINK=W02
 0380 /SET-JOB-STEP
 0390 /ASSIGN-SYSIPT TO-FILE=N2O.PURGE.IPT.BATCH
 0400 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
 0410 LOGON N2OLIB
 0420 N2OPURG2
 0430 FIN
 0440 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
 0450 /DELETE-FILE FILE-NAME=N2O.PURGE.IPT.BATCH,
 0460 /OPTION=DESTROY-ALL
 0470 /LOGOFF NOSPOOL
***** End of list *****
```

```
Program     VMPURGE  Library N2OBATCH
0010 /* Execute N2OPURGE */
0020 /*
0030 /*   N2OV5.2 CHANGE CMWKF01 LRECL FROM 123 TO 150, BLKSIZE 127 TO 154
0040 /*
0050 address 'COMMAND'
0060 'ERASE N2OPURGE CMSYNIN A'
0070 'EXECIO 1 DISKW N2OPURGE CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0080 'EXECIO 1 DISKW N2OPURGE CMSYNIN A 2 F 80 (STRING N2OPURGE'
0090 'EXECIO 1 DISKW N2OPURGE CMSYNIN A 3 F 80 (STRING &INPUT'
0100 'EXECIO 1 DISKW N2OPURGE CMSYNIN A 4 F 80 (STRING FIN'
0110 'FILEDEF * CLEAR'
0120 'FILEDEF CMWKF01 N2OPURGE LIST A RECFM VB LRECL 150 BLKSIZE 154'
0130 'FILEDEF CMSYNIN DISK N2OPURGE CMSYNIN A'
0140 'FILEDEF CMPRINT PRINTER'
0150 'EXEC NAT BATCH'
0160 'ERASE N2OPURGE CMSYNIN A'
0170 /* Execute N2OPURG1 */
0180 /*
0190 /*   N2OV5.2 CHANGE CMWKF01 LRECL FROM 290 TO 317, BLKSIZE 294 TO 321
0200 /*
0210 'ERASE N2OPURG1 CMSYNIN A'
0220 'EXECIO 1 DISKW N2OPURG1 CMSYNIN A 1 F 80 (STRING LOGON SYSTEM'
0230 'EXECIO 1 DISKW N2OPURG1 CMSYNIN A 2 F 80 (STRING N2OPURG1'
0240 'EXECIO 1 DISKW N2OPURG1 CMSYNIN A 3 F 80 (STRING FIN'
0250 'FILEDEF * CLEAR'
0260 'FILEDEF CMWKF01 N2OPURGE LIST A'
0270 'FILEDEF CMWKF02 N2OPURGE ACKN A RECFM VB LRECL 317 BLKSIZE 321'
0280 'FILEDEF CMSYNIN DISK N2OPURG1 CMSYNIN A'
0290 'FILEDEF CMPRINT PRINTER'
0300 'EXEC NAT BATCH'
0310 'ERASE N2OPURGE LIST A'
0320 'ERASE N2OPURG1 CMSYNIN A'
0330 /* Execute N2OPURG2 */
0340 'ERASE N2OPURG2 CMSYNIN A'
0350 'EXECIO 1 DISKW N2OPURG2 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0360 'EXECIO 1 DISKW N2OPURG2 CMSYNIN A 2 F 80 (STRING N2OPURG2'
0370 'EXECIO 1 DISKW N2OPURG2 CMSYNIN A 3 F 80 (STRING FIN'
0380 'FILEDEF * CLEAR'
0390 'FILEDEF CMWKF02 N2OPURGE ACKN A'
0400 'FILEDEF CMSYNIN DISK N2OPURG2 CMSYNIN A'
0410 'FILEDEF CMPRINT PRINTER'
0420 'EXEC NAT BATCH'
0430 'ERASE N2OPURGE ACKN A'
0440 'ERASE N2OPURG2 CMSYNIN A'
0450 exit
***** End of list *****
```

Program   VSEPURGE Library N2OBATCH

```
0010 * $$ JOB JNM=N2OPURGE,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB N2OPURGE
0040 * N2OPURGE - VERIFY INPUT PARMS
0050 *
0060 *   N2OV5.2 CHANGE CMWKF01 127 TO 154
0070 *
0080 // ASSGN SYSIPT,SYSRDR
0090 // ASSGN SYS001,DISK,SHR
0100 // ASSGN SYS009,SYSLST
0110 // DLBL CMWKF01,'N2OPURGE.LIST'
0120 // EXTENT SYS001,,,,nnnnn,nnnnn
0130 // EXEC NATBATCH
0140 BWORKD=(1,1,154,VB)
0150 /*
0160 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0170 /*
0180 LOGON N2OLIB
0190 N2OPURGE
0200 &INPUT
0210 FIN
0220 /*
0230 * N2OPURG1 - BATCH DELETE OF PROGRAMS
0240 *
0250 *   N2OV5.2 CHANGE CMWKF02 294 TO 321
0260 *
0270 // ASSGN SYS001,DISK,SHR
0280 // ASSGN SYS002,DISK,SHR
0290 // ASSGN SYS009,SYSLST
0300 // DLBL CMWKF01,'N2OPURGE.LIST'
0310 // EXTENT SYS001,,,,nnnnn,nnnnn
0320 // DLBL CMWKF02,'N2OPURGE.ACKN'
0330 // EXTENT SYS002,,,,nnnnn,nnnnn
0340 // EXEC NATBATCH
0350 BWORKD=(1,1,127,VB,2,2,321,VB)
0360 /*
0370 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0380 /*
0390 LOGON SYSTEM
0400 N2OPURG1
0410 FIN
0420 /*
0430 * N2OPURG2 - ACKNOWLEDGE DELETE
0440 *
0450 *   N2OV5.2 CHANGE CMWKF01 294 TO 321
0460 *
0470 *
0480 // ASSGN SYS002,DISK,SHR
0490 // ASSGN SYS009,SYSLST
0500 // DLBL CMWKF02,'N2OPURGE.ACKN'
0510 // EXTENT SYS002,,,,nnnnn,nnnnn
0520 // EXEC NATBATCH
0530 BWORKD=(1,1,321,VB)
0540 /*
0550 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0560 /*
0570 LOGON N2OLIB
0580 N2OPURG2
0590 FIN
0600 /*
0610 /&
0620 * $$ EOJ
***** End of list *****
```

3GL N2OPURGE

```
Program     MVS3PRGE Library N2OBATCH
0010 //PDSPURG  JOB (ACCOUNTING),'PDS N2OPURGE',CLASS=A,NOTIFY=&SYSUID
0020 //*
0030 //**********************************************************************
0040 //***
0050 //*  THIS IS SAMPLE JCL FOR THE 3GL N2OPURGE UTILITY
0060 //*  THIS SHOULD BE RENAMED TO PDSPURGE
0070 //***
0080 //****
0090 //**********************************************************************
0100 //*
0110 //* &INCLUDE PRTPCH will be automatically replaced with the IEBPTPCH
0120 //* commands necessary to punch the members to a workfile.
0130 //*
0140 //NPPUNCH     EXEC PGM=IEBPTPCH
0150 //SYSPRINT DD  SYSOUT=*
0160 //SYSUT1   DD  DSNAME=&PDS,DISP=(SHR,KEEP),UNIT=SYSDA
0170 //SYSUT2   DD  DSNAME=&&TEMP,DISP=(NEW,PASS,DELETE),
0180 //             UNIT=SYSDA,SPACE=(TRK,(15,15))
0190 //SYSIN    DD  *
0200 &INCLUDE PRTPCH
0210 /*
0220 //**********************************************************************
0230 //*
0240 //* &INCLUDE DELETE will be replaced automatically by N2O with
0250 //*      IDCAMS cards to delete each member that were migrated
0260 //*      if MOVE is specified for the Migration Profile.
0270 //*
0280 //NPDELETE   EXEC PGM=IDCAMS,COND=(8,LT)
0290 //SYSPRINT DD  DSN=&&DELOUT,
0300 //             DCB=(RECFM=VB,LRECL=125,BLKSIZE=129),
0310 //             DISP=(NEW,PASS,DELETE),
0320 //             UNIT=SYSDA,SPACE=(TRK,(5,5))
0330 //DD1      DD  DISP=SHR,DSN=&PDS
0340 //SYSIN    DD *
0350 &INCLUDE DELETE
0360 /*
0370 //**********************************************************************
0380 //*  N2OPURG3 RUNS ON THE FUSER WHERE N2O IS INSTALLED.
0390 //*  IT REQUIRES A NATURAL NUC WITH ACCESS TO THE N2O-ADMINISTRATION
0400 //*  N2O-MIGRATION FILES AND ANY N2O-ARCHIVE FILE DEFINED TO THE 3GL
0410 //*  ENVIRONMENT WHERE THE 3GL N2OPURGE OCCURS.
0420 //**********************************************************************
0430 //NPACKN   EXEC NATBATCH
0440 //CMWKF01  DD  *
0450 &N2OPURGE
0460 /*
0470 //CMWKF02  DD  DSN=&&TEMP,DISP=(OLD,PASS,DELETE)
0480 //CMWKF03  DD  DSN=&&DELOUT,DISP=(OLD,PASS,DELETE)
0490 //CMPRINT  DD  SYSOUT=*
0500 //CMSYNIN  DD  *
0510 LOGON N2OLIB
0520 N2OPURG3
0530 FIN
0540 /*
```

Recover from Archive backup (Natural objects)

```
Program     MVSRAB    Library N2OBATCH
0010 //N2ORAB JOB (ACCT),'RECOVER ARCH BACKUP',CLASS=A,NOTIFY=&USERID
0020 //***
0030 //***    THIS IS SAMPLE JCL FOR A RECOVER FROM ARCHIVE BACKUP
0040 //***    THIS SHOULD BE RENAMED TO N2ORAB
0050 //***
0060 //*  N2ORAB1 RUNS WHERE N2O IS INSTALLED
0070 //***
0080 //N2ORAB1  EXEC PGM=NATBATCH
0090 //CMWKF02  DD  DSN=REC.PARMS,DISP=(NEW,PASS,DELETE),
0100 //             SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
0110 //             DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
0120 //CMPRINT  DD  SYSOUT=*
0130 //CMSYNIN  DD  *
0140 LOGON N2OLIB
0150 N2ORAB1
0160 FIN
0170 /*
0180 //CMWKF01  DD *
0190 &INPUT
0200 /*
0210 //***
0220 //*  N2ORAB2 RUNS ON THE TARGET FUSER
0230 //***
0240 //N2ORAB2  EXEC PGM=NATBATCH
0250 //CMWKF01  DD  DSN=REC.PARMS,DISP=(OLD,DELETE,CATLG)
0260 //CMWKF02  DD  DSN=&BACKUP,DISP=(OLD,KEEP,KEEP)
0270 //CMWKF03  DD  DSN=REC.ACKN,DISP=(NEW,PASS,DELETE),
0280 //             SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
0290 //             DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
0300 //CMPRINT  DD  SYSOUT=*
0310 //CMSYNIN  DD  *
0320 LOGON SYSTEM
0330 N2ORAB2
0340 FIN
0350 /*
0360 //***
0370 //*  N2ORAB3 RUNS WHERE N2O IS INSTALLED
0380 //***
0390 //N2ORAB3  EXEC PGM=NATBATCH
0400 //CMWKF01  DD  DSN=REC.ACKN,DISP=(OLD,DELETE,CATLG)
0410 //CMPRINT  DD  SYSOUT=*
0420 //CMSYNIN  DD  *
0430 LOGON N2OLIB
0440 N2ORAB3
0450 FIN
0460 /*
0470 //*
***** End of list *****
```

```
Program     BSRAB    Library N2OBATCH
 0010 /.N2O LOGON
 0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
 0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
 0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
 0050 /REMARK *** EXECUTE N2ORAB1 ***
 0060 /SET-FILE-LINK LINK-NAME=W01,FILE-NAME=N2O.RAB.INFO
 0070 /FILE REC.PARMS,LINK=W02,RECFORM=VB,RECSIZE=189,BLKSIZE=193
 0080 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
 0090 /MODIFY-JOB-SWITCHES ON=(4,5)
 0100 /START-PROGRAM FROM-FILE=$EDT
 0110 LS=132,PS=60,MENU=OFF
 0120 @WRITE 'N2O.RAB.IPT.BATCH' OVERWRITE
 0130 @HALT
 0140 /MODIFY-JOB-SWITCHES OFF=(4,5)
 0150 /ASSIGN-SYSIPT TO-FILE=N2O.RAB.IPT.BATCH
 0160 /MODIFY-JOB-SWITCHES ON=(2)
 0170 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
 0180 LOGON N2OLIB
 0190 N2ORAB1
 0200 FIN
 0210 /REMARK *** EXECUTE N2ORAB2 ***
 0220 /FILE REC.PARMS,LINK=W01
 0230 /FILE &BACKUP,LINK=W02
 0240 /FILE REC.ACKN,LINK=W03,RECFORM=VB,RECSIZE=189,BLKSIZE=193
 0250 /SET-JOB-STEP
 0260 /ASSIGN-SYSIPT TO-FILE=N2O.RAB.IPT.BATCH
 0270 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
 0280 LOGON SYSTEM
 0290 N2ORAB2
 0300 FIN
 0310 /REMARK *** EXECUTE N2ORAB3 ***
 0320 /FILE REC.ACKN,LINK=W01
 0330 /SET-JOB-STEP
 0340 /ASSIGN-SYSIPT TO-FILE=N2O.RAB.IPT.BATCH
 0350 /START-PROGRAM FROM-FILE=$ADABAS.NATBATCH
 0360 LOGON N2OLIB
 0370 N2ORAB3
 0380 FIN
 0390 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
 0400 /DELETE-FILE FILE-NAME=N2O.RAB.IPT.BATCH,
 0410 /OPTION=DESTROY-ALL
 0420 /LOGOFF NOSPOOL
***** End of list *****
```

Program   VMRAB   Library N2OBATCH

```
0010 /* Execute N2ORAB1 */
0020 address 'COMMAND'
0030 'ERASE N2ORAB1 CMSYNIN A'
0040 'EXECIO 1 DISKW N2ORAB1 CMWKF01 A 1 F 80(STRING &INPUT'
0050 'EXECIO 1 DISKW N2ORAB1 CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
0060 'EXECIO 1 DISKW N2ORAB1 CMSYNIN A 2 F 80(STRING N2ORAB1'
0070 'EXECIO 1 DISKW N2ORAB1 CMSYNIN A 3 F 80(STRING FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMWKF01 N2ORAB1 CMWKF01 A'
0100 'FILEDEF CMWKF02 REC PARMS A RECFM VB LRECL 189 BLKSIZE 193'
0110 'FILEDEF CMSYNIN DISK N2ORAB1 CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'EXEC NAT BATCH'
0140 'ERASE N2ORAB1 CMSYNIN A'
0150 /*
0160 /* Execute N2ORAB2 */
0170 'ERASE N2ORAB2 CMSYNIN A'
0180 'EXECIO 1 DISKW N2ORAB2 CMSYNIN A 1 F 80(STRING LOGON SYSTEM'
0190 'EXECIO 1 DISKW N2ORAB2 CMSYNIN A 2 F 80(STRING N2ORAB2'
0200 'EXECIO 1 DISKW N2ORAB2 CMSYNIN A 3 F 80(STRING FIN'
0210 'FILEDEF * CLEAR'
0220 'FILEDEF CMWKF01 REC PARMS A'
0230 'FILEDEF CMWKF02 &BACKUP'
0240 'FILEDEF CMWKF03 REC ACKN RECFM VB LRECL 189 BLKSIZE 193'
0250 'FILEDEF CMSYNIN DISK N2ORAB2 CMSYNIN A'
0260 'FILEDEF CMPRINT PRINTER'
0270 'EXEC NAT BATCH'
0280 'ERASE N2ORAB2 CMSYNIN A'
0290 'ERASE REC PARMS A'
0300 /* Execute N2ORAB3 */
0310 'ERASE N2ORAB3 CMSYNIN A'
0320 'EXECIO 1 DISKW N2ORAB3 CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
0330 'EXECIO 1 DISKW N2ORAB3 CMSYNIN A 2 F 80(STRING N2ORAB3'
0340 'EXECIO 1 DISKW N2ORAB3 CMSYNIN A 3 F 80(STRING FIN'
0350 'FILEDEF * CLEAR'
0360 'FILEDEF CMWKF01 REC ACKN a'
0370 'FILEDEF CMSYNIN DISK N2ORAB3 CMSYNIN A'
0380 'FILEDEF CMPRINT PRINTER'
0390 'EXEC NAT BATCH'
0400 'ERASE N2ORAB3 CMSYNIN A'
0410 'ERASE REC ACKN A'
0420 exit
***** End of list *****
```

Program   VSERAB   Library N2OBATCH

