TRIM

Reference Manual

Note:	All references to the TRIM version in this manual are indicated by *vrs* or *v.r.s.* The current release of TRIM is version 8.3.2.

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Treehouse Software, Inc. provides two manuals with TRIM. These manuals are:

• **Installation and Operations Manual**	This manual provides all of the information necessary to perform the installation and procedures to set up TRIM.
• **Reference Manual**	This manual provides detailed reference material about the various TRIM functions and features.

The structure of the TRIM documentation is intended to make information about the product more convenient to locate and use.

This Reference Manual explains the functions and capabilities of the Treehouse Software, Inc. TRIM software package. This manual describes:

- The Real-Time Monitor, including the new TRIM NATURAL Monitor (TNM)
- Dynamic Control and Security through User-Exit-1 Communication Runs
- Dynamic Logging through User-Exit-4 Communication Runs
- User-Exit Communication Run Parameters
- Command Log Detail Records
- Command or SMF Log PRESUM Records
- Protection Log Records
- Command Log TRELOG Records
- Batch Log Analysis Run Parameters
- Nucleus Session Statistics

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SECTION I

INTRODUCTION

I.1 Version Changes and Enhancements

Note: All references to the TRIM version in this manual are indicated by *vrs* or *v.r.s.* The current release of TRIM is version 8.2.2.

Batch CLOG Processing

TRIM supports ADABAS CLOGFORMAT=5 and 8.

A change to the PRESUM data record length and format was necessary to provide compatibility with ADABAS V8.x and CLOGLAYOUT=8.

TRIM can process PRESUM data generated with TRIM V*vrs* UEX4 in CLOGLAYOUT 5 or 8 format as well as PRESUM data generated from TRIM V7.6.1 in CLOGLAYOUT=5 format.

In the case of the PRESUM SMF option, user programs to extract PRESUM records from the SMF log should not be affected. The SMF prefix to the PRESUM data has not changed. User programs that process the PRESUM data after the extraction process will need to adjust to the new PRESUM format. Refer to **Section V ADABAS Command and Protection Log Processing** and **Appendix E: PRESUM Date Extraction From SMF** for more information.

Batch PLOG Processing

PLOGs created by ADABAS V8.x and above can only be processed by TRIM V8.x and above. TRIM V8.x and above processes PLOGs created by ADABAS V8.1 and V8.2.

TRIM V*vrs* does not support PLOG-records for files with spanned blocks and/or expanded MU/PE capabilities. For further details, refer to Limitations and Restrictions in the ADABAS Release Notes as provided by Software AG.

To accommodate two-byte ADABAS file numbers, the SHOW statement FNR parameter will allow for file number values from 1 to 65535. Correspondingly, the file description (known in TRIM as the FDT or ADAWAN/ADACMP card images) is expected to be in datasets TFDxxxxx (for OS). VM EXECs for PLOG processing are similarly affected. VSE is unaffected, as the FDTs are expected to reside in SYS006, SYS016, etc. Refer to ***Section V Batch Operations*** of the ***TRIM Installation and Operations Manual*** for more information.

I.2 Performance Issues in the ADABAS/NATURAL Environment

In many organizations, the commitment to ADABAS and NATURAL is at a level where the viability of the organization depends on a reliable and efficient database and application environment. Such organizations place considerable emphasis on ADABAS/NATURAL performance analysis.

In practice, performance analysis and tuning do not conform to a precise and proven methodology that can be followed in anticipation of, or response to, specific performance problems. Instead, performance issues require constant attention by the applications development, database, and systems support staffs, as well as by data processing and user department management.

Independent of the framework used for evaluating performance, the technical mechanics of performance analysis will require investigation of certain key areas. Independent ADABAS/NATURAL performance studies have determined that:

- 50% of performance issues are related to NATURAL application program and database processing logic
- 20% are related to ADABAS file design characteristics
- 10% are related to the NATURAL nucleus processing environment
- 10% are related to ADABAS environmental options
- 10% are related to the operating system environment

This does not imply that the 10% items are of little impact. In fact, small changes to ADABAS, NATURAL, and the operating system environments may cause significant changes in performance. However, 70% or more of performance issues occur in the areas of application design (including ADABAS file design) and application construction. Many of these issues and problems can be identified during application testing, but some will not be evident until production-scale transaction and data volumes create stress conditions.

I.2.1 ADABAS Performance Analysis

Of these performance-related categories, the one that is dealt with most often is the ADABAS nucleus. Through the ADABAS parameters, the Database Administrator (DBA) is given great flexibility for reconfiguring ADABAS for efficiency based upon how the database is being used. As a result, most performance guidelines are oriented toward ADABAS.

This ADABAS orientation is not surprising, given the availability of ADABAS performance monitoring and analysis tools. These tools make effective ADABAS performance analysis possible by providing real-time and historical information on ADABAS use and performance. Using tools like TRIM, ADABAS DBAs are able to monitor ADABAS usage without negatively impacting user response times. Through the use of ADABAS performance monitors, sites are able to develop a more formalized methodology for ADABAS performance analysis.

Many sites regularly use TRIM to:

- Monitor database activity on-line
- Provide comprehensive resource utilization and tuning statistics
- Identify peak periods of ADABAS usage
- Aid in program development and debugging
- Assist in evaluation of file design and options
- Calculate billing figures

Developing a performance analysis methodology for NATURAL has been difficult, due to a lack of NATURAL performance tools. However, since NATURAL application considerations are usually far more important than ADABAS-specific issues and are disbursed across many

more users and programmers, it is strongly recommended that attention be focused on improving NATURAL application performance.

It is commonly agreed that about half of all performance related issues are addressable by NATURAL application program logic. Some of the important NATURAL application performance issues center around these areas:

- Application Structure
- Database Retrieval Logic
- Record Selection
- Database Processing Loops
- Record Sorting
- Rereading Records
- Database Update Logic
- Auditing of Updates
- Repeating Data Structures
- Application Recovery

These types of performance issues are more prominent at sites where NATURAL is the primary programming language. This is not because NATURAL is inefficient, but because NATURAL allows applications to be written faster, often up to 10 times faster than with COBOL. NATURAL also tends to isolate the programmer from direct interaction with ADABAS, making it easier to develop inefficient code without realizing it.

NATURAL performance analysis has traditionally been limited to the information that can be collected by ADABAS performance monitors and by timing tests, which are typically performed in test environments. ADABAS performance monitors, such as TRIM, can certainly assist in the improvement of NATURAL application performance, particularly when the source of a performance problem relates to inefficient ADABAS calls. A product like TRIM can help to identify and track ADABAS accesses by NATURAL programs. However, not all NATURAL performance problems stem from inefficient database access.

Performing tests of NATURAL programs through the use of timing routines inserted in program source code can provide insight into NATURAL performance. Unfortunately, this approach requires the programmer to expend a great deal of effort to identify appropriate timing tests, create the necessary code, evaluate the results, etc. Programmers often do not have the time or opportunity to go to such extremes, leading to the reactive approach of solving NATURAL performance problems when they become obvious.

Complicating this situation is the fact that in many organizations, test environments do not properly represent actual production conditions that the application will experience. A program that seems to perform very well in a test environment against databases with very few records in each file may perform poorly in production against large databases with many concurrent users.

For many sites, Treehouse Software's NATURAL Quality Assurance and Testing tool, PROFILER for NATURAL, has been helpful in identifying possible performance problems. PROFILER monitors each NATURAL statement executed in a given program or application, providing detailed execution statistics. While this makes PROFILER an excellent and thorough testing tool, the detailed statistics collection it performs is too extensive for high-volume production environments.

I.2.2 What Capabilities Should a NATURAL Performance Monitor Have?

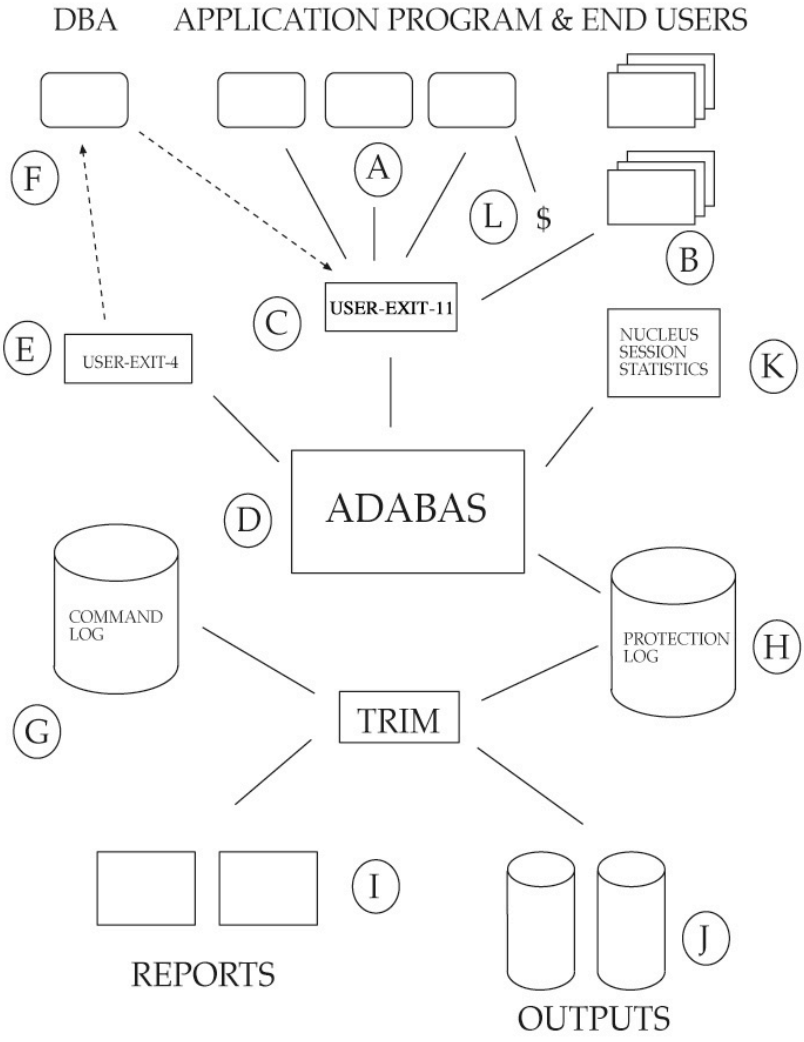
A tool that provides the essential NATURAL performance information from both test and production environments without adding observable overhead to the environments being monitored is needed. The performance tool should be capable of capturing and analyzing summary statistics, as well as optionally providing the detailed statistics needed to isolate the source of a performance problem.

Since the majority of performance issues are raised with respect to a live production system rather than a system under development, a performance monitor that is able to function efficiently in a production environment is an essential component of effective performance monitoring. TRIM is the first performance monitor with this capability, especially with the TRIM NATURAL Monitor (TNM) feature.

An effective ADABAS/NATURAL Performance Monitor must be able to capture information in real-time about what is happening on the database, provide extensive ADABAS batch log analysis capability, and provide total resource utilization statistics, while also pinpointing NATURAL program inefficiencies.

Given that a NATURAL application can include hundreds of programs, subprograms, subroutines, etc., any one of which could be the source of the problem, locating inefficient programs in an application running in production can be difficult. While TNM has been designed to collect the information necessary to evaluate NATURAL applications in a production environment, it should only be used for the periods of time where a problem exists. The detail collection feature should only be used to collect data on specific programs, users, and libraries due to the amount of data that can be collected in a production environment. TNM should be used in a testing environment first to gain an understanding of the data that is collected. Once a user is familiar with TNM, it can be effectively used in a production environment, while minimizing overhead.

The following diagram shows the functional parts of TRIM and how they act in an ADABAS/NATURAL environment:



Description

Multiple terminal (**A**) and program (**B**) access to ADABAS is DBA controlled (**F**) via TRIM User-Exit-11 (**C**), which optionally screens inefficient commands, locks out certain files, and handles certain password security situations.

After ADABAS (**D**) processes each command, but before logging the command, TRIM User-Exit-4 (**E**), which is also DBA controlled, (**F**) optionally logs selected summarizations (PRESUM) and exceptional commands' records and buffers.

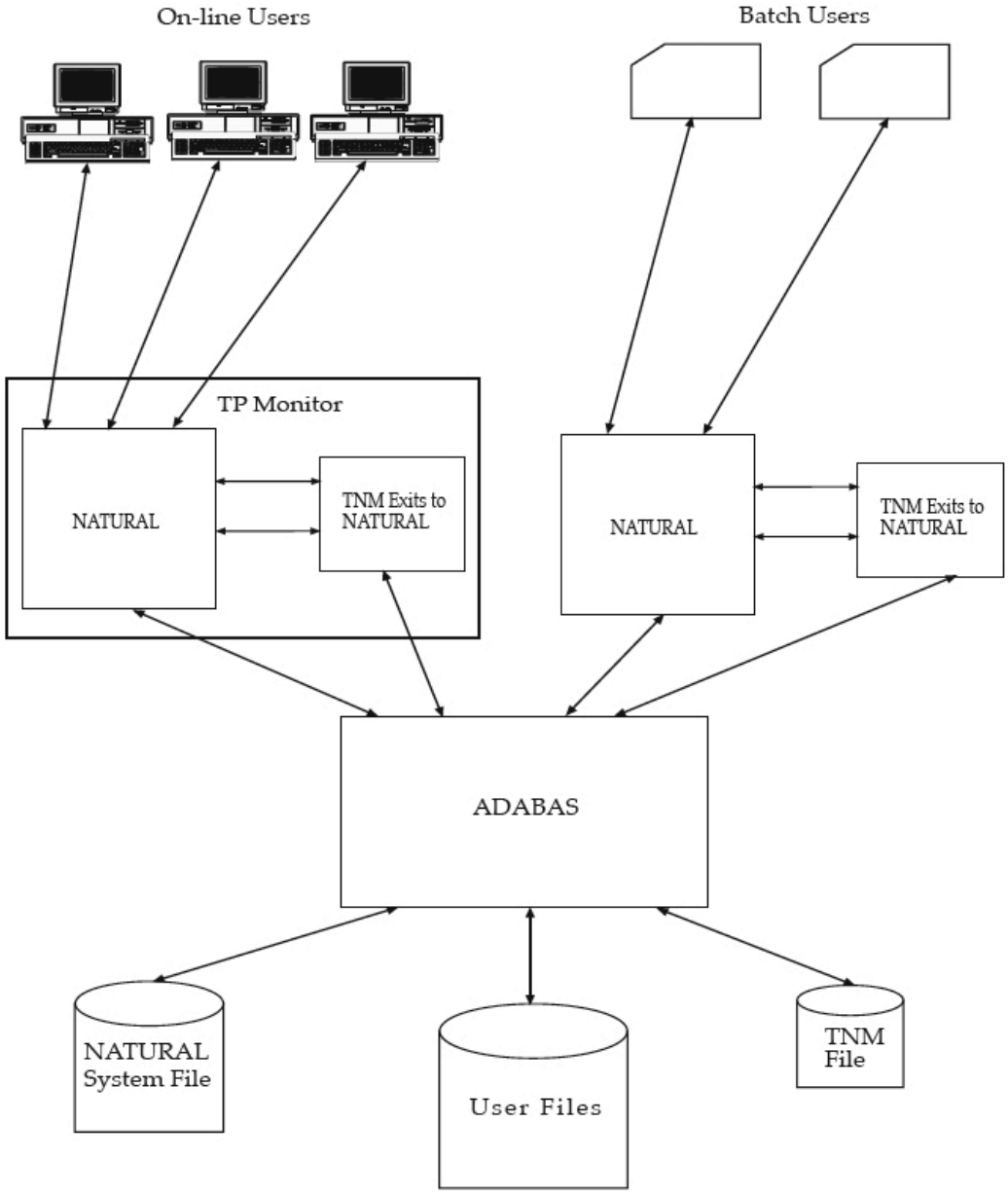
Meanwhile, the DBA may be monitoring ADABAS activity in real-time (**F**), displaying nucleus statistics and user/job/program statistics, viewing ADABAS Queue and Table information, tracing the activity of offensive users or questionable programs and assisting in debugging programs on-line.

TRIM may be used to process either the Command Log (**G**) or Protection Log (**H**), producing detailed information and summary statistics in report form (**I**) or onto output datasets (**J**). These datasets may be input into TRIM at a later date, giving TRIM a non-ADABAS based historical capability.

TRIM automatically produces hard-copy Nucleus Session Statistics (**K**) at the end of each Nucleus Session.

When each NATURAL user "FINs", the TRMFIN feature (**L**) displays counts, totals, and/or charge-back figures on-line.

The TRIM NATURAL Monitor (TNM) consists of TNM user-exits to the NATURAL nucleus, the TNM file, and TNM Administrative and Reporting functions. The function and interaction of these components are illustrated in the following diagram:



NATURAL TNM Environment

Description

As the user interacts with NATURAL and NATURAL applications, TNM monitors the user's activity. TNM NATURAL user-exits record data about the user's actions and about NATURAL program activity, periodically writing the data to the TNM file on ADABAS. TNM Administrative functions activate and deactivate data collection, purge obsolete summary and detail data from the TNM file, etc. TNM Reporting functions retrieve the data from the TNM file and present it in a variety of reports.

I.3 Introduction to Real-Time Monitoring

The TRIM Real-Time Monitor (RTM) provides the DBA, NATURAL Administrator, Operations Staff, Application Analysts, and other users a simple, powerful tool to monitor multiple database activities on-line. On-line monitoring must be instantly effective since there is only one chance to capture the necessary information.

With a single copy of the Real-Time Monitor's NATURAL modules, following simple menu screens, the DBA may view the following on-line:

- Statistics for the past five minutes broken down by minute for the following:
  - ADABAS Thread
  - ADABAS File Number
  - ADABAS Command
  - ADABAS Response Code
  - NATURAL Program (Module)
  - Job Name
  - ADABAS User-ID
  - Security-ID
  - NATURAL Application Library
  - NATURAL Security User-ID
  - CICS Transaction-ID
  - ADABAS User-Area of Control Block
- Statistics for the past five hours broken down by hour for the 19 heaviest used Threads, File Numbers, etc. (refer to the above list).
- Totals for the entire Nucleus Session including number of commands per Thread, File Number, etc. (refer to the above list), as well as for Command within File.
- Traces of all ADABAS calls, those of a particular Job, User-ID, or NATURAL Program, or the activity against a particular File or Commands receiving a certain Response Code, having a long duration or high I/Os, etc. Multiple users may use the Trace Facility concurrently.
- Nucleus Parameters and Session Statistics from ADABAS, including number of Format Buffer Translations, Overwrites, Throwbacks, Buffer Calls, Interrupts, Read and Write I/Os to ASSO, DATA, and WORK, and Buffer Efficiency.
- The User Queue, which shows the number of active users, Internal User-ID, Jobname, etc. For any selected User-ID, the currently accessed files and number of held records are shown.

  An Extended User Queue facilitates additional accumulations of statistics by User-ID. The total Commands, Duration, and I/Os for the current session (until a close) are maintained for each active user and are available for viewing. (Note: the XUQ is limited in size to a maximum of 1,024 entries. The 1,024 most recently active users will be maintained in the XUQ.) These figures show totals for the session along with an "instantaneous" view (since the last ENTER Key). The current Job Name, Security-ID, NATURAL Program, NATURAL Application Library, and NATURAL Security User-ID are also made available.

  The users with access to any selected file may be displayed. Users may have their accessibility to the file removed from the User Queue.

  All user queue entries for any selected NATURAL Program, NATURAL Application Library, or NATURAL Security User-ID may be displayed.
- The Hold Queue, which shows the number of entries, number of users represented in the Hold Queue, and the users with the most held records.

- The Command Queue, which identifies command back-up. This is useful during peak periods.
- Table of Sequential Commands, Table of Search Results, and Internal Format Buffer in detail or summary form, which identifies users with the most entries.
- Database Information resembling ADAREP, but extended with totals and warnings. GCB, FCB, FDT, and Device information is available for display.
- Warnings about Exceptional Response Codes, which shows incidents of importance, such as Queue and Table "fill-up" conditions. This will inform the DBA that the Table of Sequential Commands, for example, filled up some time earlier and indicate which user had the most entries in the table at that time. The Exceptional Response Code list may be tailored by the user through TRMRSP parameters and viewed on-line.
- Measurement of certain Queue and Table "high-water" marks showing the date (day of year) and time the maximum percent usage was hit.
- SECURITRE violation and performance statistics.
- TRIM NATURAL Monitor (TNM) summary and detail data.
- Real-Time Monitor Control Settings. The RTM (through its User-Exit-4) may be preset to accumulate or calculate only specific statistics. This may be done by Zaps or through Time Adjustable Parameters (TRMTAP). If the TRMTAP are linked with User-Exit-4, the TRMTAP for the current hour (or previous hour if there are no parameters for the current hour) are used to pre-determine which statistics will be made available from this User-Exit-4.

  The current Real-Time Monitor status may be displayed and changed. Start-up parameter settings may be viewed along with hourly change values. These may be adjusted via Real-Time Monitor "Control" screens.
- Start-up Command Logging Parameters (TRMLOG) may also be linked with User-Exit-4 and viewed on-line along with additional user-communicated logging parameters.
- The Exceptional Response Code Parameters (TRMRSP) may be viewed on-line.
- tRelational Logging Parameters (TRELOG) may be viewed on-line.
- SECURITRE may be used to control access to the various TRIM functions and screens. This places the rules for RTM usage in the System Security Facility (RACF, ACF2, or TOP SECRET).

This is all accomplished without "logging" any data.

For more information about the RTM, refer to **Section II Real-Time Monitor**.

Note: Treehouse Software's SECURITRE product provides a User-ID-based security interface between ADABAS/NATURAL and RACF, ACF2, or TOP-SECRET.

I.3.1 NATURAL Performance Monitoring with TNM

The TRIM NATURAL Monitor (TNM) feature collects comprehensive information on all NATURAL program and user activity. TNM can help a system run at peak efficiency by identifying NATURAL performance issues, including slow response time, time-consuming programs, and excessive ADABAS calls.

NATURAL activity for both users and programs is monitored by TNM and stored as summary data. Using TNM summary data, sites can watch production users running NATURAL applications and monitor the performance of the applications. If a problem is observed, detail data can be collected to provide more precise information to help analyze the problem. Detail data is collected only when requested and provides more extensive information on selected NATURAL activity.

Summary and detail reports provide users with a wide range of reporting options. TNM offers both on-line and batch reporting to allow the user to effectively analyze program execution statistics, user activity statistics, and program flow. The historical reporting features of TNM provide the user with the ability to compare user and program execution statistics over time.

TNM Users

TNM is designed to be used by a variety of computer professionals. This flexibility allows for thorough monitoring of a site's NATURAL environment.

NATURAL administrators can use TNM to monitor NATURAL performance. Information received from TNM can help them to direct developers toward the source of performance problems that need to be corrected.

Application developers can use TNM to help diagnose production performance problems. TNM reports allow developers to see which parts of applications are being executed most/least, the amount of time ADABAS calls are taking, execution times, etc. TNM can also trace the flow of program executions. All of this information points to areas in which developers can focus tuning efforts.

ADABAS database administrators can use TNM to track ADABAS response times from the NATURAL point of view to help determine if a reported problem stems from ADABAS performance or a factor internal to the program. TNM returns information on ADABAS response time, database, and NATURAL program and line number.

Quality Assurance personnel can also utilize TNM in their testing environment to determine where program executions are inefficient.

Therefore, TNM is flexible enough to fill all NATURAL monitoring needs.

With the data TNM collects, users are able to:

- Determine when programs were executed and which programs, external subroutines, and maps were called from each program
- Analyze which programs are used the most, make the most ADABAS calls, and have the fastest and slowest response times
- Ascertain what "events" programs perform and the impact of each event on system performance
- Identify programs that use an excessive amount of system resources, enabling timely resolution of system performance problems
- Determine the effect of each program and each user on total system performance
- Identify users with excessive program executions, ADABAS calls, and slow response times

- Study current and historical program and user execution information
- Pinpoint application bottlenecks
- Identify program inefficiencies, such as repeated reference to the same ADABAS record or groups of records
- Increase application and user efficiency to reduce processing costs and defer hardware and software upgrades

Because it has been designed for maximum efficiency, TNM can be used in both test and production environments without impacting application performance.

TNM detail collection should be used selectively in production environments. Large amounts of data can be generated if detail collection is turned on for all programs, users, and libraries.

I.3.2 Dynamic Control and Security Facility

An important performance issue is how to stop performance problems before they occur. The TRIM Dynamic Control and Security Facility employs "dynamic communication" (no need to bring the database down and up) to a supplied User-Exit-1 to screen out inefficient commands, lock out file access to certain users, plug ADABAS passwords, and perform security checks based upon password(s). SMP/PLEX Support allows this communication to be directed to the User-Exit-1 in specified nuclei.

The dynamic communication parameters that are in effect may be viewed on-line.

For more information, refer to **Section III.2 Using Dynamic Control and Security**.

I.3.3 Dynamic Logging Facility

ADABAS gives the user the option of starting an ADABAS session with or without detail command logging and with or without logging each of the Buffers (via ADARUN Parameters). It also allows the user to change which Buffers are being logged (via Operator Commands).

Prior to TRIM, most users logged only the Basic Part and the "Rest of the Control Block", but they did not log the buffers because the buffers required excessive logging space. For example, to capture the Record Buffer for occasional calls having non-zero response codes, the typically large Record Buffer had to have been logged for all calls having any response code values, most of which were zero.

However, some users did log the Format, Record, Search, and Value Buffers to obtain valuable information contained within them. These users were logging all records and all potentially useful Buffers even though only a fraction of the data was wanted for subsequent processing. This caused the disk log areas to fill up fast, which, in turn, caused the job that copies the disk log to tape to be invoked much more often and more tape(s) to be used. ADABAS does not provide the option of logging for certain Jobs, Buffers, Files, Response Codes, etc. TRIM's Dynamic Logging Facility gives the user this capability. SMP/PLEX Support provides the capability to direct the chosen logging options to specified nuclei.

For more information about Dynamic Logging, refer to **Section IV Dynamic Logging Facility**.

I.3.4 PRESUM Summarization Records

When a job that reads 100,000 records from a file, all with Response Code zero is initiated, it may be desirable to log information about 100,000 calls by this user, for this job, and against this file, but not to have 100,000 *detail* log records. A few summarization records about these calls are more efficient. ADABAS does not provide these summarization records. TRIM provides these summarization records known as PRESUM.

Rather than high-volume Command Log detail records, the TRIM philosophy is to pre-summarize (PRESUM) certain statistics directly in User-Exit-4. These PRESUM statistics are output hourly to the Command and/or SMF Log. Full resource analysis and charge-back data is available using only a few Command and/or SMF Log blocks. Reports and outputs may be generated via batch PRESUM analysis runs. An ADABAS session may typically run for days with a very reasonable amount of log data being written.

The Command Log has been redefined and refined by TRIM.

Note: PRESUM processing requires the use of CLOGLAYOUT=5 or 8.

For more information about PRESUM, refer to **Section V ADABAS Command and Protection Log Processing**.

I.3.5 TRELOG Summarization Records

tRelational is a Treehouse Software product that is used in the process of migrating ADABAS data to various relational databases (RDBMS). To properly define the relational model, the ADABAS file and field structure must be examined. Optimally, the ADABAS data usage should also be analyzed over a period of time. For example, it is advantageous to know if certain ADABAS descriptors are actually used and how often before propagating these descriptors to index status on the RDBMS. tRelational, in combination with the TRELOG function of TRIM, provides this statistical information for input to the tRelational Dictionary.

When tRelational logging is activated, the requested information is collected in an internal table defined via the TRELOG macro. Each entry in the table contains a count field and the count is incremented by one for each duplicate entry. Using the same philosophy as PRESUM, the use of a count field provides a form of summary for the data and avoids high volume logging.

The entries are only written to the log whenever tRelational Logging is deactivated, the session terminates, or the TRELOG table becomes full. In the later case, only the specified number of entries is written to the log, and in the other cases, the entire TRELOG table is written to the log. This design permits extended logging periods with a minimum amount of physical logging.

For more information about TRELOG, refer to **Section V ADABAS Command and Protection Log Processing**.

I.3.6 Batch Command Log Analysis

The TRIM Batch Facility is an effective tool capable of extensive log analysis. The Batch Facility is parameter driven, so the user may tailor reports to meet specific needs. It may be used to process the Command Log Detail Records, Command Summarization Records (PRESUM), or tRelational Log Records (TRELOG) to do the following:

- Identify jobs, files, commands, and NATURAL programs with excessive I/Os, poor response times, security violations, etc.
- Determine ADABAS resources used by NATURAL programs
- Show the relative efficiency of:
  - Find vs. Read
  - Find-Sorted vs. Read-Logical
  - Logical Read vs. Physical Read
- Measure on-line usage of ADABAS broken down by CICS terminal
- Produce reports for management, showing totals of CPU time and I/Os, and averages of response time for each department, system, or project for each hour (or parts of hours) of each day
- Print the contents of Format, Record, Search, and Value Buffers on certain ADABAS response codes
- Show the overhead of NATURAL Security
- Compare the speed of NATURAL and COBOL
- Calculate charge-back figures or provide billing data for inclusion into other accounting systems
- Identify program inefficiencies, such as repeated reference to the same ADABAS record or groups of records
- Compare the performance of different file designs (e.g., multiple files vs. one file with different record types vs. one file with PEs)
- View the thread usage per hour, revealing the need for additional threads during peak usage
- Highlight the overhead of specifying fields out of order, overriding default lengths and formats, specifying elementary fields vs. group fields, retaining unused descriptors, etc.
- Analyze descriptor usage by file and command within file
- Analyze file update vs. retrieval activity

TRIM generates some of the reports on the previous page from the ADABAS Command Log Detail Data Records. Summary-type reports may usually be obtained from statistics already previously summarized (PRESUM) in TRIM User-Exit-4 and contained on the Command Log along with the normal ADABAS Command detail records. Proper parameter specification to capture limited Command Log detail records, along with a reasonable set of PRESUM data will permit Command Log disk allocation of a limited number of cylinders.

For more information about Batch Command Log Runs, refer to **Section V ADABAS Command and Protection Log Processing**.

I.3.7 Batch Protection Log Processing

TRIM may be used to generate multiple reports in one pass of the ADABAS Protection Log with selection by file and field from the compressed images on the log. The data is decompressed and displayed and/or output to sequential datasets.

There is no ADABAS standard user-exit facility available for manipulation or reducing PLOG data. Protection Logging may be turned on or turned off for any ADABAS session. If turned on, Protection Logging occurs for all database modifications for all users, all files, and all ADABAS update comments.

In order to decompress the before and after compressed record images on the PLOG, TRIM requires a description of the files for which records will be decompressed. This description is obtained from file loader (ADAWAN or ADACMP) card images provided as input to TRIM.

For more information about Protection Log Runs, refer to **Section VI Log Analysis Parameter Statements**.

Note: The Treehouse Software product AUDITRE may be used for more extensive Protection Log auditing.

I.3.8 Nucleus Session Statistics

At certain hourly intervals, or upon termination of the ADABAS Nucleus Session (ADAEND), TRIM automatically prints selected information and statistics directly onto the ADABAS Nucleus DDPRINT dataset (SYSLST for VSE). This formatted information should be very helpful to the DBA. This feature requires no log records to be written and no DBA intervention.

TRIM prints certain ADABAS information, including Nucleus start and termination dates and times, Nucleus parameters, Format Buffer Translations, Overwrites, Commands Processed, Throwbacks, Buffer Calls, Interrupts, Read and Write I/Os to ASSO, DATA, WORK, and Buffer Efficiency.

TRIM produces selected additional helpful information, including number of commands for each Thread, Response Code, Command Code, File Number, Command Code within each File Number, NATURAL Program, Job Name, User-ID, Security-ID, NATURAL Application Library, NATURAL Security-ID, CICS Transaction-ID, and User-Area of the Control Block.

TRIM also automatically prints longest duration commands, certain ADABAS buffers' high-water marks, counts of commands inhibited by TRIM User-Exit-11action, etc.

In case of an ADABAS ABEND, the following list of addresses, which is automatically printed, may prove useful:

- Addresses of key ADABAS modules, Queues, and Tables
- Addresses of key TRIM modules and Tables

For more information about Nucleus Session Statistics, refer to **Section VII TRIM Nucleus Session Statistics**.

I.3.9 Historical Facility

The TRIM Historical Facility is the ability to use TRIM in conjunction with other software products, such as SAS, ADABAS, NATURAL, etc. to assist in trend analysis, capacity planning, charge-back, and maintenance of other long-term statistics and information.

The basis for this Historical Facility is TRIM's ability to "duplicate" any report data onto sequential datasets for later processing with TRIM or other statistical analysis systems, job accounting systems, or the user's own COBOL or NATURAL programs.

The sequential datasets may optionally be written to an ADABAS File via ADALOD or the user's own COBOL or NATURAL Programs and later queried via the user's own on-line programs.

For more information about the Historical Facility, refer to **Section VIII Historical Facility**.

I.3.10 Installation and Operation

The separate ***TRIM Installation and Operations Manual*** fully describes the installation and operations of TRIM. This brief introduction to the installation process may be beneficial to the user as a quick reference.

TRIM may be installed and executed on IBM 370 and compatible mainframes in the following environments: OS (OS/390, MVS, MVS/XA, MVS/ESA), VSE with POWER (or its equivalent), and VM. TRIM may also be installed on certain Siemens systems. Installation should take less than one hour.

TRIM executable code is distributed as Assembler object modules and NATURAL NATLOAD data.

TRIM requires no Zaps to any operating system, teleprocessing system, or ADABAS, NATURAL, or their associated software. A common Link-Exit-1 is provided for the various ADALINK modules. Also, User-Exit-11, User-Exit-8 and User-Exit-4 are provided for ADABAS. These user-exits may co-exist with user-exits already in place at many user sites. TRIM user-exits for ADABAS and the TRIM Real-Time Monitor (RTM) are tailorable or controllable for each database.

The TRIM RTM runs equally well in CICS, COM-PLETE, TSO, CMS, or any other teleprocessing environment capable of running NATURAL.

The TRIM RTM NATURAL modules are distributed for execution using NATURAL and may be installed onto a default library or any other library the user chooses.

The TRIM RTM NATURAL modules are required to be installed on only one database, preferably Test, although they may be installed on multiple databases.

Once ADABAS is brought up with TRIM user-exits, the exits tally statistics and the RTM is able to view these statistics.

If NATURAL Security is being used, the Application upon which the RTM modules are installed must be defined for use by all potential users of the RTM.

If TRIM usage is to be controlled by SECURITRE, the entity rules for the System Security Facility (SSF), such as ACF2, RACF, and/or TOP SECRET, must be coded and entered into the SSF in use.

TRIM is capable of extensive logging and log analysis. However, TRIM does not require logging. The numerous capabilities of the Real-Time Monitor, Dynamic Control and Security, the extensive hard-copy Nucleus Session Statistics, and the TRMFIN Feature are all available without logging a single record.

TRIM batch facilities are user-parameter driven, which require no programming.

TRIM includes a Batch Slowdown feature to optionally cause batch jobs to occasionally pause to allow on-line users to experience better response times.

The TNM feature requires an ADABAS file.

TRIM requires no other components of ADABAS or NATURAL (e.g., Utilities, PREDICT, NATURAL Security, etc.). TRIM also does not require NATURAL, except to run the Real-Time Monitor and TNM.

For more information, refer to the ***TRIM Installation and Operations Manual***.

I.3.11 TRMTAP, TRMLOG, TRMRSP, TRELOG, TRMSLO

The TRIM RTM features and capabilities are extensive. The RTM may be tailored for each database to provide only those statistics desired during certain periods of time. For example, the production database may have hourly statistics turned on at 6 a.m. for the DBA to view later in the morning. At 6 p.m., hourly and minute statistics may be turned off. Certain session statistics may be set to be always on, others always off. Also, the test database may be tailored differently. This feature is known as TRMTAP (Time Adjustable Parameters) and is discussed in ***Section VII.1 Time Adjustable Parameters (TRMTAP)*** of the ***TRIM Installation and Operations Manual***.

Start-up logging requirements are set via TRMLOG and may be augmented by dynamic adjustments (Dynamic Logging Facility) while the database(s) remains active.

Exceptional Response Codes are noted by TRIM. Twelve critical response codes are the defaults, which may be augmented with user-defined response codes worthy of note. This is known as TRMRSP.

Batch jobs may be conditionally slowed down by using TRMSLO.

tRelational Logging may be enabled and buffers allocated with TRELOG. It may be time controlled with TRMTAP.

For more information about TRMTAP, TRMLOG, TRMRSP, TRELOG, and TRMSLO, refer to ***Section VII TRMTAP, TRMLOG, TRMRSP, TRELOG, TRMSLO*** of the ***TRIM Installation and Operations Manual***.

I.3.12 Idle Mode

TRIM User-Exit-4 has a feature named Idle Mode. This mode may be compared to an automobile in idle. The engine is running, but it is not engaged. TRIM in Idle Mode means that all RTM functions are potentially available at any time (without having to turn the engine off and on), but all accumulators, TRACE, SDUR, and extended user queue processing are bypassed during idling. Logging is continued according to the parameters that have been defined.

TRIM may be set to Idle Mode from the RTM via the CTRL screen, from TRMTAP macros, or by tailoring with Zaps. When TRIM is placed in Idle Mode, all settings are saved and set to "inactive." A message is written to the ADABAS DDPRINT dataset (SYSLST for VSE) and will appear at the top of each detail screen in the RTM.

The Idle Mode setting may only be changed in the RTM after password verification. When a user changes the Idle Mode setting during an RTM session, a verification will be presented when exiting the RTM to determine if the setting should be continued in the current state. For more information, refer to **Section IX Idle Mode**.

I.3.13 TRMFIN Feature

Each NATURAL user's session totals are maintained within TRIM's User-Exit-4.

The NATURAL user's calls, I/Os, Duration, and estimated number of instructions (for estimating CPU usage) are maintained during the user session. Once the user ends the session (which is normally done by typing "FIN"), TRIM, through its TRMFIN feature, may display one or more screens about the user's activity, give NATURAL Security information, estimate CPU usage, translate usage to charge-back figures, etc., and end the session.

For more information about TRMFIN, refer to ***Section VIII.2 TRMFIN*** of the ***TRIM Installation and Operations Manual***.

SECTION II

REAL-TIME MONITOR (RTM)

II.1 Overview

The TRIM Real-Time Monitor (RTM) provides the DBA, NATURAL Administrator, Operations Staff, and Application Developers a simple and powerful tool to monitor all ADABAS activity on multiple databases, on-line.

The TRIM RTM consists of several subsystems, each of which displays specific information about the activity on the database currently being monitored. These subsystems are:

- Control Functions
  Controls operation of TRIM and the RTM for the current database session.
- Minute Statistics
  Displays database activity by the minute for the most recent five minutes.
- Hourly Statistics
  Displays database activity by the hour for the most recent five hours.
- Session Statistics
  Displays database activity for the current database session.
- Queues and Tables
  Displays information from ADABAS Queues and Tables.
- Dynamic Trace Facility
  Enables the user to trace and display ADABAS commands issued against the database.
- Database Information
  Displays information about the database and files.
- SECURITRE Interface
  Displays security information from SECURITRE.
- Environment Information
  Displays information about the ADABAS and TRIM environments.
- Exceptional Response Codes
  Displays exceptional response codes monitored by TRIM.
- TNM
  Displays summary and detail data by NATURAL program and user.

The DBA may use the RTM to monitor ADABAS commands issued against the database, ADABAS thread usage, ADABAS File usage, excessive use by a job, program, user, etc. Information about the current database, ADABAS environment, or ADABAS File may also be displayed.

The NATURAL Administrator may use the RTM to monitor and tune the NATURAL Environment. By utilizing the function to display the commands with long duration, the NATURAL Administrator may locate and correct inefficient programs. The Dynamic Trace Facility monitors programs that are currently executing and assists in locating inefficient commands or poor programming logic.

The Application Developers may use the RTM to assist in debugging programs and to ensure efficient design of the programs being created or modified.

The DBA, NATURAL Administrator, and Application Developer may invoke the TRIM NATURAL Monitor (TNM) from the menu screen of the RTM. TNM is described in the TRIM NATURAL Monitor section.

II.2 Introduction to the RTM Subsystems

The TRIM RTM consists of several subsystems. Each of these subsystems enables the RTM user to view information about or activity on the database in question. Each subsystem is briefly described below.

- *Control Functions*

  The Control Functions subsystem controls the operation of the Real-Time Monitor. From this subsystem, it is possible to change the way User-IDs are displayed or the way many of the displays are sorted. This subsystem may be used to tell the RTM which accumulators (such as File Number or Program) should be turned on or off, whether PRESUM statistics should be gathered, whether TRELOG statistics should be gathered, and what Time Adjustable Parameters (TRMTAP) settings should be in effect for the session.

- *Minute Statistics*

  The Minute Statistics subsystem enables the RTM user to view the ADABAS activity in a variety of categories by minute for the most recent five minutes. The information may be used to determine which files are most active or to locate programs or users that are issuing a large number of ADABAS commands. The available categories in the subsystem are:

  - ADABAS Thread
  - ADABAS File Number
  - ADABAS Command
  - ADABAS Response Code
  - NATURAL Program Name
  - Job Name
  - ADABAS User-ID
  - Security-ID (i.e., RACF User-ID)
  - NATURAL SECURITY System User-ID
  - NATURAL Application Library
  - CICS Transaction-ID
  - User-Area of ADABAS Control Block

- *Hourly Statistics*

  The Hourly Statistics subsystem displays the ADABAS activity for the most recent five hours. This subsystem may be used to expose trends over this period and to locate those files, users, programs, etc. that were the most active during this period. The categories available in this subsystem are the same as the categories in the Minute Statistics subsystem.

- *Session Statistics*

  The Session Statistics subsystem is the next logical extension of the previous two subsystems. This subsystem reports on the activity for the entire ADABAS session. It is possible to determine which files, users, programs, etc. are the most active for the current session. For each category, percentages are displayed to enable the RTM user to determine if possible problems exist. For example, if a specific program issued 30% of all the commands during the session, this may indicate the program is not properly coded. The categories available in the Minute and Hourly subsystems are also available for display in this subsystem.

  This subsystem may also display the 51 commands of longest duration issued against the database for the current session. This function is of great value for locating problematic or inefficient programs.

  The Session Statistics subsystem also displays information about the ADABAS Nucleus Parameters in effect for the current session and some statistics from the Nucleus.

- *Queues and Tables*

  The Queues and Tables subsystem enables the RTM user to view the information from many of the ADABAS internal tables, such as the User Queue, Hold Queue, Command Queue, Table of Sequential Commands, Table of Search Results, and Internal Format Buffer.

  The information found in these queues and tables may be used to identify resource usage, users accessing a specific file, the number of records being held by a user, etc.

- *Dynamic Trace Facility*

  The Dynamic Trace Facility subsystem enables the RTM user to trace certain commands being issued against the database in real-time. It is possible to restrict the trace to capture only those commands being issued by a specific user or program, commands with excessive I/O or Duration, or specific ADABAS commands (i.e., E1 - DELETE). This subsystem is useful for determining the causes of database problems and assists the Application Developers in tuning and debugging programs.

- *Database Information*

  The Database Information subsystem is used to view information about the database. The information displayed resembles an ADAREP, but with extended totals and warnings. The File Control Block (FCB) and Field Definition Table (FDT) for a file may be displayed, along with device types used by the database.

- *SECURITRE Interface*

For those sites utilizing the Treehouse Software security package, SECURITRE, performance and violation statistics may be viewed from this subsystem.

- *Environment Information*

  This subsystem enables the RTM user to view information about the current ADABAS and TRIM environments. Information displayed from this subsystem includes the address locations of the ADABAS and TRIM modules and tables, SVC information, the ADABAS link routine being used, etc.

- *Exceptional Response Codes*

  The RTM automatically looks for exceptional response codes deemed serious enough for reporting purposes, such as Queue and Table "fill-up" conditions. This informs the DBA that the Table of Sequential Commands, for example, filled up some time earlier and indicates which user had the most entries in the table at that time.

- *TNM*

  This subsystem collects comprehensive information on all NATURAL program and user activity. TNM can help a system run at peak efficiency by identifying NATURAL performance issues, including slow response time, time-consuming programs, and excessive ADABAS calls.

  Using TNM Summary data, sites can watch production users running NATURAL applications and monitor the performance of the applications. If a problem is observed, detail data can be collected to provide more precise information to help analyze the problem. Detail data is collected only when requested and provides more extensive information on selected NATURAL activity.

  Summary and detail reports provide users with a wide range of reporting options. TNM offers both on-line and batch reporting to allow the user to effectively analyze program execution statistics, user activity statistics, and program flow. The historical reporting features of TNM provide the user with the ability to compare user and program execution statistics over time.

II.3 Real-Time Monitor Environment

The RTM is very simple to install and use. Only a single copy of the RTM NATURAL modules is needed for a site to monitor the entire ADABAS environment. This one copy may be loaded onto a database of the DBA's choice (e.g., Test), and from this one location, monitor any active local database. Refer to ***Section IV Real-Time Monitor Operations*** of the ***TRIM Installation and Operations Manual*** for details.

Any mainframe system running ADABAS and NATURAL may use the RTM. This means OS (OS/390, MVS, MVS/XA, MVS/ESA), VSE, VM (SP, XA, ESA) using COM-PLETE, CICS, TSO, CMS, etc., and the BS2000 operating system.

If the NATURAL SECURITY System (NSS) is being used, the Application upon which the RTM modules are installed must be defined for use by all potential users of the RTM.

Once ADABAS is brought up with the TRIM user-exits properly in place, the full RTM capability is ready for use.

Note: No Command Log records need to be written to use this Monitor.

II.4 Real-Time Monitor Operation

The TRIM RTM is a menu-driven set of NATURAL modules. The user logs onto whichever library the RTM modules have been installed and executes MENU. There are no new languages or disciplines to learn. The RTM looks like any other ADABAS/NATURAL application.

Multiple Database Support

The NATURAL modules representing the RTM may be installed on one database and perform monitoring of others. It is common to install the RTM on one Test database while directing it to present statistics from several other Test and/or Production databases. The user merely types the appropriate database ID number to switch databases.

When the NATURAL modules are placed on Test, most overhead associated with the RTM NATURAL modules' calculations, sorts, displays, fetches, etc. will affect Test, not Production, even though Production Databases are being monitored.

If the user has the NATURAL SECURITY System (NSS) in use on Test and desires to use the TRIM RTM to view a filled Hold Queue on Test, the attempt will fail in NSS because of NSS's attempt to write a record about the user logging on. One indirect advantage of TRIM's Multiple Database Support is that the RTM NATURAL modules may be loaded onto two databases and always run from Test, unless the above scenario occurs. At that time, the RTM may be started on the other database to view Test, even when Test's Hold Queue is filled.

Default DBID to Monitor

When the RTM is invoked (MENU is typed), the RTM interacts with the TRIM user-exits on the "default database". This is the database upon which the RTM modules reside. The RTM modules may be on Test, and Test is to be monitored. At times, Production is the DBID that needs to be monitored. Its DBID may be specified on one of many RTM screens. In some sites, the RTM is installed on one database, such as Test, but it is desired to always have the RTM start by monitoring another database, such as Production. The RTM TRMCUST module may be tailored to set the default.

To accomplish this default setting, code the proper #DEFAULT-DBID number in the TRMCUST program, and STOW it in the RTM library. The source code for the TRMCUST program is shown in ***Section VIII.1 TRMCUST*** of the ***TRIM Installation and Operations Manual***.

TRMUEX4 Tailoring

TRIM UEX4 (TRMUEX4x) may be run in Idle Mode to keep production overhead at its lowest. Whenever TRIM UEX4 is required to be active, there are options for tailoring that allow the database administrator to collect the information needed while keeping overhead to a minimum.

TRIM UEX4 may be tailored to calculate only the statistics the DBA desires from that database. For example, the Test Database may be tailored to calculate Five-Minute statistics by User-ID and File Number, hourly by Thread, and Session statistics by Command, File, and Security-ID. With this tailoring, overhead on the Production database is minimized.

The single set of RTM NATURAL modules may communicate with each TRMUEX4x to know what statistics are available from each database.

TRMUEX4x may be tailored in three ways:

- Zaps (refer to ***Section VI Tailoring With Zaps*** of the ***TRIM Installation and Operations Manual***). These Zaps affect the entire session unless there are Time Adjustable Parameters (TRMTAP) or the DBA makes adjustments through Control Screens.
- Time Adjustable Parameters (TRMTAP) for start-up and hourly changes (refer to ***Section VII.1 Time Adjustable Parameters (TRMTAP)*** of the ***TRIM Installation and Operations Manual***). These override any Zaps and may be overridden by adjustments via the RTM Control Screens. The RTM Control Screens may also be used to modify any hour's settings. TRMTAP and RTM Control Screen adjustments last only for the duration of the current Nucleus Session.
- RTM Control Screen adjustments (refer to **Section II.5 Real-Time Monitor Screens** for more information). These adjustments last only for the duration of the current Nucleus Session.

Certain functions are unavailable with the small UEX4 (TRMUEX4S). Other functions may have reduced capabilities or table sizes. The regular UEX4 (TRMUEX4R) has complete functionality, but smaller table sizes than the large UEX4 (TRMUEX4L).

Dynamic Adjustment of Statistics to be Calculated

At any point, the DBA may use Control Screens to adjust which Five-Minute, Five-Hour, and Session statistics are to be calculated on any database. This is accomplished on-line without interrupting database operation.

With its ease of use, TRIM and its RTM are often released to multiple users at the ADABAS site. This works fine, unless various users are allowed to change the statistics being tallied. This would cause confusion. Therefore, this adjustment process via Control Screens is password controlled.

The Control Screens may be used to view the Time Adjustable Parameters (TRMTAP). For example, if these parameters indicate the hourly statistics are to be turned off at 1900 hours, the DBA may elect to keep these hourly statistics in force after 1900 hours by making entries on the Control Screens. Furthermore, if no TRMTAP are available for a particular hour, and the DBA wants to set some, this may be accomplished on-line via the Control Screens.

The status of Command Logging (TRMLOG) and tRelational (TRELOG) parameters may be viewed on-line. Start-up parameters may be viewed along with multiple users' additional logging requirements.

The Exceptional Response Codes (TRMRSP) for warnings generated may be viewed on-line, but not changed.

On-line View of Past Five Minutes, Five Hours, and Session Activity

Five-Minute ADABAS command statistics by FNR, CMD, JOB, etc. are available to help the DBA determine the current load on the database.

Hourly command statistics for the past five hours are also available for viewing on-line. Rather than display counts for hundreds of JOBs, users, etc., the RTM displays the 19 with the highest usage. An applicable use might be the DBA using the RTM very quickly at mid-day to view what has been happening all morning.

Nucleus Session Statistics are available to cover a potentially long period of time.

Printing TRIM Nucleus Session Statistics

TRIM Nucleus Session Statistics may be set to print at the end of the ADABAS session (ADAEND) or at other intervals. These statistics may be output to DDPRINT (SYSLST for DOS) daily, every hour, or multiple of hours that divide evenly into 24, in addition to ADAEND time.

The on-line Nucleus Session Statistics screen for Longest Duration Commands may be "released for print" to DDPRINT/SYSLST at any time. These counters may also be cleared so that another stack of Long Duration Commands may be captured and reported.

DBID and Database Name on Screens

The DBID being monitored is displayed on nearly every screen. The DBID and other items may be changed via the RTM Control Screen. The DBID to be monitored may also be changed directly on the top of nearly every detail screen. For example, monitoring may be switched from Five-Minute Statistics by FNR on DBID 123 to Hourly Statistics by JOB on DBID 246 by entering four characters and three numbers.

The database name is displayed on several screens, usually in the center of the second line.

Database and File Structure Information

The RTM may present facts and figures on the database and its files' structures. For the database, the following "GCB" information is presented:

- Database ID number, name, date created, and system files
- Maximum number of files
- Physical layout of ASSO, DATA, and WORK datasets

For any selected file, the following "FCB" information is presented:

- File number and name
- ISN data (highest expected, first unused, etc.)
- Padding information
- Security, Coupling, and ADAM information
- Address Converter, Index and Data Storage extents

For any selected file, the following "FDT" information is presented:

- Field list (name, format, length, options (MU, NU, DE, etc.))
- Superdescriptor and subdescriptor makeup and lengths
- Total number of fields, descriptors, MUs, PEs, etc.
- Decompressed record length assuming default lengths and single occurrences

A database device table is also presented.

Exceptional Response Codes, or Warning Screens

TRIM notices certain critical response codes (Hold Queue full, Table of Sequential Commands full, etc.) and retains information about which user is adversely affecting the Queue or Table. This information is reported on DDPRINT (SYSLST) and causes a warning message to the RTM. The user may then view the latest 19 warning messages on-line. If more than 19 messages are built, the oldest messages are printed on DDPRINT (SYSLST).

The Response Codes that may cause warnings include 1, 2, 27, 70-75, 77, 145, 151, and 152. These are the defaults. It is possible to monitor different Response Codes through the TRMRSP feature, and these are viewable on-line.

Queues, Tables, and Buffers, On-line

The User Queue, Hold Queue, Command Queue, Table of Sequential Commands, Table of Search Results, and Internal Format Buffer are displayable one line per entry in the Queue, Table, or Buffer, on multiple screens when necessary.

Screens showing "highest usage" are more often used to identify abusers of these Queues, Tables, and Buffers.

The User Queue shows number of active users, External User-ID, Internal User-ID, Jobname, etc. For any selected User-ID, the currently accessed files and number of held records may be displayed.

An Extended User Queue has been added to facilitate new accumulations of statistics by User-ID. The total Commands, Duration, and I/Os are maintained for each active user and are available for viewing. These figures show totals for the session along with an "instantaneous" view (since the last ENTER key). The Security-ID and the current NATURAL Program, NATURAL Application Library, and NATURAL Security User-ID are also made available.

The users with access to any selected file may be displayed. Users may have their accessibility to the file removed from the User Queue.

All user queue entries for any selected NATURAL Program, NATURAL Application Library, or NATURAL Security User-ID may be displayed.

Scrolling through User Queue Entries

All User Queue entries are displayed on multiple screens when necessary. User Queue entries for apparently inactive users are ignored. This affects the User Queue display, User Queue selection, and UID Trace selection screens.

User-ID (and User-Area) Display in Hex or Characters

Some users require the User-ID to be displayed in hex. This is necessary because User-IDs may contain any binary configuration and may be unprintable in character form. However, other users desire to display the User-ID in character form because it contains readable characters (in CICS, for example). This is provided as a modifiable option. It also affects the User-Area (USA) of the Control Block displays.

Large Numbers in RTM Statistics

Sporadic large numbers are displayed in one of two ways: as ">>>" or "NNNK". The greater-than symbols should stand out and mean "greater than reasonable, should be looked into". An example is long duration commands with Associator I/Os greater than 999. The NNNK means the value was divided by 1000 and is in the new format. An example is a large command count in minute, hour, and session screens, shown as 123K, which means 123000 to 123999.

Trace Control

TRIM has no way of knowing that the user is done tracing unless told so. If TRIM is tracing a particular job for example, it will continue to do so until the end of the Nucleus Session, it is instructed to trace something else, or it is discontinued for this user. Often the user forgets to discontinue a trace. For this reason a warning message to indicate that the trace is still active displays on certain screens and upon quitting the RTM. Also, the DBA or anyone knowing the correct password may view and discontinue any active trace that is determined to be excessive or no longer needed.

Option for Zeroing FNR

User-Exit-4 has an option for zeroing the file number for commands that should have had a zero file number field in the ADABAS Control Block. ET, BT, RC, OP, RE, CL, and C1-C5 commands should specify file zero. However, any file number works in that it is ignored by ADABAS. Non-NATURAL programs usually zero or blank out the file number when appropriate.

NATURAL programs tend to leave whatever file number was last used in the file number field. When summarizing statistics in TRIM, this non-zero file number is usually beneficial in that statistics are based upon the non-zero file numbers, rather than having significant statistical figures for file zero. But, by simply processing with the non-zero file number in TRIM, invalid statistics sometimes occur when application programs blank out the entire Control Block before setting it for any particular ADABAS command. A blank in the file number field, formerly a single byte (hex 40), appears as file 64 to TRIM. A blank in the file number field, two bytes in ADABAS 6 (hex 4040), appears as file 16448 to TRIM. Therefore, some users may prefer to generate statistics as if the file number is zero for these commands and may set this option to do so.

Alternate User-ID

The Internal ADABAS User-ID (formally TERMID in CICS, TID in COM-PLETE, and STCK in BATCH) in ADABAS 6 is a sequentially assigned binary number. Therefore, relating on-line activity back to a CICS terminal or particular user has become more difficult. The TRIM Extended User Queue will relate CICS TERMID to ADABAS User-ID to permit better identification. Often, the NATURAL Security User-ID (NSU) will provide better user identification. The Security-ID (SID) is probably the best user identification.

Real-Time Monitor Module Names

All RTM Module Names start with TRM or TNM, except for the initially invoked MENU program. Note that statistics by NATURAL Program will identify many ADABAS calls for programs TRMxxxxx and TNMxxxxx. These are the calls from the NATURAL nucleus that read the RTM modules for execution.

Screen Navigation, PF-keys, ENTER key, Menu Screens

The PF-key operation of the RTM is similar to the other Treehouse products and additional products, such as NATURAL and PREDICT.

The following PF-keys will always function as indicated:

PF1	Invokes help for the field, screen, or report
PF3	Terminates the current function and returns to the previous menu displayed or main menu for the function
PF12	Exits the Real-Time Monitor

For those functions having multiple display screens, scrolling is possible with the following PF-keys:

PF7	Scrolls backward one screen
PF8	Scrolls forward one screen
PF10	Scrolls left
PF11	Scrolls right

PF-keys 13 to 24 are identical in function to PF-keys 1 to 12.

On several screens, other PF-keys are used to toggle between information or to activate or deactivate functions. The PF-keys are labeled with the appropriate function and are described for the appropriate screen.

The name of each function (or screen) is displayed at the top of the screen. Once the user becomes familiar with these names, the name of the screen to which the user desires to transfer may be entered. The RTM immediately transfers control to display that screen. For example, the user may immediately transfer from the Hourly Screen by File Number (HFNR) to the Session Screen by Job (SJOB). A list of RTM modules/screens is provided as Figure 1 at the end of this section.

The ENTER key usually means to "refresh" the screen with more current data if possible. When multiple screens of data are involved, the ENTER key means to continue to the next screen.

Some displays may involve long lists of names (Jobs, User-IDs, etc.). A "Start At" value may be entered to skip to a specified entry in the list.