```
0010 * $$ JOB JNM=N2ORAB,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB N2ORAB
0040 // DLBL CMWKF01,'RAB.INPUT.PARMS'
0050 // EXTENT SYS001,,,,nnnnn,nnnnn
0060 // EXEC IDCAMS,SIZE=AUTO
0070   REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0080        OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0090 &INPUT
0100 /*
0110 * N2ORAB1 - VERIFY INPUT PARMS
0120 // ASSGN SYSIPT,SYSRDR
0130 // ASSGN SYS001,DISK,SHR
0140 // ASSGN SYS002,DISK,SHR
0150 // ASSGN SYS009,SYSLST
0160 // DLBL CMWKF01,'RAB.INPUT.PARMS'
0170 // EXTENT SYS001,,,,nnnnn,nnnnn
0180 // DLBL CMWKF02,'REC.PARMS'
0190 // EXTENT SYS002,,,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB,2,2,193,VB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
```

```
0250 LOGON N2OLIB
0260 N2ORAB1
0270 FIN
0280 /*
0290 * N2ORAB2 - RECOVER OBJECT TO TARGET
0300 // ASSGN SYS001,DISK,SHR
0310 // ASSGN SYS002,DISK,SHR
0320 // ASSGN SYS003,DISK,SHR
0330 // ASSGN SYS009,SYSLST
0340 // DLBL CMWKF01,'REC.PARMS'
0350 // EXTENT SYS001,,,,nnnnn,nnnnn
0360 // DLBL CMWKF02,'&BACKUP'
0370 // EXTENT SYS002,,,,nnnnn,nnnnn
0380 // DLBL CMWKF03,'REC.ACKN'
0390 // EXTENT SYS003,,,,nnnnn,nnnnn
0400 // EXEC NATBATCH
0410 BWORKD=(1,1,193,VB,2,2,5500,VB,3,3,193)
0420 /*
0430 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0440 /*
0450 LOGON SYSTEM
0460 N2ORAB2
0470 FIN
0480 /*
0490 * N2ORAB3 - ACKNOWLEDGE RECOVERY
0500 // ASSGN SYS001,DISK,SHR
0510 // ASSGN SYS009,SYSLST
0520 // DLBL CMWKF01,'REC.ACKN'
0530 // EXTENT SYS001,,,,nnnnn,nnnnn
0540 // EXEC NATBATCH
0550 BWORKD=(1,1,193,VB)
0560 /*
0570 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0580 /*
0590 LOGON N2OLIB
0600 N2ORAB3
0610 FIN
0620 /*
0630 /&
0640 * $$ EOJ
***** End of list *****
```

Recover from archive backup (3GL PDS Objects)

Program   MVSRAB3   Library N2OBATCH
```
0010 //N2ORAB3 JOB (ACCT),'RECOVER PDS ARCH BACKUP',CLASS=A,NOTIFY=&USERID
0020 //**
0030 //*  THIS IS SAMPLE JCL FOR A PDS RECOVER FROM ARCHIVE BACKUP
0040 //***
0050 //*  N2ORAB1 RUNS WHERE N2O IS INSTALLED
0060 //***
0070 //N2ORAB1  EXEC PGM=NATBATCH
0080 //CMWKF02  DD  DSN=REC.PARMS,DISP=(NEW,PASS,DELETE),
0090 //             SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
0100 //             DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
0110 //CMPRINT  DD  SYSOUT=*
0120 //CMSYNIN  DD  *
0130 LOGON N2OLIB
0140 N2ORAB1
0150 FIN
0160 /*
0170 //CMWKF01  DD *
0180 &INPUT
0190 /*
0200 //***
0210 //* N2ORAB2T RUNS ON THE TARGET RECOVERY ENVIRONMENT
0220 //***
0230 //N2ORAB2T EXEC PGM=NATBATCH
0240 //CMWKF01  DD  DSN=REC.PARMS,DISP=(OLD,DELETE,CATLG)
0250 //CMWKF02  DD  DSN=&BACKUP,DISP=(OLD,KEEP,KEEP)
```

```
0260 //CMWKF03  DD  DSN=REC.ACKN,DISP=(NEW,PASS,DELETE),
0270 //             SPACE=(TRK,(5,5),RLSE),UNIT=SYSDA,
0280 //             DCB=(RECFM=VB,BLKSIZE=193,LRECL=189)
0290 //CMWKF05  DD  DSN=&PDS(&MEMBER),DISP=SHR
0300 //CMPRINT  DD  SYSOUT=*
0310 //CMSYNIN  DD  *
0320 LOGON SYSTEM
0330 N2ORAB2T
0340 FIN
0350 /*
0360 //***
0370 //*   N2ORAB3 RUNS WHERE N2O IS INSTALLED
0380 //***
0390 //N2ORAB3  EXEC PGM=NATBATCH
0400 //CMWKF01  DD  DSN=REC.ACKN,DISP=(OLD,DELETE,CATLG)
0410 //CMPRINT  DD  SYSOUT=*
0420 //CMSYNIN  DD  *
0430 LOGON N2OLIB
0440 N2ORAB3
0450 FIN
0460 /*
0470 //*
***** End of list *****
```

Recover Purged Events

Program   MVSREB   Library N2OBATCH
```
0010 //N2OREB   JOB (ACCT),'RECOVER EVENT BACKUP',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //N2OREB1  EXEC  PGM=NATBATCH
0040 //CMWKF01  DD  DSN=&BACKUP,DISP=SHR
0050 //CMPRINT  DD  SYSOUT=*
0060 //CMPRT01  DD  SYSOUT=*
0070 //CMPRT01  DD  SYSOUT=*
0080 //CMPRT02  DD  SYSOUT=*
0090 //CMPRT03  DD  SYSOUT=*
0100 //CMPRT04  DD  SYSOUT=*
0110 //CMSYNIN  DD  *
0120 LOGON N2OLIB
0130 N2OREB
0140 FIN
0150 /*
0160 //
***** End of list *****
```

Program   BSREB   Library N2OBATCH
```
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE N2O EVENT RECOVERY ***
0060 /FILE N2O.REPORT,LINK=P01
0070 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0080 /MODIFY-JOB-SWITCHES ON=(4,5)
0090 /START-PROGRAM FROM-FILE=$EDT
0100 LS=132,PS=60,MENU=OFF
0110 @WRITE 'N2O.REPT.IPT.BATCH' OVERWRITE
0120 @HALT
0130 /MODIFY-JOB-SWITCHES OFF=(4,5)
0140 /ASSIGN-SYSIPT TO-FILE=N2O.REPT.IPT.BATCH
0150 /MODIFY-JOB-SWITCHES ON=(2)
0160 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0170 LOGON N2OLIB
0180 N2OREB
0190 FIN
0200 /FILE &BACKUP,LINK=W01
0210 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0220 /DELETE-FILE FILE-NAME=N2O.REPT.IPT.BATCH,
0230 /OPTION=DESTROY-ALL
```

```
0240 /LOGOFF NOSPOOL
***** End of list *****
```

Program   VMREB   Library N2OBATCH
```
0010 /* EXECUTE A EVENT RECOVERY  */
0020  ADDRESS 'COMMAND'
0030  'ERASE N2OREB CMSYNIN A'
0040  'EXECIO 1 DISKW N2OREB CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
0050  'EXECIO 1 DISKW N2OREB CMSYNIN A 2 F 80(STRING N2OREB'
0060  'EXECIO 1 DISKW N2OREB CMSYNIN A 3 F 80(STRING FIN'
0070  'FILEDEF * CLEAR'
0080  'FILEDEF CMWKF01 DISK N2OREB &BACKUP A'
0090  'FILEDEF CMSYNIN DISK N2OREB CMSYNIN A'
0100  'FILEDEF CMPRINT PRINTER'
0110  'FILEDEF CMPRT01 PRINTER'
0120  'EXEC NAT BATCH'
0130  'ERASE N2OREB CMSYNIN A'
0140  exit
***** End of list *****
```

Program   VSEREB   Library N2OBATCH
```
0010 * $$ JOB JNM=N2OREPT,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB N2OREPT
0040 * N2OREB - N2O EVENT RECOVERY JCL
0050 // ASSGN SYS001,DISK,SHR
0060 // ASSGN SYS009,SYSLST
0070 // DLBL CMWKF01,'&BACKUP'
0080 // EXTENT SYS001,,,,NNNNN,NNNNN
0090 // EXEC NATBATCH
0100 /BWORKD=(1,1,80,FB)
0110 /*
0120 ADARUN DB=XXX,SVC=YYY,DEVICE=ZZZZ
0130 /*
0140 LOGON N2OLIB
0150 N2OREB
0160 FIN
0170 /*
0180 /&
0190 * $$ EOJ
***** End of list *****
```

Reporting

Program   MVSREPT   Library N2OBATCH
```
0010 //N2OREPT JOB (20100),'EXECUTE REPORT',CLASS=A,NOTIFY=&USERID
0020 //***
0030 //*  THIS IS SAMPLE JCL FOR ALL OF N2O REPORTS AND FOR THE
0040 //*  DOCUMENTATION TOOLS SUBSYSTEM
0050 //*
0060 //*  THIS JCL SHOULD BE RENAMED AS N2OREPT
0070 //***
0080 //*  N2OREPT RUNS WHERE N2O IS INSTALLED
0090 //***
0100 //N2OREPT  EXEC PGM=NATBATCH
0110 //CMPRINT  DD  SYSOUT=*
0120 //CMPRT01  DD  SYSOUT=*
0130 //CMSYNIN  DD  *
0140 LOGON N2OLIB
0150 &REPORT
0160 &INPUT
0170 FIN
0180 /*
0190 //*
***** End of list *****
```

Program   BSREPT   Library N2OBATCH

```
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE N2OREPORT ***
0060 /FILE N2O.REPORT,LINK=P01
0070 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0080 /MODIFY-JOB-SWITCHES ON=(4,5)
0090 /START-PROGRAM FROM-FILE=$EDT
0100 LS=132,PS=60,MENU=OFF
0110 @WRITE 'N2O.REPT.IPT.BATCH' OVERWRITE
0120 @HALT
0130 /MODIFY-JOB-SWITCHES OFF=(4,5)
0140 /ASSIGN-SYSIPT TO-FILE=N2O.REPT.IPT.BATCH
0150 /MODIFY-JOB-SWITCHES ON=(2)
0160 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0170 LOGON N2OLIB
0180 &REPORT
0190 &INPUT
0200 FIN
0210 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0220 /DELETE-FILE FILE-NAME=N2O.REPT.IPT.BATCH,
0230 /OPTION=DESTROY-ALL
0240 /LOGOFF NOSPOOL
***** End of list *****
```

Program   VMREPT   Library N2OBATCH

```
0010 /* Execute a report */
0020 address 'COMMAND'
0030 'ERASE N2OREPT CMSYNIN A'
0040 'EXECIO 1 DISKW N2OREPT CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
0050 'EXECIO 1 DISKW N2OREPT CMSYNIN A 2 F 80(STRING &REPORT'
0060 'EXECIO 1 DISKW N2OREPT CMSYNIN A 3 F 80(STRING &INPUT'
0070 'EXECIO 1 DISKW N2OREPT CMSYNIN A 4 F 80(STRING FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMSYNIN DISK N2OREPT CMSYNIN A'
0100 'FILEDEF CMPRINT PRINTER'
0110 'FILEDEF CMPRT01 PRINTER'
0120 'EXEC NAT BATCH'
0130 'ERASE N2OREPT CMSYNIN A'
0140 exit
***** End of list *****
```

Program   VSEREPT   Library N2OBATCH

```
0010 * $$ JOB JNM=N2OREPT,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 // JOB N2OREPT
0040 * N2OREPT - N2O REPORTING
0050 // ASSGN SYSIPT,SYSRDR
0060 // ASSGN SYS009,SYSLST
0070 // EXEC NATBATCH
0080 /*
0090 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0100 /*
0110 LOGON N2OLIB
0120 &REPORT
0130 &INPUT
0140 FIN
0150 /*
0160 /&
0170 * $$ EOJ
***** End of list *****
```

N2OSCAN

Program   MVSSCAN   Library N2OBATCH
```
0010 //N2OSCAN  JOB (ACCOUNTING),'N2OSCAN   ',CLASS=A,TIME=40,NOTIFY=&USERID
0020 //***
0030 //*   THIS IS SAMPLE JCL FOR THE TOOLBOX OPTION FOR THE N2OSCAN UTILITY
0040 //*   THIS JOB SHOULD BE RENAMED N2OSCAN
0050 //***
0060 //*  N2OSCAN RUNS WHERE N2O IS INSTALLED
0070 //***
0080 //N2OSCAN  EXEC PGM=NATBATCH
0090 //*
0100 //CMPRINT  DD  SYSOUT=*
0110 //CMPRT02  DD  SYSOUT=*
0120 //CMSYNIN  DD  *
0130 LOGON N2OLIB
0140 N2OSCANX
0150 &INPUT
0160 FIN
0170 /*
0180 //*
***** End of list *****
```

Program   VMSCAN   Library N2OBATCH
```
0010 /* Execute N2OSCAN Utility */
0020 address 'COMMAND'
0030 'ERASE N2OSCAN CMSYNIN A'
0040 'EXECIO 1 DISKW N2OSCAN CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
0050 'EXECIO 1 DISKW N2OSCAN CMSYNIN A 2 F 80(STRING N2OSCANX'
0060 'EXECIO 1 DISKW N2OSCAN CMSYNIN A 3 F 80(STRING &INPUT'
0070 'EXECIO 1 DISKW N2OSCAN CMSYNIN A 4 F 80(STRING FIN'
0080 'FILEDEF * CLEAR'
0090 'FILEDEF CMSYNIN DISK N2OSCAN CMSYNIN A'
0100 'FILEDEF CMPRINT PRINTER'
0110 'FILEDEF CMPRT01 PRINTER'
0120 'EXEC NAT BATCH'
0130 'ERASE N2OSCAN CMSYNIN A'
0140 exit
***** End of list *****
```

Program   VSESCAN   Library N2OBATCH
```
0010 * $$ JOB JNM=N2OSCAN,CLASS=A,USER=&USERID
0020 * $$ LST CLASS=A,LST=SYSLST
0030 * $$ LST CLASS=A,LST=02E,DISP=K,JSEP=0
0040 // JOB N2OSCAN
0050 * N2OSCAN - N2OSCAN UTILITY
0060 // ASSGN SYSIPT,SYSRDR
0070 // ASSGN SYS002,02E
0080 // EXEC NATBATCH
0090 /*
0100 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0110 /*
0120 LOGON N2OLIB
0130 N2OSCANX
0140 &INPUT
0150 FIN
0160 /*
0170 /&
0180 * $$ EOJ
***** End of list *****
```

N2OSCAN delete specific scan output set

Program   MVSSCBD1 Library N2OBATCH
```
0010 //N2OSCBD1 JOB (ACCOUNTING),'N2OSCAN DELETE',CLASS=A,NOTIFY=&USERID
0020 //**********
0030 //*  THIS IS SAMPLE N2OSCAN DELETE JCL (FOR N2OSCBD1)
0040 //*  THIS JOB SHOULD BE RENAMED TO N2OSCBD1
0050 //**********
0060 //* N2OSCBD1 RUNS WHERE N2O IS INSTALLED
0070 //*
0080 //N2OSCBD1 EXEC PGM=NATBATCH
0090 //CMPRINT  DD  SYSOUT=*
0100 //CMPRT01  DD  SYSOUT=*
0110 //CMPRT02  DD  SYSOUT=*
0120 //CMSYNIN  DD  *
0130 LOGON N2OLIB
0140 N2OSCBD1
0150 FIN
0160 /*
0170 //CMWKF01  DD  *
0180 &INPUT
0190 /*
0200 //*
***** End of list *****
```

Program   VMSCBD1 Library N2OBATCH
```
0010 /* Execute N2OSCBD1 */
0020 address 'COMMAND'
0030 'ERASE N2OSCBD1 CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OSCBD1 CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OSCBD1 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OSCBD1 CMSYNIN A 2 F 80 (STRING N2OSCBD1'
0080 'EXECIO 1 DISKW N2OSCBD1 CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
0100 'FILEDEF CMWKF01 DISK N2OSCBD1 CMWKF01 A'
0110 'FILEDEF CMSYNIN DISK N2OSCBD1 CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'FILEDEF CMPRT02 PRINTER'
0150 'EXEC NAT BATCH'
0160 exit
***** End of list *****
```

Program   VSESCBD1 Library N2OBATCH
```
0010 * N2OSCBD1 - N2OSCAN DELETE 1
0020 * $$ JOB JNM=N2OSCBD1,CLASS=A,USER=&USERID
0030 * $$ LST CLASS=A,LST=SYSLST
0040 // JOB N2OSCBD1
0050 /*
0060 * N2OSCBD1 -
0070 // DLBL CMWKF01,'N2O.SCBD1.INPUT'
0080 // EXTENT SYS001,,,,nnnnn,nnnnn
0090 // EXEC IDCAMS,SIZE=AUTO
0100    REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0110          OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0120 &INPUT
0130 /*
0140 // ASSGN SYSIPT,SYSRDR
0150 // ASSGN SYS000,SYSRDR
0160 // ASSGN SYS001,DISK,SHR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF01,'N2O.SCBD1.INPUT'
0190 // EXTENT SYS001,,,,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON N2OLIB
0260 N2OSCBD1
0270 FIN
0280 /*
0290 /&
0300 * $$ EOJ
***** End of list *****
```

N2OSCAN Batch Delete by Date and User ID

Program   MVSSCBD2 Library N2OBATCH
```
0010 //N2OSCBD2 JOB (ACCOUNTING),'N2OSCAN DELETE',CLASS=A,NOTIFY=&USERID
0020 //**********
0030 //*  THIS IS SAMPLE N2OSCAN DELETE JCL (FOR N2OSCBD2)
0040 //*  THIS JOB SHOULD BE RENAMED TO N2OSCBD2
0050 //**********
0060 //* N2OSCBD2 RUNS WHERE N2O IS INSTALLED
0070 //*
0080 //N2OSCBD2 EXEC PGM=NATBATCH
0090 //CMPRINT  DD  SYSOUT=*
0100 //CMPRT01  DD  SYSOUT=*
0110 //CMPRT02  DD  SYSOUT=*
0120 //CMSYNIN  DD  *
0130 LOGON N2OLIB
0140 N2OSCBD2
0150 FIN
0160 /*
0170 //CMWKF01  DD  *
0180 &INPUT
0190 /*
0200 //*
***** End of list *****
```

Program   VMSCBD2   Library N2OBATCH