PF12 and PF24 may be configured to accomplish a NATURAL STOP (return to the NEXT prompt) or a TERMINATE (terminate the entire NATURAL session).

Environment Information

The status of the ADABAS and TRIM environments are displayable on-line. For ADABAS and TRIM, addresses of many modules and tables are available. For TRIM, information may be displayed about the LX1NAME LX2NAME, UEX11, UEX8 and the UEX4 currently in use. This information is valuable in problem determination, especially as it relates to mismatched versions of various TRIM modules.

User Termination (TRMFIN) Statistics

This feature may be used to display counts, totals, and charge-back figures on-line and is described in ***Section VIII.2 TRMFIN*** of the ***TRIM Installation and Operations Manual***.

SECURITRE Interface

SECURITRE performance statistics are viewable via the TRIM RTM. A "seamless" transfer may be made from the TRIM RTM to the SECURITRE RTM and back. Refer to ***Section VII.1 TRMCUST*** of the ***TRIM Installation and Operations Manual*** for more information.

SECURITRE Control over TRIM

SECURITRE may be used to control access to the various TRIM RTM functions and screens. This places the rules for RTM usage in the System Security Facility (RACF, ACF2, or TOP SECRET). There are two components to the rules (or pseudo-dataset names) for controlling access to the various TRIM functions and screens via SECURITRE. The first component is supplied to SECURITRE in the TRMRTM parameter (a parameter in the SECURITRE product).

Example:

```
TRMRTM='TRIM.RTM.PROD'   or
TRMRTM='RTM.DB1794'
```

The second component is the TRIM RTM function or screen. These are broken into the functional groups below:

MENU
MINUTE
HOURLY
SESSION
CONTROL
TRACE
QUEUES
INFORM
SECURTRE
ENVIRON
WARN
CORE

The rules for a System Security Facility must be coded with the two components together, such as:

```
TRIM.RTM.PROD.ffffffff   or
RTM.DB1794.ffffffff
```

where ffffffff is the function as listed above.

II.5 Real-Time Monitor Screens

Although others may use the RTM, for illustration purposes, assume the DBA is the user.

Standard procedures available at the user site are used to invoke NATURAL. Then the DBA logs onto "TRMV620" (or the library upon which the RTM was installed) and executes the "MENU" Program by entering the following:

```
LOGON  TRMV811
MENU
```

The RTM screens have a standard format. In the upper left corner, the screen displays the date. In the upper right corner, the screen displays the time. The top middle of the screen displays a one or two line identification of the current screen.

The Direct Command line is displayed next to the date and allows a user to enter a new direct command. PF-keys are displayed across the bottom of the screen.

The DBID is generally displayed to the left of the time.

There are several types of screens used throughout the TRIM RTM:

Startup Screens

Displays authorization and version information.

Main Menu Screen

Allows users to select a major function, such as Session Statistics, Queues and Tables, TNM, etc.

Menu Screens

Displays sub-functions for selection.

Input Windows

Displays input fields for entering data necessary to perform certain functions.

Confirmation Windows

Allows users to either confirm or cancel a requested function.

Message Windows

Displays information concerning the status of a function.

Report Screens

Displays requested data that has been collected.

Help Screens

Displays information about the current function or valid data for the field.

Error Message Screens

Displays information about an error that has occurred during the use of the TRIM RTM.

Note that certain TNM screens display a DBID, but the DBID information is meaningless within TNM. The DBID is displayed to allow for quick and easy transfer to other RTM screens where the DBID is appropriate.

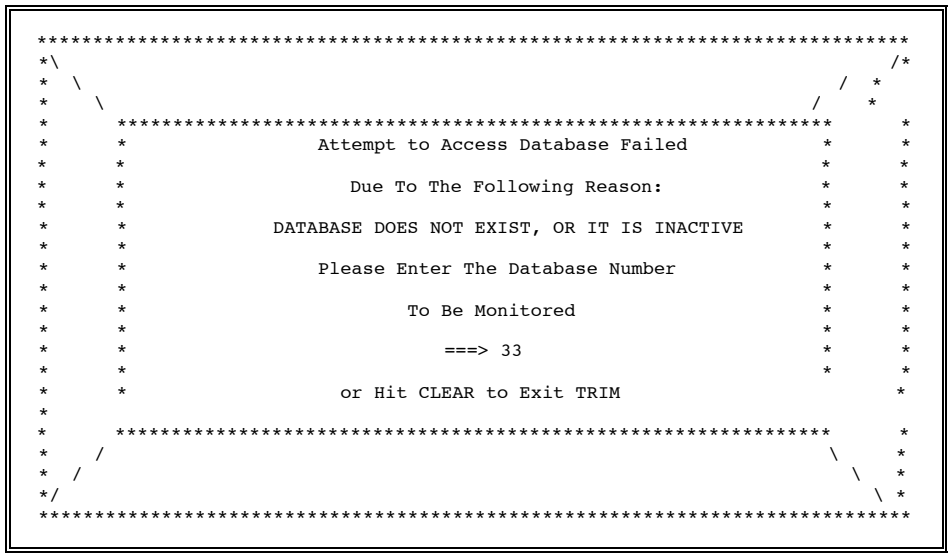
Examples of RTM Error Screens

The RTM performs several self-diagnostic tests when it is invoked to ensure that it has been correctly installed. If an error is detected during these tests, an error screen is displayed indicating the problem and, if necessary, who should be contacted to correct the problem.

Error screens are displayed if the version of TRIM being used has expired or if the user attempts to monitor a database that is either not active or does not exist.

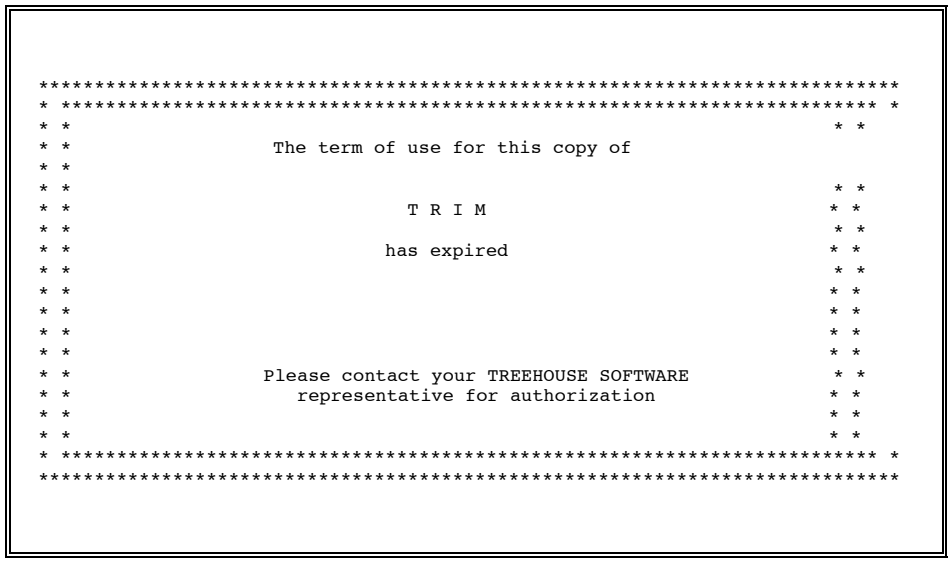
It is imperative that the versions of the Real-Time Monitor and the TRIM user-exits match.

The screen below is displayed if the user attempts to access a database that is not active or does not exist.



The user must follow the instructions to enter a correct, active database number.

The screen below is displayed if the user attempts to access a menu when the TRIM license has expired.



The authorization for the use of TRIM must be reestablished.

If the version and/or SM Level of the RTM NATURAL modules and the TRIM User-Exit-4 do not match, an Error Screen such as the one below is displayed.

```
************************************************************
*                                                          *
*           *** TRIM INITIALIZATION ERROR***               *
*    The TRIM Real-Time Monitor has been unsuccessful      *
*    when attempting to invoke User-Exit-4.  This          *
*    version of the Real-Time Monitor is not consistent    *
*    with the TRIMUser-Exit-4 which is being invoked.      *
*    Please be certain that the ADABAS Nucleus is          *
*    loading the correct User-Exit-4 (TRMUEX4).            *
*                                                          *
*    UEX4 VERSION =>  V76   0   RTM VERSION => V81   1     *
*                                                          *
*    If necessary, please contact:                         *
*                                                          *
*    for further details.                                  *
*                                                          *
*      Enter a new database ID: 221    (ZERO to exit TRIM) *
************************************************************
```

This indicates that on database 221, where the RTM programs are installed, the user-exits have not been updated to the SM level of the RTM. The user may switch to another database where the exits are the correct version and SM Level.

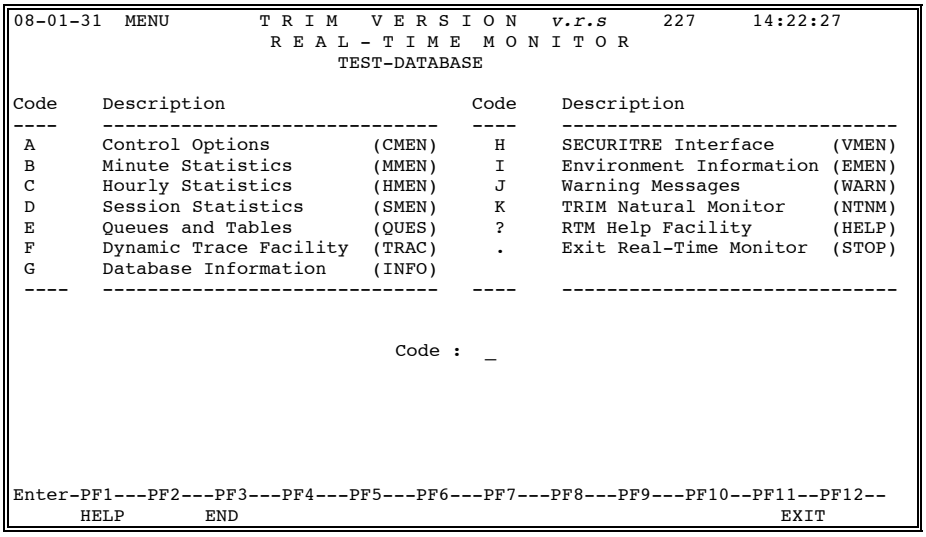
Once communication has been correctly established between the RTM NATURAL modules and the user-exits on the database to be monitored, the screen below is displayed.

```
TTTTTTTTTT
TTTTTTTTTT   RRRRRR
   TTTT      RR   RR    II
   TTTT      RR    RR   II   M     M
   TTTT      RR    RR   II   MM   MM    >
   TTTT      RR   RR    II   MMM MMM      >
   TTTT      RRRRRR     II   M MMM M        >
   TTTT      RRRR       II   M  M  M      >
   TTTT      RR RR      II   M     M    >
   TTTT      RR  RR     II   M     M
   TTTT      RR   RR    II
   TTTT      RR    RR
   TTTT                            Version v.r.s

TREEHOUSE SOFTWARE, INC.
                        SEWICKLEY, PENNSYLVANIA,
                        UNITED STATES OF AMERICA

                             (C) COPYRIGHT  2008
AUTHORIZED FOR USE
BY LICENSEE ONLY
                               ENTER TO CONTINUE
```

The "Authorized" line on this screen may authorize use:

- For limited trial
- By licensee only
- By a particular licensee, by name

Once ENTER is pressed, the main menu screen is displayed.



The date and time are always displayed on the first line of every screen, and the database is identified on most screens.

PF1 will always be for help.

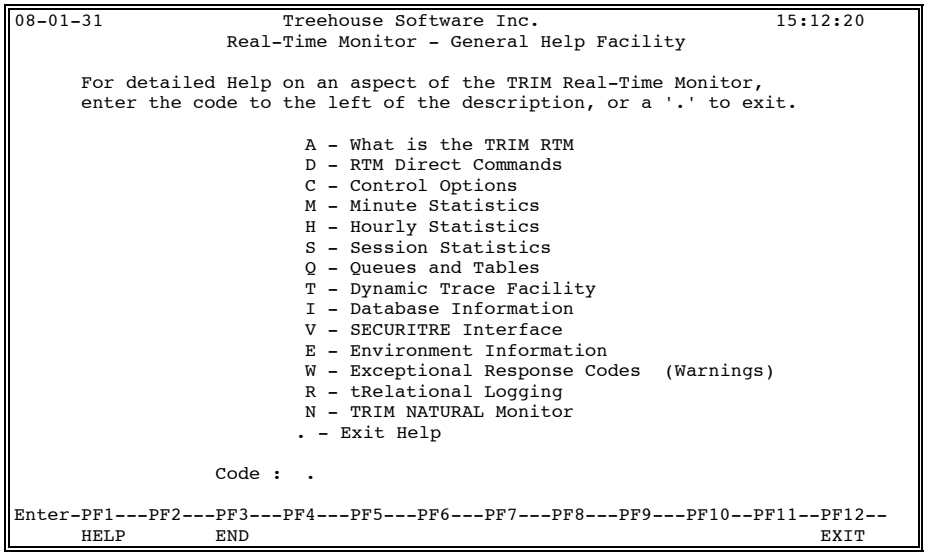
At any time while monitoring, the DBA may press PF12 to discontinue monitoring.

When monitoring the database, the user may maneuver through the RTM by using the various menus provided or by entering a screen name on the Direct Command line (MENU). Entering a screen name will immediately invoke the appropriate RTM function.

Real-Time Monitor HELP Facility

The TRIM Real-Time Monitor has extensive help screens to assist the RTM user. The RTM user may enter the function name HELP to view a menu of the topics available for help. In addition to the HELP facility, many of the detail screens have field level or report level help if the word "HELP" is displayed under the label for PF-key PF1.

If "HELP" is entered on the Direct Command line, the screen below is displayed.



TRIM contains detailed information about each subsystem of the RTM. To view the information on any of the items listed, the RTM user must enter the desired code. To exit the HELP facility, enter a "." or press PF3.

II.6 Control Options

When a database is brought up with TRIM installed, certain parameters related to the operation of TRIM are defined (refer to the ***TRIM Installation and Operations Manual*** for further details). The parameter settings defined at installation time are in effect for the entire duration of the database session and are used to control the information that TRIM monitors. The RTM may temporarily alter these settings to better meet the needs of the site at the moment.

The DBA may alter the display characteristics of the Minute and Hourly screens, as well as the ADABAS Internal User-ID by modifying the appropriate values displayed on the control screen.

The activation or deactivation of the various TRIM accumulators may also be set. This feature enables a DBA to turn on an accumulator that is not normally active or deactivate an accumulator that is normally active.

The TRIM Time Adjustable Parameters (TRMTAP) settings may be used to control what types of information TRIM will monitor at various times of the day. These settings also may be modified to perform different operations as the DBA deems necessary.

The TRIM tRelational logging feature may be activated or deactivated. The number of TRELOG table entries to write to the CLOG may also be altered in this section.

Note: The settings modified through the various functions in the Control Options subsystem are only in effect for the duration of the current database session.

II.6.1 Control Options Menu (CMEN)

The Control Options subsystem may be accessed by entering "A" on the RTM Main Menu screen or the function name CMEN on any RTM screen.

```
08-01-31   CMEN            Control Options          227             15:14:14
                           TEST-DATABASE


                 Code     Description
                 ----     ----------------------------------
                   A      RTM Control Options       (CTRL)
                   B      Time Adjustable Parameters        (CTAP)
                   C      tRelational Parameters    (CTRE)
                   ?      RTM Help Facility         (HELP)
                   .      Return to RTM Main Menu   (MENU)
                 ----     ----------------------------------

             Code :  .




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

Function "A" alters the operation and display characteristics of the RTM, including the sort sequence of the Minute and Hourly screens and the display of the ADABAS Internal User-ID. The operation parameters that may be modified through this subsystem include the modification of the RTM password and the activation/deactivation of the TRIM accumulators (i.e., Minute, Hourly, Session, Violations, PRESUM, and TRELOG).

Function "B" alters the TRMTAP settings defined for the database session.

Function "C" alters the TRELOG settings defined for the database session.

II.6.2 RTM Control (CTRL)

The RTM settings may be viewed and modified by entering "A" on the Control Options Main Menu screen or the function name CTRL on any RTM screen.

```
08-01-31   CTRL          Real-Time  Monitor  Control       227       15:14:39
                              TEST-DATABASE

        User Session Controls:
                Command Count Display Sequence  (C=CATEGORY, F=FREQ) ===> C
                User-ID Display Format          (C=CHARACTER, H=HEX) ===> H

        Additional Options:
                Time Display Adjustment           - WEST 5 HOURS
                Time Adjustable Parameters                - NOT AVAILABLE
                Current Logging Status            - NOLOG
                Exceptional RSP Codes             - DEFAULTS ONLY
                Job Name In Use                   - COMMAND QUEUE JOB NAME
                Clear Sesn Stats At Print         - YES
                NATPROG Fill When Null            - NO
                NSA-NSU-SID To ADD-3/ADD-4                - NO
                External UID To ADD-4             - NO

        Enter password to View/Update following controls  ===>
                     To change password, enter new value  ===>


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

This screen displays information about the parameters in effect for the current RTM session.

The Command Count Display Sequence field determines how the Minute and Hourly statistics are to be sorted for display. Sorting by Frequency (a value of "F") will display the category (e.g., Job Name) in descending order based on the number of commands issued for the category during the interval. Sorting by Category (a value of "C") will sort the same display in ascending order by the category value (e.g., by Job name).

The User-ID Display Format field determines whether the ADABAS Internal User-ID and the TRIM Alternate-ID are displayed in hexadecimal or character format.

The non-modifiable fields on the screen provide information about the time adjustment from Greenwich Mean Time for the site, whether TRMTAP settings are in effect, what types of exceptional response codes are to be monitored, etc. These values are controlled by tailoring TRIM User-Exit-4 or by modifications to the TRMTAP, TRMLOG, TRMRSP, or TRELOG macros. Refer to ***Section VI.1 Tailoring UEX4*** and ***Section VII TRMTAP, TRMLOG, TRMRSP, TRELOG, TRMSLO*** of the ***TRIM Installation and Operations Manual*** for more information.

Note: The settings for the Display Characteristics and User-ID are in effect only for the duration of the current RTM session and only for the RTM user that made the modifications.

User Session Controls are modifiable by each user and remain in effect for that user's ADABAS session.

The Non-modifiable Options, Time Display Adjustment, and Exceptional Response Codes are **not** modifiable from the RTM. However, all are modifiable through changes to TRMUEX4, except the Time Display Adjustment. Time Adjustable Parameters, Current Logging Status, Exceptional Response Codes, and tRelational Logging are controlled respectively by TRMTAP, TRMLOG, TRMRSP, and TRELOG parameters.

Current Logging Status default may be set by Zap to TRMUEX4 to log ALL or NONE of the detail Command Log records.

The remaining controls on this screen may be altered by tailoring TRMUEX4 or on subsequent screens after password verification. Refer to ***Section VI.1 Tailoring User-Exit-4*** of the ***TRIM Installation and Operations Manual*** for more information.

The remaining Control Options are protected by the TRIM RTM Password and may only be viewed and/or modified by entering the correct password on the screen. These options are normally controlled by the DBA who also maintains the password.

The TRIM RTM password may be altered by entering the current password and a new password.

```
08-01-31     CPWD     Real-Time Monitor Password Modification    227  14:22:35

                              TEST-DATABASE


                       Please Confirm Password Change

                       Current Password ===>       XXXXXXXX

                       New Password  ======>       XXXXXXXX


                           (Passwords Will Not Display)




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

To verify the modifications to the current password, the DBA is prompted to enter both the current password and the new password.

If the new password entered is not the same as the new password entered on the CTRL function screen, the DBA is prompted to re-enter the new password again. It is necessary to enter the new password twice in succession for it to be accepted.

When the new password is accepted, control is passed to the second screen of the Control Options subsystem.

If the DBA types the Current Password and presses ENTER, the second CTRL screen will appear.

Note: The password for the RTM is defined in ***Section VI Tailoring With Zaps*** of the ***TRIM Installation and Operations Manual*** under RTM Control Screen Password.

If the correct password is entered on the CTRL function screen or a new password is entered and verified on the password screen, the CTRM function screen is displayed.

```
08-01-31   CTRM           Real-Time  Monitor  Control       227     14:22:39
                                TEST-DATABASE

      Password Retention            (Y=YES, N=NO, V=Violators) ===> N

      Job Name in Use          (C=CQE, U=Uinfo, J=Command Log) ===> C

      Add-3/Add-4 Data          (N=None, S=NSA-SID, U=NSA-NSU) ===> N

      Crunch Command Log Records                 (Y=YES, N=NO) ===> N

      Zero FNR in Commands                       (Y=YES, N=NO) ===> N

      Set TRIM Idle                       (Y=YES, N=NO U=Uexb) ===> N

ACCUMS... THD  FNR  CMD  CWF  RSP  PGM  JOB  UID  CTI  NSA  NSU  USA  SPE  SID
5 MINUTE   Y    Y    Y    -    Y    Y    Y    Y    N    N    N    N    -    N
5 HOUR     Y    Y    Y    -    Y    Y    Y    Y    Y    N    N    N    -    Y
SESSION    Y    Y    Y    Y    Y    Y    Y    Y    N    N    N    N    -    N
PRESUM     Y    Y    Y    -    Y    Y    Y    Y    N    N    N    N    N    N
VIOLATIONS -    Y    -    -    -    Y    Y    Y    -    N    -    -    -    N

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

The options on this screen are all modifiable on-line. They may only be viewed if the current password has been supplied.

This screen enables the RTM user to turn on or off the various accumulators, as well as several settings for the RTM.

A setting of "N" in the Password Retention field instructs TRIM not to retain the password (i.e., blank it out) in Additions-3 in the Command Log records. A setting of "Y" instructs TRIM to always retain the password. A setting of "V" instructs TRIM to retain the password only for those commands with a security violation (i.e., commands that received a response code of 200 through 204).

There are three possible values that may be entered in the Job Name field in the Command Log. A setting of "J" will use the Job Name that is passed in the Command Log from ADABAS. A setting of "C" will cause the Job Name from the Command Queue to be placed in the Command Log record. A setting of "U" will use the Job Name passed in the USERINFO Area from Link-Exit-1 to be placed in the Command Log.

If no data is to be entered in the Additions-3 and Additions-4 fields of the Command Log, an "N" should be specified in the Add-3/Add-4 Data field. To have the NATURAL Application Library in Additions-3 and the NATURAL Security User-ID in Additions-4 on the Command Log, use the "U" option. To have the NATURAL Application Library and the Security-ID in Additions-3/Additions-4, respectively, use the "S" option.

TRIM may be used to "Crunch" the Command Log (CLOG) Records, if CLOGLAYOUT=5, in order to save valuable space on the CLOG. The default setting is not to crunch the CLOG information. However, this may be modified by entering a "Y" in the Crunch Command Log Records field. This change is only in effect for the duration of the current database session.

There are many types of ADABAS commands that are not issued against a specific file number (e.g., an RC). These commands may or may not have a value in the FNR field of the Control Block. It is sometimes useful to collect statistics for these commands by the FNR specified or as if the FNR was specified as zero.

A setting of "Y" or "U" in the Set TRIM Idle field will put TRIM in Idle Mode until the end of the session or until the field is set to active. A setting of "U" will process and/or place data from the user information area in the command log record according to Zap switch settings. For more information, refer to **Section IX Idle Mode** section for more information.

The TRIM RTM keeps information on database activity by maintaining the Minute, Hourly, Session, and Violation accumulators, as well as PRESUM Data. The Violation accumulators are only applicable for those sites using the Treehouse Software security package SECURITRE. These accumulators may be turned on or off by entering "Y" or "N" in the appropriate column for the appropriate accumulator. A value of "Y" indicates the accumulator is active and collecting information.

Each column represents a specific accumulator, as indicated below:

Column	Description
THD	ADABAS Thread
FNR	ADABAS File Number
CMD	ADABAS Two Character Command Code
CWF	Command Counts within File Number (Session Statistics only)
RSP	ADABAS Response Code
NAT	NATURAL Program Name
JOB	Job Name
UID	ADABAS User-ID
SID	Security-ID
CTI	CICS Transaction-ID
NSA	NATURAL Application Library
NSU	NSS User-ID
USA	User Area of ADABAS Control Block
SPE	Special PRESUM Commands

Note: The modifications made on the CTRM function screen are only in effect for the duration of the current database session. Permanent modifications may be made by applying the appropriate Zap to UEX4.

When the ENTER key is pressed on the first CTRM screen, the values entered on the screen are validated. If all data on the screen is correct, the second screen for the CTRM function is displayed.

```
08-01-31   CTRM           Real-Time  Monitor  Control       227     14:22:39
                                TEST-DATABASE

         High Duration CMDS / High Use Stats          (Y=YES, N=NO) ===> Y

         Trace Facility Available For Use             (Y=YES, N=NO) ===> Y

         Session Stats Print Sequence       (C=CAT, F=FREQ, B=BOTH) ===> B

         Session Stats Print Frequency                              ===> 12
            (00, 01, 02, 03, 04, 06, 08, 12, 24 Times each 24 hours
                         99 = Session end only)

         Alternate Internal UID                       (Y=YES, N=NO) ===> Y
         Inactive User Queue Entries Display          (Y=YES, N=NO) ===> Y
         STCK Error Displays                          (Y=YES, N=NO) ===> Y
         SECURITRE Security Active For TRIM RTM       (Y=YES, N=NO) ===> N
         TRIM logging                                 (Y=YES, N=NO) ===> Y
         Clear Session Statistics at Print            (Y=YES, N=NO) ===> Y
         NATPROG Fill when Null                       (Y=YES, N=NO) ===> N
         External UID to Additions-4 in Log           (Y=YES, N=NO) ===> N

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

This second screen is a continuation of the first screen and enables the RTM user to turn on or off several control settings and to indicate when session statistics may be printed.

If TRIM is to keep track of commands with a high duration and high water marks for various tables, the High Duration CMDS/High Use Stats field must be set to "Y".

The Dynamic Trace Facility is available to any RTM user if the Trace Facility Available For Use field is set to "Y". If the Dynamic Trace Facility is turned off, but an RTM user attempts to activate a trace, an error window is displayed.

Many of the statistics accumulated during the database session may be printed in a display sequence similar to the Minute and Hourly screens.

When set to Y, Alternate Internal UID will display the CICS or COM-PLETE Term-ID (when available) for most references to Internal User-ID (referred to as UIDALT). When set to N, it will always display the ADABAS user-ID for Internal User-ID.

When set to Y, Inactive User Queue Entries Display will display all User Queue Entries, even those that appear to be inactive. When it is set to N, the Inactive Entries will not be displayed.

If Y is specified, STCK Error Displays will display a console warning message when the command log STCK time is out of sequence. If N is specified, the STCK time sequence error(s) will be ignored.

SECURITRE Security Active for TRIM RTM will control TRIM RTM functions via SECURITRE when set to Y. TRIM RTM functions will not be controlled via SECURITRE when set to N.

When set to Y, TRIM Logging will log all detail records unless/until instructed otherwise. When set to N, detail logging will not be done unless/until instructed otherwise.

If set to Y, Clear Session Statistics at Print will clear session statistics each time they are printed, and counts are set to zero. When set to N, session statistics are not cleared, and counts continue to accumulate.

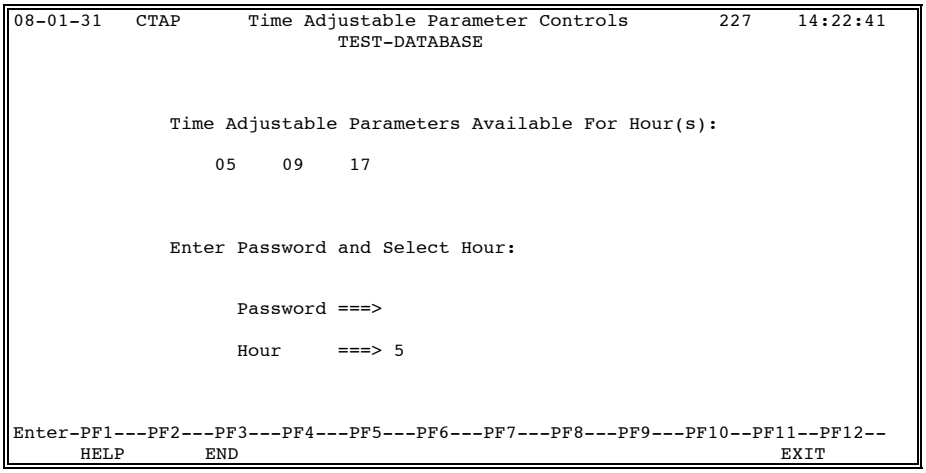
If set to Y, NATPROG Fill When Null will replace null NATPROG with COBOL or other program name (when available). When set to N, an alternate for NATPROG will not be used.

When set to Y, External UID to Additions-4 in Log will move the External User-ID to Additions-4 (cipher) field of the command log when set to Y. If set to N, the External User-ID will not be moved to the Additions-4 field of the command log.

II.6.3 Time Adjustable Parameter (TRMTAP) Settings (CTAP)

TRIM uses the TRMTAP settings to dynamically control many of its operations. TRMTAP settings may be used to turn the accumulators on or off during specified periods of the day and to set certain display characteristics during specified periods of time.

The RTM TAP settings may be displayed by entering "B" on the Control Options Main Menu or the function name CTAP on any RTM screen.



For the example above, there are TRMTAP settings for hours 5, 9, and 17. This indicates that between the hours of 05:00:00 and 08:59:59 certain settings are in effect, a second set of settings are in effect between 09:00:00 and 16:59:59, and a third set of settings begin at 17:00:00 and are in effect through 04:59:59.

This screen indicates Time Adjustable Parameters (refer to ***Section VII.1 Time Adjustable Parameters (TRMTAP)*** of the ***TRIM Installation and Operations Manual***) are included (link-edited) with the TRMUEX4 for hours 5, 9, and 17. After selecting the desired hour, screens identical to the previously described CTRL and CTRM screens are displayed. These screens are named CTAQ and CTAR, respectively.

The settings for a specific TRMTAP period may be viewed or modified by entering the RTM password and the hour to be examined. The CTAQ function is invoked.

```
08-01-31   CTAQ        Time Adjustable Parameter Controls      227    14:22:45
                              TEST-DATABASE
                                  HOUR 5
       Command Count Display Sequence     (C=CATEGORY, F=FREQ) ===> F

       User-ID Display Format             (C=CHARACTER, H=HEX) ===> *

       Password Retention           (Y=YES, N=NO, V=Violators) ===> *

       Job Name in Use          (C=CQE, U=Uinfo, J=Command Log ===> *

       Add-3/Add-4 Data         (N=None, S=NSA-SID, U=NSA-NSU) ===> N

       Crunch Command Log Records                (Y=YES, N=NO) ===> *
       Zero FNR In Commands Not Using FNR        (Y=YES, N=NO) ===> *
       Set TRIM Idle                     (Y=YES, N=NO, U=Uexb) ===> *
ACCUMS..  THD  FNR  CMD  CWF  RSP  PGM  JOB  UID  CTI  NSA  NSU  USA  SPE  SID
5 MINUTE   N    N    Y    -    N    N    Y    Y    N    N    N    N    -    N
5 HOUR     N    Y    Y    -    N    N    Y    Y    N    Y    N    N    -    N
SESSION    N    Y    Y    N    Y    N    N    Y    N    N    N    N    -    N
PRESUM     N    Y    Y    -    N    N    N    Y    N    N    N    N    N    N
VIOLATIONS -    Y    -    -    -    Y    N    Y    -    N    -    -    -    N
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                NEXT             EXIT
```

The DBA has included Time Adjustable Parameters (TRMTAP) for hour 5, which have the minute statistics turned off (the DBA will not be present to view these statistics), while most hourly statistics are turned on (when the DBA arrives, these statistics are available for the past 5 hours). Session statistics are on, while PRESUM statistics will not be logged. The second Control Screen may also be viewed for hour 5 or other hours. The parameters with an "*" indicate the settings will remain unchanged from the previous hour's settings. The DBA may select any hour 0 to 23. If the selected hour has no TRMTAP, the DBA may create them on-line. *These on-line adjustments only last for the duration of the current ADABAS session on this database*.

Note that if the MPM session just started a few minutes ago, the TRMTAP for hour 9 would be currently in effect. This is because there are no hour 14 TRMTAP parms. The TRMTAP parms are "wrap around." For example, with TRMTAP parms for hours 5, 9, and 17, a start-up at 3:00 AM would use hour 17 TRMTAP parms.

A second screen is available to enable the DBA to modify the remaining parameters.

```
08-01-31   CTAR        Time Adjustable Parameter Controls     227     14:22:55
                              TEST-DATABASE                     HOUR 10

   High Duration CMDS / High Use Stats            (Y=YES, N=NO) ===> Y

   Trace Facility Available For Use               (Y=YES, N=NO) ===> Y

   Session Statistics Print Sequence    (C=CAT, F=FREQ, B=BOTH) ===> B

   Session Statistics Print Frequency                           ===> 12
      (00, 01, 02, 03, 04, 06, 08, 12, 24 TIMES EACH 24 HOURS
                  99 = SESSION END ONLY)

   Alternate Internal UID                          (Y=YES, N=NO) ===> Y
   Inactive User Queue Entries Display             (Y=YES, N=NO) ===> Y
   STCK Error Displays                             (Y=YES, N=NO) ===> Y
   SECURITRE Active for TRIM RTM                   (Y=YES, N=NO) ===> *
   Logging Default                                 (Y=YES, N=NO) ===> *
   Clear Session Statistics at Print               (Y=YES, N=NO) ===> *
   NATPROG Fill when Null                          (Y=YES, N=NO) ===> *
   External UID to Additions-4                     (Y=YES, N=NO) ===> *

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

The options on this screen are all modifiable on-line. They may only be viewed if the current password has been supplied.

Modifications to the current active TRMTAP Parameters will not take effect until the hour for which the parameters are being modified is reached. For example, if the user is currently in HOUR 10 and makes changes to HOUR 10 parameters, the changes do not take effect until the next occurrence of HOUR 10, which is 24 hours later.

II.6.4 Real Time tRelational Control (CTRE)

The tRelational Logging settings may be viewed and modified by entering "C" on the Control Options Main Menu screen or the function name CTRE on any RTM screen.

```
08-01-31   CTRE        Real-Time tRelational Control        227     14:22:55
                              TEST-DATABASE
                        tRelational Buffer Information

            tRelational Active                          ====>  Y

            Number of Entries:
               Maximum                                  ====>500
               In Use                                   ====>190
            Entry size (in bytes)                       ====> 60
            Number of entries to write                  ====> 50

            Number of TRELOG records written            ====>  0



     Enter Password to View/Update following controls  ====>



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

This screen provides the status of tRelational logging. The active status is indicated by Y (Yes) or N (No). The number of entries shows:

Maximum	The number of entries possible in the table as defined by the TRELOG macro.
In Use	The number of the MAXIMUM table entries in use.
Entry size	The length of each table entry.
Number of entries to write	The number of table entries to write to the CLOG when the table becomes full.
Number of TRELOG records written	The number of TRELOG records that have been written to the CLOG during this session.

tRelational Logging may be activated or deactivated and the number of records to be written to the CLOG, when the TRELOG table is full, it may be updated from the CTRF screen.

The CTRF screen, displayed below, is accessed by entering a password on the CTRE screen. The CTRF screen is used to change active status of tRelational Logging and to update the number of TRELOG table entries to be written to the CLOG when the TRELOG table is full.

```
08-01-31   CTRF        Real-Time tRelational Control        227     14:22:55
                              TEST-DATABASE
                        tRelational Buffer Information


            tRelational Active              (Y=YES, N-NO) ====> N
            Number of entries to write                    ====> 10









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

II.7 Minute Statistics

The Minute Statistics Subsystem provides a glimpse of the ADABAS activity for the past five minutes. The count of ADABAS calls for each of several categories (ADABAS file, command; NATURAL application, program, etc.) indicates database use and allows the DBA to focus on heavy users and abusers of the database.

There is a separate screen for each category display. These screens have a similar format. Five column pairs are presented. The left column pair, which is highlighted, represents the current minute. The other column pairs represent the previous four minutes. Each column pair shows the category value on the left and the count of ADABAS calls on the right.

The Minute Statistics may be displayed in two different orders:

- Ascending order by category value

```
AAAA          3856
BBBB          7641
CCCC          6095
```

- Descending order of count value

```
BBBB          7641
CCCC          6095
AAAA          3856
```

To see a display of the count of calls (frequency) in descending order rather than ascending order of File Number (category), the DBA may go to the Control Screen (CTRL) to change the Sort Control from category to frequency. Optionally, a toggle switch (PA1) may be used on certain minute and hourly screens to change the Sort Control. The toggle takes effect on the FNR, CMD, NAT, JOB, UID, SID, NSA, NSU, CTI, and USA screens, but not on the THD or RSP.

Each column pair displays up to 18 entries, with all values beyond the 18th combined into a 19th entry called "OTHER=>" or "OTHER". At the bottom of each column pair is a total count marked as " ********".

II.7.1 Minute Statistics Main Menu (MMEN)

The Minute Statistics Menu may be invoked by entering "B" on the RTM Main Menu or the screen name MMEN on any RTM screen.

```
08-01-31   MMEN            Commands per Minute          227         14:23:45
                              TEST-DATABASE

          Code     Description
          ----     ------------------------------------
            A      File Number                (MFNR)
            B      ADABAS Command Code        (MCMD)
            C      Program Name               (MPGM)
            D      Job Name                   (MJOB)
            E      ADABAS User ID             (MUID)
            F      Security ID                (MSID)
            G      Response Code              (MRSP)
            H      Thread                     (MTHD)
            I      Application Library        (MNSA)
            J      NSS User ID                (MNSU)
            K      CICS Transaction ID        (MCTI)
            L      User Area                  (MUSA)
            .      Return to RTM Main Menu    (MENU)
          ----     ------------------------------------

             Code : .

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

As seen in the above menu selection, counts of ADABAS calls may be displayed by several different categories.

II.7.2 Minute Statistics by Thread (MTHD)

The count of ADABAS calls for the past five minutes for the Thread category may be viewed by entering "H" on the Minute Statistics Menu screen or the screen name MTHD on any RTM screen.

```
08-01-31   MTHD      Commands Per Minute By ADABAS Thread      227    14:23:56
THREAD  14:23   THREAD  14:22   THREAD  14:21   THREAD  14:20   THREAD  14:19
1          30   1         152   1         348   1         195   1          10
2        2456   2        1777   2         678   2         535   2          37
3        1934   3        1003   3         478   3         131   3           2
4         459   4         229   4         198   4           7
5         319   5         201   5           8
6         104   6         111
******** 5302   ******** 3473   ******** 1710   ********  868   ********   49




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

The left column pair shows the ADABAS Thread number with the count of ADABAS commands executed in that Thread for the current minute.

The remaining column pairs show the previous four minute's Thread counts.

The last line in each column is a total (********) line.

The DBA is able to see the Thread buildup over the last few minutes.

The DBA presses the ENTER key again and views the screen below.

```
08-01-31   MTHD      Commands Per Minute By ADABAS Thread      227    14:23:59
 THREAD  14:23   THREAD  14:22   THREAD  14:21   THREAD  14:20   THREAD  14:19
 1          50   1         152   1         348   1         195   1          10
 2        3001   2        1777   2         678   2         535   2          37
 3        2332   3        1003   3         478   3         131   3           2
 4         657   4         229   4         198   4           7
 5         518   5         201   5           8
 6         161   6         111
********  6719   ******** 3473   ********  1710  ********  868   ********   49




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

The DBA notices that the new current minute is still showing activity.

The DBA notices the PF-key legend on the bottom line of the screen.

PF1	Invokes help for the field, screen, or report.
PF3	Terminates the current function and returns to the previous menu displayed or main menu for the function.
PF12	Exits the Real-Time Monitor.

ENTER produces an update of the current screen data.

The DBA presses the ENTER key again and views the screen below.

```
08-01-31   MTHD       Commands Per Minute By ADABAS Thread     227    14:24:02
 THREAD  14:24   THREAD  14:23   THREAD  14:22   THREAD  14:21   THREAD  14:20
 1           1   1          57   1         152   1         348   1         195
 2         291   2        3278   2        1777   2         678   2         535
 3         121   3        2549   3        1003   3         478   3         131
 4          44   4         734   4         229   4         198   4           7
 5           3   5         606   5         201   5           8
                 6         199   6         111
********   460   ********  7423  ******** 3473   ********  1710  ********  868









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

On this screen, the current minute has changed from 14:23 to 14:24. What had been the current minute is now the previous minute. So, all minute figures are shifted to the right. A new current minute's figures appear on the left.

The DBA notices that the current minute's ADABAS Command Count is still increasing significantly.

The DBA notices the name of each screen or program appears in the upper left, such as MTHD for Thread. Figure 1 at the end of this section lists all program names.

Note that thread numbers can be as high as 250.

II.7.3 Minute Statistics by File Number (MFNR)

The count of ADABAS calls for the past five minutes for the File Number category may be viewed by entering "A" on the Minute Statistics Menu screen or the screen name MFNR on any RTM screen.

```
08-01-31   MFNR   Commands Per Minute By ADABAS File Number    227    14:24:15
FNR    14:24   FNR     14:23   FNR     14:22   FNR     14:21   FNR       14:20
0          3   0          53   0          77   1          34   0            17
1         13   1          50   1          17   4          14   1            23
7         12   8         291   8         434   8         228   4            16
8         51   9         115   9         129   9         126   8           141
9         17   13        248   13        253   10        108   9            32
10         1   50         12   14         13   13        440   13          341
13        44   51         28   31        299   21        351   31          200
31         3   52          8   50          2   77        339   93            6
50         7   53          2   51         12                   12345        92
51       188   54          2   52          2
52         3   55          2   53          1
53         1   56          4   54         54
54         1   57          2   55          1
55         1   58         14   56          2
56         2   59          2   57          1
57         1   77       6060   58          7
58         7   78        454   59          1
59         1   123        77   77       1891
OTHER=> 4770                   OTHER=>   330
********4956   ******** 7423   ******** 3473   ******** 1710   ********    868
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
       HELP        END                                                EXIT
```

The left column pair shows the ADABAS File Number with the number of ADABAS Commands executed against each File for the current minute.

The remaining column pairs show the previous four minute's File counts.

The DBA sees that the "OTHER=>" (OTHER) figure in column 1 is high. It is apparent that additional heavily-used files are not shown.

A "correction" is made in TRIM UEX4 for on-line functions (minute, hour, session statistics, and Nucleus Session statistics). The FNR is changed (to zero) for commands that should have specified FNR=0. (Refer to **"Option for Zeroing FNR"** in **Section II.4 Real-Time Monitor Operation** and ***"Zero FNR"*** in ***Section VI.1 Tailoring UEX4*** of the ***TRIM Installation and Operations Manual***.)

Note that file numbers can be as high as 65535.

The DBA presses PA1 and the screen below is displayed.

```
08-01-31   MFNR    Commands Per Minute By ADABAS File Number    227   14:24:20
FNR     14:24   FNR     14:23   FNR     14:22   FNR     14:21     FNR     14:20
77       4589   77       6060   77       1891   13        440      13       341
78        910   78        454   8         434   21        351      31       200
51        188   8         291   31        299   77        339       8       141
8          78   13        248   78        256   8         228   12345        92
123        78   9         115   13        253   9         196       9        32
13         77   123        77   9         129   10        108       1        23
31         57   0          53   0          77   1          34       0        17
1          33   1          50   123        74   4          14       4        16
7          31   51         28   1          17                     93         6
9          28   58         14   14         13
0          22   50         12   51         12
50          7   52          7   58          7
58          7   56          4   50          2
52          3   53          2   52          2
56          2   54          2   56          2
10          1   55          2   53          1
53          1   57          2   54          1
54          1   59          2   55          1
OTHER=>     3                   OTHER=>     2
******** 6116   ******** 7423   ******** 3473   ******** 1710  ********    868
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP       END                                                   EXIT
```

Now the DBA may view the 18 files most used in any one minute, with the 19th row showing "other" infrequently used files, followed by the total for all files.

The DBA sees that File 77 and 78 usage is heavy and increasing.

II.7.4 Minute Statistics by Command Code (MCMD)

The count of ADABAS calls for the past five minutes for the ADABAS Command Code category may be viewed by entering "B" on the Minute Statistics Menu screen or the screen name MCMD on any RTM screen.

```
08-01-31   MCMD    Commands Per Minute By ADABAS CMD Code     227     14:24:32
CMD     14:24   CMD     14:23   CMD     14:22   CMD     14:21    CMD     14:20
A1         13   A1          1   A4          7   CL         34    CL         13
A4         53   A4        102   BT          7   L1         18    L1         27
BT         14   BT          1   CL         14   L2        218    L2        394
CL          8   CL        135   ET        128   L4        686    L9        161
ET         37   E1        323   L1        283   L9        108    OP         12
L1        151   ET          2   L2         13   OP         40    RC         81
L2        192   L1        414   L3        200   RC        217    S1        180
L4       5220   L3         97   L4       2391   S1        390
OP          9   L4       6132   L9        246
RC        411   OP        134   OP         17
S1        191   RC          9   RC        166
S8         12   S1        123   RE          1
S1         60
S2          6
S8          1
******** 6378   ******** 7423   ******** 3473   ******** 1710   ********  868




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

The DBA sees that L4 Commands are receiving heavy usage. Some program may be having a "read-with-hold" problem.

II.7.5 Minute Statistics by Response Code (MRSP)

The count of ADABAS calls for the past five minutes for the Response Code category may be viewed by entering "G" on the Minute Statistics Menu screen or the screen name MRSP on any RTM screen.

```
08-01-31   MRSP    Commands Per Minute By ADABAS Response Code   227  14:24:40
RSP     14:24   RSP     14:23   RSP     14:22   RSP     14:21   RSP      14:20
0         195   0         613   0        1008   0        1489   0          860
3           2   3          13   3          24   3           1   3            8
9           1   9          14   145      2441   145       204
145      6343   145      6783
******** 6541   ******** 7423   ******** 3473   ******** 1710   ********   868









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

The DBA discovers that by entering the screen name, navigation through the RTM is faster than returning to the Minute Statistics Menu screen to select a category for viewing.

The DBA sees that Response Code 145 is being issued often, and it is probably causing some program to loop.

Note that Response Codes can be as high as 65535.

II.7.6 Minute Statistics by Program Name (MPGM) - formerly MNAT

The count of ADABAS calls for the past five minutes for the Program Name category may be viewed by entering "C" on the Minute Statistics Menu screen or the screen name MPGM on any RTM screen.

```
08-01-31   MPGM       Commands Per Minute By Program Name     227     14:24:43
PROGRAM 14:24   PROGRAM 14:23   PROGRAM 14:22   PROGRAM 14:21   PROGRAM  14:20
          307              93             122              47             101
GMENU     498   BELOW      31   BELOW       6   CHGR      170   BASIL       84
GRHG     5317   GMENU     227   GMENU     108   DISPLR    278   GRHG       100
G3         66   GRHG     6280   GRHG     2920   ELIMR     121   DISPLR     208
SUBM      565   G3         27   G3          3   GMENU      27   EMLIMR      93
SUBX      280   G4        190   HARRY1    117   GRHG     1063   GMENU       10
                HARRY1    271   HARRY2    179   HARRY2      2   XITR         2
                HARRY2    290   HARRY4     18   XITR        2   YELO       270
                SUBX       14
******** 7033   ******** 7423   ******** 3473   ******** 1710   ********   868

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

The DBA notices some non-NATURAL users (blanks under PROGRAM).

The DBA notices program GRHG is making a high number of ADABAS calls.

The Database-ID has been displayed next to the time in the top right of each screen. If the DBA is interrupted with a problem on another database, the DBA may take a glimpse at Session totals by FNR on the Production Database (#215). By entering SFNR in the program name and 215 in the DBID, the DBA may easily switch from one database to another, and the RTM displays the screen below.

```
08-01-31   SFNR       Session Totals By ADABAS File Number      215    14:24:48

 FNR    COUNT    PCT       FNR    COUNT     PCT       FNR    COUNT     PCT
 --- ---------- -----      --- ---------- -----      --- ---------- -----
   0       1389   0.1       30      97651   7.2       91      15966   1.2
   1      14936   1.1       31        650   0.1      100       8043   0.6
   3       7896   0.6       33       1987   0.2      103        966   0.1
   6       3353   0.2       34       9986   0.7      127       8192   0.1
   7       4007   0.3       42      19439   1.4      142        532   0.0
   8     268781  19.7       45      28054   2.1      161      21955   1.6
  10       1174   0.1       46        112   0.0      181      42518   3.1
  12      77936   5.7       50     109201   8.0      194      65288   4.8
  13       3095   0.2       51      54238   4.0      237       7296   0.5
  14      69043   5.1       60       2003   0.2      240       2461   0.2
  18      19101   1.4       73      69781   5.1    12345      93107   6.8
  21      83222   6.1       79      16584   1.2
  24       1000   0.1       80        177   0.0
  25      10232   0.7       84      19856   2.0
  28       3891   0.2       87      99999   7.3

 Total Commands: 1365098                          Total File Numbers: 41

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

Note that the DBA has switched from monitoring the Test Database (#227) to monitoring the Production Database (#215).

File 8 is experiencing the most activity this session. The DBA sees nothing out of line. The DBA switches back to the Test Database (#227).

II.7.7 Minute Statistics by Job Name (MJOB)

The count of ADABAS calls for the past five minutes for the Job Name category may be viewed by entering "D" on the Minute Statistics Menu screen or the screen name MJOB on any RTM screen.

```
08-01-31   MJOB       Commands Per Minute By Job Name          227     14:24:50
JOB NAME 14:24  JOB NAME 14:23  JOB NAME 14:22  JOB NAME 14:21  JOB NAME 14:20
A4301PX2   495   A4301PX2  526   A1008XXX  397   A3013PX4  111   A3013PX4  700
CICS      7001   CICS     6897   A4301PX2  309   A4031PX2   93   A4031PX2   60
                                 CICS     2767   CICS     1506   CICS      108
********  7496   ******** 7423   ******** 3473   ******** 1710   ********  868









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

The DBA knows if a Batch Job is receiving Response Code 145s and looping, then operator commands may be used to cancel the Batch Job. But the Job is CICS, so further research is necessary.

II.7.8 Minute Statistics by ADABAS User-ID (MUID)

The count of ADABAS calls for the past five minutes for the ADABAS User-ID category may be viewed by entering "E" on the Minute Statistics Menu screen or the screen name MUID on any RTM screen.

```
08-01-31   MUID    Commands Per Minute By ADABAS User ID      227     14:24:52
  UID   14:24     UID   14:23     UID   14:22     UID   14:21     UID    14:20
C4C1F4F3 7092   C4C1F4F3 6897   C4C1F4F3 2767   C4C1F4F3 1506   D9D7F1F2   788
00000003  540   D9D7F1F2    6   D9D7F1F2  309   D9D7F1F2   93   00000004    80
                00000003  520   00000003  397   00000003  110
                                                00000004    1
******** 7632   ******** 7423   ******** 3473   ******** 1710   ********   868









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

Note: User-IDs are sequential numbers assigned internally by the ADABAS Nucleus. The "Alternate User-ID" option may be used to view the CICS Term-ID rather than sequential numbers. The example above shows this.

The DBA may change the display of User-ID from hex (H) to character (C) simply by entering CTRL in the program name, changing the H to C on the Control Screen, and entering MUID in the program name to get directly back to this screen. The hex mode enables the DBA to see Batch User-Ids, which are not readable characters.

II.7.9 Minute Statistics by Security-ID (MSID)

The count of ADABAS calls for the past five minutes for the Security ID category may be viewed by entering "F" on the Minute Statistics Menu screen or the screen name MSID on any RTM screen. An example of the MSID screen is displayed below.

```
08-01-31   MSID       Commands Per Minute By Security ID      227     14:24:53
SEC ID  14:24   SEC ID  14:23   SEC ID  14:22   SEC ID  14:21   SEC ID   14:20
TREE05   7092   TREE05   6897   TREE05   2767   TREE05   1506   TREBATCH   788
TREE03    540   TREBATCH    6   TREBATCH  309   TREBATCH   93   TREE11      80
                TREE03    520   TREE03    397   TREE03    110
                                                TREE11      1
******** 7632   ******** 7423   ******** 3473   ******** 1710   ********   868









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

The Security-ID, a maximum of eight characters, is a meaningful identifier of the user, whether it is a batch job or an on-line user. This Security-ID is commonly known as the RACFID, and, for an on-line user, it usually identifies the "logon ID".

II.7.10 Minute Statistics by Application Library (MNSA)

The count of ADABAS calls for the past five minutes for the Application Library category may be viewed by entering "I" on the Minute Statistics Menu screen or the screen name MNSA on any RTM screen.

```
08-01-31   MNSA   Commands Per Minute By Application Library   227    14:24:54
LIBRARY 14:24   LIBRARY 14:23   LIBRARY 14:22   LIBRARY 14:21   LIBRARY  14:20
APPL23    390   APPL23    350   APPL23    690   APPL27     63   APPL27     700
AVOID      13   APPL27     29   APPL27     10   BAKUP      47   OVERTIME    10
BAKUP      10   AVOID      21   OVERTIME   70   OVERTIME   41   SHOWNO     108
OVERTIME  370   BAKUP      70   SHOWNO   2767   SHOWNO   1506   TRIMRTM     76
SHOWNO   7127   OVERTIME    9   TRIMRTM    31   TRIMRTM    53
TRIMRTM    23   SHOWNO   6897
                TRIMRTM    47
******** 7933   ******** 7423   ******** 3473   ******** 1710   ********   868









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

The Application SHOWNO has excessive ADABAS usage.

II.7.11 Minute Statistics by NATURAL Security User-ID (MNSU)

The count of ADABAS calls for the past five minutes for the NSS User ID category may be viewed by entering "J" on the Minute Statistics Menu screen or the screen name MNSU on any RTM screen.

```
08-01-31   MNSU       Commands Per Minute By NSS User ID       227    14:24:55
NSS UID 14:24   NSS UID 14:23   NSS UID 14:22   NSS UID 14:21   NSS UID  14:20
ARTHUR1    35   ARTHUR1    47   ARTHUR1    31   ARTHUR1    41   ARTHUR1     40
ASX10234   35   ASX10234   47   ASX10234   31   ASX10234   41   ASX10234    40
BEATRICE  273   BEATRICE  108   BEATRICE  140   BEATRICE   17   BEATRICE   240
C13F43A7  139   C13F43A7  111   C13F43A7   26   C13F43A7   20   C13F43A7    17
C13F43B1  124   C13F43B1   46   C13F43B1  117   C13F43B1   20   C13F43B1    18
DBA1       73   DBA1       60   DBA1      167   DBA1       17   DBA1       113
DBA2       79   DBA2       61   DBA2       12   DBA2        1   DBA2       212
GROUPX   7209   GROUPX   6897   GROUPX   2767   GROUPX   1506   GROUPX     108
JOURNAL   100   JOURNAL     6   JOURNAL     3   KREPPS     18   KREPPS      42
KREPPS      1   KREPPS      3   KREPPS     19   LOGA03      6   LOGAO3      17
MASTER     17   LOGAO3     16   LOGAO3     63   MASTER      4   MASTER       8
N386DBA     4   MASTER      7   MASTER     67   N386DBA     2   OPER09      13
OPER09      1   N386DBA    13   N386DBA    11   OPER09      7
                OPER09      1   OPER09     19
******** 8070   ******** 7423   ******** 3473   ******** 1710   ********   868




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

The NATURAL Security User-ID GROUPX is identified as the excessive user.

II.7.12 Minute Statistics by CICS Transaction-ID (MCTI)

The count of ADABAS calls for the past five minutes for the CICS Transaction ID category may be viewed by entering "K" on the Minute Statistics Menu screen or the screen name MCTI on any RTM screen.

```
08-01-31   MCTI     Commands Per Minute By CICS Trans. ID     227     14:24:56
TRANS ID 14:24  TRANS ID 14:23  TRANS ID 14:22  TRANS ID 14:21  TRANSID  14:20
BATC      1743  BATC       847  TSO       3473  TSO       1710  TSO        868
CICSA413   721  CICSYN23  2695
CICSB4Z1   860  TSO       3881
CICSDD03    17
CICSYN23  1916
TSO       4318
********  8070  ********  7423  ********  3473  ********  1710  ********   868
```

The DBA easily distinguishes calls from various sources, including Batch, TSO, and CICS.

II.7.13 Minute Statistics by User Area (MUSA)

The count of ADABAS calls for the past five minutes for the User Area category (the last four bytes of the ADABAS Control Block) may be viewed by entering "L" on the Minute Statistics Menu screen or the screen name MUSA on any RTM screen.

```
08-01-31   MUSA        Commands Per Minute By User Area        227    14:24:57
  AREA  14:24     AREA  14:23     AREA  14:22    AREA   14:21    AREA    14:20
40404040 8143   40404040 7423   40404040 3473  40404040 1710   40404040    868
******** 8143   ******** 7423   ******** 3473  ******** 1710   ********    868









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

As is often the case, the User Area of the Control Block is blank on most or all ADABAS calls. Some installations place a charge-code, transaction path identifier, or other information in this 4-byte field. It may be shown as hex or character similar to the User-ID. If the User Area field is planned to remain blank, this accumulator should be deactivated via start-up Zaps or parameters.

II.8 Hourly Statistics

The Hourly Statistics Subsystem provides a glimpse of the ADABAS activity for the past five hours. The count of ADABAS calls for each of several categories (ADABAS file, command; NATURAL application, program, etc.) indicates database use and allows the DBA to focus on heavy users and abusers of the database.

There is a separate screen for each category display. These screens have a similar format. Five column pairs are presented. The left column pair, which is highlighted, represents the current hour. The other column pairs represent the previous four hours. Each column pair shows the category value on the left and the count of ADABAS calls on the right.

TRIM will write the counts for the previous hour when the first activity for the next hour occurs. If the next hour has no activity, the counts are carried over and the previous hour will not appear on the report.

The Hourly Statistics may be displayed in two different orders:

- Ascending order by category value

```
AAAA          3856
BBBB          7641
CCCC          6095
```

- Descending order of count value

```
BBBB          7641
CCCC          6095
AAAA          3856
```

To see a display of the count of calls (frequency) in descending order rather than ascending order of File Number (category), the DBA may go to the Control Screen (CTRL) to change the Sort Control from category to frequency. Optionally, a toggle switch (PA1) may be used on certain minute and hourly screens to change the Sort Control. The toggle takes effect on the FNR, CMD, NAT, JOB, UID, SID, NSA, NSU, CTI, and USA screens, but not on the THD or RSP.