```
0010 /* Execute N2OSCBD2 */
0020 address 'COMMAND'
0030 'ERASE N2OSCBD2 CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OSCBD2 CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OSCBD2 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OSCBD2 CMSYNIN A 2 F 80 (STRING N2OSCBD2'
0080 'EXECIO 1 DISKW N2OSCBD2 CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
0100 'FILEDEF CMWKF01 DISK N2OSCBD2 CMWKF01 A'
0110 'FILEDEF CMSYNIN DISK N2OSCBD2 CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'FILEDEF CMPRT02 PRINTER'
0150 'EXEC NAT BATCH'
0160 exit
***** End of list *****
```

Program   VSESCBD2 Library N2OBATCH

```
0010 * N2OSCBD2 - N2OSCAN DELETE 1
0020 * $$ JOB JNM=N2OSCBD2,CLASS=A,USER=&USERID
0030 * $$ LST CLASS=A,LST=SYSLST
0040 // JOB N2OSCBD2
0050 /*
0060 * N2OSCBD2 -
0070 // DLBL CMWKF01,'N2O.SCBD2.INPUT'
0080 // EXTENT SYS001,,,,nnnnn,nnnnn
0090 // EXEC IDCAMS,SIZE=AUTO
0100    REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0110          OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0120 &INPUT
0130 /*
0140 // ASSGN SYSIPT,SYSRDR
0150 // ASSGN SYS001,DISK,SHR
0160 // ASSGN SYS000,SYSRDR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF01,'N2O.SCBD2.INPUT'
0190 // EXTENT SYS001,,,,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON N2OLIB
0260 N2OSCBD2
0270 FIN
0280 /*
0290 /&
0300 * $$ EOJ
***** End of list *****
```

N2OSCAN Batch source display

Program   MVSSCBSD Library N2OBATCH
```
0010 //N2OSCBSD JOB (ACCOUNTING),'N2OSCAN BSD',CLASS=A,NOTIFY=&USERID
0020 //**********
0030 //*  THIS IS SAMPLE N2OSCAN BATCH SOURCE DISPLAY
0040 //*  THIS JOB SHOULD BE RENAMED TO N2OSCBSD
0050 //**********
0060 //* N2OSCBSD RUNS WHERE N2O IS INSTALLED
0070 //*
0080 //N2OSCBSD EXEC PGM=NATBATCH
0090 //CMPRINT  DD  SYSOUT=*
0100 //CMPRT01  DD  SYSOUT=*
0110 //CMPRT02  DD  SYSOUT=*
0120 //CMSYNIN  DD  *
0130 LOGON N2OLIB
0140 N2OSCBSD
0150 FIN
0160 /*
0170 //CMWKF01  DD  *
0180 &INPUT
0190 /*
0200 //*
***** End of list *****
```

Program   VMSCBSD Library N2OBATCH
```
0010 /* Execute N2OSCBSD */
0020 address 'COMMAND'
0030 'ERASE N2OSCBSD CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OSCBSD CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OSCBSD CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OSCBSD CMSYNIN A 2 F 80 (STRING N2OSCBSD'
0080 'EXECIO 1 DISKW N2OSCBSD CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
0100 'FILEDEF CMWKF01 DISK N2OSCBSD CMWKF01 A'
0110 'FILEDEF CMSYNIN DISK N2OSCBSD CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'FILEDEF CMPRT02 PRINTER'
0150 'EXEC NAT BATCH'
0160 exit
***** End of list *****
```

Program   VSESCBSD Library N2OBATCH

```
0010 * N2OSCBSD - N2OSCAN BATCH SOURCE DISPLAY
0020 * $$ JOB JNM=N2OSCBSD,CLASS=A,USER=&USERID
0030 * $$ LST CLASS=A,LST=SYSLST
0040 // JOB N2OSCBSD
0050 /*
0060 * N2OSCBSD -
0070 // DLBL CMWKF01,'N2O.SCBSD.INPUT'
0080 // EXTENT SYS001,,,,nnnnn,nnnnn
0090 // EXEC IDCAMS,SIZE=AUTO
0100    REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0110         OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0120 &INPUT
0130 /*
0140 // ASSGN SYS001,DISK,SHR
0150 // ASSGN SYSIPT,SYSRDR
0160 // ASSGN SYS000,SYSRDR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF01,'N2O.SCBSD.INPUT'
0190 // EXTENT SYS001,,,,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON N2OLIB
0260 N2OSCBSD
0270 FIN
0280 /*
0290 /&
0300 * $$ EOJ
***** End of list *****
```

N2OSCAN

Program   MVSSCBX   Library N2OBATCH
```
0010 //N2OSCBX  JOB (ACCOUNTING),'N2OSCAN',CLASS=A,NOTIFY=&USERID
0020 //**********
0030 //*  THIS IS SAMPLE N2OSCAN  JCL
0040 //*  THIS JOB SHOULD BE RENAMED TO N2OSCBX
0050 //**********
0060 //* N2OSCBX RUNS WHERE N2O IS INSTALLED
0070 //*
0080 //N2OSCBX  EXEC PGM=NATBATCH
0090 //CMPRINT  DD  SYSOUT=*
0100 //CMPRT01  DD  SYSOUT=*
0110 //CMPRT02  DD  SYSOUT=*
0120 //CMSYNIN  DD  *
0130 LOGON N2OLIB
0140 N2OSCBX
0150 FIN
0160 /*
0170 //CMWKF01  DD  *
0180 &INPUT
0190 /*
0200 //*
***** End of list *****
```

Program   VMSCBX   Library N2OBATCH
```
0010 /* Execute N2OSCBX  */
0020 address 'COMMAND'
0030 'ERASE N2OSCBX CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OSCBX  CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OSCBX  CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OSCBX  CMSYNIN A 2 F 80 (STRING N2OSCBX'
0080 'EXECIO 1 DISKW N2OSCBX  CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
0100 'FILEDEF CMWKF01 DISK N2OSCBX  CMWKF01 A'
0110 'FILEDEF CMSYNIN DISK N2OSCBX  CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'FILEDEF CMPRT02 PRINTER'
0150 'EXEC NAT BATCH'
0160 exit
***** End of list *****
```

```
Program     VSESCBX   Library N2OBATCH
 0010 * N2OSCBX - N2OSCAN
 0020 * $$ JOB JNM=N2OSCBX,CLASS=A,USER=&USERID
 0030 * $$ LST CLASS=A,LST=SYSLST
 0040 // JOB N2OSCBX
 0050 /*
 0060 * N2OSCBX -
 0070 // DLBL CMWKF01,'N2O.SCBX.INPUT'
 0080 // EXTENT SYS001,,,,nnnnn,nnnnn
 0090 // EXEC IDCAMS,SIZE=AUTO
 0100    REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
 0110         OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
 0120 &INPUT
 0130 /*
 0140 // ASSGN SYSIPT,SYSRDR
 0150 // ASSGN SYS001,DISK,SHR
 0160 // ASSGN SYS000,SYSRDR
 0170 // ASSGN SYS009,SYSLST
 0180 // DLBL CMWKF01,'N2O.SCBX.INPUT'
 0190 // EXTENT SYS001,,,,nnnnn,nnnnn
 0200 // EXEC NATBATCH
 0210 BWORKD=(1,1,80,FB)
 0220 /*
 0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
 0240 /*
 0250 LOGON N2OLIB
 0260 N2OSCBX
 0270 FIN
 0280 /*
 0290 /&
 0300 * $$ EOJ
 ***** End of list *****
```

N2OSCAN Standard report

Program   MVSSCB01 Library N2OBATCH
```
0010 //N2OSCB01 JOB (ACCOUNTING),'N2OSCAN B01',CLASS=A,NOTIFY=&USERID
0020 //**********
0030 //*  THIS IS SAMPLE N2OSCAN OUTPUT STANDARD REPORT
0040 //*  THIS JOB SHOULD BE RENAMED TO N2OSCB01
0050 //**********
0060 //* N2OSCB01 RUNS WHERE N2O IS INSTALLED
0070 //*
0080 //N2OSCB01 EXEC PGM=NATBATCH
0090 //CMPRINT  DD  SYSOUT=*
0100 //CMPRT01  DD  SYSOUT=*
0110 //CMPRT02  DD  SYSOUT=*
0120 //CMSYNIN  DD  *
0130 LOGON N2OLIB
0140 N2OSCB01
0150 FIN
0160 /*
0170 //CMWKF01  DD  *
0180 &INPUT
0190 /*
0200 //*
***** End of list *****
```

Program   VMSCB01 Library N2OBATCH
```
0010 /* Execute N2OSCB01 */
0020 address 'COMMAND'
0030 'ERASE N2OSCB01 CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OSCB01 CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OSCB01 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OSCB01 CMSYNIN A 2 F 80 (STRING N2OSCB01'
0080 'EXECIO 1 DISKW N2OSCB01 CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
0100 'FILEDEF CMWKF01 DISK N2OSCB01 CMWKF01 A'
0110 'FILEDEF CMSYNIN DISK N2OSCB01 CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'FILEDEF CMPRT02 PRINTER'
0150 'EXEC NAT BATCH'
0160 exit
***** End of list *****
```

Program   VSESCB01 Library N2OBATCH
```
0010 * N2OSCB01 - N2OSCAN OUTPUT STD REPORT
0020 * $$ JOB JNM=N2OSCB01,CLASS=A,USER=&USERID
0030 * $$ LST CLASS=A,LST=SYSLST
0040 // JOB N2OSCB01
0050 /*
0060 * N2OSCB01 -
0070 // DLBL CMWKF01,'N2O.SCB01.INPUT'
0080 // EXTENT SYS001,,,,nnnnn,nnnnn
0090 // EXEC IDCAMS,SIZE=AUTO
0100    REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0110         OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0120 &INPUT
0130 /*
0140 // ASSGN SYSIPT,SYSRDR
0150 // ASSGN SYS001,DISK,SHR
0160 // ASSGN SYS000,SYSRDR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF01,'N2O.SCB01.INPUT'
0190 // EXTENT SYS001,,,,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON N2OLIB
0260 N2OSCB01
0270 FIN
0280 /*
0290 /&
0300 * $$ EOJ
***** End of list *****
```

N2OSCAN String found report

Program   MVSSCB02 Library N2OBATCH
```
0010 //N2OSCB02 JOB (ACCOUNTING),'N2OSCAN B02',CLASS=A,NOTIFY=&USERID
0020 //**********
0030 //*  THIS IS SAMPLE N2OSCAN STRING FOUND REPORT
0040 //*  THIS JOB SHOULD BE RENAMED TO N2OSCB02
0050 //**********
0060 //* N2OSCB02 RUNS WHERE N2O IS INSTALLED
0070 //*
0080 //N2OSCB02 EXEC PGM=NATBATCH
0090 //SYSOUT   DD  SYSOUT=*
0100 //CMPRINT  DD  SYSOUT=*
0110 //CMPRT01  DD  SYSOUT=*
0120 //CMPRT02  DD  SYSOUT=*
0130 //CMSYNIN  DD  *
0140 LOGON N2OLIB
0150 N2OSCB02
0160 FIN
0170 /*
0180 //CMWKF01  DD  *
0190 &INPUT
0200 /*
0210 //*
***** End of list *****
```

Program   VMSCB02 Library N2OBATCH
```
0010 /* Execute N2OSCB02 */
0020 address 'COMMAND'
0030 'ERASE N2OSCB02 CMSYNIN A'
0040 'ERASE N2O CMWKF01 A'
0050 'EXECIO 1 DISKW N2OSCB02 CMWKF01 A 1 F 80 (STRING &INPUT'
0060 'EXECIO 1 DISKW N2OSCB02 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OSCB02 CMSYNIN A 2 F 80 (STRING N2OSCB02'
0080 'EXECIO 1 DISKW N2OSCB02 CMSYNIN A 3 F 80 (STRING FIN'
0090 'FILEDEF * CLEAR'
```