Each column pair displays up to 18 entries, with all values beyond the 18th combined into a 19th entry called "OTHER=>" or "OTHER". At the bottom of each column pair is a total count marked as "********".

II.8.1 Hourly Statistics Main Menu (HMEN)

The Hourly Statistics Menu may be invoked by entering "C" from the RTM Main Menu or the screen name HMEN from any RTM screen. To view statistics for the Production database, the DBA must enter the appropriate DBID number (e.g., 227).

```
08-01-31   HMEN              Commands per Hour            227          14:23:45
                               TEST-DATABASE

                 Code     Description
                 ----     -----------------------------------
                   A      File Number                (HFNR)
                   B      ADABAS Command Code        (HCMD)
                   C      Program Name               (HPGM)
                   D      Job Name                   (HJOB)
                   E      ADABAS User ID             (HUID)
                   F      Security ID                (HSID)
                   G      Response Code              (HRSP)
                   H      Thread                     (HTHD)
                   I      Application Library        (HNSA)
                   J      NSS User ID                (HNSU)
                   K      CICS Transaction ID        (HCTI)
                   L      User Area                  (HUSA)
                   .      Return to RTM Main Menu    (MENU)
                 ----     -----------------------------------
             Code : .


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

As may be seen in the menu selection above, counts of ADABAS calls may be displayed by several different categories. For example, if code "A" is selected, or "HFNR" is entered, counts are displayed for each of 18 ADABAS file numbers.

II.8.2 Hourly Statistics by Command Code (HCMD)

The count of ADABAS calls for the past five hours for the ADABAS Command Code category may be viewed by entering "B" on the Hourly Statistics Menu screen or the screen name HCMD on any RTM screen.

```
08-01-31   HCMD     Commands Per Hour By ADABAS CMD Code       227    14:26:16
CMD       14:26 CMD       13:00  CMD       12:00  CMD       11:00   CMD      10:00
A1         3046 A1         2876  BT          245  A1         1403   CL         245
BT          243 BT          890  CL          367  BT          250   ET        1867
CL         1065 CL          979  ET         2587  CL          400   E1         803
ET        10649 ET         9330  E1         1085  ET         2369   L1        5521
E1         6096 E1         5265  L1         6560  E1          921   L2        9876
L1        24610 L1        20194  L2        12975  L1         7289   L3        3578
L2       167165 L2       124879  L3        92123  L2        11865   L4        2234
L3       239863 L3       269436  L4         4976  L3        79901   OP         227
L4        10496 L4        20943  N1           65  L4         4658   RC        9436
L9         8046 L9         7741  OP          304  N1           63   S1        2378
N1          397 N1          201  RC        12980  OP          279   S4         985
OP         1099 OP          974  S1         9876  RC        11678
RC       107695 RC        93087  S2          502  S1         8855
S1        31634 S1        33760  S4         1843  S2          432
S2         2427 S2         2189                  S4         1698
S4         8163 S4         7321                  S8           76
S8          107 S8           99
S9           26 S9           21

******** 622827 ******** 600185  ******** 146488  ******** 135137 ******** 37150
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP       END                                                    EXIT
```

These are the 18 heaviest used Command Codes for the past five hours on the Production Database.

II.8.3 Hourly Statistics by File Number (HFNR)

The count of ADABAS calls for the past five hours for the File Number category may be viewed by entering "A" on the Hourly Statistics Menu screen or the screen name HFNR on any RTM screen.

```
08-01-31   HFNR     Commands Per Hour By ADABAS File Number    227    14:26:03
FNR       14:26  FNR        4:00  FNR       13:00  FNR       12:00  FNR
11:00
0         10243  0          7906  0          1936  0          1580  0
1227
1          1039  1           895  4            56  4            53  4
46
4           565  4           283  7          2108  7          1965  7
1386
7         21463  7          9056  8         25178  8         23670  8
19138
8        139862  8         97103  10         6789  10         6154  10
3935
10        73042  10        24105  19        32905  17         2504  17
1087
13         8111  17         3201  22            8  19        27865  22
6
17         3457  19       120006  103        7145  22            7  103
4031
20        84106  21         8192  117          13  103        6211  185
2578
21         9135  22           17  200       18631  185        5321  201
346
22           23  103      247809  201        1298  200       14937  12345
3370
47           97  117          58  12345     50421  201         963
56          192  193         796                   12345     39907
103      174096  200       75409
117         10  201        4686
193       1045  221         398
201      76403  12345       265
221        279

******** 603251 ********  600185  ******** 146488  ******** 135137  ********
37150
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                 EXIT
```

These are the 18 most heavily used FNRs for each hour on the Production Database.

A "correction" is made in TRIM UEX4 for on-line functions (minute, hour, session statistics, and Nucleus Session statistics). The FNR is changed (to zero) for commands that should have specified FNR=0. (Refer to **"Option for Zeroing FNR"** in **Section II.4 Real-Time Monitor Operation** and ***"Zero FNR"*** in ***Section VI.1 Tailoring UEX4*** of the ***TRIM Installation and Operations Manual***.)

II.8.4 Hourly Statistics by Program Name (HPGM) - formerly HNAT

The count of ADABAS calls for the past five hours for the Program Name category may be viewed by entering "C" on the Hourly Statistics Menu screen or the screen name HPGM on any RTM screen.

```
08-01-31   HPGM       Commands Per Hour By Program Name      227      14:26:29
PROGRAM  14:26  PROGRAM  14:00  PROGRAM  13:00  PROGRAM  12:00  PROGRAM  11:00
APIN104   4092  APIN104   3063  APIN107    124  APIN104   2689  APIN104    862
APIN107    589  APIN107    439  APIN113   6912  APIN107    121  APIN107     53
APIN111   3821  APIN113  14590  APIN115   7890  APIN113   5903  APIN113   1247
APIN113  12970  APIN115 295021  APIN118   2381  APIN118   1955  APIN118    965
APIN116 239760  APIN118  45999  APIN122    521  APIN123   2965  APIN123   1011
APIN118  58329  APIN123   3042  APIN127     82  APIN122    689  APIN122    123
APIN123   5602  APIN127    298  APIN129    263  APIN127    300  APIN127     87
APIN127    365  APIN129   1237  APIN142    106  APIN129    205  APIN129     43
APIN136     42  APIN142    745  APIN145    395  APIN136     81  APIN136     23
APIN142    863  APIN145    968  APIN151   1734  APIN142    101  APIN142     50
APIN145   1077  APIN149   3109  APIN153  31725  APIN145    379  APIN145    109
APIN149   2588  APIN153 126900  APIN155  13289  APIN151   1718  APIN151    964
APIN153 185480  APIN159   2871  APIN159   7318  APIN153  51904  APIN153  13890
APIN155  55019  APIN160    179  APIN164    617  APIN155   2290  APIN155   1379
APIN159   3546  APIN165     89  APIN165     30  APIN165     31  APIN165     29
APIN160    256  APIN167   1438  APIN167    298  APIN167    244  APIN167    193
APIN167   1087  APIN172  43955  APIN172  10891  APIN172   9832  APIN172   1745
APIN173     95  APIN173     73  APIN173     19  APIN173     18  APIN173     17
OTHER=>  70321  OTHER=>  56547  OTHER=>  61893  OTHER=>  51712  OTHER=>   5360
******** 645902 ******** 600185 ******** 146488 ******** 135137 ******** 37150
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP       END                                                  EXIT
```

These are the 18 NATURAL Programs issuing the most calls to the Production Database during the past five hours.

II.8.5 Hourly Statistics by Job Name (HJOB)

The count of ADABAS calls for the past five hours for the Job Name category may be viewed by entering "D" on the Hourly Statistics Menu screen or the screen name HJOB on any RTM screen.

```
08-01-31    HJOB        Commands Per Hour By Job Name        227          14:26:44
JOB NAME  14:26 JOB NAME 14:00  JOB NAME 13:00  JOB NAME 12:00  JOB NAME 11:00
$JXP104     4090 $JXP104    3063  $JXP107     124  $JXP104    2689  $JXP104     862
$JXP107      589 $JXP107     439  $JXP113    6912  $JXP107     121  $JXP107      53
$JXP111     3821 $JXP113   14590  $JXP115    7890  $JXP113    5903  $JXP113    1247
$JXP113    17970 $JXP115  295021  $JXP118    2381  $JXP118    1955  $JXP118     965
$JXP116   219760 $JXP118   45999  $JXP122     521  $JXP123    2965  $JXP123    1011
$JXP118    51329 $JXP123    3042  $JXP127      82  $JXP122     689  $JXP122     123
$JXP123     5602 $JXP127     298  $JXP129     263  $JXP127     300  $JXP127      87
$JXP127      365 $JXP129    1237  $JXP142     106  $JXP129     205  $JXP129      43
$JXP136       42 $JXP142     745  $JXP145     395  $JXP136      81  $JXP136      23
$JXP142      863 $JXP145     968  $JXP151    1734  $JXP142     101  $JXP142      50
$JXP145     1077 $JXP149    3109  $JXP153   31725  $JXP145     379  $JXP145     109
$JXP149     2588 $JXP153  126900  $JXP155   13289  $JXP151    1718  $JXP151     964
$JXP153   265480 $JXP159    2871  $JXP159    7318  $JXP153   51904  $JXP153   13890
$JXP155    55015 $JXP160     179  $JXP164     617  $JXP155    2290  $JXP155    1379
$JXP159     3546 $JXP165      89  $JXP165      30  $JXP165      31  $JXP165      29
$JXP160      256 $JXP167    1438  $JXP167     298  $JXP167     244  $JXP167     193
$JXP167     1087 $JXP172   43955  $JXP172   10891  $JXP172    9832  $JXP172    1745
$JXP173       95 $JXP173      73  $JXP173      19  $JXP173      18  $JXP173      17
OTHER=>    70321 OTHER=>   56547  OTHER=>   61893  OTHER=>   51712  OTHER=>    5360
******** 703896 ******** 600185 ******** 146488 ******** 135137 ******** 37150
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                 EXIT
```

These are the 18 Jobs issuing the most calls to the Production Database during the past five hours.

II.8.6 Hourly Statistics by ADABAS User-ID (HUID)

The count of ADABAS calls for the past five hours for the ADABAS User ID category may be viewed by entering "E" on the Hourly Statistics Menu screen or the screen name HUID on any RTM screen.

```
08-01-31   HUID       Commands Per Hour By ADABAS User ID     227     14:26:58
   UID    14:26    UID    14:00    UID    13:00    UID    12:00    UID   11:00
C1C71044   4490 C1C71044   3063 C1D71078    124 C1D7104A  2689  C1D7104A   862
C1D71078    589 C1D71078    439 C1D71132   6912 C1D71078   121  C1D71078    53
C1D71117   3821 C1D71132  14590 C1D71159   7890 C1D71132  5903  C1D71132  1247
C1D7113C  17970 C1D71159 295021 C1D71181   2381 C1D71181  1955  C1D71181   965
C1D7116D 239760 C1D71181  45999 C1D71226    521 C1D7123C  2965  C1D7123C  1011
C1D71181  52329 C1D71233   3042 C1D71275     82 C1D71226   689  C1D71226   123
C1D71233   5602 C1D71275    298 C1D7129A    263 C1D71275   300  C1D71275    87
C1D71275    365 C1D7129A   1237 C1D7142A    106 C1D7129A   205  C1D7129A    55
C1D7136F     65 C1D7142A    745 C1D71456    395 C1D7136F    81  C1D71456   159
C1D7142A    863 C1D71456    968 C1D71515   1734 C1D7142A   101  C1D71515   964
C1D71456   1077 C1D71492   3109 C1D71533  31725 C1D71456   379  C1D71533 13890
C1D71492   2588 C1D71533 126900 C1D71558  13289 C1D71515  1718  C1D71558  1379
C1D71533 265480 C1D7159E   2871 C1D7159E   7318 C1D71533 51904  C1D7165B    29
C1D71559  55015 C1D71604    179 C1D71640    617 C1D71558  2290  C1D7167B   193
C1D7159E   3546 C1D7165B     89 C1D7165B     30 C1D7165B    31  C1D71727  1745
C1D71604    256 C1D7167B   1438 C1D7167B    298 C1D7167B   244  C1D71804  5377
C1D7167B   1087 C1D71727  43955 C1D71727  10891 C1D71727  9832
C1D71731     95 C1D71731     73 C1D71731     19 C1D71731    18
OTHER=>   70321 OTHER=>   56547 OTHER=>   61893 OTHER=>  51712
******** 725319 ******** 600185 ******** 146488 ******** 135137 ******** 37150
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                 EXIT
```

These are the 18 User-IDs issuing the most calls to the Production Database during the past five hours.

> **Note:** User-IDs are sequential numbers assigned internally by the ADABAS Nucleus. The "Alternate User-ID" option may be used to view the CICS Term-ID rather than sequential numbers. The example above shows this.

The DBA may change the display of User-ID from hex (H) to character (C) simply by typing CTRL in the program name, changing the H to C on the Control Screen, and entering HUID in the program name to get directly back to this screen. The hex mode enables the DBA to see Batch User-Ids, which are not readable characters.

II.8.7 Hourly Statistics by Security-ID (HSID)

The count of ADABAS calls for the past five hours for the Security ID category may be viewed by entering "F" on the Hourly Statistics Menu screen or the screen name HSID on any RTM screen.

```
08-01-31   HSID       Commands Per Hour By Security ID      227       14:26:58
SEC ID    14:26  SEC ID    14:00 SEC ID   13:00  SEC ID    12:00 SEC ID   11:00
TREE1044   4490  TREE1044   3063 TREE1078   124  TREE104A   2689 TREE104A   862
TREE1078    589  TREE1078    439 TREE1132  6912  TREE1078    121 TREE1078    53
TREE1117   3821  TREE1132  14590 TREE1159  7890  TREE1132   5903 TREE1132  1247
TREE113C  17970  TREE1159 295021 TREE1181  2381  TREE1181   1955 TREE1181   965
TREE116D 239760  TREE1181  45999 TREE1226   521  TREE123C   2965 TREE123C  1011
TREE1181  52329  TREE1233   3042 TREE1275    82  TREE1226    689 TREE1226   123
TREE1233   5602  TREE1275    298 TREE129A   263  TREE1275    300 TREE1275    87
TREE1275    365  TREE129A   1237 TREE142A   106  TREE129A    205 TREE129A    55
TREE136F     65  TREE142A    745 TREE1456   395  TREE136F     81 TREE1456   159
TREE142A    863  TREE1456    968 TREE1515  1734  TREE142A    101 TREE1515   964
TREE1456   1077  TREE1492   3109 TREE1533 31725  TREE1456    379 TREE1533 13890
TREE1492   2588  TREE1533 126900 TREE1558 13289  TREE1515   1718 TREE1558  1379
TREE1533 265480  TREE159E   2871 TREE159E   7318 TREE1533  51904 TREE165B    29
TREE1559  55015  TREE1604    179 TREE1640    617 TREE1558   2290 TREE167B   193
TREE159E   3546  TREE165B     89 TREE165B     30 TREE165B     31 TREE1727  1745
TREE1604    256  TREE167B   1438 TREE167B    298 TREE167B    244 TREE1804  5377
TREE167B   1087  TREE1727  43955 TREE1727  10891 TREE1727   9832
TREE1731     95  TREE1731     73 TREE1731     19 TREE1731     18
OTHER=>   70321  OTHER=>   56547 OTHER=>   61893 OTHER=>   51712
******** 725319  ******** 600185 ******** 146488 ******** 135137 ******** 37150
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                 EXIT
```

These are the 18 Security-IDs issuing the most calls to the Production Database during the past five hours.

The Security-ID, a maximum of eight characters, is a meaningful identifier of the user, whether it is a batch job or an on-line user. This Security-ID is commonly known as the RACFID, and, for an on-line user, it usually identifies the "logon ID".

II.8.8 Hourly Statistics by Response Code (HRSP)

The count of ADABAS calls for the past five hours for the Response Code category may be viewed by entering "G" on the Hourly Statistics Menu screen or the screen name HRSP on any RTM screen.

```
08-01-31   HRSP Commands Per Hour By ADABAS Response Code     227     14:27:22
RSP       14:27  RSP       14:00  RSP       13:00  RSP      12:00  RSP
11:00
0        725719  0        600017  0        146393  0       135120  0
37140
3           130  3             8  3            50  3           13  3
3
9            47  9           160  9            44  9            4
52            3                   52            1

******** 725319  ******** 600185  ******** 146488  ********135137  ********
37150









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

These are the 4 Response Codes most commonly encountered on the Production Database during the past 5 hours.

Note that Response Codes can be as high as 65535.

II.8.9 Hourly Statistics by Thread (HTHD)

The count of ADABAS calls for the past five hours for the Thread category may be viewed by entering "H" on the Hourly Statistics Menu screen or the screen name HTHD on any RTM screen.

```
08-01-31   HTHD     Commands Per Hour By ADABAS Thread      227      14:25:47
THREAD    14:25 THREAD    14:00  THREAD    13:00  THREAD    12:00  THREAD   11:00
1         10495 1         13906  1          8040  1          7896  1         1943
2        327196 2        463108  2        107369  2         99406  2        27609
3         74809 3         94165  3         27643  3         21806  3         6803
4         17392 4         23201  4          3189  4          5109  4          795
5          4173 5          5584  5           247  5           893
6           199 6           301                    6            27
******** 434264 ******** 600185  ******** 146488  ******** 135137  ******** 37150









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

The count of calls per thread to this Production Database for the current hour and the past 4 full hours is displayed.

Note that thread numbers can be as high as 250.

II.8.10 Hourly Statistics by Application Library (HNSA)

The count of ADABAS calls for the past five hours for the Application Library category may be viewed by entering "I" on the Hourly Statistics Menu screen or the screen name HNSA on any RTM screen.

```
08-01-31   HNSA    Commands Per Hour By Application Library    227    14:27:24
LIBRARY   14:27 LIBRARY   14:00 LIBRARY   13:00 LIBRARY   12:00 LIBRARY  11:00
A417068    4021 A417068    3963 A417068    1963 A417068    1863 A417068    501
BAT4163   30995 BAT4163   26021 BAT4163    5021 BAT4163    4730 BAT4163   1803
BAT5100   76886 BAT5100   61222 BAT5100   21222 BAT5100   20181 BAT5100   9092
BAT5200   23994 BAT5200   22004 BAT5200    3013 BAT5200    2966 BAT5300    700
BAT5300    9997 BAT5300    8900 BAT5300    2010 BAT5300    1024 BAT5400    694
BAT5400   1087K BAT5400   71800 BAT5400    2005 BAT5400    1809 BAT5700   1055
BAT5500    9323 BAT5500    9010 BAT5500    2200 BAT5600     105 BAT5800    488
BAT5600    1966 BAT5600    1702 BAT5600     204 BAT5700    4694 CRC4603   2166
BAT5900   45376 BAT5700   34444 BAT5700    4984 BAT5800    1584 GOR1909    444
CRC4603    6099 BAT5900    5775 BAT5800    2028 CRC4603    9552 HMH2086   1776
GOR1909    5555 CRC4603    4966 BAT5900    1101 LMB1156    1977 LMB1156    803
HMH2086    5565 HMH2086    5407 HMH2086    1917 MES3755    1177 MRR0213   3777
MES3714    6368 LMB1156    6017 LMB1156    3076 MRR0213    8238 OPR5532   2099
MES3755    4523 MES3714    4033 MES3755     999 OPR5532   10126 RJY1017  10342
MRR0213   99781 MRR0213   88129 MRR0213   10545 RJY1017   46077 TRS0802   1211
NLG0802   74667 NLG0802   64008 NLG0802   10222 TRS0802   10112 ZTP3071    199
RJY1017  168542 RJY1017  130808 RJY1017   47088 ZTP3071    8922
TRS0802   21966 TRS0802   20966 TRS0802   17025
OTHER=>   42010 OTHER=>   31010 OTHER=>    9865
********  1725K ******** 600185 ******** 146488 ******** 135137 ******** 37150
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                 EXIT
```

These are the 18 NATURAL Application Libraries that have issued the most ADABAS commands during the past five hours.

Note the "1725K" figure in the left column of statistics. This is an example of how TRIM displays excessively large numbers. The "K" denotes thousands.

II.8.11 Hourly Statistics by NATURAL Security User-ID (HNSU)

The count of ADABAS calls for the past five hours for the NSS User ID category may be viewed by entering "J" on the Hourly Statistics Menu screen or the screen name HNSU on any RTM screen.

```
08-01-31   HNSU       Commands Per Hour By NSS User ID      227       14:27:37
NSS UID   14:27 NSS UID   14:00  NSS UID  13:00 NSS UID   12:00 NSS UID  11:00
            110             201             406             400            202
ABX4700   19989 ABX4700   17302 ABX4700    9095 ABX4700    8833 ABX4700   1099
ABX4701   55923 ABX4701   47434 ABX4701   18028 ABX4701   17850 ABX4701   2022
ABX4783   41122 ABX4783   30113 ABX4783    9762 ABX4783    9442 ABX4783    927
ACX47XX   88038 ACX47XX   60111 ACX47XX    7543 ACX47XX    7300 ACX47XX    900
ADX47XX  110664 ADX47XX  102445 ADX47XX    6314 ADX47XX    6241 BOND007    103
BOND007     909 BOND007     888 BOND007     912 BOND007     789 CAT0034   3088
CAT0034   20000 CAT0034   13666 CAT0034    6011 GROUCHO    2749 GROUCHO   1679
GROUCHO   31286 GROUCHO   18807 GROUCHO    2999 HMS2422     778 HMS2422    492
HMS2422   10211 HMS2422    9379 HMS2422     879 LARRY01   30749 MAR4301   2638
LARRY01  107864 LARRY01   77232 LARRY01   31873 MAR4301    7850 MAX4777   6955
MAR4301   18095 MAR4301   17095 MAR4301    8024 MAX4777    7893 MAX9641    555
MAX4777   25029 MAX4777   24883 MAX4777    8666 MAX9641     873 NRD9932   3024
MAX9641    8243 MAX9641    6984 MAX9641     998 NRD9932    8899 TREE1     3753
NRD9932   11112 NRD9932   10011 NRD9932    9077 TREE1      4995 TREE2     2913
TREE1     41052 TREE1     36206 TREE1      5151 TREE2      5956 VIC6543    507
TREE2     40331 TREE2     36205 TREE2      6205 VIC6543     870 XXY27     3147
VIC6543   25035 VIC6543   23903 VIC6543     893 XXY27      6984 ZZT0476   3146
XXY27     14229 XXY27     12222 XXY27      7554 ZZT0476    5686
OTHER=>   56077 OTHER=>   55098 OTHER=>    6098
******** 725319 ******** 600185 ******** 146488 ******** 135137 ******** 37150
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                 EXIT
```

These are the 18 NATURAL Security User-IDs that have issued the most ADABAS commands during the past five hours.

II.8.12 Hourly Statistics by CICS Transaction-ID (HCTI)

The count of ADABAS calls for the past five hours for the CICS Transaction ID category may be viewed by entering "K" on the Hourly Statistics Menu screen or the screen name HCTI on any RTM screen.

```
08-01-31   HCTI      Commands Per Hour By CICS Trans. ID      227     14:27:44
TRANS ID  14:27  TRANS ID  14:00  TRANS ID  13:00  TRANS ID  12:00 TRANS ID
11:00
BATC      13743  TSO      600185  TSO      146488  TSO      135137 TSO
37150
CICSA413   9108
CICSB4Z1  10772
CICSDD0D   6069
CICSYN23  34396
TSO      650739
******** 725327  ******** 600185  ******** 146488  ******** 135137 ********
37150









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

These are the 6 CICS Transaction-IDs (or other communication IDs, such as TSO and BATCH) that have issued the most ADABAS commands during the past 5 hours.

II.8.13 Hourly Statistics by User Area (HUSA)

The count of ADABAS calls for the past five hours for the User Area category (the last four bytes of the ADABAS Control Block) may be viewed by entering "L" on the Hourly Statistics Menu screen or the screen name HUSA on any RTM screen.

```
08-01-31   HUSA        Commands Per Hour By User Area      227        14:27:56
  AREA    14:27   AREA    14:00   AREA    13:00   AREA    12:00   AREA   11:00
40404040 725319 40404040 600185 40404040 146488 40404040 135137 40404040 37150
******** 725319 ******** 600185 ******** 146488 ******** 135137 ******** 37150
```

The blank value that is usually seen in the User Area field indicates that there is no particular use for this field by this user site. The USA statistics should probably be permanently deactivated.

II.9 Session Statistics

The Session Statistics subsystem is a logical extension of the Minute and Hourly Statistics subsystems, which display database activity for the most recent five minutes and five hours, respectively. The Session Statistics subsystem displays the database activity for the entire database session.

Viewing ADABAS activity for the database session is useful for locating the most active files, programs, users, etc. The DBA and NATURAL Administrator may monitor the session statistics over a period of time to determine trends in database activity. When these trends are broken by an abnormally large amount of database activity, the DBA or the NATURAL Administrator may determine if a problem exists.

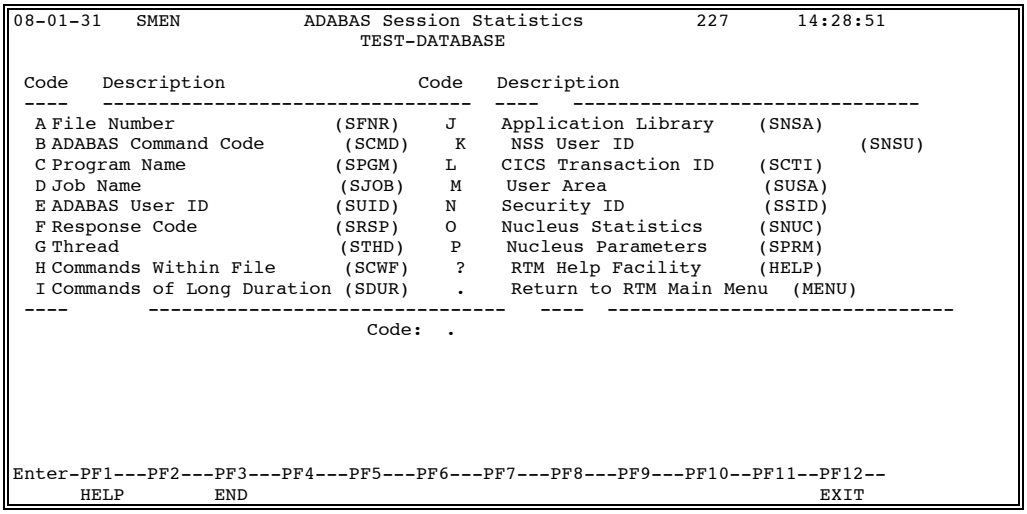
Many features within the Session Statistics subsystem are similar to the features available for the Minute and Hourly subsystems. The Session Statistics subsystem also includes functions to view the most inefficient commands issued, statistics about commands issued for each file, and ADABAS parameters and internal Nucleus statistics.

The Session screens display the command totals in the order as customized (Zap, RTM or TRMTAP) Optionally, a toggle switch (PA1) may be used on the session screens to change the Sort Control. The toggle takes effect on all active Session accumulators. The Session Statistics screens generally allow for scrolling through the many active files, programs, users, etc. in any one session.

Note: Hard-copy Nucleus Session Parameters and Statistics are automatically printed at ADAEND (or more often). Refer to **Section I.3.8 Nucleus Session Statistics**.

II.9.1 Session Statistics Main Menu (SMEN)

The Session Statistics Menu may be invoked by entering "D" from the RTM Main Menu or the screen name SMEN from any RTM screen.



II.9.2 ADABAS Nucleus Parameters (SPRM)

he ADABAS Nucleus Parameters may be viewed by entering "P" on the Session Statistics Menu screen or the screen name SPRM on any RTM screen.

```
Allocated values are displayed. Press the ENTER key for Actual values.
08-01-31   SPRM          ADABAS  Nucleus  Parameters       227        14:29:02
                                 TEST-DATABASE

 Mode = M
 ReadOnly = NO                                    Buffer Flushes    188
                                    MAX %
                  SETTINGS      USED/OCCURRED
 Commands       NC  = 20        -                   CT = 600
 Holds          NH  = 200       1   365/13:25       TT = 600
 Threads        NT  = 4         -                   TNAA = 900
 Users          NU  = 20        20  365/13:24       TNAE = 1800
 Buffer Pool    LBP = 125000    -                   TNAX = 900
 Format Pool    LFP = 8000      34  365/13:25       DUALCLD = 3330
 Work Pool      LWP = 100000    -                   DUALCLS = 50
 Seq CMDS       LQ  = 3000      10  365/14:27       DUALPLD = 3330
 Srch Results   LI  = 2000      9   365/13:25       DUALPLS = 50
 Prot Area      LP  = 500       -                   LOGGING = YES  LOGSB = NO
 Max Each IUB   LU  = 12000     -                   LOGCB = NO     LOGVB = NO
 Sort           LS  = 19968     -                   LOGFB = NO     LOGIB = NO
                                                    LOGRB = NO     LOGIO = NO
                                                 CLOGLAYOUT = 5
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP       END                                                    EXIT
```

Note the settings of the various Queues and Tables with the MAX% USED/OCCURRED figures. These are "high water marks" for these Queues and Tables for this session, showing the percent, day of year, and time of occurrence of that high water mark. Entries that do not currently have high water marks are currently available are marked with "-".

The top (message) line indicates that the Queue and Table SETTINGS are for the allocated amount. Pressing ENTER will alternately reveal the actual and the allocated amounts.

II.9.3 ADABAS Nucleus Statistics (SNUC)

The ADABAS Nucleus Session Statistics as retained by ADABAS may be viewed by entering "O" on the Session Statistics Menu screen or the screen name SNUC on any RTM screen.

```
08-01-31   SNUC           ADABAS  Nucleus  Statistics       227       14:29:08
                                  TEST-DATABASE
 Database Started=  08-01-31  08:27:07
 Format Translations      =        377
 Format Overwrites        =        2
 Interrupts               =        1761
 Throwbacks               =        1
 Commands Processed       =        1123
 Buffer Calls             =        3560
 Buffer Efficiency        =        1.30

            I / O   S U M M A R Y
        *   READ     *   WRITE    *   TOTAL
*********************************************
  ASSO  *       2329 *         81 *       2410
*********************************************
  DATA  *        419 *         21 *        440
*********************************************
  WORK  *         73 *         88 *        161
*********************************************
  TOTAL *       2821 *        190 *       3011

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

The highlighted Buffer Efficiency is the number of logical I/Os against ASSO and DATA (Buffer Calls=3560) divided by the number of physical reads against ASSO and DATA (2748) = 1.30. Early in an ADABAS session, this figure is low as ADABAS fills its buffer pools. Later, this figure increases. The buffer efficiency may be affected by adjusting the buffer pool size parameters when ADABAS is next brought up.

The previous start-up parameters and above statistics are available within ADABAS and are obtainable through ADABAS DPARM and DSTAT Operator Commands. With TRIM they are available on-line.

II.9.4 Session Statistics by File Number (SFNR)

The Session Statistics by File Number may be viewed by entering "A" on the Session Statistics Menu screen or the screen name SFNR on any RTM screen.

```
08-01-31   SFNR      Session Totals By ADABAS File Number     227    14:29:12

   FNR    COUNT      PCT      FNR    COUNT     PCT      FNR    COUNT    PCT
 ----- ----------  -----   ----- ----------  -----   ----- ----------  ----
     0        12    1.0
     1         1    0.1         o                        o
     2        27    2.3         o                        o
     7         1    0.1         o                        o
     8       512   44.4
     9        11    1.0
    13        87    7.5                                243        12    1.0
    24         1    0.1                                247        26    2.3
    25         3    0.3                                248        73    6.3
     o
     o
     o




 Total Commands: 1153                                 Total File Numbers: 42
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                  EXIT
```

Nothing extraordinary is seen this early in the session.

If many files are accessed this session, multiple screens are prepared. By pressing the ENTER key, the multiple screens showing FNR Command Counts are displayed.

A "correction" is made in TRIM UEX4 for on-line functions (minute, hour, session statistics, and Nucleus Session statistics). The FNR is changed (to zero) for commands that should have specified FNR=0. (Refer to **"Option for Zeroing FNR"** in **Section II.4 Real-Time Monitor Operation** and ***"Zero FNR"*** in ***Section VI.1 Tailoring UEX4*** of the ***TRIM Installation and Operations Manual***.)

Note that file numbers can be as high as 65535.

The maximum number of FNRs that are displayed is 256. These 256 will be the first 256 FNRs accessed in the session.

II.9.5 Session Statistics by Command Code (SCMD)

The Session Statistics by Command Code may be viewed by entering "B" on the Session Statistics Menu screen or the screen name SCMD on any RTM screen.

```
08-01-31   SCMD    Session Command Totals By ADABAS CMD Code   227    14:29:29


 CMD   COUNT      PCT     CMD    COUNT      PCT      CMD    COUNT     PCT
 --- ----------  ----     ---  ----------  -----     --- ----------  -----
 A1           5   .40     L9           77   6.20
 A4          10   .81     N1            7    .56
 BT          30  2.42     OP           38   3.06
 CL          27  2.18     RC          122   9.83
 ET          61  4.92     S1           81   6.53
 E1           3   .24     S2            3    .24
 E4           7   .56     S4           18   1.45
 L1          78  6.29
 L2         291 23.45
 L3         343 27.64
 L4          40  3.22



 Total Commands: 1241
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                   EXIT
```

This screen displays a listing of all ADABAS commands, the total number of times each command is issued, and the percentage of the total commands each has occupied.

If it is desirable to see a breakdown by command within file, use the SCWF screen.

II.9.6 Session Statistics by Command within File (SCWF)

The Session Totals by Command within File may be viewed by entering "H" on the Session Statistics Menu screen or the screen name SCWF on any RTM screen. The DBA is then prompted to enter a file number 0 - 65535. If the DBA enters 123, the screen below displays the session totals for each of 16 command groups for the selected file.

```
08-01-31     SCWF         Session Totals By CMD within FNR      227      14:29:36
                                  TEST-DATABASE



 CMD      COUNT    PCT/FILE  PCT/TOTAL     CMD    COUNT     PCT/FILE  PCT/TOTAL
 ---  ----------  --------  ---------     ---  ----------  --------  ---------
 L1/4         12      4.18        0.9     A1/4          3      1.05        0.2
 L2/5         23      8.01        1.7     N1/2          0      0.00        0.0
 L3/6        227     79.09       16.5     E1/4          0      0.00        0.0
 L7/9          2      0.70        0.2     ET            7      2.44        0.6
 S1/4          1      0.35        0.1     BT            2      0.70        0.2
 S2/9          0      0.00        0.0     OP            1      0.35        0.1
 S8            0      0.00        0.0     CL            0      0.00        0.0
 RC            7      2.44        0.5     MISC          2      0.70        0.1


 Total Commands - File 123 : 287        (20.9% Of Total)

 Total Commands - Session  : 1374

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

This screen is helpful later in the session to display command counts for the most-used files. In this case, nearly 80% of all commands against file 123 are L3 commands.

II.9.7 Session Statistics by Program Name (SPGM) - formerly SNAT

The Session Totals by Program Name may be viewed by entering "C" on the Session Statistics Menu screen or the screen name SPGM on any RTM screen.

```
08-01-31     SPGM         Session Totals By Program          227       14:29:39

Start At: ________
PROGRAM     COUNT    PCT   PROGRAM     COUNT    PCT   PROGRAM     COUNT    PCT
-------- ---------- -----  -------- ---------- ----- -------- ---------- -----
AA              12   0.5        o                          o
AIX              6    .3        o                          o
A93BX           17    .7        o                          o
BUYER         1214  50.2
BUYERA           3    .1
BUYERB          13    .5
  o
  o
  o




 Total Commands: 2417                                 Total Program Names: 36
ENTER-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                  EXIT
```

Numerous program names are retained for display. By continually pressing the ENTER key, the DBA may view all of them.

The display may begin with a particular program name by entering the name or the starting characters in the "Start At:" prompt located in the top left-hand corner.

II.9.8 Session Statistics by Job Name (SJOB)

The Nucleus Session Totals by Job Name may be viewed by entering "D" on the Session Statistics Menu screen or the screen name SJOB on any RTM screen.

```
08-01-31   SJOB          Session Totals By Job Name        227        14:29:43

Start At: ________
JOB NAME    COUNT   PCT   JOB NAME    COUNT    PCT  JOB NAME    COUNT    PCT
-------- ---------- ----- -------- ---------- ----- -------- ---------- -----
$J43X95          28   1.1        o                          o
$J43X96          14    .5        o                          o
$J43X97          56   2.1        o                          o
DBA403           85   3.2
DBA407           73   2.8
PRO921          187   7.1
   o
   o
   o




Total Commands:  2643                                Total Job Names: 86
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                  EXIT
```

Numerous Job Names are retained for display. By continually pressing the ENTER key, the DBA may view all of them. Again, the "Start At:" field may be used to specify the beginning point for the display.

II.9.9 Session Statistics by ADABAS User-ID (SUID)

The Nucleus Session Totals by User-ID may be viewed by entering "E" on the Session Statistics Menu screen or the screen name SUID on any RTM screen.

```
08-01-31   SUID       Session Totals By ADABAS User ID       227      14:29:50

  UID      COUNT     PCT    UID       COUNT    PCT    UID       COUNT     PCT
-------- ---------- ----- -------- ---------- ----- -------- ---------- -----
00142708        125   4.3
00142733        233   8.0
C7C4D3D6        497  17.2
C7C4D5D1       1126  38.9
C7C4E3D3          3    .1
9B43ACB1         13    .4
   o
   o
   o




 Total Commands: 2895                                  Total Users: 12
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                 EXIT
```

Numerous User-IDs are retained for display. By continually pressing the ENTER key, the DBA may view all of them.

Note: User-IDs are sequential numbers assigned internally by the ADABAS Nucleus. The "Alternate User-ID" option may be used to view the CICS Term-ID rather than sequential numbers. The example above shows this.

The DBA may change the display of User-ID from hex (H) to character (C) simply by typing CTRL in the program name, changing the H to C on the Control Screen, and entering HUID in the program name to get directly back to this screen. The hex mode enables the DBA to see Batch User-Ids, which are not readable characters.

II.9.10 Session Statistics by Security-ID (SSID)

The Nucleus Session Totals by Security-ID may be viewed by entering "N" on the Session Statistics Menu screen or the screen name SSID on any RTM screen.

```
08-01-31   SSID        Session Totals By Security ID       227        14:29:50

Start At: ________
 SEC ID     COUNT    PCT   SEC ID     COUNT    PCT   SEC ID    COUNT     PCT
-------- ---------- ----- -------- ---------- ----- -------- ---------- -----
TREE2708        125   4.3
TREE2733        233   8.0
TREED3D6        497  17.2
TREED5D1       1126  38.9
TREEE3D3          3    .1
TREEACB1         13    .4
   o
   o
   o




Total Commands: 2895                                  Total Security IDs: 12
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP       END                                                  EXIT
```

Numerous Security-IDs are retained for display. By continually pressing the ENTER key, the DBA may view all of them.

The Security-ID, a maximum of eight characters, is a meaningful identifier of the user, whether it is a batch job or an on-line user. This Security-ID is commonly known as the RACFID, and, for an on-line user, it usually identifies the "logon ID".

II.9.11 Session Statistics by Response Code (SRSP)

The Nucleus Session Totals by Response Code may be viewed by entering "F" on the Session Statistics Menu screen or the screen name SRSP on any RTM screen.

```
08-01-31   SRSP     Session Totals By ADABAS Response Code     227    14:29:59

 RSP   COUNT      PCT       RSP   COUNT      PCT       RSP   COUNT      PCT
 --- ----------  -----      --- ----------  -----      --- ----------  -----
   0       2950  100.0




 Total Commands: 2950                                  Total RSP Codes: 1
ENTER-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP       END                                                  EXIT
```

All 256 Response Codes can be displayed, although during a typical ADABAS session only a few Response Code values are usually encountered.

II.9.12 Session Statistics by Thread (STHD)

The Nucleus Session Totals by Thread may be viewed by entering "G" on the Session Statistics Menu screen or the screen name STHD on any RTM screen.

```
08-01-31   STHD      Session Totals By ADABAS Thread            227    14:29:59

 THD   COUNT      PCT       THD   COUNT      PCT       THD   COUNT      PCT
 --- ----------  -----      --- ----------  -----      --- ----------  -----
   1       2655   90.0
   2        295   10.0









 Total Commands: 2950                                  Total Threads: 1
ENTER-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                 EXIT
```

Up to 250 threads (ADABAS V6 maximum) can be displayed, although during a typical ADABAS session only a few Thread values are usually encountered.

Note that Thread numbers can be as high as 250.

II.9.13 Commands of Long Duration (SDUR)

The "commands of longest duration" during this session may be viewed by entering "I" on the Session Statistics Menu screen or the screen name SDUR on any RTM screen.

```
08-01-31  SDUR          Commands of Long Duration             227    14:30:09

  DATE     TIME    CM  FNR   RSP  TD  TERM   SEC ID   PROGRAM     DUR-MS
_ 05-13 14:27:37 S2   27     0   3  T221   TREE05    FINDER     12747.0
_ 05-13 14:27:40 S1   27     0   2  T204   TREE05    FINDER     12569.3
_ 05-13 14:16:27 S1   27     0   3  T011   TREE05    FINDER     12387.8
_ 05-13 14:21:45 S1   27     0   3  T731   TREE05    FINDER     12123.5
_ 05-13 14:10:35 S1   27     0   3  T003   TREE05    FINDER     11994.6
_ 05-13 14:30:28 S1   27     0   2  T101   TREE05    FINDER     11547.0
_ 05-13 14:27:55 S1   27     0   3  T568   TREE05    FINDER     11321.1
_ 05-13 14:31:20 S1   27     0   2  T001   TREE05    FINDER     11263.5
_ 05-13 14:17:22 S1   27     0   3  T609   TREE05    FINDER     11038.9
_ 05-13 14:28:17 S1   27     0   2  T044   TREE05    FINDER     10888.8
_ 05-13 14:26:46 S1   27     0   3  T220   TREE05    FINDER     10635.7
_ 05-13 14:27:07 S1   27     0   3  T001   TREE05    FINDER     10495.0
_ 05-13 14:28:26 S1   27     0   3  T009   TREE05    FINDER     10164.4
_ 05-13 14:27:34 S1   27     0   3  T877   TREE05    FINDER      9967.8
_ 05-13 14:27:56 S1   27     0   3  T947   TREE05    FINDER      9862.2
_ 05-13 14:07:44 S1   27     0   3  T333   TREE05    FINDER      9666.2
_ 05-13 14:10:33 S1   27     0   3  T071   TREE05    FINDER      9325.0
                        LINE 1 THRU 17 OF 51
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP         END   UID   LIB   OPTNS       DOWN  INFO        RIGHT EXIT
```

Enter PF11 to scroll right and view additional statistics.

```
08-01-31  SDUR          Commands of Long Duration            227    14:30:09

    TIME   CM  AIO  DIO  WIO    ISNQ    COP   ADD1  ADD2(hex)   ADD5(hex)
_ 14:27:37 S1  291    0    2  100729344     TH99903  00000000 4040404040404040
_ 14:27:40 S1  283    0    2  100729344     TH99900  00000000 0000000000000000
_ 14:16:27 S1  243    0    4            F           00000002 4040404040404040
_ 14:21:45 S1  227    0    2              V         00000002 4040404040404040
_ 14:10:35 S1  227    0    2                        00000002 0000000000000000
_ 14:30:28 S1  223    0    3              V         00000005 4040404040404040
_ 14:27:55 S1  214    0    2                        00000002 0000000000000000
_ 14:31:20 S1  210    0    2            F           00000002 0000000000000000
_ 14:17:22 S1  210    0    4              V         00000002 4040404040404040
_ 14:28:17 S1  209    0    2                        00000002 0000000000000000
_ 14:26:46 S1  208    0    2              V         00000002 4040404040404040
_ 14:27:07 S1  208    0    5              V         00000002 4040404040404040
_ 14:28:26 S1  207    0    2              V         00000002 0000000000000000
_ 14:27:34 S1  200    0    2                        00000005 0000000000000000
_ 14:27:56 S1  198    0    4              V         00000002 4040404040404040
_ 14:07:44 S1  198    0    3              V         00000002 4040404040404040
_ 14:10:33 S1  197    0    2            F           00000002 0000000000000000

Enter-PF1---PF2---PF3---PF4---PF5--PF6---PF7--PF8---PF9---PF10--PF11--PF12--
      HELP        END              OPTNS       DOWN  INFO  LEFT        EXIT
```

It is important for programs executing on the database to be efficient in design and in ADABAS command usage. Programs issuing inefficient commands or commands requiring large amounts of I/O may create database performance problems. Therefore, it is useful to view the commands with long duration and make the appropriate coding corrections.

Each site sets its own standards for what is considered good response time. When commands take several seconds (or several minutes) to complete, these programs may be deemed inefficient and in need of coding modifications.

There are many reasons why a command may have a long duration. Complex FINDs requiring a large amount of WORK I/O to sort the ISN lists generally have long durations (i.e., the FIND SORTED BY statement). UPDATE and DELETE commands may create a large amount of Associator I/O if the file has a large number of Descriptors or Super-Descriptors.

TRIM enables the RTM user to view the 51 commands with the longest duration issued during the session. The DBA and the NATURAL Administrator may view the commands to determine if the program needs to be modified to improve performance. The 12.7-second response time on S2 commands issued by the NATURAL program "FINDER", shown in the previous screen, should be investigated.

The information displayed on the SDUR screen is described below:

- DATE — Date the command was issued
- TIME — Time the command was issued
- CM — ADABAS Command Code
- FNR — ADABAS File Number
- RSP — ADABAS Response Code
- TD — ADABAS Thread
- TERM — CICS Terminal ID
- SEC ID — Security-ID of the user that issued the command
- PROGRAM — Program that issued the command
- DUR-MS — Duration (in milliseconds) of the command

Scrolling right using PF11 displays the following additional fields:

- AIO — Amount of Associator I/O the command generated
- DIO — Amount of Data I/O the command generated
- WIO — Amount of Work I/O the command generated
- ISNQ — ISN Quantity
- COP — Command Options 1 and 2
- Add1 — Additions 1 field from ADABAS control block
- Add2(hex) — Additions 2 field from ADABAS control block
- Add5(hex) — Additions 5 field from ADABAS control block

The Security-ID field (SEC ID) may also display the ADABAS Internal User-ID, the Command-ID, and the number of descriptors updated. To view the ADABAS Internal User-ID, Command-ID, or the number of descriptors updated, the user presses PF4 to toggle between the four types of information. The label under PF4 indicates the next type of information to be displayed on the screen if PF4 is pressed.

The Program Name field (PROGRAM) may also display the Application Library from which the program is executed. To view the Application Library or the Program, the user presses PF5 to toggle between the two types of information. The label under the PF5 indicates the next type of information to be displayed on the screen if PF5 is pressed.

The field settings will be maintained when paging forward or backward (e.g., if Program is being displayed, it will still be displayed after pressing PF7 or PF8).

TRIM maintains a list of the 51 commands with the longest duration. The SDUR screen lists 17 commands at a time, displaying the commands taking the longest time to complete. The user may scroll forward and backward through the list.

Three types of scrolling are available to the RTM user. The first type is to scroll by screen. If the cursor remains at the normal screen name position and either PF7 or PF8 is pressed, the SDUR screen shifts the display up or down by or one full screen (17 lines). In the above example, if PF8 is pressed, lines 18 through 34 would be displayed.

The second type of scrolling is to scroll by cursor position. This enables the RTM user to select a command on the screen and scroll the command to the top or bottom of the screen. If PF7 is pressed when the cursor is on one of the displayed lines, the SDUR screen places the selected command at the bottom of the screen and displays the 16 commands with longer duration above it. If PF8 is pressed, the command is placed at the top of the screen with the next 16 commands of lesser duration displayed under the selected command.

The user cannot scroll backward past the first command, nor may the user scroll forward past the last command.

The third type of scrolling is to scroll right. Pressing PF11 displays all additional screen fields.

The Detail Information screen may be accessed by placing the cursor on any line containing an ADABAS Command. This detail information screen is invoked by placing the cursor on any command on the screen and pressing PF9 or selecting with "I". This screen provides a detailed explanation about the line the user selects. This information includes the ADABAS Command (e.g., S2) with the corresponding NATURAL equivalent (e.g., FIND SORTED), NATURAL program line number, Security-ID, NATURAL SECURITY System (NSS) User-ID, etc.

Detail information is available about any command displayed on the SDUR screen. This information includes the NATURAL function relating to the ADABAS command issued and

the line number within the NATURAL program. An example of the Detail Information screen is displayed below.

```
08-01-31              Detail Information for Selected Line            14:30:22

  Date and Time          Command Received a    Command Was Issued     ADABAS
  Command Issued          Response Code of          on Thread       Command ID
--------------------    ------------------    ------------------  ----------
12/31/01  14:21:45                0                     3            0130101

ADABAS  Issued Against          ISN       Duration of     ADABAS I/O Required
Command     File             Accessed   Command (MSEC)        by Command
------- --------------      ----------  --------------   --------------------
  S1          27                196          12123            Assoc =>  227
  FIND STATEMENT                                                Data  =>  0
                                                                Work  =>  2

       NATURAL Program     Line Number   Application      Job
            Name           in Program      Library        Name
       ---------------     -----------   -----------    --------
           FINDER             0130         PAYROLL      CICSPROD

       Security ID   Internal Id       External ID   NSS User ID
       -----------   -----------       -----------   -----------
         TREE05       00000137                        TREE05
```

The DBA may want a hard copy printout of the SDUR screen. Furthermore, the DBA may want to "clear the stack" and to start collecting information about other inefficient commands. By pressing PF6 on the SDUR screen, the pop-up window below is displayed.

```
08-01-31   SDUR          Commands of Long Duration             227    14:30:22

_ DATE    TIME   TD RSP CM FNR TERM   SEC ID  NAT PROG  DUR-MS  AIO  DIO  WIO
_ 05-13 14:27: +-----------------------------------------+  291    0    2
_ 05-13 14:27: |                                         |  283    0    2
_ 05-13 14:16: |  The list of Commands with Long Duration|  243    0    4
_ 05-13 14:21: |  may be printed, cleared, or printed and|  227    0    2
_ 05-13 14:10: |  cleared.  Please indicate your selection|  227    0    2
_ 05-13 14:30: |  below, or leave the value at '0' to    |  223    0    3
_ 05-13 14:27: |  return to the SDUR screen.             |  214    0    2
_ 05-13 14:31: |                                         |  210    0    2
_ 05-13 14:17: |         1 - Print Current List          |  210    0    4
_ 05-13 14:28: |         2 - Clear Current List          |  209    0    2
_ 05-13 14:26: |         3 - Print and Clear List        |  208    0    2
_ 05-13 14:27: |        -----                            |  208    0    5
_ 05-13 14:28: |         0                               |  207    0    2
_ 05-13 14:27: |                                         |  200    0    2
_ 05-13 14:27: +-----------------------------------------+  198    0    4
_ 05-13 14:07:44  3   0 S1  27 T333  TREE05   FINDER    9666.5  198    0    3
_ 05-13 14:10:33  3   0 S1  27 T071  TREE05   FINDER    9325.7  197    0    2
_                      LINE 1 THRU 17 OF 51

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END   UID   JOB   OPTNS UP    DOWN  INFO        RIGHT EXIT
```

The option window indicates that the list may be printed, cleared to enable TRIM to capture another 51 commands, or printed and cleared. The printed commands appear on DDPRINT (SYSLST for VSE) at ADAEND. If the user selects none of these options, the user is returned to the SDUR screen.

II.9.14 Session Statistics by Application Library (SNSA)

The Session Statistics by Application Library may be viewed by entering "J" on the Session Statistics Menu screen or the screen name SNSA on any RTM screen.

```
08-01-31   SNSA      Session Totals By Application Library     227    14:30:23

Start At: ________
LIBRARY    COUNT      PCT  LIBRARY    COUNT     PCT  LIBRARY    COUNT     PCT
-------- ----------  ----- -------- ---------- ----- -------- ---------- -----
TRMV710          139   4.37
N2OLIB           320  10.06
PAYR312          800  25.16
TRIMRTM          321  10.09
   o
   o
   o









Total Commands:  3181                                 Total Libraries: 10
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                 EXIT
```

Only a few Application Libraries have been run so far.

Note the use of Application "N2OLIB". This indicates use of the Treehouse Software NATURAL Change Management product, N2O.

II.9.15 Session Statistics by NATURAL Security User-ID (SNSU)

he Session Statistics by NATURAL Security User-ID may be viewed by entering "K" on the Session Statistics Menu screen or the screen name SNSU on any RTM screen.

```
08-01-31   SNSU          Session Totals By NSS User ID        227      14:30:31

Start At: ________
 NSS UID    COUNT    PCT  NSS UID     COUNT   PCT    NSS UID    COUNT     PCT
-------- ---------- ----- -------- ---------- -----  -------- ---------- -----
TH99990         133  4.09
DBA              33  1.01
TREE1           624 19.18
PAYUS1         1232 37.86
   o
   o
   o









Total Commands: 3254                                  Total NSS User IDs: 12
ENTER-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                 EXIT
```

II.9.16 Session Statistics by CICS Transaction-ID (SCTI)

The Session Statistics by CICS Transaction-ID may be viewed by entering "L" on the Session Statistics Menu screen or the screen name SCTI on any RTM screen.

```
08-01-31   SCTI          Session Totals By CICS Trans. ID       227      14:30:37

Start At: ________
TRANS ID   COUNT      PCT   TRANS ID   COUNT      PCT  TRANS ID   COUNT      PCT
-------- ----------  ----- -------- ----------  ----- -------- ----------  -----
BATC            133   4.09
CICSBNZ1         33   1.01
CICSYN23        624  19.18
COMP            273   8.39
TSO             959  29.47
   o
   o
   o









Total Commands: 3254                                  Total Trans IDs: 12
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                 EXIT
```

II.9.17 Session Statistics by User Area (SUSA)

The Session Statistics by User Area of the Control Block may be viewed by entering "M" on the Session Statistics Menu screen or the screen name SUSA on any RTM screen in the screen name.

```
08-01-31   SUSA           Session Totals By User Area          227      14:30:47

AREA        COUNT    PCT    AREA     COUNT     PCT    AREA     COUNT     PCT
-------- ---------- ----- -------- ---------- ----- -------- ---------- -----
40404040       3273 100.0

Totals Commands: 3273                                 Total User Areas: 1
ENTER-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                                                 EXIT
```

The blank value (40404040) that is usually seen in the User Area field indicates that there is no particular use for this field by this particular ADABAS site. If your site does not use this area, the USA statistics should probably be permanently deactivated.

II.10 ADABAS Queues and Tables

The Queues and Tables subsystem contains many functions that enable the RTM user to view the various ADABAS queues and tables. These include the ADABAS User Queue, Hold Queue, Command Queue, Table of Sequential Commands, Table of Search Results, and the Internal Format Pool.

The ADABAS User Queue shows the number of active users, Internal User-ID, Jobname, etc. For any selected User-ID, the currently accessed files and number of held records are shown.

A TRIM Extended User Queue (XUQ) facilitates new accumulations of additional statistics by User-ID. The total Commands, Duration, and I/Os for the current session (until a close) are maintained for each active user and are available for viewing. (Note: The XUQ is limited in size to a maximum of 1,024 entries. The 1,024 most recently active users will be maintained in the XUQ.) These figures show totals for the session along with an "instantaneous" view (since the last ENTER Key). The current Job Name, Security-ID, NATURAL Program, NATURAL Application Library, and NATURAL Security User-ID are also made available for viewing from the XUQ.

The users with access to any selected file may be displayed. Users may have their accessibility to the file removed from the User Queue.

All XUQ and associated User Queue entries for any selected NATURAL Program, NATURAL Application Library, or NATURAL Security User-ID may be displayed.

The Hold Queue shows the number of entries, the number of users represented in the Hold Queue, and the users with the most held records.

The Command Queue identifies command back-up, which is useful during peak periods.

Table of Sequential Commands, Table of Search Results, and Internal Format Buffer may be displayed in detail or may identify users with the most entries.

II.10.1 Queues and Tables Menu (QUES)

The Queues and Tables subsystem may be invoked by entering "E" from the RTM Main Menu screen or the function name QUES from any RTM screen.

```
08-01-31   QUES          ADABAS Queues and Tables          227      15:31:34
                              TEST-DATABASE

Code   Description                          Code   Description
----   ---------------------------------    ----   ---------------------------------
 A      User Queue Element         (QUQE)    I     High Int Format Buffer
(QHIF)
 B      Users of a File            (QUQF)    J     Table of Sequential Cmds  (QSC )
 C      Users by Program Name      (QUQN)    K     Table of Search Results   (QSR )
 D      Users by Nat Sec Appl      (QUQA)    L     High Hold Queue Users    (QHHQ)
 E      Users by Nat Sec User ID   (QUQU)    M     High Sequential Cmds     (QHSC)
 F      Command Queue              (QCQ )    N     High Search Results      (QHSR)
 G      Hold Queue                 (QHQ )    ?     RTM Help Facility        (HELP)
 H      Int Format Buffer          (QIF )    .     Return to RTM Main Menu   (MENU)
----   ---------------------------------    ----   ---------------------------------
                                    Code:  .




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

This screen displays the functions available to the user. To invoke any function, the RTM user must enter the function code and press the ENTER key.

II.10.2 User Queue Element (QUQE)

The User Queue function displays active users from the ADABAS User Queue, including information from the TRIM Extended User Queue, such as the number of commands and database I/Os the user has generated, what program and job the user is currently executing, how many records the user has on hold, and what files the user is accessing or updating.

The QUQE function may be invoked by entering "A" on the Queues and Tables Main Menu screen or the function name QUQE on any RTM screen. The first screen displayed is a selection list of all active users.

```
08-01-31   QUQE     Select User ID for User Queue Display      227    14:31:47
                                                   USERQ: ACTV   MAX   HI% USE
   Enter an 'S' next to the desired entry,              5    20      31
   or enter the Internal ID here: ________

  SEC ID   INT ID   EXT ID   JOB NAME      SEC ID   INT ID   EXT ID   JOB NAME
_ TREE04   00000055 00000055 TREE04
_ TREE12   0000005C 0000005C TREE12
_ TREE18   0000006B 0000006B TREE18
_ TREE19   0000006E 0000006E TREE19
_ TREE13   0000006F 0000006F TREE13
_

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

This screen displays the active users on the system. Each screen may display up to 30 users at a time. The RTM user may scroll forward through the list of users by pressing the ENTER key.