```
0100 'FILEDEF CMWKF01 DISK N2OSCB02 CMWKF01 A'
0110 'FILEDEF CMSYNIN DISK N2OSCB02 CMSYNIN A'
0120 'FILEDEF CMPRINT PRINTER'
0130 'FILEDEF CMPRT01 PRINTER'
0140 'FILEDEF CMPRT02 PRINTER'
0150 'EXEC NAT BATCH'
0160 exit
***** End of list *****
```

Program   VSESCB02 Library N2OBATCH
```
0010 * N2OSCB02 - N2OSCAN STRING FOUND REPORT
0020 * $$ JOB JNM=N2OSCB02,CLASS=A,USER=&USERID
0030 * $$ LST CLASS=A,LST=SYSLST
0040 // JOB N2OSCB02
0050 /*
0060 * N2OSCB02 -
0070 // DLBL CMWKF01,'N2O.SCB02.INPUT'
0080 // EXTENT SYS001,,,,nnnnn,nnnnn
0090 // EXEC IDCAMS,SIZE=AUTO
0100    REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0110         OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0120 &INPUT
0130 /*
0140 // ASSGN SYSIPT,SYSRDR
0150 // ASSGN SYS001,DISK,SHR
0160 // ASSGN SYS000,SYSRDR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF01,'N2O.SCB02.INPUT'
0190 // EXTENT SYS001,,,,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON N2OLIB
0260 N2OSCB02
0270 FIN
0280 /*
0290 /&
0300 * $$ EOJ
***** End of list *****
```

Batch Update of Environment FUSER/FDIC Information

Program   MVSUML   Library N2OBATCH
```
0010 //N2OBATCH JOB 'UPDATE ENVIRONMENT',MSGLEVEL=1,
0020 //     CLASS=C,MSGCLASS=X,REGION=4M,NOTIFY=&USERID
0030 //*
0040 //* UPDATE THE FUSER/FDIC INFORMATION FOR AN EXISTING ENVIRONMENT
0050 //*         THIS MEMBER SHOULD BE RENAMED NATUML
0060 //*  THIS STEP RUNS WHERE N2O IS INSTALLED
0070 //*
0080 //STEP1    EXEC PGM=NATBATCH,
0090 //  TIME=1400,COND=(9,LT)
0100 /*
0110 //CMPRINT  DD  SYSOUT=*
0120 //CMPRT01  DD  SYSOUT=*
0130 //CMSYNIN  DD  *
0140 LOGON N2OLIB
0150 N2O5210P
0160 FIN
0170 /*
0180 //CMWKF01  DD  *
0190 &INPUT
0200 /*
0210 //*
***** End of list *****
```

Program   BSUML   Library N2OBATCH
```
0010 /REMARK *** RENAME NATUML ***
0020 /.N2O LOGON
0030 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0040 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0050 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0060 /REMARK *** EXECUTE N2OUML ***
0070 /FILE CAPT1.INPUT,LINK=W01
0080 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0090 /MODIFY-JOB-SWITCHES ON=(4,5)
0100 /START-PROGRAM FROM-FILE=$EDT
0110 LS=132,PS=60,MENU=OFF
0120 @WRITE 'N2O.CAPTURE.IPT.BATCH' OVERWRITE
0130 @HALT
0140 /MODIFY-JOB-SWITCHES OFF=(4,5)
0150 /ASSIGN-SYSIPT TO-FILE=N2O.CAPTURE.IPT.BATCH
0160 /MODIFY-JOB-SWITCHES ON=(2)
0170 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0180 LOGON N2OLIB
0190 N2OUML
0200 FIN
0210 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0220 /DELETE-FILE FILE-NAME=N2O.CAPTURE.IPT.BATCH,
0230 /OPTION=DESTROY-ALL
0240 /LOGOFF NOSPOOL
***** End of list *****
```

Program   VMUML   Library N2OBATCH
```
0010 /* EXECUTE N2OUML RENAME THIS TO NATUML  */
0020 address 'COMMAND'
0030 'ERASE N2OUML1 CMSYNIN A'
0040 'ERASE CAPTURE DATA A'
0050 'ERASE N2OUML1 CMWKF01 A'
0060 'EXECIO 1 DISKW N2OUML1 CMSYNIN A 1 F 80 (STRING LOGON N2OLIB'
0070 'EXECIO 1 DISKW N2OUML1 CMSYNIN A 2 F 80 (STRING N2OUML1'
0080 'EXECIO 1 DISKW N2OUML1 CMSYNIN A 3 F 80 (STRING FIN'
0090 'EXECIO 1 DISKW N2OUML1 CMWKF01 A 1 F 80 (STRING &INPUT'
0100 'FILEDEF * CLEAR'
0110 'FILEDEF CMSYNIN DISK N2OUML1 CMSYNIN A'
0120 'FILEDEF CMWKF01 DISK N2OUML1 CMWKF01 A'
0130 'FILEDEF CMPRINT PRINTER'
0140 'EXEC NAT BATCH'
0150 'ERASE N2OUML1 CMSYNIN A'
0160 exit
***** End of list *****
```

Program   VSEUML   Library N2OBATCH
```
0010 * N2OUML - MODIFY ENVIRONMENT  RENAME NATUML
0020 * $$ JOB JNM=N2OUML1,CLASS=A,USER=&USERID
0030 * $$ LST CLASS=A,LST=SYSLST
0040 // JOB N2OUML1
0050 /*
0060 * N2OUML1 -
0070 // DLBL CMWKF01,'N2O.UML.INPUT'
0080 // EXTENT SYS001,,,,nnnnn,nnnnn
0090 // EXEC IDCAMS,SIZE=AUTO
0100    REPRO INFILE(SYSIPT ENV(RECFM(FB) RECSZ(80))) -
0110         OUTFILE(CMWKF01 ENV(RECFM(FB) RECSZ(80) BLKSZ(80)))
0120 &INPUT
0130 /*
0140 // ASSGN SYSIPT,SYSRDR
0150 // ASSGN SYS001,DISK,SHR
0160 // ASSGN SYS000,SYSRDR
0170 // ASSGN SYS009,SYSLST
0180 // DLBL CMWKF01,'N2O.UML.INPUT'
0190 // EXTENT SYS001,,,,nnnnn,nnnnn
0200 // EXEC NATBATCH
0210 BWORKD=(1,1,80,FB)
0220 /*
0230 ADARUN DB=xxx,SVC=yyy,DEVICE=zzzz
0240 /*
0250 LOGON SYSTEM
0260 N2OUML
0270 FIN
0280 /*
0290 /&
0300 * $$ EOJ
***** End of list *****
```

Archive Backup Reporting

Program   MVSWKRP   Library N2OBATCH
```
0010 //N2OREPT JOB (20100),'EXECUTE REPORT',CLASS=A,NOTIFY=&USERID
0020 //***
0030 //*  THIS IS SAMPLE JCL FOR THE N2O ARCHIVE BACKUP REPORT
0040 //***
0050 //*  N2OREPT RUNS WHERE N2O IS INSTALLED
0060 //***
0070 //N2OREPT  EXEC PGM=NATBATCH
0080 //CMPRINT  DD  SYSOUT=*
0090 //CMPRT01  DD  SYSOUT=*
0100 //CMSYNIN  DD  *
0110 LOGON N2OLIB
0120 N2OTOLC
0130 &INPUT
0140 FIN
0150 //CMWKF01  DD  DSN=&BACKUP,DISP=SHR
0160 /*
0170 //*
***** End of list *****
```

Program   BSWKRP   Library N2OBATCH
```
0010 /.N2O LOGON
0020 /CALL-PROCEDURE NAME=$TSOSAVE.DO.JV.T
0030 /ASSIGN-SYSOUT TO-FILE=N2O.OUT.LOAD.&(JV.ZEIT.T)
0040 /MODIFY-JOB-OPTIONS LOGGING=PARAMETERS(LISTING=YES)
0050 /REMARK *** EXECUTE N2OREPORT ***
0060 /FILE N2O.REPORT,LINK=P01
0070 /ASSIGN-SYSDTA TO-FILE=*SYSCMD
0080 /MODIFY-JOB-SWITCHES ON=(4,5)
0090 /START-PROGRAM FROM-FILE=$EDT
0100 LS=132,PS=60,MENU=OFF
0110 @WRITE 'N2O.REPT.IPT.BATCH' OVERWRITE
0120 @HALT
0130 /MODIFY-JOB-SWITCHES OFF=(4,5)
```

```
0140 /ASSIGN-SYSIPT TO-FILE=N2O.REPT.IPT.BATCH
0150 /MODIFY-JOB-SWITCHES ON=(2)
0160 /START-PROGRAM FROM-FRIL=$ADABAS.NATBATCH
0170 LOGON N2OLIB
0180 N2OTOLC
0190 &INPUT
0200 FIN
0210 /FILE &BACKUP,LINK=W01
0220 /ASSIGN-SYSIPT TO-FILE=*PRIMARY
0230 /DELETE-FILE FILE-NAME=N2O.REPT.IPT.BATCH,
0240 /OPTION=DESTROY-ALL
0250 /LOGOFF NOSPOOL
***** End of list *****
```

Program   VMWKRP   Library N2OBATCH
```
 0010 /* EXECUTE A REPORT WITH A WORKFILE */
 0020 ADDRESS 'COMMAND'
 0030 'ERASE N2OREPT CMSYNIN A'
 0040 'EXECIO 1 DISKW N2OREPT CMSYNIN A 1 F 80(STRING LOGON N2OLIB'
 0050 'EXECIO 1 DISKW N2OREPT CMSYNIN A 2 F 80(STRING N2OTOLC'
 0060 'EXECIO 1 DISKW N2OREPT CMSYNIN A 3 F 80(STRING &INPUT'
 0070 'EXECIO 1 DISKW N2OREPT CMSYNIN A 4 F 80(STRING FIN'
 0080 'FILEDEF * CLEAR'
 0090 'FILEDEF CMWKF01 DISK N2OREPT &BACKUP A'
 0100 'FILEDEF CMSYNIN DISK N2OREPT CMSYNIN A'
 0110 'FILEDEF CMPRINT PRINTER'
 0120 'FILEDEF CMPRT01 PRINTER'
 0130 'EXEC NAT BATCH'
 0140 'ERASE N2OREPT CMSYNIN A'
 0150 EXIT
***** End of list *****
```

Program   VSEWKRP   Library N2OBATCH
```
 0010 * $$ JOB JNM=N2OREPT,CLASS=A,USER=&USERID
 0020 * $$ LST CLASS=A,LST=SYSLST
 0030 // JOB N2OREPT
 0040 * N2OREPT - N2O REPORTING WITH INPUT WORK FILE
 0050 // ASSGN SYS001,DISK,SHR
 0060 // ASSGN SYS009,SYSLST
 0070 // DLBL CMWKF01,'&BACKUP'
 0080 // EXTENT SYS001,,,,NNNNN,NNNNN
 0090 // EXEC NATBATCH
 0100 /BWORKD=(1,1,80,FB)
 0110 /*
 0120 ADARUN DB=XXX,SVC=YYY,DEVICE=ZZZZ
 0130 /*
 0140 LOGON N2OLIB
 0150 N2OTOLC
 0160 &INPUT
 0170 FIN
 0180 /*
 0190 /&
 0200 * $$ EOJ
***** End of list *****
```

3GL compile

Program   MVS3GLAC Library N2OBATCH
```
0010 //COMPILE JOB (ACCOUNTING),'COMPILE MEMBERS',CLASS=A,NOTIFY=&USERID
0020 //*
0030 &INCLUDE COMPILE
0040 //*
***** End of list *****
```

3GL batch submit

Program   N2O3GL   Library N2OBATCH
```
0010 //N2O3GL JOB (ACCT),'SUBMIT 3GL',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //N2O3GL1  EXEC PGM=NATBATCH
0040 //CMWKF01  DD  *
0050 &INPUT
0060 /*
0070 //CMWKF02  DD  DSN=&&TEMP,DISP=(NEW,PASS,DELETE),
0080 //             DCB=(RECFM=FB,LRECL=80,BLKSIZE=80),
0090 //             UNIT=SYSDA,SPACE=(TRK,(12,12))
0100 //CMPRINT  DD  SYSOUT=*
0110 //CMSYNIN  DD  *
0120 LOGON N2OLIB
0130 N2OSELT
0140 FIN
0150 /*
0160 //*
0170 //N2O3GL2  EXEC PGM=IEBGENER,COND=(4,LT)
0180 //SYSUT1   DD  DSN=&&TEMP,
0190 //             DISP=(OLD,DELETE)
0200 //SYSUT2   DD  SYSOUT=(A,INTRDR)
0210 //SYSPRINT DD  SYSOUT=*
0220 //SYSIN    DD  DUMMY
0230 /*
0240 //*
***** End of list *****
```

D.2 – <u>3GL PDS JCL</u>

PDS archive

```
Program      PDSARCH  Library N2OBATCH
0010 //* &INCLUDE PRTPCH will be automatically replaced with the IEBPTPCH
0020 //* commands necessary to punch the members to a workfile.
0030 //*
0040 //&STEP1      EXEC PGM=IEBPTPCH
0050 //*
0060 //SYSPRINT DD  SYSOUT=A
0070 //SYSUT1   DD  DSNAME=&PDS,DISP=(SHR,KEEP),UNIT=SYSDA
0080 //SYSUT2   DD  DSNAME=&&TEMP,DISP=(NEW,PASS,DELETE),
0090 //             UNIT=SYSDA,VOL=SER=XXXXXX,SPACE=(TRK,(12,12))
0100 //SYSIN    DD  *
0110 &INCLUDE PRTPCH
0120 /*
0130 //*
0140 //&STEP2   EXEC PGM=NATBATCH
0150 //CMWKF01  DD  *
0160 &EVENT
0170 /*
0180 //CMWKF02  DD  DSN=&&TEMP,DISP=(OLD,DELETE,DELETE)
0190 //CMPRINT  DD  SYSOUT=*
0200 //*
0210 //CMSYNIN  DD  *
0220 LOGON N2OLIB
0230 N2OARCP
0240 FIN
0250 /*
0260 //*
***** End of list *****
```

PDS Catalog Capture

Program   PDSCAPT   Library N2OBATCH
```
0010 //PDSCAPT  JOB (ACCOUNTING),'CATALOG CAPTURE',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //PDSLIST  EXEC PGM=IEHLIST
0040 //*
0050 //*********************************
0060 //*   CUSTOMIZATION NOTES
0070 //*********************************
0080 //*  THE CORRECT "VOLSER" MUST BE IDENTIFIED.
0090 //*    DCB INFORMATION LISTED IS MANDATORY.
0100 //*     THE LISTPDS STATEMENTS CANNOT BEGIN IN COLUMN ONE
0110 //*      UP TO TEN LISTPDS STATEMENTS MAY BE ISSUED.
0120 //*********************************
0130 //DD1      DD UNIT=SYSDA,DISP=OLD,VOL=SER=volser
0140 //SYSPRINT DD UNIT=SYSDA,DSN=N2O.PDS.CAPTURE.DATA,
0150 //            DCB=(RECFM=FBA,LRECL=121,BLKSIZE=1210),
0160 //            DISP=(,CATLG,DELETE),SPACE=(CYL,(1,1),RLSE)
0170 //SYSIN    DD  *
0180      LISTPDS DSNAME=pdsname1,VOL=SYSDA=volser
0190      LISTPDS DSNAME=pdsname2,VOL=SYSDA=volser
0200      LISTPDS DSNAME=pdsname3,VOL=SYSDA=volser
0210      ...
0220 /*
0230 //*
0240 //CAPTURE  EXEC PGM=NATBATCH
0250 //CMWKF01  DD  *
0260 &INPUT
0270 /*
0280 //CMWKF02  DD  DSN=N2O.PDS.CAPTURE.DATA,DISP=(OLD,DELETE,KEEP)
0290 //CMPRINT  DD  SYSOUT=*
0300 //CMSYNIN  DD  *
0310 LOGON N2OLIB
0320 N2OCAPT3
0330 FIN
0340 /*
0350 //*
***** End of list *****
```

PDS Compile

Program   PDSCMPL   Library N2OBATCH
```
0010 //PDSCMPL JOB (ACCOUNTING),'PDS COMPILE',CLASS=A,NOTIFY=&USERID
0020 //*
0030 &INCLUDE COMPILE
0040 //*
***** End of list *****
```

PDS Move

```
Program     PDSDMOVE Library N2OBATCH
0010 //* Steps below required only for 3GL MOVE events.
0020 //*
0030 //* &INCLUDE DELETE will be replaced automatically by N2O with
0040 //*      IDCAMS cards to delete each member that were migrated
0050 //*      if MOVE is specified for the Migration Profile.
0060 //*
0070 //PDSDEL   EXEC PGM=IDCAMS,COND=(8,LT)
0080 //SYSPRINT DD  DSN=N2O.DELOUT,
0090 //              DCB=(RECFM=VB,LRECL=125,BLKSIZE=129),
0100 //              DISP=(NEW,PASS,DELETE)
0110 //SYSIN    DD *
0120 &INCLUDE DELETE
0130 /*
0140 //**
0150 //PDSACKN2 EXEC NATBATCH
0160 //CMWKF01  DD  DSN=N2O.DELOUT,DISP=OLD
0170 //CMWKF02  DD  *
0180 &EVENT
0190 /*
0200 //CMPRINT  DD  SYSOUT=*
0210 //CMSYNIN  DD  *
0220 LOGON N2OLIB
0230 N2OACKND
0240 FIN
0250 /*
0260 //**
***** End of list *****
```

PDS Migration