Note that it is possible to view all User-ID displays (INT ID on this screen) in character or hex format. Refer to the CTRL screen.

Note that the "high water mark" (HI% USE: 31) shows that a maximum of 31% of the User Queue space has been used this session. This translates to a maximum of 3.1 users at any one time, so far. Because the high water marks are based upon space used rather than number of entries, the figure is approximate (i.e., 3.1 users is actually 3 users).

> **Note:** The User-IDs displayed on the screen are listed in ADABAS Internal User-ID order, not by Security-ID.

To view the information about a specific user, the RTM user may enter an "S" next to the ID on the Selection screen or the desired user's Internal-ID on the screen. When a user has been selected or an ID has been entered, and the ENTER key has been pressed, the information about the selected user is displayed.

```
08-01-31       QUQE             User Queue Element          227         14:31:56
                                  TEST DATABASE

 Internal ID   =  00000055                    Application Library =  ZLIB
 External ID   =  TREE1                       Program Name        =  TREETEST
 Security ID   =  TREE04                      Job Name            =  L01TSI
 NSS User ID   =  TREEABCD


   --  User Information  --
 Type/Status   =  ET/NOT AT ET         COUNTS       CURRENT        TOTAL
 Last Activity =  10:47:42             --------     -------       --------
 Priority      =  1                    Commands          17            807
                                       I/Os               8            101
 Records Held  = 420/500               Duration (MS)    123           2433

 Files Being Accessed = 4
    ACC = 1,2,3,17
    UPD = 1,2


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

By continually striking the ENTER Key, the "current counts" show counts since the previous ENTER. The "total counts" are accumulated for the session for this user.

The QUQE screen displays information about the various IDs assigned to the user. This is useful because multiple IDs are available in the ADABAS world. The screen above illustrates this point as the Security-ID of the user is TREE04, the ADABAS Internal ID is 00000055, and the NSS User-ID is TREEABCD.

The QUQE displays information about the program and job the user is currently executing. If the program is a NATURAL program, the application library the program is executing from is also displayed.

The ADABAS Type and Status of the user (i.e., ET/NON ET), the time the user was last active, and the user's ADABAS Priority are displayed. This is useful in determining who the user is and when the user was last active.

The QUQE screen displays the amount of activity the user has generated during the user's session, including the number of ADABAS commands issued, the amount of I/O generated, and the command duration the user has caused since the last time the user pressed the ENTER key and for the session in total.

The file activity of the user is displayed, including the total number of records the user currently has in the Hold Queue and the maximum number of records the user may have in the queue concurrently. This is useful in assisting programmers that have received a response code 47.

The QUQE screen also displays the total number of files the user is currently accessing. This total is then separated into a list of the files being accessed (ACC), updated (UPD), required exclusively (EXU), having a utility run against it (UTI), and cluster updated (CLU).

The user may return to the display list of active users by pressing PF9.

Note that the information on the QUQE screen originates from the ADABAS User Queue entry and from the associated TRIM Extended User Queue (XUQ) entry.

II.10.3 Hold Queue (QHQ)

When records from an ADABAS file are to be modified (i.e., a NATURAL UPDATE or DELETE), ADABAS places the record on hold in the Hold Queue. These records may only be modified by the user that placed the record in the queue until an END TRANSACTION (ET) or BACKOUT TRANSACTION (BT) is issued. This is done to ensure that no two users modify the same record concurrently.

The contents of the Hold Queue may be viewed by entering "G" on the Queues and Tables Main Menu screen or the function name QHQ on any RTM screen.

```
08-01-31   QHQ              Active  Hold  Queue              227    14:31:21
USERQ: ACTV   MAX   HI% USE        HOLDQ: ACTV   MAX   HI% USE
         5    20      31                 15   1000      11
       INTERNAL ID     EXTERNAL ID    JOB NAME    FNR       ISN
       00140023        GROSS          LOITSI       13      12345
       00140023        GROSS          LOITSI       13      12346
       00140023        GROSS          LOITSI       13      12347
       00140023        GROSS          LOITSI       13      12348
       00140023        GROSS          LOITSI       13      12349
       00140023        GROSS          LOITSI       13      12350
       00140023        GROSS          LOITSI       13      12351
       00140023        GROSS          LOITSI       13      12352
       00140023        GROSS          LOITSI       13      12353
       00140023        GROSS          LOITSI       13      12354
       00140023        GROSS          LOITSI       13      12355
       00140023        GROSS          LOITSI       13      12356
       00140023        GROSS          LOITSI       13      12357
       00140023        GROSS          LOITSI       13      12358
       00140023        GROSS          LOITSI       13      12359

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

For each record in the Hold Queue, TRIM displays the ADABAS Internal and External User-ID of the user, the Job Name that issued the command to place the record on hold, the File Number the record is from, and the ISN of the record.

The QHQ screen also displays the number of active users on the database, the maximum allowed, the total number of records in the Hold Queue, and the maximum value the Queue may contain.

The QHQ screen displays 17 records at a time. The user may scroll through the list by pressing the ENTER key.

One User-ID, 00140023, seems to be holding many consecutive ISNs. If there are more than 18 entries, the RTM displays multiple screens when the ENTER Key is pressed. However, the User must be aware of possible instantaneous radical changes in the Hold Queue. For example, upon ET, the user suddenly has no entries in the Hold Queue.

II.10.4 Highest Users of Hold Queue (QHHQ)

There are instances when there are too many records in the Hold Queue to scroll through. The RTM provides the user with a function to view a summary of what is in the Hold Queue, reducing the number of screens to be displayed.

This summary may be viewed by selecting the High Hold Queue function from the Queues and Tables Main Menu screen. The user may invoke this function be entering "L" on this screen or the function name QHHQ on any RTM screen.

```
08-01-31   QHHQ          Hold Queue By High Usage          227         14:31:33
USERQ: ACTV   MAX   HI% USE        HOLDQ: ACTV    MAX   HI% USE   USERS
          5    20      31                 60    1000     33         3
          INT UID   INT UIDX    EXT UID    JOB NAME   NUMBER HELD
          ????      00140023    GROSS      LOITSX             195
          LA02      D3C1F0F2    GROSS02    CICSTEST            17
          ????      00140071    GROSS      L03T19               4
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP       END                                              EXIT
```

The QHHQ function displays for the top 200 users with the most records in the Hold Queue, the ADABAS Internal User-ID, the Job Name issuing the calls, and the File Number from which the records are modified. This screen also displays the total number of records in the Hold Queue.

The user may scroll forward through the list by pressing the ENTER key.

The program being run by User-ID 00140023 is holding an inordinate number of records. Its logic should be examined.

II.10.5 Users of a File (QUQF)

The QUQF screen may display a list of all users accessing or updating a selected file. This function is most useful when certain ADABAS Utilities must be run that require exclusive use of a file.

A list of users for a file may be viewed by entering "B" on the Queues and Tables Main Menu screen or the function name QUQF on any RTM screen. The first screen displayed is a selection list of all active files.

```
 08-01-31   QUQF     Select Active File Number for Display    227     14:32:02
                                                    USERQ:  ACTV  MAX  HI% USE
   Enter an 'S' next to the desired entry,                  5     20     31
   or enter any File Number here: ________

       FNR            FNR            FNR            FNR            FNR
     _   17
     _   35
     _  200
     _  202
     _  230
     _12345




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

The selection screen displays currently active files. The RTM user may select one of the files or enter any file number. The user is not restricted to the file numbers displayed on the screen.

Once a file number has been selected or entered, the current users of the specified file are displayed.

```
08-01-31   QUQF      Current  Users  Within  File  17         227     14:32:11
USERQ: ACTV   MAX   HI% USE
          5    20     31
                            A U E U C                              A U E U C
                            C P X T L                              C P X T L
  SEC ID INT UID   JOB NAME  C D U I U   SEC ID   INT UID   JOB NAME C D U I U
  ----- --------   --------  - - - - -   ------   --------  -------- - - - - -
d TREE11 00140023  LO1TSI    X X
_ TREE12 00140089  P01G13    X
_ TREE13 9A410643  D01XXAS4  X
_ TREE14 00228043  TSI8833   X X




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

This screen displays the users currently accessing the file, as well as the Security-ID of the user, ADABAS Internal User-ID, Job Name, and the access type of the user. An "X" under the various access types is used to indicate the action the user may be performing against the file.

Four users have access to file 17. The DBA may remove access to a particular file, in this case file 17, by typing a "d" next to the user(s). The DBA is prompted for the control password to ensure DBA control over this facility. It is only possible to remove a user's access to a particular file via the "d" option when the file is ACC or UPD. The "d" option is not allowed for UTI, EXU, or CLU file usage.

The RTM user may scroll forward through the list by pressing the ENTER key.

II.10.6 Users of a Program (QUQN)

The RTM user may need to know all the users currently using a specific program. The RTM user may view this information through the users of a NATURAL Program function.

The users of a NATURAL Program may be viewed by entering "C" on the Queues and Tables Main Menu screen or the function name QUQN on any RTM screen. A selection list of programs currently executing is displayed first.

```
08-01-31   QUQN     Select Program For User Queue Display     227     14:32:20
                                                    USERQ:  ACTV   MAX   HI%USE
                                                              5    20     31
   Enter an 'S' next to the desired entry,
   or enter any Program name here: ________

   PROGRAM        PROGRAM        PROGRAM        PROGRAM        PROGRAM
   --------       --------       --------       --------       --------
_  APPLOT
_  BATRUGL
_  CARPR
_  CARPX
s  CARPY
_  MUNITION
_  MUNTL
_  TRMQUQN
_  X49P3G




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

This screen lists all of the programs currently executing. The RTM user may select a program by entering an "S" next to the Program name or any Program name on the screen. The RTM user is not restricted to the programs displayed on the screen. The selection list is provided to inform the RTM user of the currently active programs. A maximum of 1,024 programs are available for display from this selection list.

The DBA wants to see which users are executing program "CARPY".

When a program has been selected, the list of users executing the program is displayed.

```
08-01-31   QUQN    User  Queue  For  NATURAL Program:  CARPY    227   14:32:22
                                TEST-DATABASE
                                                  ----  NATURAL  SESSION  ----

 SEC ID  USER ID   JOB NAME  APPL LIB NSS UID     CMDS     I/O      DUR-SEC
 ------  --------  --------  -------- -------- --------- --------   -------
 TREE1   ?f??      DBA43     TRIMRTM  TREE1           90       53        32






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

This screen lists all users of Program "CARPY". In this case there is only one.

This screen displays the users currently executing the specified program, as well as the Security, ADABAS, and NSS User-IDs of the user, the application library, and the job name. The screen also displays the session counts for each user, including the number of commands the user has issued during the users session, the amount of ADABAS I/O the user has generated, and the amount of time required to issue all of the user's commands.

II.10.7 Users of an Application Library (QUQA)

The users of a particular Application Library may be viewed by entering "D" on the Queues and Tables Main Menu screen or the function name QUQA on any RTM screen. The DBA makes a selection from the list of active applications. A maximum of 1,024 applications are available for display from this selection list. Assume "BOMBAY" is selected.

```
08-01-31   QUQA   User Queue For Application Library:  BOMBAY   227   14:32:29
                            TEST-DATABASE

                                                 ----  NATURAL  SESSION  ----

  SEC ID   UID   JOB NAME  NAT PROG NSS UID     CMDS      I/O    DUR-SEC
 --------  ----  --------  -------- --------  --------- -------- --------
 TREE1     ?f??  DBA43     TRMQUQA  TREE1            92       54       33
 TREE2     ??DC  DBA81     TRMMENU  DBA               7       10        8

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

This screen lists all users of NSA BOMBAY. In this case there are only two users.

II.10.8 Users of a NATURAL Security User-ID (QUQU)

The users of a particular NATURAL Security User-ID may be viewed by entering "E" on the Queues and Tables Main Menu screen or the function name QUQU on any RTM screen. The DBA makes a selection from the list of active NATURAL Security User-IDs. A maximum of 1,024 User-IDs are available for display from this selection list. Assume "AJ143P9" is selected.

```
08-01-31   QUQU     User Queue For NSS User ID:  AJ143P9      227     14:32:36
                            TEST-DATABASE
                                                 ----  NATURAL  SESSION  ----

 SEC ID     UID     JOB NAME  NAT PROG APPL LIB  CMDS       I/O    DUR-SEC
 -------- --------  --------  -------- --------  ------ ---------  --------
 TREE1     ?f??     DBA43     TRMQUQU  B3943X3       93         55         34

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

This lists one user of NSU "AJ143P9".

II.10.9 Command Queue (QCQ)

When an ADABAS command is issued, the command is initially placed into the Command Queue and assigned to an ADABAS thread for execution. If no threads are available, or if the command must wait for another resource to be freed before execution, the command remains in the queue.

The commands in the Command Queue may be viewed by entering "F" on the Queues and Tables Main Menu screen or the function name QCQ on any RTM screen.

```
08-01-31    QCQ          ADABAS  Command  Queue          227          14:32:58
                              ENTRIES:   ACTV   MAX
                                           2    20

 UID  UID HEX SEQUENCE CMD    CALLS   FNR JOB NAME LIBRARY  PROGRAM  NSS UID
   ? 00000050    30015  S1        1   116 A$49XP3Z B3943X3  N416PQ   TREE1
ABCD C1C2C3C4    30016  L2        2    43 CICS     PAYTEST  PAYPGM12 DBA




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

This screen displays the ADABAS Internal User-ID (in both hexadecimal and character formats), the Sequence number of the command (e.g., the command is the 30015th command to be issued in the database session), the number of ADABAS calls the user has made, and the program and job from which the command was issued.

The QCQ function screen also displays how many active commands are in the Command Queue and the maximum number of commands the queue may hold at any one time.

Some of the information above is not available for display with certain operating systems.

II.10.10 Table of Sequential Commands (QSC)

TRIM enables the RTM user to view the Table of Sequential Commands to determine if any user(s) are starting multiple sequential reads unnecessarily, which may cause performance problems.

The Table of Sequential Commands may be viewed by entering "J" on the Queues and Tables Main Menu screen or the function name QSC on any RTM screen.

```
08-01-31   QSC          Table  Of  Sequential Commands         227      14:33:05
USERQ: ACTV   MAX   HI% USE      ENTRIES: ACTV   L2   L3   L9   ALLOC  HI% USE
          5    20      31                  27     9   12    6    2996     27
  CMD   CMD-ID       UID      FNR  DESC   CMD   CMD-ID       UID      FNR  DESC
  L3   00300001  C4C1F4F3    24    XX    L3   19700001  C1D7F1F2   123    AA
  L3   00900001  C1C2C3C6    24    XX    L3   38300001  C1F7F1F2   123    AA
  L3   10200001  C4C1F4F3    24    XX    L3   47600001  C1C2C3C6   123    AA
  L3   14200001  C4C1F4F3    25    AB    L9   90100001  C1D7F1F2   123    BB
  L3   59400001  C1C2C3C6    24    XX    L9   10100001  C1D7F1F2   123    AA
  L3   00900001  C4C1F4F3    24    XX    L9   47300001  C1C2C3C6   123    AA
  L3   19900001  C4C1F4F3    24    SA    L9   51600001  C1D7F1F2   123    CC
  L3   24700001  C1C2C3C6    24    XX    L9   24300001  C1D7F1F2   123    AA
  L3   12300001  C4C1F4F3    24    XX    L9   80700001  C1C2C3C6   123    AA
   o
   o
   o

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

This screen displays the ADABAS command being executed (e.g., L3: READ LOGICAL), the ADABAS Command-ID assigned to the command, the ADABAS Internal User-ID of the person issuing the command, the file number the command is issued against, and the ADABAS two character name of the Descriptor used to access the file (e.g., S1: SOCIAL-SECURITY-NUMBER).

The QSC function screen also displays the number of active users and the Maximum number permitted, as well as summarizes the contents in the table by indicating how many sequential commands there are and how many L2, L3, and L9 commands are in the table.

The QSC function may display 28 commands per screen. If more than 28 commands are executing or are in the Table of Sequential Commands, the user may scroll forward through the table by pressing the ENTER key.

All User-ID displays may be in character or hex format. Refer to the CTRL screen. Note the "high water mark" (HI% USE) for the session.

II.10.11 Highest Users of Table of Sequential Commands (QHSC)

A summarization of the Table of Sequential Commands is available through the QHSC function. This function may be invoked by entering "M" on the Queues and Tables Main Menu screen or the function name QHSC on any RTM screen.

```
08-01-31   QHSC       Sequential Commands By High Usage       227     14:33:16
USERQ: ACTV   MAX   HI% USE      ENTRIES: ACTV   L2   L3   L9   ALLOC  HI% USE
          5    20      31                 29    12   15    3    2996    27

              UID        CMDS                       UID        CMDS
            C4C1F4F3       13
            C1D7F1F2        7
            C1C3C2C6        5
            C1C3C2C8        2
            C1C3C2C9        1
            C1C3C2C7        1









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

The first user seems to have an inordinate number of sequential commands started. Program logic should be checked to see that Command-IDs are being released properly.

II.10.12 Table of Search Results (QSR)

The Table of Search Results may be viewed by entering "K" on the Queues and Tables Main Menu screen or the function name QSR on any RTM screen.

```
08-01-31   QSR            Table  Of  Search  Results          227      14:33:23
USERQ: ACTV   MAX   HI% USE      ENTRIES: ACTV  S2-S9  SAV-OPT  ALLOC  HI% USE
          5    20      31                    8      6        2   1996      30
             SEC ID     CMD ID     FNR    SEQ-NR  S2/9      RABNS
            C4C1F4F3   D5C5E601     13       101    N           4
            C4C1F4F3   D5C5E602     13       102    N           7
            C1D7F1F2   D5C5D701     28       103    Y          13
            C4C1F4F3   D5C5E603     13       104    N         393
            C1D7F1F2   D5C5D702     28       105    N          27
            C1D7F1F2   D5C5D703     28       106    N           7
            C4C1F4F3   D5C5E604     13       107    N          12
            C4C1F4F3   D5C5E605     13       108    N           2
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP       END                                                   EXIT
```

Two users are represented. One has several Find Command Search Results currently filling the table.

Note the "high water mark" (HI% USE) for the session.

This screen displays the ADABAS Internal User-ID of the user issuing the command, the ADABAS Command-ID assigned to the command, the file number the command was issued against, the sequence number of the command (i.e., the command was the 101st command issued in the session), an indicator as to whether or not the command was an S2 or S9, and the RABNs accessed to retrieve the record.

The QSR function screen displays 17 commands per screen. The RTM user may scroll forward through the table by pressing the ENTER key.

II.10.13 Highest Users of Table of Search Results (QHSR)

A summarization of the Table of Search Results is available to the RTM user through the High Search Results screen, which groups all commands issued by the user and summarizes the data.

The High Search Results function may be invoked by entering "N" on the Queues and Tables Main Menu screen or the function name QHSR on any RTM screen.

```
08-01-31   QHSR          Search Results By High Usage          227      14:33:27
USERQ: ACTV   MAX   HI% USE      ENTRIES: ACTV  S2-S9  SAV-OPT  ALLOC  HI% USE
          5    20      31                    8      6        2   1996      30

            UID      LISTS     RABNS              UID   LISTS     RABNS
           C4C1F4F3        5       418
           C1D7F1F2        3        47









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

Only two users have Search Results being retained at the moment.

Note the "high water mark" (HI% USE) for the session.

II.10.14 Internal Format Buffer (QIF)

The ADABAS Internal Format Buffer function may be viewed by entering "H" on the Queues and Tables Main Menu screen or the function name QIF on any RTM screen.

```
08-01-31   QIF            Internal  Format  Buffer           227      14:33:29
USERQ: ACTV   MAX   HI% USE    IFB ENTRIES ACTV   GLOBAL        ALLOC  HI% USE
          5    20      31                    7        3           7996     53
 GLOBAL      GLOBAL HEX        UID     CID   CID HEX      FNR   BYTES
 ?  A J   C0AD1724C14AD101                                2748     636
 ?   ?J   C0AD189F3ABAD101                                 379     814
 ?  1 J   C0AD1927F14AD101                                  16     297
                           C4C1F4F3    ?   00000001        13    1026
                           C1D7F1F2  ?  s  9B3472A2        28     358
                           C4C1F4F3    ?   00000002        12     712
                           C4C1F4F3  REV1  D9C5E5F1        16     874
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP       END                                              EXIT
```

The Internal Format Buffer shows seven entries at the moment.

Each entry in the Internal Format Buffer table is for either a global or non-global Command-ID. For Global Command-ID entries, the Global Command-ID is displayed as 8 characters and as 16 hexadecimal digits. For non-global Command ID entries, the ADABAS Internal User-ID is displayed in hexadecimal, and the ADABAS Command-ID in both hexadecimal and character format.

The QIF function screen also displays the file number and the length of each Internal Format Buffer entry. The number of users active on the database and the maximum number allowed is displayed in the upper left portion of the screen. The amount of space allocated for the Internal Format Buffer table is displayed in the upper right portion of the screen, with an indicator as to how much of the table has been used. Note the "high water mark" (HI% USE) for the session.

The QIF function screen displays 14 records per screen. The user may scroll forward through the entire table by pressing the ENTER key.

II.10.15 Highest Users in IFB (QHIF)

This screen is valid only for non-global format IDs.

A user may have multiple entries in the Internal Format Buffer. The RTM may summarize the highest 200 entries and display this summarization through the QHIF function.

The High Usage of the Internal Format Buffer may be viewed by entering "I" on the Queues and Tables Main Menu screen or the function name QHIF on any RTM screen.

```
08-01-31  QHIF         Internal Format Buffer High Usage          227 14:33:37
USERQ: ACTV   MAX   HI% USE   IFB ENTRIES: ACTV   GLOBAL        ALLOC  HI% USE
          5    20       31                     7        3         7996      40
                                GLOBAL CIDS: 3
            UID    IFBS    BYTES               UID    IFBS    BYTES
          C4C1F4F3     3     2612
          C1D7F1F2     1      358
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
       HELP        END                                                 EXIT
```

This screen shows 7 active entries in the Internal Format Buffer table, 3 Global and 4 non-global. Two users are currently represented in the Internal Format Buffer with non-global Command-IDs.

This screen displays the non-global users in descending order of usage with a count of the Internal Format Buffer entries for each user.

II.11 Dynamic Trace Facility

There are many instances when the DBA, the NATURAL Administrator, or the Applications Programmer needs to view detailed information about the actual ADABAS commands being issued against a database. The DBA may need to research a slowdown in the database. The NATURAL Administrator may need to locate an inefficient program. The Application Programmer may need to monitor the execution of a specific program to determine if it is functioning properly and efficiently.

The TRIM RTM satisfies these needs through the Dynamic Trace Facility. This facility enables the user to trace or to monitor the database activity as the commands are being issued.

The various trace functions enable the RTM user to trace all commands issued against the database or to restrict the commands the trace captures based on specific search criteria. The RTM user may capture commands being issued by a specific user, from a specific library, against a specific file, etc. In addition, the RTM user may specify that only certain types of commands, such as an L3 (READ LOGICAL) or S1 (FIND), are to be captured.

The available functions for a trace are described below:

TRAC	Presents the user with the Dynamic Trace Facility screen from which all traces can be performed.
TALL	Performs a trace on all commands regardless of the source.
TFNR	Performs a trace on up to five ADABAS File numbers.
TRSP	Performs a trace on up to five ADABAS Response Codes.
TPGM	Performs a trace on up to five Programs.
TJOB	Performs a trace on up to five Jobs.
TLIB	Performs a trace on up to five NATURAL Application Libraries.
TSID	Performs a trace on up to five Security-IDs.
TUID	Performs a trace on up to five ADABAS Internal User-IDs.
TNSU	Performs a trace on up to five NSS User-IDs.
TCMD	Performs a trace on up to five ADABAS Commands.
TDUR	Permits the user to perform a trace on those commands exceeding a specified duration.
TI/O	Permits the user to perform a trace on those commands exceeding a specified ADABAS I/O amount.
TDSP	Presents the user with the Trace Display Screen, which displays extensive command information.
TACT	Presents the user with an active trace list, which displays active traces with corresponding information on each trace.

The Dynamic Trace Facility improves the power and the flexibility of tracing. Each trace may accept up to five values in a combination of categories from the trace selection screen. For example, in a single trace, a user may trace all S2 commands that have a duration greater than 1000 milliseconds against file 12 in program PAYUPD01.

Wildcarding of values is available by entering an "*" in the appropriate field (i.e., NATPROG=N2O* traces all program names starting with "N2O").

Each trace displays the most recent 85 commands that satisfy the trace criteria. A paging mechanism is available to scroll forward or backward through these commands.

Note: PROFILER for NATURAL can extend TRIM capabilities by pinpointing statements causing inefficient access, as well as any statements that consume large amounts of CPU Time.

II.11.1 Dynamic Trace Facility Menu (TRAC)

The Dynamic Trace Facility may be accessed by entering "F" on the RTM Main Menu screen or the function name TRAC on any RTM screen.

```
To perform a 'TRACE ALL' leave screen blank & hit ENTER
08-01-31   TRAC           Dynamic Trace Facility          227         14:29:50
                               TEST-DATABASE

 (TALL) Trace Everything
 (TFNR) File Number        : _____     _____     _____     _____     _____
 (TRSP) Response Code      : _____     _____     _____     _____     _____

 (TJOB) Job Name           : ________  ________  ________  ________  ________
 (TPGM) Program Name       : ________  ________  ________  ________  ________
 (TLIB) Application Library: ________  ________  ________  ________  ________

 (TSID) Security ID        : ________  ________  ________  ________  ________
 (TUID) Internal User ID   : ________  ________  ________  ________  ________
 (TNSU) NSS User ID        : ________  ________  ________  ________  ________

 (TCMD) ADABAS Command     : __        __        __        __        __
                           :
 (TDUR) Command Duration  >= ______  milliseconds

 (TI/O) ADABAS I/O's:  Assoc >= ______  Data >= ______  Work >= ______

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP       END         TDSP  TACT  EXCLD       SEL       DEACT EXIT
```

The TRAC function screen enables the RTM user to specify the criteria to be used by TRIM to capture commands. By pressing the ENTER key without any information entered on the screen, TRIM performs a TRACE ALL, which captures ADABAS activity for the database specified, regardless of the activity source. This is equivalent to entering the function name TALL.

The RTM user may perform any of the other trace functions from the TRAC screen by entering the values for the trace next to the appropriate category and pressing the ENTER key. Changing any value on this screen and pressing the ENTER key deactivates the current trace and activates a new trace using the new values entered on the screen.

It is possible to wildcard the values entered on the TRAC function screen. To wildcard a value, the RTM user enters as much of the value as desired and places an "*" immediately after the value (e.g., N2O*). TRIM traces on all values beginning with the characters preceding the "*" (e.g., N2O). A wildcard value counts as one value within the maximum limit of five values. Wildcarding is useful if the DBA tracks a specific series of programs, users, jobs, etc.

If the TRAC function screen is invoked when the user is already performing a trace, the values used as search criteria for the active trace is displayed on the TRAC screen, and the message below is displayed:

You currently have an active trace against this DBID.

If a trace is activated, the user may go immediately to the trace display screen by pressing PF5 (which will indicate TDSP) or by entering the function name *TDSP*. The active trace can be deactivated by pressing PF11 (which will indicate DEACT).

PF6 shows the active trace sessions.

PF5 and PF11 are only active when trace is active.

Notice PF9 (SEL) on the TRAC screen. To view a selection list of active values for any category, the RTM user places the cursor on the category line and presses PF9. The selection list displayed shows the current active values. The RTM user is not limited to these values and may enter any value for the trace. An example selection window for the Application Library is displayed below.

```
08-01-31   TLIB      Selection list for Applic. Library      227    14:29:50

   The list below shows the active entries on the system.  You may select
 from the list below (up to 5 max) or enter up to 5 values here:
                 _________  _________  _________  _________  _________
   LIBRARY      LIBRARY      LIBRARY      LIBRARY      LIBRARY      LIBRARY
 _ N2OTEST
 _ TREE12
 _ TREE13
 _ TRIMTEST
 _ ZLIB




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

To assist the user in describing unfamiliar categories, the Dynamic Trace Facility has built-in help for each category on the TRAC screen. To invoke help for a specific category, the RTM user places the cursor on any field for the desired category and presses PF1. The appropriate help text is displayed. An example of the available help text for the Response Code category is displayed below.

```
To perform a 'TRACE ALL' leave screen blank & hit ENTER
08-01-31   TRAC           Dynamic Trace Facility          227         14:29:50
                          Tracing: TEST-DATABASE

 (TALL) +-------------------------------------------------------------+
 (TFNR) |           Help for Response Code Trace                      |___
 (TRSP) | You may perform a Trace on a specific Response Code         |___
        | or you may trace on up to 5 different Response Codes.       |
 (TJOB) |                                                             |________
 (TPGM) | To perform a Trace on a specific Response Code(s),          |________
 (TLIB) | simply enter the Response Code on the screen (up to         |________
        | five (5) different codes.                                   |
 (TSID) |                                                             |________
 (TUID) | As an example, if you wish to trace on three codes          |________
 (TNSU) | (i.e., 200, 201, and 202), simply enter these three         |________
        | Response Codes and hit the ENTER key.  TRIM                 |
 (TCMD) | will now trace for commands receiving one of these          |__
        | Response Codes.                                             |
 (TDUR) |          Press PF9 for a selection list.                    |
        +-------------------------------------------------------------+
 (TI/O) ADABAS I/O's:  Assoc >= ______  Data >= ______  Work >= ______

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

The Dynamic Trace Facility enables the user to perform a complex trace, which is a trace involving multiple values and/or multiple categories. A complex trace can be performed by entering up to five values on the screen for a single category or across multiple categories. If more than five values are entered on the screen, the trace is not activated.