```
Program     PDSMIGR  Library N2OBATCH
0010 //PDSMIGR  JOB (ACCOUNTING),'PDS MIGRATION',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //* The Archive JCL exists in program PDSARCH in library N2OBATCH.
0040 //* Archiving will be performed if specified on the TO-ENV Definition
0050 //*
0060 &INCLUDE ARCHIVE
0070 //*
0080 //* &INCLUDE PDS will automatically be replaced with the names of
0090 //* the FROM and TO PDS identified on the Environment Definitions.
0100 //* This information will be formulated into the INDD and OUTDD cards.
0110 //*
0120 //PDSCOPY  EXEC PGM=IEBCOPY
0130 //SYSPRINT DD  DSN=N2O.COPYOUT,
0140 //              DISP=(NEW,PASS,DELETE),LRECL=120,SPACE=(TRK,(1))
0150 //*
0160 &INCLUDE PDS
0170 /*
0180 //SYSUT3   DD  UNIT=SYSDA,SPACE=(TRK,(1))
0190 //SYSUT4   DD  UNIT=SYSDA,SPACE=(TRK,(1))
0200 //*
0210 //* &INCLUDE COPY will be replaced automatically by N2O with the
0220 //* COPY and SELECT control statements necessary to migrate the
0230 //* selected members.
0240 //*
0250 //SYSIN    DD  *
0260 &INCLUDE COPY
0270 /*
0280 //*
0290 //PDSACKN  EXEC PGM=NATBATCH
0300 //CMWKF01  DD  DSN=N2O.COPYOUT,DISP=OLD
0310 //CMWKF02  DD  *
0320 &EVENT
0330 /*
0340 //CMPRINT  DD  SYSOUT=*
0350 //CMSYNIN  DD  *
```

```
0360 LOGON N2OLIB
0370 N2OACKNP
0380 FIN
0390 /*
0400 //*
0410 //* &INCLUDE COMPILE will be replaced automatically by N2O
0420 //*     with compile JCL for each member migrated
0430 //*     if Autocompile is specified for the Migration Profile.
0440 //*
0450 &INCLUDE COMPILE
***** End of list *****
```

PDS archive recovery

Program   PDSRJOB   Library N2OBATCH
```
0010 //PDSRMIGR JOB (ACCOUNTING),'PDS RECOVERY',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //*  &INCLUDE RECOVERY will be replaced by the JCL step (PDSRMIGR)
0040 //*       for each member to be recovered.
0050 //*
0060 &INCLUDE RECOVERY
0070 //*
0080 //*  &INCLUDE COMPILE will be replaced automatically by N2O with
0090 //*        compile JCL for each member migrated if Autocompile is
0100 //*        for the Migration Profile.
0110 //*
0120 &INCLUDE COMPILE
0130 //*
***** End of list *****
```

PDS Archive recovery

Program   PDSRMIGR Library N2OBATCH
```
0010 //&STEPNUM EXEC PGM=NATBATCH
0020 //CMWKF01  DD  *
0030 &MEMBER
0040 &EVENT
0050 /*
0060 //*
0070 //CMPRINT  DD  SYSOUT=*
0080 //CMWKF02  DD  DSN=&PDS,DISP=SHR
0090 /*
0100 //SYSIN    DD  *
0110 //CMSYNIN  DD  *
0120 LOGON N2OLIB
0130 N2ORECP
0140 FIN
0150 /*
***** End of list *****
```

3GL member submit to PREDICT pre-processor

```
Program       PREPROCS Library N2OBATCH
0010 //*  JCL to submit 3GL members to the PREDICT Pre-processor.
0020 //*  The pre-processor will store XREF information for
0030 //*  a 3GL member in PREDICT.
0040 //*
0050 //*  &STEPNUM will be replaced automatically by N2O with the next
0060 //*  available step name.
0070 //*
0080 //*  &SLIB will be replaced automatically by N2O with the target
0090 //*  PDS name of the Event.
0100 //*
0110 //*  &MEMBER will be replaced automatically by N2O with the name of
0120 //*  the migrated member.
0130 //*
0140 //&STEPNUM EXEC PGM=NATBATCH
0150 //*
0160 //* The COBOL source code is input to the pre-processor
0170 //*
0180 //CMWKF01  DD DSN=&SLIB(&MEMBER),DISP=SHR
0190 //*
0200 //* The output of the pre-processor can be passed to the compiler,
0210 //* but the SYSIN statement of compile JCL must have the DSN below.
0220 //*
0230 //CMWKF02  DD DSN=&&TEMPPDS(&MEMBER),DISP=(NEW,PASS),
0240               UNIT=SYSDA,DCB=(RECFM=FB,LRECL=80,BLKSIZE=800)
0250 //*
0260 //* Temporary work file for the pre-processor.
0270 //*
0280 //CMWKF03  DD DSN=&&WORK,DISP=(NEW,DELETE),
0290               UNIT=SYSDA,DCB=(RECFM=FB,LRECL=91,BLKSIZE=9100)
0300 //CMPRINT  DD SYSOUT=*,DCB=BLKSIZE=1330
0310 //CMPRT01  DD SYSOUT=*,DCB=BLKSIZE=1330   /* Success of run
0320 //CMPRT02  DD SYSOUT=*,DCB=BLKSIZE=1330   /* List of Pre-proc cmds
0330 //CMPRT03  DD SYSOUT=*,DCB=BLKSIZE=1330   /* List of errors
0340 //CMSYSIN    DD *
0350 LOGON SYSDIC
0360 MENU
0370 PREPROCESS,COBOL,&MEMBER
0380 FIN
0390 /*
0400 //*
***** End of list *****
```

D.3 – <u>Panvalet JCL</u>

Panvalet Catalog Capture

```
Program     PANVCAPT Library N2OBATCH
0010 //PANVCAPT JOB (ACCOUNTING),'CATALOG CAPTURE',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //PANPRT   EXEC PGM=PAN#2
0040 //*
0050 //PANDD1   DD  DSN=&PANDD1,DISP=SHR
0060 //SYSPUNCH DD  DSN=N2O.CAPTURE.DATA,LRECL=121,
0070 //             DISP=(,CATLG,DELETE),
0080 //             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
0090 //SYSPRINT DD  SYSOUT=*
0100 //SYSIN    DD  *
0110 ++PRINT 0-UP
0120 /*
0130 //*
0140 //CAPTURE  EXEC PGM=NATBATCH
0150 //*
0160 //CMWKF01  DD  *
0170 &INPUT
0180 /*
0190 //CMWKF02  DD  DSN=N2O.CAPTURE.DATA,DISP=SHR
0200 //CMPRINT  DD  SYSOUT=*
0210 //CMSYNIN  DD  *
0220 LOGON N2OLIB
0230 N2OCAPT3
0240 FIN
0250 /*
0260 //*
***** End of list *****
```

Panvalet Compile

```
Program     PANVCMPL Library N2OBATCH
0010 //PANVCMPL JOB (ACCOUNTING),'PANVALET COMPILE',CLASS=A,NOTIFY=&USERID
0020 //*
0030 &INCLUDE COMPILE
0040 //*
***** End of list *****
```

Panvalet Migration

Panvalet Migration Program   PANVMIGR Library N2OBATCH

```
0010 //PANVMIGR JOB (ACCOUNTING),'PANVALET MIGRATION',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //*   &PANDD1 and &PANDD2 will be replaced automatically by N2O when
0040 //*      the batch migration is submitted to an internal reader.
0050 //*
0060 //PANTRAN  EXEC PGM=PAN#2,PARM='OPEN=INP'
0070 //*
0080 //PANDD1   DD DSN=&PANDD1,DISP=SHR
0090 //PANDD2   DD DSN=&PANDD2,DISP=SHR
0100 //SYSPRINT DD DSN=N2O.PANV.MIGR,
0110 //            DISP=(NEW,PASS,CATLG)
0120 //SYSIN    DD *
0130 &INCLUDE TRANSFER
0140 /*
0150 //*
0160 //PANACKN  EXEC PGM=NATBATCH
0170 //*
0180 //CMWKF01  DD DSN=N2O.PANV.MIGR,DISP=(OLD,DELETE,CATLG)
0190 //CMWKF02  DD *
0200 &EVENT
0210 /*
0220 //CMSYNIN  DD *
0230 LOGON N2OLIB
0240 N2OACKNP
0250 FIN
0260 /*
0270 //*
0280 //*  &INCLUDE COMPILE will be replaced automatically by N2O with
0290 //*      the JCL to compile each migrated member if Autocompile
0300 //*      is specified for the Migration Profile.
0310 //*
0320 &INCLUDE COMPILE
0330 //*
0340 //PANMOVE  EXEC PGM=PAN#2,PARM='OPEN=INP'
0350 //PANDD1   DD DSN=&PANDD1,DISP=SHR
0360 //PANDD2   DD DUMMY
0370 //SYSPRINT DD SYSOUT=N2O.PANV.MOVELIST,
0380 //            DISP=(NEW,PASS,CATLG)
0390 //SYSIN    DD *
0400 &INCLUDE DELETE
0410 /*
0420 //*
0430 //PANACKN2 EXEC PGM=NATBATCH
0440 //*
0450 //CMWKF01  DD DSN=N2O.PANV.MOVELIST,DISP=(OLD,DELETE,CATLG)
0460 //CMWKF02  DD *
0470 &EVENT
0480 /*
0490 //CMSYNIN  DD *
0500 LOGON N2OLIB
0510 N2ODAKNP
0520 FIN
0530 /*
***** End of list *****
```

D.4 - <u>Endevor JCL</u>

Endevor Catalog capture

```
Program     ENDVCAPT Library N2OBATCH
0010 //ENDVCAPT JOB (ACCOUNTING),'CATALOG CAPTURE',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //CAPTURE1 EXEC   PGM=NDVRC1,PARM='C1BR1000',REGION4096K
0040 //CONLIB   DD  DSN=PREND.PERM.CONLIB,DISP=SHR
0050 //SYSOUT   DD  DSN=N2O.CAPTURE.DATA,DISP=SHR
0060 //BSTINP   DD  *
0070     REPORT  03 .
0080     ENVIRONMENT PROD .
0090     SYSTEM      * .
0100     SUBSYSTEM   * .
0110     TYPE        * .
0120     STAGE       P .
0130     DAYS        7 .
0140 //BSTPDS   DD  DUMMY
0150 //SMFDATA  DD  DUMMY
0160 //UNLINPT  DD  DUMMY
0170 //BSTPCH   DD  DSN=&TEMP,DISP=(NEW,DELETE,DELETE),
0180 //             UNIT=SYSDA,SPACE=(CYL,(1,2)),
0190 //             DCB=(RECFM=FB,LRECL=416,BLKSIZE=4160)
0200 //BSTLST   DD  SYSOUT=*
0210 //SORTIN   DD  UNIT=SYSDA,SPACE=(CYL(5,5))
0220 //SORTOUT  DD  UNIT=SYSDA,SPACE=(CYL(5,5))
0230 //SORTWK01 DD  UNIT=SYSDA,SPACE=(CYL(5,5))
0240 //SORTWK02 DD  UNIT=SYSDA,SPACE=(CYL(5,5))
0250 //SORTWK03 DD  UNIT=SYSDA,SPACE=(CYL(5,5))
0260 //C1MSGS1  DD  SYSOUT=*
0270 //SYSOUT   DD  SYSOUT=*
0280 //SYSPRINT DD  SYSOUT=*
0290 /*
0300 //CAPTURE2 EXEC PGM=NATBATCH
0310 //*
0320 //CMWKF01  DD  *
0330 &INPUT
0340 /*
0350 //CMWKF02  DD  DSN=N2O.CAPTURE.DATA,DISP=SHR
0360 //*
0370 //CMPRINT  DD  SYSOUT=*
0380 //CMSYSIN  DD  *
0390 LOGON SYSTEM
0400 N2OCAPT3
0410 FIN
0420 /*
0430 //*
***** End of list *****
```

Endevor migration

Program   ENDVMIGR Library N2OBATCH
```
0010 //ENDVMIGR JOB (ACCOUNTING),'ENDEVOR MIGRATION',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //ENDV001  EXEC PGM=NDVRC1,DYNAMNBR=1500,PARM='C1BM3000',REGION=4096K
0040 //CONLIB   DD DSN=IPRFX.IQUAL.CONLIB,DISP=SHR
0050 //SYSPRINT DD DSN=N2O.ENDVOUT,DISP=SHR
0060 //*
0070 //*  &INCLUDE COPY will be replaced automatically by N2O with the
0080 //*  ADD, MOVE, OR RETRIEVE statements necessary to migrate the
0090 //*  selected members.
0100 //*
0110 //BSTIPT01 DD    *
0120 &INCLUDE COPY
0130 /*
0140 //C1MSGS1  DD SYSOUT=*
0150 //C1PRINT  DD SYSOUT=*
0160 //SYSOUT   DD SYSOUT=*
0170 //*
0180 //* &INCLUDE COMPILE will be replaced automatically by N2O with the
0190 //* compile JCL for each member migrated if Autocompile is set to YES.
0200 //*
0210 &INCLUDE COMPILE
0220 //*
0230 //*  &EVENT will be replaced automatically by N2O with the Event that
0240 //*  is being migrated when the batch migration is submitted to an
0250 //*  internal reader.
0260 //*
0270 //ENDVACKN  EXEC PGM=NATBATCH
0280 //CMWKF01  DD   DSN=N2O.ENDVOUT,DISP=OLD
0290 //CMWKF02  DD   *
0300 &EVENT
0310 /*
0320 //CMPRINT  DD   SYSOUT=*
0330 //CMSYNIN  DD   *
0340 LOGON N2OLIB
0350 N2OACKNE
0360 FIN
0370 /*
***** End of list *****
```

D.5 - <u>Librarian JCL</u>

Librarian catalog capture

```
Program       LIBRCAPT Library N2OBATCH
0010 //LIBRCAPT JOB (LIST),'CATALOG CAPTURE',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //LIBPRT   EXEC PGM=LIBRPROG
0040 //*
0050 //*  &MASTER1 will be replaced automatically by N2O with
0060 //*  the Librarian Master file name to be captured.
0070 //*
0080 //OSJOB    DD DSN=&&TEMP,UNIT=SYSDA,
0090 //            SPACE=(TRK,(3,1)),DISP=NEW
0100 //MASTER   DD DSN=&MASTER1,DISP=SHR
0110 //INDEX    DD DSN=N2O.CAPTURE.DATA,LRECL=121,
0120 //            DISP=(,CATLG,DELETE),
0130 //            UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
0140 //SYSPRINT DD SYSOUT=*
0150 //SYSIN    DD *
0160 -OPT INDEX
0170 -END
0180 /*
0190 //*
0200 //CAPTURE EXEC PGM=NATBATCH
0210 //*
0220 //CMWKF01  DD  *
0230 &INPUT
0240 /*
0250 //CMWKF02  DD  DSN=N2O.CAPTURE.DATA,DISP=SHR
0260 //CMPRINT  DD  SYSOUT=*
0270 //CMSYNIN  DD  *
0280 LOGON N2OLIB
0290 N2OCAPT3
0300 FIN
0310 /*
0320 //*
***** End of list *****
```

Librarian Compile

```
Program       LIBRCMPL Library N2OBATCH
0010 //LIBRCMPL JOB (ACCOUNTING),'LIBRARIAN COMPILE',CLASS=A,NOTIFY=&USERID
0020 //*
0030 &INCLUDE COMPILE
0040 //*
***** End of list *****
```

Librarian migration

Program   LIBRMIGR Library N2OBATCH

```
0010 //LIBRMIGR JOB (ACCOUNTING),'LIBRARIAN MIGRATION',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //*  &MASTER1 will be replaced automatically by N2O with the
0040 //*  LIBRARIAN Master File representing the source of the migration,
0050 //*  when the batch migration is submitted to an Internal Reader.
0060 //*
0070 //*  &MASTER2 will be replaced automatically by N2O with the
0080 //*  LIBRARIAN Master File representing the target of the migration,
0090 //*  when the batch migration is submitted to an Internal Reader.
0100 //*
0110 //*  &INCLUDE COPY will be replaced automatically by N2O with
0120 //*  the LIBRARIAN commands necessary to perform the migration.
0130 //*
0140 //LIBCOPY1 EXEC PGM=LIBRCOPY,PARM='NOSEQ,NOHIST'
0150 //*
0160 //OSJOB    DD  DSN=&&TEMP,DISP=(NEW,PASS),
0170 //              UNIT=DISK,SPACE=(CYL,(5,1)),
0180 //              DCB=(RECFM=FB,LRECL=80,BLKSIZE=80)
0190 //MASTER   DD  DSN=&MASTER1,DISP=SHR
0200 //DESTMAST DD  DSN=&MASTER2,DISP=SHR
0210 //SYSPRINT DD  DSN=N2O.LIBR.COPY,SPACE=(CYL,(2,1)),
0220 //              DISP=(NEW,PASS,CATLG),
0230 //              DCB=(RECFM=FB,LRECL=121,BLKSIZE=1210)
0240 //SYSIN    DD  *
0250 &INCLUDE COPY
0260 /*
0270 //*
0280 //LIBCOPY2 EXEC PGM=LIBRPROG,PARM='NRJS,NJTS'
0290 //*
0300 //OSJOB    DD  DUMMY
0310 //LIST     DD  SYSOUT=*
0320 //INDEX    DD  SYSOUT=*
0330 //MASTER   DD  DSN=&MASTER2,DISP=SHR
0340 //SYSPRINT DD  DSN=N2O.LIBR.PROGLIST,
0350 //              SPACE=(CYL,(2,1)),
0360 //              DISP=(NEW,PASS,CATLG),
0370 //              DCB=(RECFM=FB,LRECL=121,BLKSIZE=1210)
0380 //SYSIN    DD  &&TEMP,DISP=(OLD,DELETE)
0390 //*
0400 //*   &EVENT will be replaced automatically by N2O with the Event
0410 //*   that is being migrated when the batch migration is submitted.
0420 //*
0430 //LIBACKN1 EXEC PGM=NATBATCH
0440 //*
0450 //CMWKF01  DD  DSN=N2O.LIBR.COPY,
0460 //              DISP=(OLD,DELETE,CATLG)
0470 //CMWKF02  DD  *
0480 &EVENT
0490 /*
0500 //CMWKF03  DD  DSN=N2O.LIBR.PROGLIST,
0510 //              DISP=(OLD,DELETE,CATLG)
0520 //CMPRINT  DD  SYSOUT=*
0530 //CMSYNIN  DD  *
0540 LOGON N2OLIB
0550 N2OACKNL
0560 FIN
0570 /*
0580 //*   &INCLUDE COMPILE will be replaced automatically by N2O with
0590 //*   the JCL to compile each migrated member if Autocompile
0600 //*   is specified on the Migration Profile.
0610 //*
0620 &INCLUDE COMPILE
0630 //*
0640 //*  The following steps are for Librarian MOVEs only.
0650 //*
0660 //LIBMOVE  EXEC PGM=LIBRPROG,COND=(4,LT)
0670 //*
```

```
0680 //MASTER   DD  DSN=&MASTER1,DISP=SHR
0690 //SYSAF01  DD  UNIT=SYSDA,SPACE=(TRK,(30,30),RLSE)
0700 //SYSAF02  DD  UNIT=SYSDA,SPACE=(TRK,(30,30),RLSE)
0710 //OSJOB    DD  DUMMY
0720 //LIST     DD  SYSOUT=*
0730 //SYSPRINT DD  DSN=N2O.LIBR.MOVELIST,SPACE=(CYL,(2,1)),
0740 //             DISP=(NEW,PASS,CATLG)
0750 //SYSIN    DD  *
0760 &INCLUDE DELETE
0770 //*
0780 //LIBACKN2 EXEC PGM=NATBATCH
0790 //*
0800 //CMWKF01  DD  DSN=N2O.LIBR.MOVELIST,DISP=(OLD,DELETE,CATLG)
0810 //CMWKF02  DD  *
0820 &EVENT
0830 /*
0840 //CMPRINT  DD  SYSOUT=*
0850 //CMSYNIN  DD  *
0860 LOGON N2OLIB
0870 N2OACKNL
0880 FIN
0890 /*
***** End of list *****
```

D.6 - <u>DB2 related JCL</u>

Program   DB2ASM   Library N2OBATCH
```
0010 //*   &ASMNUM will generate the next available step name for the
0020 //*   Assemble step (e.g. ASM1, ASM2).
0030 //*
0040 //&ASMNUM  EXEC PGM=IEV90,REGION=1M,PARM='NODECK,OBJECT'
0050 //*
0060 //SYSLIB   DD   DISP=SHR,DSN=NDB21X.SRCE
0070 //         DD   DISP=SHR,DSN=NAT21X.SRCE
0080 //         DD   DISP=SHR,DSN=DSNXXX.DSNMACS
0090 //         DD   DISP=SHR,DSN=SYS1.MACLIB
0100 //SYSIN    DD   DSN=&&DSNHOUT,
0110 //              DISP=(OLD,DELETE)
0120 //SYSLIN   DD   DSN=&&LOADSET,
0130 //              DISP=(NEW,PASS),UNIT=SYSDA,SPACE=(800,(500,500))
0140 //              DCB=(RECFM=FBS,LRECL=80,BLKSIZE=800,BUFNO=1)
0150 //SYSTERM  DD   SYSOUT=*
0160 //SYSPRINT DD   SYSOUT=*
0170 //SYSUDUMP DD   SYSOUT=*
0180 //SYSUT1   DD   SPACE=(TRK,(50,5)),UNIT=SYSDA,DISP=(,DELETE)
0190 //SYSUT2   DD   SPACE=(TRK,(36,5)),UNIT=SYSDA,DISP=(,DELETE)
0200 //SYSUT3   DD   SPACE=(TRK,(36,5)),UNIT=SYSDA,DISP=(,DELETE)
0210 /*
***** End of list *****
```

Program   DB2BIND   Library N2OBATCH
```
0010 //N2OBIND JOB (ACCT),'SUBMIT BIND',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //JOBLIB  DD DSN=NATURAL.NAT21x.LOADLIB,
0040 //             DISP=(SHR,KEEP,KEEP)
0050 //        DD DSN=ADABAS.ADA52x.LOADLIB,
0060 //             DISP=(SHR,KEEP,KEEP)
0070 //*
0080 //N2OBIND1 EXEC PGM=NATBATCH
0090 //*
0100 //DDCARD   DD *
0110 ADARUN DBID=xxx,SVC=yyy,DEVICE=zzzz,MODE=MULTI,PROGRAM=USER
0120 /*
0130 //CMPRINT  DD SYSOUT=*
0140 //CMSYNIN  DD *
0150 LOGON N2OLIB
0160 N2OBIND
0170 FIN
0180 /*
0190 //CMWKF01  DD *
0200 &INPUT
0210 /*
0220 //CMWKF02  DD DSN=SYSTSIN.INPUT.N2O
0230 //CMWKF03  DD DSN=&&TEMP,DISP=(NEW,PASS,DELETE),
0240 //             UNIT=WORK,SPACE=(TRK,(1,1),RLSE),
0250 //             DCB=(RECFM=FB,LRECL=80,BLKSIZE=80)
0260 /*
0270 //*
0280 //* COPY JCL TO BIND DB2 PLAN TO INTERNAL READER
0290 //*
0300 //N2OBIND2 EXEC PGM=IEBGENER,COND=(4,LT,N2OBIND)
0310 //SYSUT1    DD DSN=&&TEMP,
0320 //              DISP=(OLD,DELETE)
0330 //SYSUT2    DD SYSOUT=(A,INTRDR)
0340 //SYSIN     DD DUMMY
0350 /*
0360 //*
***** End of list *****
```

Program   DB2BINDP Library N2OBATCH
```
0010 //BINDPLAN   JOB (ACCT),'BIND DB2 PLAN',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //*  If each DBRM was bound separately as a package, see DB2PKLST.
0040 //*
0050 //*  &PLAN will be replaced automatically by N2O with the name
0060 //*  of the Plan to be bound (set in User Exit 9).
0070 //*
0080 //*  &SUBSYS will be replaced automatically by N2O with the name
0090 //*  of the DB2 Subsystem (set in User Exit 9).
0100 //*
0110 //*  &DBRM will be replaced automatically by N2O with the name(s)
0120 //*  of the DBRM(s) to be bound.  The list of DBRM(s) is written
0130 //*  to work file 2 in N2OUE10N, and then copied to work file 3
0140 //*  with the remainder of the JCL.
0150 //*
0160 //BIND     EXEC PGM=IKJEFT01,DYNAMNBR=20,REGION=4096K,TIME=200
0170 //*
0180 //STEPLIB  DD DISP=SHR,DSN=DSNxxx.DSNLOAD
0190 //DBRMLIB  DD DISP=SHR,DSN=NDB21x.DBRMLIB
0200 //SYSTSPRT DD SYSOUT=*
0210 //SYSPRINT DD SYSOUT=*
0220 //SYSUDUMP DD SYSOUT=*
0230 //SYSTSIN  DD *
0240   &INPUT
0250     OR
0260   DSN SYSTEM(&SUBSYS)
0270     BIND PLAN(&PLAN) -
0280     MEM( -
0290        &DBRM
0300        ) -
0310     ISOLATION(CS) -
0320     RELEASE(COMMIT) -
0330     ACTION(REPLACE) -
0340   END
0350 /*
***** End of list *****
```

Program   DB2DBRM Library N2OBATCH

```
0010 //N2ODBRM JOB (ACCT),'CREATE DBRM',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //JOBLIB   DD DSN=NATURAL.NAT21x.LOADLIB,
0040 //           DISP=(SHR,KEEP,KEEP)
0050 //         DD DSN=ADABAS.ADA52x.LOADLIB,
0060 //           DISP=(SHR,KEEP,KEEP)
0070 //*
0080 //N2ODBRM1 EXEC PGM=NATBATCH
0090 //*
0100 //DDCARD   DD *
0110 ADARUN DBID=xxx,SVC=yyy,DEVICE=zzzz,MODE=MULTI,PROGRAM=USER
0120 /*
0130 //CMPRINT  DD SYSOUT=*
0140 //CMSYNIN  DD *
0150 LOGON N2OLIB
0160 N2ODBRM
0170 FIN
0180 /*
0190 //CMWKF01  DD *
0200 &INPUT
0210 /*
0220 //CMWKF03  DD DSN=&&TEMP,DISP=(NEW,PASS,DELETE),
0230 //            UNIT=WORK,SPACE=(TRK,(1,1),RLSE),
0240 //            DCB=(RECFM=FB,LRECL=80,BLKSIZE=80)
0250 //*
0260 //N2ODBRM2 EXEC PGM=IEBGENER,COND=(4,LT,N2ODBRM)
0270 //SYSUT1   DD DSN=&&TEMP,
0280 //            DISP=(OLD,DELETE)
0290 //SYSUT2   DD SYSOUT=(A,INTRDR)
0300 //SYSIN    DD DUMMY
0310 /*
0320 //*
***** End of list *****
```

Program   DB2DBRMA Library N2OBATCH

```
0010 //*  The NATURAL DB/2 Batch Nucleus must be used for this job.
0020 //*
0030 //*  &DBRM will be replaced automatically by N2O with the name
0040 //*  of the DBRM to be created.
0050 //*
0060 //*  &LIBRARY will be replaced automatically by N2O with the name
0070 //*  of the library containing the programs included in the DBRM.
0080 //*
0090 //*  &PROGRAM will be replaced automatically by N2O with the name
0100 //*  of the program(s) to be included in the DBRM.
0110 //*
0120 //&DBRM    EXEC PGM=NATDEMO,REGION=2000K,TIME=1400
0130 //*
0140 //STEPLIB  DD   DSN=NDB21X.LOAD,DISP=SHR
0150 //         DD   DSN=ADA51X.LOAD,DISP=SHR
0160 //         DD   DSN=NAT21X.LOAD,DISP=SHR
0170 //DDKARTE  DD   DUMMY
0180 //DDDRUCK  DD   SYSOUT=*
0190 //DDPRINT  DD   SYSOUT=*
0200 //DDCARD   DD   *
0210 ADARUN DBID=xxx,SVC=yyy,DEVICE=zzzz,MODE=MULTI,PROGRAM=USER
0220 /*
0230 //********* OUTPUT DECKS
0240 //CMWKF01 DD DSN=&&TMP1,
0250 //           DISP=(,PASS),UNIT=SYSDA,SPACE=(TRK,(5,5)),
0260 //           DCB=(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=3120)
0270 //CMWKF02 DD DSN=&&TMP2,
0280 //           DISP=(,PASS),UNIT=SYSDA,SPACE=(TRK,(5,5)),
0290 //           DCB=(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=3120)
0300 //CMWKF03 DD DSN=&&TMP3,
0310 //           DISP=(,PASS),UNIT=SYSDA,SPACE=(TRK,(5,5)),
0320 //           DCB=(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=3120)
0330 //CMWKF04 DD DSN=&&TMP4,
0340 //           DISP=(,PASS),UNIT=SYSDA,SPACE=(TRK,(5,5)),
```

```
0350 //            DCB=(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=3120)
0360 //CMWKF05  DD DSN=&&TMP5,
0370 //            DISP=(,PASS),UNIT=SYSDA,SPACE=(TRK,(5,5)),
0380 //            DCB=(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=3120)
0390 //CMWKF06  DD DSN=&&TMP,
0400 //            DISP=(,PASS),UNIT=SYSDA,SPACE=(TRK,(5,5)),
0410 //            DCB=(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=3120)
0420 //CMWKF07  DD DSN=&&TMP7,
0430 //            DISP=(,PASS),UNIT=SYSDA,SPACE=(TRK,(5,5)),
0440 //            DCB=(DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=3120)
0450 //*
0460 //CMPRINT  DD SYSOUT=*
0470 //CMSYNIN  DD *
0480 LOGON SYSDB2
0490 CMD CREATE DBRM &DBRM USING INPUT DATA WITH XREF NO
0500 &LIBRARY,&PROGRAM
0510 .
0520 FIN
0530 /*
***** End of list *****
```

Program   DB2JOB   Library N2OBATCH
```
0010 //NSTATIC JOB (ACCT),'GENERATE DBRM',CLASS=A,
0020 //   MSGCLASS=X,NOTIFY=&USERID
0030 //*
0040 //*  The following JOBLIB statements can be used instead of specifying
0050 //*  LOADLIBS in each step.
0060 //*
0070 /*JOBPARM S=CPU1
0080 /*ROUTE PRINT SYSPRT
0090 //*
0100 //JOBLIB   DD DSN=NATURAL.NAT21X.LOADLIB,
0110 //            DISP=(SHR,KEEP,KEEP)
0120 //         DD DSN=NATURAL.NDB21X.LOADLIB,
0130 //            DISP=(SHR,KEEP,KEEP)
0140 //         DD DSN=ADABAS.ADA51X.LOADLIB,
0150 //            DISP=(SHR,KEEP,KEEP)
0160 //         DD DSN=DB2.DSNLOAD.LOADLIB,
0170 //            DISP=(SHR,KEEP,KEEP)
***** End of list *****
```

Program   DB2LINK   Library N2OBATCH
```
0010 //*  &LKONUM will generate the next available step name for the
0020 //*  Online Link step (e.g. LKO1, LKO2).
0030 //*
0040 //*  &LKBNUM will generate the next available step name for the
0050 //*  Batch Link step (e.g. LKB1, LKB2).
0060 //*
0070 //*  Note:  Online Link Skeleton shown below.
0080 //*
0090 //*  &DBRM will be replaced automatically by N2O with the name
0100 //*  of the DBRM specified in the generate step above.
0110 //*
0120 //&LKONUM  EXEC PGM=IEWL,PARM='REUS,XREF',
0130 //            COND=((4,LT,&ASMNUM),(4,LT,&PCNUM))
0140 //*
0150 //SYSLIB   DD   DISP=SHR,DSN=NDB21X.LOAD,DCB=BLKSIZE=20000
0160 //         DD   DISP=SHR,DSN=DSNXXX.DSNLOAD
0170 //*        DD   DISP=SHR,DSN=IMSVS.RESLIB        >--- IMS
0180 //*        DD   DISP=SHR,DSN=CICS.LOADLIB        >--- CICS
0190 //SYSLIN   DD   DSN=&&LOADSET,
0200 //            DISP=(OLD,DELETE)
0210 //         DD   DDNAME=SYSIN
0220 //*
0230 //*  Include the appropriate language interface
0240 //*
0250 //SYSIN    DD   *
0260    INCLUDE SYSLIB(DSNCLI)                    <--- CICS
0270    NAME &DBRM(R)
```

```
0280 //* INCLUDE SYSLIB(DSNELI)                        <--- TSO
0290 //* INCLUDE SYSLIB(DSNALI)                        <--- CAF
0300 //* INCLUDE SYSLIB(DFSLI000)                      <--- IMS/DC
0310 /*
0320 //SYSUT1   DD   UNIT=SYSDA,SPACE=(1024,(50,50))
0330 //SYSLMOD  DD   DISP=SHR,DSN=NDB21X.LOAD(&DBRM)
0340 //SYSPRINT DD   SYSOUT=*
0350 //SYSUDUMP DD   SYSOUT=*
0360 /*
***** End of list *****
```

Program   DB2PC   Library N2OBATCH
```
0010 //*  &PCNUM will generate the next available step name for the
0020 //*  Precompile step (e.g. PC1, PC22).
0030 //*
0040 //*  &DBRM will be replaced automatically by N2O with the name
0050 //*  of the DBRM specified in the generate step above.
0060 //*
0070 //&PCNUM   EXEC PGM=DSNHPC,REGION=2048K,PARM='HOST(ASM)',
0080 //             COND=(4,LT,&DBRM)
0090 //*
0100 //DBRMLIB  DD   DSN=NDB21X.DBRMLIB(&DBRM),
0110 //             DISP=SHR
0120 //SYSIN    DD   DSN=&&TMP,
0130 //             DISP=(OLD,DELETE)
0140 //SYSUT1   DD   UNIT=SYSDA,SPACE=(800,(500,500),,,ROUND)
0150 //SYSCIN   DD   DSN=&&DSNHOUT,
0160 //             DISP=(NEW,PASS),UNIT=SYSDA,SPACE=(800,(500,500))
0170 //SYSPRINT DD   SYSOUT=*
0180 //SYSTERM  DD   SYSOUT=*
0190 //*
0200 //* * * * * * * * * * * * * * * * * * * * * * * * * *
0210 //*         OUTPUT PRE-COMPILE
0220 //* * * * * * * * * * * * * * * * * * * * * * * * * *
0230 //*
0240 //PRINT1   EXEC PGM=IEBGENER
0250 //SYSUT1   DD   DSN=&&DSNHOUT,DISP=(OLD,PASS)
0260 //SYSUT2   DD   SYSOUT=*
0270 //SYSIN    DD   DUMMY
0280 //SYSPRINT DD   SYSOUT=*
0290 /*
***** End of list *****
```

Program   DB2PKG   Library N2OBATCH
```
0010 //*  &PKANUM will generate the next available step name for the
0020 //*  Bind Package Add step (e.g. PKA1, PKA2).
0030 //*
0040 //*  &PKRNUM will generate the next available step name for the
0050 //*  Bind Package Replace step (e.g. PKA1, PKA2).
0060 //*
0070 //*  &DBRM will be replaced automatically by N2O with the name
0080 //*  of the DBRM specified in the generate step above.
0090 //*
0100 //&PKRNUM  EXEC PGM=IKJEFT01,DYNAMNBR=20,
0110 //             COND=((4,LT,&ASMNUM),(4,LT,&PCNUM))
0120 //*
0130 //STEPLIB  DD   DISP=SHR,DSN=NDB23X.LOADLIB
0140 //SYSTSPRT DD   SYSOUT=*
0150 //SYSPRINT DD   SYSOUT=*
0160 //SYSUDUMP DD   SYSOUT=*
0170 //SYSTSIN  DD   *
0180   DSN
0190       BIND PACKAGE (Location-name.Collection-id) -
0200       QUALIFIER(qualifier-name) -
0210       MEMBER(&DBRM) -
0220       LIBRARY(dbrm-pds-name) -
0230       SQLERROR(NOPACKAGE) -
0240       VALIDATE(RUN) -
0250       FLAG(I) -
0260       ISOLATION(CS) -
0270       RELEASE(COMMIT) -
0280       EXPLAIN(NO) -
0290       CURRENTDATA(NO) -
0300       ACTION(REPLACE) -
0310       ENABLE (*)
0320   END
***** End of list *****
```

Program   DB2PKLST Library N2OBATCH
```
0010 //BINDPLAN JOB (ACCT),'BIND DB2 PLAN',CLASS=A,NOTIFY=&USERID
0020 //*
0030 //*  To bind DBRMs directly to a plan, see DB2BIND.
0040 //*
0050 //*  &PLAN will be replaced automatically by N2O with the name
0060 //*  of the Plan to be bound (set in User Exit 9).
0070 //*
0080 //*  &SUBSYS will be replaced automatically by N2O with the name
0090 //*  of the DB2 Subsystem (set in User Exit 9).
0100 //*
0110 //*  &INPUT will be replaced automatically by N2O with the SYSTSIN
0120 //*  statements necessary to perform the bind.  These statements
0130 //*  are written to work file 2 in N2OUE10N, and then copied to
0140 //*  work file 3 with the remainder of the JCL.
0150 //*
0160 //BIND     EXEC PGM=IKJEFT01,DYNAMNBR=20,REGION=4096K,TIME=200
0170 //*
0180 //STEPLIB  DD DISP=SHR,DSN=DSNXXX.DSNLOAD
0190 //DBRMLIB  DD DISP=SHR,DSN=NDB21X.DBRMLIB
0200 //SYSTSPRT DD SYSOUT=*
0210 //SYSPRINT DD SYSOUT=*
0220 //SYSUDUMP DD SYSOUT=*
0230 //SYSTSIN  DD *
0240   DSN SYSTEM(&SUBSYS)
0250     BIND PLAN(&PLAN) -
0260     &INPUT
0270     ISOLATION(CS) -
0280     RELEASE(COMMIT) -
0290     ACTION(REPLACE) -
0300   END
0310 /*
***** End of list *****
```

D.7 - <u>Network Data Mover sample JCL</u>

```
Program     NDMTRANF Library N2OBATCH
 0010 //*  USED BY SITES THAT HAVE NOT MODIFIED N2OUE14N,
 0020 //*  VARIABLE BUILD-EXTRACT SET TO FALSE (DEFAULT)
 0030 //*********************************************
 0040 //*  &PFUSERNETID will be replaced automatically by N2O with the
 0050 //*  Network Id for the primary FUSER node (FROM FUSER Node).
 0060 //*
 0070 //*  &SFUSER NETID1 - &SFUSERNETID10 will be replaced by N2O with
 0080 //*  the Network Id for the secondary FUSER nodes (TO FUSER Nodes)
 0090 //*
 0100 //*  &PFDICNETID will be replaced automatically by N2O with the
 0110 //*  Network Id for the primary FDIC node (FROM FDIC Node).
 0120 //*
 0130 //*  &SFDIC NETID1 - &SFDICNETID10 will be replaced by N2O with
 0140 //*  the Network Id for the secondary FDIC nodes (TO FDIC Nodes)
 0150 //*
 0160 //*  &DATE will be replaced automatically by N2O with a value
 0170 //*  derived from &DATN in order to uniquely identify the dataset.
 0180 //*
 0190 //*  &TIME will be replaced automatically by N2O with a value
 0200 //*  derived from &TIMN in order to uniquely identify the dataset.
 0210 //*
 0220 //NDMBATCH EXEC PGM=DMBATCH
 0230 //         REGION=4M,
 0240 //         PARM=(YYSLYNN)
 0250 //DMPUBLIB DD  DSN=PRNDM.PERM.PROCESS.LIB,DISP=SHR
 0260 //         DD  DSN=PSOPE.PERM.NDM.PROCESS,DISP=SHR
 0270 //DMMSGFIL DD  DSN=PRNDM.PERM.MSG,DISP=SHR
 0280 //DMPRINT  DD  SYSOUT=*
 0290 //NDMCMDS  DD  SYSOUT=*
 0300 //SYSIN    DD  *
 0310   SIGNON NETMAP=PSNDM.PERM.NETMAP
 0320         ESF=YES
 0330   SUBMIT PROC=D4903NEW
 0340   &&PNODE=&PFUSERNETID
 0350   &&SNODE=&SFUSERNETID1
 0360   &&FROMDSN=N2O.SOURCE
 0370   &&TODSN=N2O.SOURCE.&DATE.&TIME
 0380   &&UNIT=SYSDA
 0390 //*
 0400 //NDMBATCH EXEC PGM=DMBATCH
 0410 //         REGION=4M,
 0420 //         PARM=(YYSLYNN)
 0430 //DMPUBLIB DD  DSN=PRNDM.PERM.PROCESS.LIB,DISP=SHR
 0440 //         DD  DSN=PSOPE.PERM.NDM.PROCESS,DISP=SHR
 0450 //DMMSGFIL DD  DSN=PRNDM.PERM.MSG,DISP=SHR
 0460 //DMPRINT  DD  SYSOUT=*
 0470 //NDMCMDS  DD  SYSOUT=*
 0480 //SYSIN    DD  *
 0490   SIGNON NETMAP=PSNDM.PERM.NETMAP
 0500         ESF=YES
 0510   SUBMIT PROC=D4903NEW
 0520   &&PNODE=&PFUSERNETID
 0530   &&SNODE=&SFUSERNETID1
 0540   &&FROMDSN=N2O.PREDICT
 0550   &&TODSN=N2O.PREDICT.&DATE.&TIME
 0560   &&UNIT=SYSDA
 0570 //*
 ***** End of list *****
```

```
      Program        NDMTRANT Library N2OBATCH
 0010 //*  USED BY SITES THAT HAVE MODIFIED N2OUE14N, SETTING THE
 0020 //*  VARIABLE BUILD-EXTRACT TO TRUE
 0030 //*********************************************
 0040 //* &PFUSERNETID WILL BE REPLACED AUTOMATICALLY BY N2O WITH THE NETWORK
 0050 //*            ID FOR THE PRIMARY FUSER NODE (FROM FUSER NODE).
 0060 //**
 0070 //* &SFUSER NETID1 - &SFUSERNETID10 WILL BE REPLACED BY N2O WITH THE
 0080 //*          NETWORK ID FOR THE SECONDARY FUSER NODES (TO FUSER NODES).
 0090 //**
 0100 //* &PFDICNETID WILL BE REPLACED AUTOMATICALLY BY N2O WITH THE NETWORK
 0110 //*            ID FOR THE PRIMARY FDIC NODE (FROM FDIC NODE).
 0120 //* &SFDICNETID1 - &SFDICNETID10 WILL BE REPLACED BY N2O WITH THE
 0130 //*          NETWORK ID FOR THE SECONDARY FDIC NODES (TO FDIC NODES).
 0140 //**
 0150 //* &DATE WILL BE REPLACED AUTOMATICALLY BY N2O WITH A VALUE DERIVED
 0160 //*       FROM *DATN IN ORDER TO UNIQUELY IDENTIFY THE DATASET.
 0170 //* &TIME WILL BE REPLACE AUTOMATICALLY BY N2O WITH A VALUE DERIVED FROM
 0180 //*  *TIMN IN ORDER TO UNIQUELY IDENTIFY THE DATASET.
 0190 //N2OSEND        EXEC NATBAT,SOUT=X
 0200 //CMWKF01        DD      DSN=N2OPRD,DISP=(NEW,CATLG),
 0210 //               SPACE=(CYL,(4,4)),
 0220 //               DCB=(RECFM=VB,LRECL=1804,BLKSIZE=1808)
 0230 //CMWKF02        DD      DSN=N2OSRC,DISP=(NEW,CATLG),
 0240 //               DCB=(RECFM=VB,LRECL=9183,BLKSIZE=9187),
 0250 //               SPACE=(CYL,(1,1),RLSE)
 0260 //CMWKF03        DD      DSN=N2OPARM,DISP=SHR
 0270 //CMWKF05        DD          DSN=CMWKF05,DISP=(NEW,CATLG),
 0280 //               DCB=(RECFM=VB,LRECL=254,BLKSIZE=2540),
 0290 //               SPACE=(CYL,(4,4))
 0300 //CMPRT01        DD      SYSOUT=X
 0310 //SYSIN          DD          DSN=N2OCOMM,DISP=SHR
 0320 //**
 0330 //NDMBATCH EXEC PGM=DMBATCH,
 0340 //        REGION=4M,
 0350 //        PARM=(YYSLYNN)
 0360 //DMPUBLIB       DD      DSN=PRNDM.PERM.PROCESS.LIB,DISP=SHR
 0370 //               DD      DSN=PSOPE.PERM.NDM.PROCESS,DISP=SHR
 0380 //DMMSGFIL       DD      DSN=PSNDM.PERM.MSG,DISP=SHR
 0390 //DMPRINT        DD      SYSOUT=*
 0400 //NDMCMDS        DD      SYSOUT=*
 0410 //SYSIN          DD*
 0420   SIGNON NETMAP=PSNDM.PERM.NETMAP,
 0430        ESF=YES
 0440   SUBMIT PROC=D4903NEW
 0450   &&PNODE=&PFUSERNETID
 0460   &&SNODE=&SFUSERNETID1
 0470   &&FROMDSN=N2O.SOURCE
 0480   &&TODSN=N2O.SOURCE.&DATE.&TIME
 0490   &&UNIT=SYSDA
 0500 //NDMBATCH       EXEC    PGM=DMBATCH,
 0510 //        REGION=4M,
 0520 //        PARM=(YYSLYNN)
 0530 //DMPUBLIB       DD      DSN=PRNDM.PERM.PROCESS.LIB,DISP=SHR
 0540 //               DD      DSN=PSOPE.PERM.NDM.PROCESS,DISP=SHR
 0550 //DMMSGFIL       DD      DSN=PSNDM.PERM.MSG,DISP=SHR
 0560 //DMPRINT        DD      SYSOUT=*
 0570 //NDMCMDS        DD      SYSOUT=*
 0580 //SYSIN          DD*
 0590   SIGNON NETMAP=PSNDM.PERM.NETMAP,
 0600        ESF=YES
 0610   SUBMIT PROC=D4903NEW
 0620   &&PNODE=&PFUSERNETID
 0630   &&SNODE=&SFUSERNETID1
 0640   &&FROMDSN=N2O.PREDICT
 0650   &&TODSN=N2O.PREDICT.&DATE.&TIME
 0660   &&UNIT=SYSDA
 0670 //NDMBATCH EXEC  PGM=DMBATCH,
 0680 //        REGION=4M
 0690 //        PARM=(YYSLYNN)
 0700 //DMPUBLIB       DD      DSN=PRNDM.PERM.PROCESS.LIB,DISP=SHR
```

```
0710 //            DD      DSN=PSOPE.PERM.NDM.PROCESS,DISP-SHR
0720 //DMMSGFIL    DD      DSN=PSNDM.PERM.MSG,DISP=SHR
0730 //DMPRINT     DD      SYSOUT=*
0740 //NDMCMDS     DD      SYSOUT=*
0750 //    SYSIN   DD*
0760         SIGNON  NETMAP=PSNDM.PERM.NETMAP,
0770           ESF=YES
0780         SUBMIT PROC=D4903NEW
0790         &&PNODE=&PFUSERNETID
0800         &&SNODE=&SFUSERNETID1
0810         &&FROMDSN=N2OCOMM
0820         &&TODSN=N2OCOMM.&DATE.&TIME
0830         &&UNIT=SYSDA
***** End of list *****
```

Section D.8 – <u>COBOL sample JCL</u>

Program   N2OCMPL   Library N2OBATCH
```
0010 //CBLOAD   PROC MEMBER=TEMPNAME,
0020 //         SLIB=,LLIB=DEVL,OBJNAME=TEMPNAME,
0030 //         CLIB1=CB,CLIB2=CB,CLIB3=CB,
0040 //         LLIB1=DEVL,LLIB2=PROD,FLAG=W,
0050 //         CALL=,CLIST=,DMAP=,DYNAM=,PMAP=NO,
0060 //         STATE=NO,FLOW=,RES=,COPT=,LOPT=,
0070 //         SYMDMP=NO,SYSOUT=A
0080 //COB      EXEC PGM=IKFCBL00,PARM=(&CLIST.CLIST,
0090 //         &DMAP.DMAP,&DYNAM.DYNAM,FLAG&FLAG,
0100 //         &PMAP.PMAP,&RES.RESIDENT,&STATE.STATE,
0110 //         &SYMDMP.SYMDMP,'&FLOW',
0120 //         TERM,LIB,'SIZE=384K',&COPT)
0130 //STEPLIB  DD DSN=SYS1.VSCOLIB,DISP=SHR
0140 //SYSLIB   DD DSN=ADMU.B014.&CLIB1..SOURCE,DISP=SHR
0150 //         DD DSN=ADMU.B014.&CLIB2..SOURCE,DISP=SHR
0160 //         DD DSN=ADMU.B014.&CLIB3..SOURCE,DISP=SHR
0170 //         DD DSN=ADMU.B014.CB.SOURCE,DISP=SHR
0180 //         DD DSN=ADMU.B014.MP.SOURCE,DISP=SHR
0190 //         DD DSN=SYS2.MACCOB,DISP=SHR
0200 //         DD DSN=SYSC.B022.PROD.SOURCE,DISP=SHR
0210 //SYSPRINT DD SYSOUT=&SYSOUT
0220 //SYSTERM  DD SYSOUT=&SYSOUT
0230 //SYSPUNCH DD SYSOUT=B
0240 //SYSUT1   DD UNIT=SYSDA,SPACE=(460,(700,100)),DSN=&&SYSUT1
0250 //SYSUT2   DD UNIT=SYSDA,SPACE=(460,(700,100)),DSN=&&SYSUT2
0260 //SYSUT3   DD UNIT=SYSDA,SPACE=(460,(700,100)),DSN=&&SYSUT3
0270 //SYSUT4   DD UNIT=SYSDA,SPACE=(460,(700,100)),DSN=&&SYSUT4
0280 //SYSUT5   DD UNIT=SYSDA,SPACE=(460,(700,100)),DSN=&&SYMDMP,
0290 //         DISP=(,PASS)
0300 //SYSLIN   DD DSN=&&LOADSET,DISP=(MOD,PASS),UNIT=SYSDA,
0310 //         SPACE=(80,(500,100))
0320 //SYSIN    DD DSN=&SLIB(&MEMBER),DISP=SHR
***** End of list *****
```

Program   MVSCOBAC Library N2OBATCH
```
0010 //*  COBOL COMPILE JCL
0020 //*
0030 //*  &STEPNUM will be replaced automatically by N2O with the next
0040 //*  available step name.
0050 //*
0060 //*  &SLIB will be replaced automatically by N2O with the target
0070 //*  PDS name of the Event.
0080 //*
0090 //*  &MEMBER will be replaced automatically by N2O with the name of
0100 //*  the migrated member.
0110 //*
0120 //*  &UXXXXXX will be replaced with the corresponding value specified
0130 //*  in User-Exit-11.
0140 //*
0150 //&STEPNUM EXEC PGM=IKFCBL00,PARM=(&UCLIST.CLIST,
0160 //         &UDMAP.DMAP,&UDYNAM.DYNAM,FLAG&UFLAG,
0170 //         &UPMAP.PMAP,&URES.RESIDENT,&USTATE.STATE,
0180 //         &USYMDMP.SYMDMP,'&UFLOW',
0190 //         TERM,LIB,'SIZE=384K',&COPT)
0200 //STEPLIB  DD DSN=SYS1.VSCOLIB,DISP=SHR
0210 //SYSLIB   DD DSN=&UCLIB1,DISP=SHR
0220 //         DD DSN=&UCLIB2,DISP=SHR
0230 //         DD DSN=&UCLIB3,DISP=SHR
0240 //         DD DSN=TREE.CB.SOURCE,DISP=SHR
0250 //         DD DSN=TREE.MP.SOURCE,DISP=SHR
0260 //         DD DSN=SYS2.MACCOB,DISP=SHR
0270 //         DD DSN=TREE.PROD.SOURCE,DISP=SHR
0280 //SYSPRINT DD SYSOUT=&USYSOUT
0290 //SYSTERM  DD SYSOUT=&USYSOUT
0300 //SYSPUNCH DD SYSOUT=B
0310 //SYSUT1   DD UNIT=SYSDA,SPACE=(460,(700,100))
0320 //SYSUT2   DD UNIT=SYSDA,SPACE=(460,(700,100))
```

```
0330 //SYSUT3   DD UNIT=SYSDA,SPACE=(460,(700,100))
0340 //SYSUT4   DD UNIT=SYSDA,SPACE=(460,(700,100))
0350 //SYSUT5   DD UNIT=SYSDA,SPACE=(460,(700,100))
0360 //SYSLIN   DD DSN=&&LOADSET,DISP=(MOD,PASS),UNIT=SYSDA,
0370 //            SPACE=(80,(500,100))
0380 //SYSIN    DD DSN=&SLIB(&MEMBER),DISP=SHR
0390 //*
***** End of list *****
```

Program   MVSCOBLK Library N2OBATCH
```
0010 //*  LINK EDIT JCL
0020 //*
0030 //*  &STEPNUM will be replaced automatically by N2O with the next
0040 //*  available step name.
0050 //*
0060 //*  &MEMBER will be replaced automatically by N2O with the name of
0070 //*  the migrated member.
0080 //*
0090 //*  &UXXXXXX will be replaced with the corresponding value specified
0100 //*  in User-Exit-11.
0110 //*
0120 //&STEPNUM EXEC PGM=IEWL,PARM=(&LUOPT),
0130 //         COND=(5,LT,COB)
0140 //SYSLIN   DD DSNAME=&&LOADSET,DISP=(OLD,DELETE)
0150 //         DDNAME=SYSIN
0160 //STEPLIB  DD DSN=SYS1.VSCOLIB,DISP=SHR
0170 //SYSLMOD  DD DSNAME=&ULLIB(&MEMBER),DISP=SHR
0180 //SYSLIB   DD DSN=TREE.VSCLLIB,DISP=SHR
0190 //         DD DSN=TREE.NTSUBRTN.LOAD,DISP=SHR
0200 //         DD DSN=&ULLIB1,DISP=SHR
0210 //         DD DSN=&ULLIB2,DISP=SHR
0220 //         DD DSN=TREE.PROD.ADALOAD,DISP=SHR
0230 //         DD DSN=TREE.PROD.LOAD,DISP=SHR
0240 //         DD DSN=TREE.PROD.COBLOAD,DISP=SHR
0250 //SYSUT1   DD UNIT=SYSDA,SPACE=(1024,(50,20))
0260 //SYSPRINT DD SYSOUT=&USYSOUT
0270 //*
***** End of list *****
```

Program   MVSCOBUS Library N2OBATCH
```
0010 //*
0020 //*  This JCL could be used to compile a COBOL program by calling a
0030 //*  PROC.
0040 //*
0050 //*  &STEPNUM will be replaced automatically by N2O with the next
0060 //*  available step name.
0070 //*
0080 //*  &SLIB will be replaced automatically by N2O with the target
0090 //*  PDS name of the Event.
0100 //*
0110 //*  &MEMBER will be replaced automatically by N2O with the name of
0120 //*  the migrated member.
0130 //*
0140 //*  &UXXXXXX will be replaced with the corresponding value specified
0150 //*  in User-Exit-11.
0160 //*
0170 //&STEPNUM EXEC COBCMPL,
0180 //         SLIB=&SLIB,
0190 //         MEMBER=&MEMBER,
0200 //         SYSOUT=*,
0210 //         OBJNAME=&UOBJ,
0220 //         LOPT=&ULOPT
0230 //*
***** End of list *****
```

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APPENDIX E

Frequently Asked Questions

Where does N2O place the output of my batch job?
N2O writes the output to CMPRT01.

How can I delete an Event with a status of 'H'?
A status of 'H' indicates that the Event is on hold. The status of the Event can be modified using the Utility Tools in the Toolbox Subsystem.

Why is my Event marked "Override"?
N2O allows self-authorization and emergency migrations without authority or approval. In both cases the Events are marked as override. An override Event is always copied regardless of the migration profile. Therefore, users will see a move changed to a copy. Override Events do not delete objects.

What is an Extract Event and how is it used?
An Extract Event migrates an object without causing a checkout to occur. It is used for migrating objects to a development library. The objects would be copies of existing code to be used as the basis for new programs. An Extract Event also allows the object to be renamed on the target environment.

How do I use an existing program as a base for creating a new program?
An Extract Event migrates an object to a library without performing a checkout. It also allows an object to be renamed at the target.

How do I allow a supervisor to authorize an Event if the programmer is not available?
When defining a migration profile with authorization, the user also defines the authorization level and authorization ID. Entering '*' allows any user with the appropriate approval profile to authorize the Event. The Supervisor's approval profile should contain the migration paths necessary to authorize Events as needed. Up to 40 migration paths can be defined in the approval profile.

How is Project Tracking used with N2O?
Every time an Event is requested, the user can relate that Event to a specific task defined in the N2O Project Tracking Subsystem. This allows the user to track the relationships of Events and projects. Refer to **Section III Project Tracking Subsystem.**

How does N2O handle multiple versions of the same program?
Multiple versions of programs are handled using the checkout/checkin features of N2O. The Checkout/Checkin field on the N2O install parms screen specifies the levels of checkout permitted. Every time an object is checked out, N2O verifies the current number of checkouts. If more than one checkout exists the user receives a warning message on the screen. A user will receive this warning every time the object is migrated if more than one checkout exists.

Does N2O have a move option so that the object's source and compiled code is deleted from the location from which you are migrating?

Yes, there is a move option. It is set in the Migration Profile method parameter. Refer to the ***N2O Administrator Manual***.

For PDSs, the JCL must be changed from an IEBCOPY to an IEBMOVE. For PANVALET, ENDEVOR, or Librarian, it would depend on their capabilities.

What does the Change Control Number do?

The Change Control Number provides a way to relate several Events. If the user has ten Events to complete a specific enhancement/bug fix, the user can assign them all the same Change Control Number. A report by Change Control Number is available to show all Events related to a selected number. This allows a history of all modules changed to be related to an enhancement/bug fix.

Installation/Product Upgrade Questions

What do I have to do to N2O when upgrading Natural versions?

When upgrading NATURAL, the N2OUXCPY program must be executed to ensure that the correct USR* modules are in the SYSTEM and SYSLIB libraries. If you are using N2O's autocompile and/or N2OEDIT components, they must be re-installed.

Does upgrading PREDICT versions require any changes to N2O?

Yes, the PREDICT version in User-Exit 14 must be changed and the member stowed as described in the ***N2O Administrator Manual***.

Can I install N2O on the FNAT?

No. N2O cannot be installed on the FNAT.

APPENDIX F

N2OSCAN GLOSSARY

TERM	DEFINITION
Absolute Scan Indicator	Valid values are **Y** (for "yes") or **N** (for "no").
	If value is **Y**, then the *Scan Process* will examine target source lines for the associated *Scan String* value, ignoring delimiters.
	If value is **N**, then the *Scan Process* will examine target source for the associated *Scan String* value surrounded by delimiters. (Refer to "*DELIM Header Parm*".)
N2OSCAN Comment Line	Any line of a *Scan Parm Set* starting with either "*", "/*", "**", or " " (two spaces) will be interpreted by N2OSCAN as a *Comment Line* and ignored.
DELIM Header Parm	Valid value is any special character that the user wishes to use as delimiter for non-absolute scanning. Values entered here override default delimiter values of N2OSCAN (i.e., any character with hexadecimal value less than that of lower-case "a").
Detail Line	Any non-comment line in a *Scan Parm Set* that follows the *Header*. Valid format is:
	x,y,zzzzzzzzzzzzzzzzzzzzzzzzzzzzzzzz
	where
	x = *Include/exclude Indicator*
	valid values = **I** (for "include") or **E** (for "exclude")
	y = *Absolute Scan Indicator*
	valid values = **Y** (for "yes") or **N** (for "no")
	zzzzzz = *Scan String* (up to 32 characters)
	Detail Line examples:
	I,Y,DATE
	E,N,UPDATE
Exclusion Process	A *Found String* passed from the *Inclusion Process* is examined for all *Exclusion Strings* defined in the *Scan Parm Set*. If an *Exclusion String* is found, then the *Hit* is canceled. If no *Exclusion String* is found, then the *Hit* data is stored in the *Scan Output Set.*
Exclusion String	A *Scan String* (denoted by *Include/Exclude Indicator* = **E**) used as input to the *Exclusion Process*. (Refer to "*Include/exclude Indicator*".)
Found String	A space-delimited string found in a target source line by the *Inclusion Process*.
Header Section of Scan Parm Set	Up to the first six non-comment line(s) of a *Scan Parm Set*. A valid *Header* <u>must</u> contain the *Required Header Parm*, set equal to an existing N2O environment on a local node, at the beginning of the first non-comment line.

TERM	DEFINITION
Hit	See *Scan Hit.*
Include/Exclude Indicator	Valid values are **I** (for "include") or **E** (for "exclude"). If value is **I**, then the associated *Scan String* becomes an *Inclusion String* used in *Inclusion Processing*. If value is **N**, then the associated *Scan String* becomes an *Exclusion String* used in *Exclusion Processing*.
Inclusion Process	A target source line is examined for all *Inclusion Strings* defined in the *Scan Parm Set*. If an *Inclusion String* is found, then a *Hit* is registered and the complete space-delimited string identified in the target source line is designated as a *Found String*. A *Found String* is passed on to the *Exclusion Process*.
Inclusion String	A *Scan String* (denoted by *Include/exclude Indicator* = **I**) used as input to the *Inclusion Process*. (Refer to "*Include/exclude Indicator*".)
Label of Scan Parm Set	Used by N2OSCAN to differentiate *Scan Parm Set* objects from other NATURAL text objects. A valid *Label* value consists of the characters **ENV=** or **ENVIRONMENT=** found at the beginning of the first non-comment line. The presence or absence of this *Label* distinguishes Scan Parm Set objects (which have this *Label*) from other NATURAL text objects (which do not have this *Label*).
Optional Header Parms	Any of the following, upper- or lower- case, separated by a comma delimiter, may appear following the Required Header Parm (see above). A comma at the end of a line indicates continuation to next line. *Optional Header Parms* may be in any order. START-LIB=xxxxxxxx or START-LIBRARY=xxxxxxxx END-LIB=xxxxxxxx or END-LIBRARY=xxxxxxxx START-OBJ=xxxxxxxx or START-OBJECT=xxxxxxxx END-OBJ=xxxxxxxx or END-OBJECT=xxxxxxxx DELIM=<xxxxxxx> or DELIMITER=<xxxxxxx> or DELIMITERS=<xxxxxxx> (may have up to 32 Delimiters) Additional note: Each Header Parm above may appear only once in the Header. If any Header Parm appears more than once, the first occurrence will be used in processing and subsequent occurrences will be ignored.
Required Header Parm	The following, upper- or lower-case, must appear at the beginning of the first non-comment line of the Scan Parm Set. To be valid, it must be set equal to an existing N2O Environment on a local node. ENV=xxxx or ENVIRONMENT=xxxx
Scan Hit	An event identifying a target source Environment, Library, Object, Line Number, and *Found String* value output by the Scan Process.

TERM	DEFINITION
Scan Output Set	A set of records stored on the N2O-MIGRATION file, which constitute the output of a scan.
	A *Scan Output Set* consists of (1) detail records of all *Scan Hits* and (2) summary records outlining scan statistics at the object, library, and full *Scan Output Set* level.
	A *Scan Output Set* is uniquely identified by: (1) the User ID of the user who submitted the scan, (2) the Scan Parm Set ID of the *Scan Parm Set* selected as input to the scan, (3) the starting value for the range of libraries scanned, (4) the ending value for the range of libraries scanned, (5) the starting value for the range of objects scanned, and (6) the ending value for the range of objects scanned.
Scan Parm Set	A NATURAL text object that has a valid *Scan Parm Set Label*.
	To be valid for scan processing, a *Scan Parm Set* must have a valid *Scan Parm Set Label*, a valid *Scan Parm Set Header*, and at least one valid *Detail Line* with an *Inclusion String*.
Scan Process	*Scan Process* examines target source code one line at a time, performing the *Inclusion Process* followed by the *Exclusion Process*.
Scan String	A case-sensitive string (up to 32 characters in length) used as input to *Scan Processing*.

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