Complex traces follow a set logic defined by TRIM. When multiple values are entered in a single category, a logical OR is performed. For example, when a user enters File Number = 9, 10, TRIM captures all commands issued against files 9 *or* 10 when the trace is activated.

Complex traces can also have a single value in multiple categories. In this case, a logical AND is performed. Only those commands meeting the search criteria of all the categories are captured. For example, when a user enters File Number = 9, Job Name = PAYROLL, TRIM captures only those commands issued against file 9 and issued from the job PAYROLL.

Complex traces, which may involve multiple values in multiple categories, are a combination of the previous two examples: a logical OR within the category and a logical AND across categories. An example of a complex trace is when the user enters Program Name = N2O*, Application Library = N2OPROD, and ADABAS Command = L3, S1, S9.

An example of a complex trace entered on the TRAC function screen is displayed below.

```
You currently have an active Trace against this DBID.
08-01-31   TRAC           Dynamic Trace Facility          227         14:29:50
                          Tracing: TEST-DATABASE

 (TALL) Trace Everything
 (TFNR) File Number        : _____     _____     _____     _____     _____
 (TRSP) Response Code      : _____     _____     _____     _____     _____

 (TJOB) Job Name           : ________  ________  ________  ________  ________
 (TPGM) Program Name       : N2O*____  ________  ________  ________  ________
 (TLIB) Application Library: N2OTEST_  ________  ________  ________  ________

 (TSID) Security ID        : ________  ________  ________  ________  ________
 (TUID) Internal User ID   : ________  ________  ________  ________  ________
 (TNSU) NSS User ID        : ________  ________  ________  ________  ________

 (TCMD) ADABAS Command     : L3        S1        S9        __        __
                           :
 (TDUR) Command Duration  >= ______  milliseconds

 (TI/O) ADABAS I/O's:  Assoc >= ______  Data >= ______  Work >= ______

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP       END              TDSP        SEL   TACT        DEACT EXIT
```

TRIM will capture only L3, S1, or S9 commands issued by program names beginning with the characters "N2O" and executing out of the application library N2OTEST.

II.11.2 Trace Display Function (TDSP)

After information has been entered on a trace screen, and the ENTER key is pressed, the trace is initiated and the Trace Display (TDSP) Screen is displayed.

```
08-01-31   TDSP           Dynamic Trace Facility          227         14:29:50

  TIME     CM   FNR   RSP      ISN   SEC ID PROGRAM  JOB NAME    DUR-MS
_ 14:29:49 S1   200     0      217  TREE11  N2OEDIT  TREE11       137.1
_ 14:29:49 L3   202     0    12474  TREE12  N2O4330S TREE12        48.5
_ 14:29:49 S1   202     0      112  TREE11  N2OEDIT  TREE11       114.6
_ 14:29:49 L3   202     0    12491  TREE12  N2O4330S TREE12       120.9
_ 14:29:49 L3   202     0    12525  TREE12  N2O4330S TREE12        43.0
_ 14:29:49 L3   202     0    21788  TREE12  N2O4330S TREE12        67.6
_ 14:29:49 L3   202     0    33620  TREE12  N2O4330S TREE12        64.2
_ 14:29:49 L3   202     0    33659  TREE12  N2O4330S TREE12        43.3
_ 14:29:49 L3   202     0    33673  TREE12  N2O4330S TREE12         6.7
_ 14:29:50 L3   202     0    33814  TREE12  N2O4330S TREE12        39.8
_ 14:29:50 S1   202     0    33845  TREE12  N2O4330S TREE12        38.9
_ 14:29:50 S1   202     0      112  TREE11  N2OEDIT  TREE11       121.0
_ 14:29:50 L3   202     0    33872  TREE12  N2O4330S TREE12        47.2
_ 14:29:50 S1   200     0        8  TREE11  N2OEDIT  TREE11       81.0
_ 14:29:50 L3   202     0    33879  TREE12  N2O4330S TREE12        70.4
_ 14:29:50 L3   202     0    33884  TREE12  N2O4330S TREE12         6.1
_ 14:29:50 L3   202     0    33894  TREE12  N2O4330S TREE12         6.8
                        LINE 69 THRU 85 OF 85
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END   UID   LIB   TACT        UP    DOWN  INFO  RIGHT EXIT
```

Enter PF11 to scroll right and view additional statistics.

```
08-01-31   TDSP           Dynamic Trace Facility          227         14:29:50

    TIME   CM AIO  DIO  WIO    ISNQ    COP   ADD1  ADD2(hex)   ADD5(hex)
_ 14:29:49 S1        1    2  100729344     TH99903  00000000 0000000000000000
_ 14:29:49 L3        1    2  100729344     TH99900  00000000 4040404040404040
_ 14:29:49 S1        1    4            F           00000002 0000000000000000
_ 14:29:49 L3        1    2              V         00000002 4040404040404040
_ 14:29:49 L3        1    2                        00000002 4040404040404040
_ 14:29:49 L3   1    1    3              V         00000005 0000000000000000
_ 14:29:49 L3   1    1    2                        00000002 0000000000000000
_ 14:29:49 L3        1    2            F           00000002 4040404040404040
_ 14:29:49 L3                           V         00000002 0000000000000000
_ 14:29:50 L3        1    2                        00000002 0000000000000000
_ 14:29:50 S1        1    2              V         00000002 4040404040404040
_ 14:29:50 S1        1    5              V         00000002 4040404040404040
_ 14:29:50 L3        1    2              V         00000002 0000000000000000
_ 14:29:50 S1        1    2                        00000005 0000000000000000
_ 14:29:50 L3        1    4              V         00000002 4040404040404040
_ 14:29:50 L3             3              V         00000002 4040404040404040
_ 14:29:50 L3             2            F           00000002 0000000000000000
Enter-PF1---PF2---PF3---PF4---PF5--PF6---PF7--PF8---PF9---PF10--PF11--PF12--
      HELP        END              OPTNS      DOWN  INFO  LEFT        EXIT
```

This screen displays up to 85 of the most recent commands that meet the search criteria specified for the trace and shows valuable information about the command. The RTM user may also invoke this function at any time by entering the function name TDSP.

The information shown on the TDSP screen is described below:

- TIME — Time the command was issued
- CM — ADABAS Command Code
- FNR — ADABAS File Number
- RSP — ADABAS Response Code
- ISN — ISN of the record
- SEC ID — Security-ID of the user issuing the command
- PROGRAM — Program that issued the command
- JOB NAME — Job that issued the command
- DUR-MS — Duration (in milliseconds) of the command

Scrolling right using PF11 displays the following additional fields:

- AIO — Amount of Associator I/O the command required
- DIO — Amount of DATA I/O the command required
- WIO — Amount of Work I/O the command required
- ISNQ — ISN Quantity
- COP — Command Options 1 and 2
- Add1 — Additions 1 field from ADABAS control block
- Add2(hex) — Additions 2 field from ADABAS control block
- Add5(hex) — Additions 5 field from ADABAS control block

It is possible to view the ADABAS Internal User-ID, TRIM Alternate-ID (UID), or ADABAS Command-ID (CID) that issued the command. The UID and CID may be viewed by pressing PF4 (UID). Continually pressing PF4 causes the TDSP function to toggle between the Security-ID (SID), UID, and CID respectively. The label under PF4 indicates which ID displays next if PF4 is pressed.

If the program executing is a NATURAL program, the application library from which the program is executing may be viewed by pressing PF5 (LIB). Continually pressing PF5 causes the TDSP screen to toggle between the program name (PGM) and the application library (LIB) respectively. The label under PF5 indicates which value displays next if PF5 is pressed.

The Dynamic Trace Facility captures the most recent 85 commands meeting the search criteria specified for the trace. When the TDSP function screen is first invoked, the most recent 17 of the 85 commands captured are displayed. The remaining 68 commands are viewed by scrolling up or down the list.

Three types of scrolling are possible on the TDSP screen: scrolling by page, scrolling by cursor position, and scrolling right. To scroll by page, press PF7 (UP) or PF8 (DOWN) while leaving the cursor on the function name field, and the TDSP screen moves backward or forward or one page (17 commands).

To scroll by cursor position, place the cursor anywhere on the line to be placed at the top or bottom of the display. This method is useful for placing a certain command at the top or the bottom of the screen. Pressing PF7 causes the command to be placed at the bottom of the screen, while pressing PF8 places the command at the top of the screen.

To scroll right, press PF11 to display the additional fields.

The informational line at the bottom of the display screen indicates which commands are being displayed (e.g., commands 1 through 17) and how many total commands were captured. It is not possible to scroll back past the first command or to scroll forward past the most recent command.

Every time the user presses the ENTER key, TRIM captures and displays the most recent 85 commands meeting the search criteria. While the user is scrolling through these commands, the program or the job continues to execute. The Dynamic Trace Facility does not impede the program or job execution.

Detail Information about a specific command displayed on the TDSP screen is available by placing the cursor on the line containing the command in question and pressing PF9 (INFO) or by marking the desired line with an "I" and pressing Enter.

```
08-01-31              Detail Information for Selected Line            14:30:22

  Date and Time         Command Received A    Command Was Issued    ADABAS
  Command Issued         Response Code of          on Thread      Command ID
--------------------    ------------------    ------------------  ----------
12/31/01  14:21:45               0                     1           08100201

ADABAS  Issued Against         ISN       Duration of     ADABAS I/O Required
Command     File             Accessed   Command (MSEC)        by Command
------- --------------      ----------  --------------   -------------------
  L3         202               12474        48              Assoc =>
  READ LOGICAL                                                Data  =>  1
                                                              Work  =>

       NATURAL Program     Line Number   Application      Job
            Name           in Program      Library        Name
       ---------------     -----------   -----------    --------
          N2O4330S            0810         N2OTEST      TREE12

      Security ID    Internal Id      External ID    NSS User ID
      -----------    -----------      -----------    -----------
        TREE12             92          0000005C       TREE12
```

Note that the information displayed on this screen includes the ADABAS command, the equivalent NATURAL statement (i.e., L3: READ LOGICAL), and the program name issuing the command. For NATURAL programs, the line number within the NATURAL program that generated the command and the library from where the program is executing are also displayed.

This information assists the application programmer, the DBA, or the NATURAL Administrator in locating the abusive users, focusing on an application and program, and locating the exact line within the program that issued the ADABAS call.

The TACT function displays a list of active database traces, displays the trace search criteria of those active traces, and deactivates traces. This function may be invoked by pressing PF10 (TACT) on the TDSP screen or the function name TACT from any RTM screen. Further details on the TACT function are presented later in this section.

Note: A few trace examples are included in this manual to highlight available trace functions. The remaining trace functions work in a similar manner to the functions described in these sections.

II.11.3 Trace by ADABAS Command (TCMD)

The RTM user may need to monitor certain ADABAS commands being issued and may not be interested in restricting the trace by creating a complex trace.

The RTM user has two choices for performing an ADABAS command trace. The TRAC function may be invoked and the desired commands may be entered on that screen. The second choice, the trace function TCMD, performs a trace only on ADABAS commands and automatically displays a selection screen of available commands.

```
08-01-31    TCMD       ADABAS Commands Selection List      227        14:30:22

Enter the 2-character code to be used
for the trace criteria.  Up to 5
commands may be entered:
                     Cmds: __     __     __     __     __

  A1 - Record Update          LC - Used by Utilities      N2 - Add Record/Hold
  A4 - Record Update/Hold     LD - Used by Utilities      OP - Open User Sesn
  BT - Backout Transaction    LF - Read Field Defs        RC - Release CID
  C1 - Write a Checkpoint     L1 - Read Record            RE - Read ET Data
  C2 - Write a Checkpoint     L2 - Read Physical          R1 - Release Record
  C3 - Write a Checkpoint     L3 - Read Logical           SP - Used by Util.
  C5 - User Write to PLOG     L4 - Read Record/Hold       S1 - Find
  ET - End Transaction        L5 - Read Physical/Hold     S2 - Find Sorted
  E1 - Delete Record          L6 - Read Logical/Hold      S4 - Find with Hold
  E4 - Delete Record/Hold     L7 - Used by Utilities      S5 - Find Coupled
  H1 - Hold Record            L8 - Used by Utilities      S8 - Process ISN Lst
  LB - Used by Utilities      L9 - Histogram              S9 - Sort ISN List
                              N1 - Add Record


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

This screen displays all the available ADABAS commands. To activate a trace, the RTM user enters the command(s) to be captured by TRIM and presses the ENTER key.

The various commands may be wildcarded by entering an "*" in the second character of the field. This enables the user to perform a trace on all commands of a certain type (e.g., L* would capture the commands LB, LC, LD, LF, L1, L2, L3, L4, L5, L6, L7, L8, and L9).

A logical OR is performed based upon the commands entered on this screen.

Note: The CL (Close User Session) will not be traced.

II.11.4 Trace by File Number (TFNR)

The RTM user may need to monitor the ADABAS commands being issued against specific ADABAS files and may not be interested in restricting the trace by creating a complex trace.

The RTM user has two choices for performing a file number trace. The TRAC function may be invoked and the desired file numbers may be entered on that screen. However, the trace function TFNR performs a trace only on ADABAS file numbers and automatically displays a selection screen of currently active ADABAS files.

```
08-01-31    TFNR      Selection list for ADABAS File Number    227    14:30:22

 The list below shows those files that are currently active.  However, you
 can trace any file. Please enter your choice(s):_____ _____ _____ _____ _____

       FNR           FNR            FNR           FNR
       200
       202
     12345

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

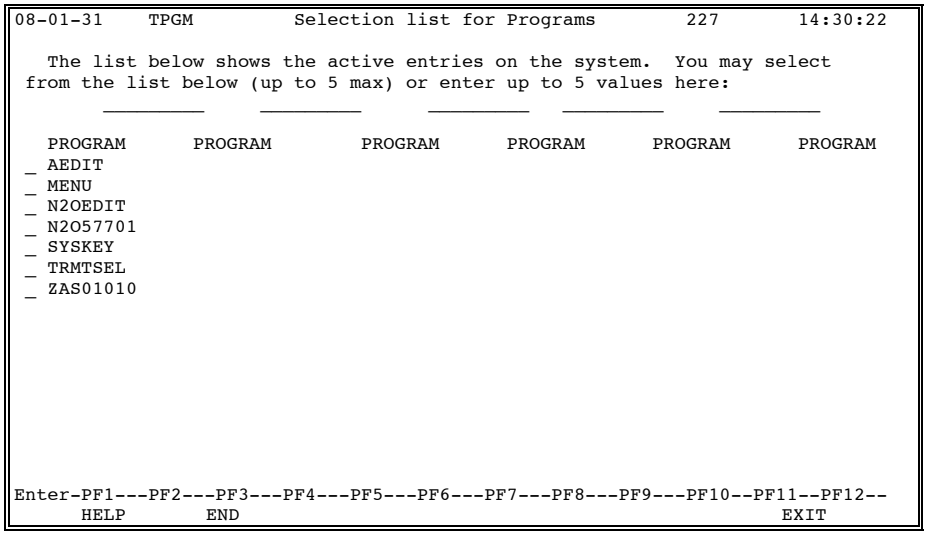
This screen displays the currently active ADABAS file numbers. To activate a trace, the RTM user enters the File number(s) to be traced and presses the ENTER key.

The user may enter any file number desired and is not restricted to the file numbers displayed on the screen. The selection list is displayed to indicate which files are currently active. A logical OR is performed based upon the file numbers entered on this screen.

II.11.5 Trace by Program Name (TPGM) - formerly TNAT

The RTM user may need to monitor the ADABAS commands being issued by a specific program and may not be interested in restricting the trace by creating a complex trace.

The RTM user has two choices for performing a program trace. The TRAC function may be invoked and the desired program names may be entered on that screen. However, the TPGM function performs a trace only on programs and automatically displays a selection screen of currently executing programs.



This screen displays all currently active programs. To activate a trace, the RTM user selects the name of the program(s) and presses the ENTER key.

The user may enter any program name desired and is not restricted to the programs displayed on the screen. The selection list is displayed only as an indicator of which programs are currently executing.

A logical OR is performed based upon the program names entered on this screen.

II.11.6 Trace by Security-ID (TSID)

The RTM user may need to monitor the ADABAS commands being issued by a specific user and may not be interested in restricting the trace by creating a complex trace.

The RTM user may monitor several User-ID types. The ADABAS Internal User-ID is a sequential number assigned by ADABAS (e.g., 0000003C). The TRIM Alternate-ID, which is generally the CICS Terminal-ID (e.g., YBX4), is more descriptive and may replace the ADABAS Internal-ID. However, viewing these IDs does not directly identify the user.

The NATURAL Security System (NSS) User-ID is much more indicative of who the user is, but the ID displayed may differ from who the user is (i.e., user JOHN may have an NSS ID of DBA).

The Security-ID is the ID of the user logged on to TSO, CICS, or COM-PLETE and is the ID defined to the System Security Facility (i.e., RACF, ACF2, TOP-SECRET). The Security-ID directly identifies the user.

When it is necessary to trace users, all three User-ID types may be traced. However, since the Security-ID most identifies the user, it is discussed here.

The RTM user has two choices for performing a Security-ID trace. The TRAC function may be invoked and the desired Security-IDs may be entered on that screen. However, the TSID function performs a trace only on Security-IDs and automatically displays a selection screen of currently active IDs.

```
08-01-31    TSID        Selection List For User ID Trace       227    14:30:22

 The list below shows the active users on the system.  However, you may
 perform the trace on any ID (up to 5 max).  Please select the ID(s) or enter
 the ID here:   ________  ________  ________  ________  ________

  SEC ID   INT ID   NSS ID   JOB NAME      SEC ID   INT ID   NSS ID   JOB NAME
_ TREE04   00000055 TREE04   TREE04
_ TREE12   0000005C TREE12   TREE12
_ TREE18   0000006B TREE18   TREE18
_ TREE19   0000006E TREE19   TREE19
_ TREE13   0000006F TREE13   TREE13
_ TREE11   00000070 TREE11   TREE11
_ TREE06   00000071 TREE06   TREE06
_




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

This screen displays all the currently active Security-IDs. To activate a trace, the RTM user enters the Security-ID(s) in the allotted space and presses the ENTER key.

The user may enter any ID desired and is not restricted to the Security-IDs displayed on the screen. The selection list is displayed only as an indicator of which users are currently active.

A logical OR is performed based upon the Security-IDs entered on this screen.

II.11.7 Trace by Command Duration (TDUR) or ADABAS I/O (TI/O)

The Dynamic Trace Facility may also perform a trace based on the duration of an ADABAS command or the amount of ADABAS I/O a command generated. Both traces are useful for locating programs issuing inefficient commands. By tracing commands with a duration exceeding a specified limit, the Dynamic Trace Facility locates programs issuing inefficient commands that may not be inefficient enough to be displayed on the Commands of Long Duration (SDUR) screen. Tracing commands that generate high ADABAS I/O is useful in locating poorly-coded complex FINDs in NATURAL programs.

To perform a trace based on either the duration of a command or the I/O of a command, the RTM user enters the limits for these categories on the TRAC screen or the function name TDUR or TI/O on any RTM screen.

The screen below is displayed for both trace functions.

```
08-01-31    TDUR     Selection screen for Command Duration     227    14:30:22




               This trace option will enable you to capture
               those commands that exceed a specified time
               period to complete (Duration) or have excessive
               ADABAS I/O for the Associator, Data or Work.

               The value you enter will be the lower limit for the
               trace, meaning TRIM will return those commands that
               have an equal or greater value than that specified.

               Please enter the values for the trace below:

               Duration >= ______        Associator I/O >= ______
               (milliseconds)            Data I/O       >= ______
                                         Work I/O       >= ______



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

The cursor is automatically placed on the appropriate field depending upon the function name entered.

To perform a trace on command duration, the RTM user enters a time (in milliseconds) to be used as the lower limit for the duration of the ADABAS commands. The trace captures all commands with an equal or greater value of duration than specified on the screen.

To perform a trace by ADABAS I/O, the RTM user selects to trace by Associator, Data, or Work I/O. The trace may involve one type, two types, or all three types of I/O. The search criteria for the data entered is similar to the command duration data; the amounts entered are used as the lower limit for the trace. When the ENTER key is pressed, TRIM captures all commands with any of the I/O counts equal to or greater than the values specified for the corresponding I/O type.

II.11.8 Display of Active Traces (TACT)

TRIM is capable of having up to ten traces active concurrently (3 for sites using the small TRIM User-Exit-4). If all traces are active, no other traces may be activated until an active trace is deactivated. RTM users attempting to activate a trace at this time receive an error message and are returned to the previously-viewed function. However, the RTM user may view an active trace list and, if authorized, deactivate one or more of the traces.

The active trace list may be viewed by entering the function name TACT or pressing PF10 on the TRAC and TDSP screens.

```
Use 'D' to Deactivate Traces, 'I' for Information on Traces.
 08-01-31    TACT           Active Trace Display            227       14:30:22
                               TEST-DATABASE



     Security Trace                                          Trace  Time
       ID     Type          Trace Value                     Date  Started
     -------- ----- ---------------------------------------- ----- --------
   _ TREE18    DUR  >= 1000 milliseconds                     12/31 13:53:44
   _ TREE12   CMPLX * Complex Trace - Use an 'I' for Info *  12/31 13:55:25









        To stop another user's trace,
        please enter password:

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

This screen displays active traces with corresponding information on each trace. This information includes the Security-ID of the person that activated the trace, the type of trace, the values used as search criteria, and the date and time the trace was activated.

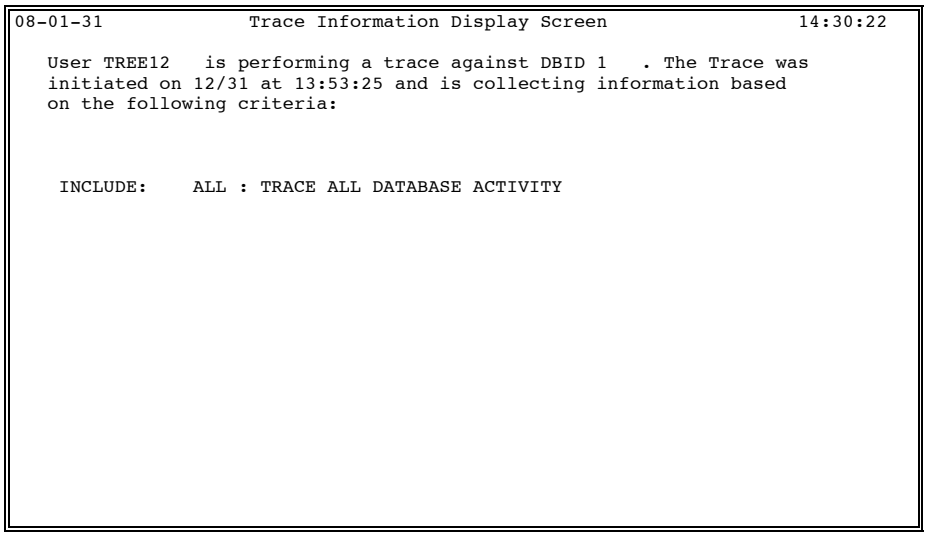
The possible values for the trace type correlate to the various trace functions available (e.g., TALL, TPGM, etc.). When possible, the values used as the trace search criteria are displayed on the screen, such as the first trace on the screen above.

Complex traces involving multiple categories cannot be displayed on the TACT screen due to limited space. In this case, the trace type has the value "CMPLX" and the trace value becomes:

```
* COMPLEX TRACE - USE 'I' FOR INFO *
```

The second trace entry on the previous screen is an example of this trace type.

The RTM user may view the search criteria for these trace types or for any trace displayed on the screen by entering "I" next to the Security-ID of the trace. An information screen is displayed listing the values entered for the selected trace.



This screen displays information about when the trace was activated, the ID of the person that activated the trace, and the values used for the search criteria of the trace.

The RTM users may deactivate their own traces by entering a "D" by their ID on the screen and pressing the ENTER key. No password is needed to deactivate a user's own trace.

For those authorized RTM users, it is possible to deactivate any trace displayed on the screen. To deactivate a trace, the RTM user enters a "D" next to the ID of the traces to be deactivated. The TRIM password must also be entered. Failure to enter the password or entering an invalid password, results in the user being prompted for the correct password. If the password is not known, PF3 may be used to abort the attempt and to return to the TACT screen.

If the correct password is entered, the selected traces are immediately deactivated. For those users whose traces are deactivated, the next time the ENTER key is pressed while on the TDSP function screen, a message informing the user(s) of the trace cancellation displays.

If the TACT function is invoked when no traces are active, a window is displayed to inform the user there are no active traces. After pressing the ENTER key, the user is returned to the RTM function where the TACT function originated.

II.12 Database Information

The Database Information subsystem contains several screens showing the database format, the file distribution across the disk-packs, the file format defined to ADABAS, and other database information. This subsystem includes functions to display the distribution of the Associator, the Data, and the Work datasets. This information may be used to determine the extent of fragmentation or if the various datasets need to be enlarged.

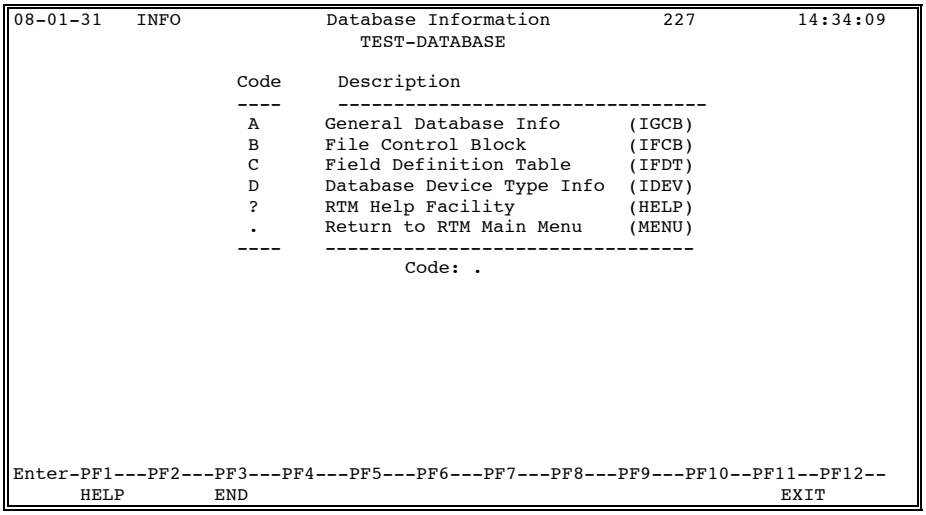
File Control Block (FCB) information about any file is available. This function displays the date and time the file was created and was last modified, the maximum number of records the file may contain, whether it is an ADAM file, and other file information.

A file's Field Definition Table (FDT) is available. This function displays the file's field definition directly from the FDT and is useful for determining what fields actually exist in the file on the database, what fields are Descriptors, and what fields make up the file's Super Descriptors.

TRIM may display the various device type formats.

II.12.1 Database Information Main Menu (INFO)

The Database Information subsystem contains the functions to view information about a database. This subsystem may be invoked by entering "G" on the RTM Main Menu screen or the function name INFO on any RTM screen.



The screen on the previous page displays the various functions available. Each function and a brief description follows:

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

A **General Database Information (IGCB)**

Displays information from the ADABAS General Control Block (GCB), including the Associator, Data, and Work dataset RABNs, how many files are loaded in the database, and the date and time the database was originally loaded.

B **File Control Block (IFCB)**

Displays information from the ADABAS File Control Block (FCB), such as how many records are in the file, the maximum number of records the file may contain, whether the file is an ADAM file, the last time the file was loaded and modified, and other file information.

C **Field Definition Table (IFDT)**

Displays information from the ADABAS Field Definition Table (FDT). All fields are displayed with their corresponding formats, lengths, suppression indicators, and field information. Super-Descriptors, Sub-Descriptors, and the fields making up these Descriptors are displayed. A summary of all field types is displayed at the end of the report.

D **Database Device Type Info (IDEV)**

Displays the various device types the site is using. Information displayed includes the number of tracks per cylinder for the device, the block size for the Associator, Data, and Work datasets, and the number of RABNs per cylinder for these datasets.

II.12.2 General Database Information (IGCB)

The ADABAS Associator, Data, and Work datasets are important to monitor with respect to size and fragmentation.

It is important to know the size of each dataset, what RABNs are being used, the number of files loaded on the database, and the date and time the database was originally loaded.

The General Database Information function may be viewed by entering "A" on the Database Information Main Menu screen or the function name IGCB on any RTM screen.

```
08-01-31   IGCB         General  Database  Information       227       14:34:17
                              TEST-DATABASEA

                 DEVICE    FIRST RABN     LAST RABN    TOTAL RABNS
         ASSO-1   3350             1         3,289          3,289
         ASSO-2   3350         3,290        13,156          9,867

         DATA-1   3350             1         5,394          5,294
         DATA-2   3350         5,395        21,576         16,182

         WORK-1   3350             1        10,788         10,788









 Maximum Files  1000    Highest FNR  30    Original Load  01/01/99  14:55:41

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

Note that with file numbers as two byte fields, files as high as 65563 are possible.

II.12.3 File Control Block Information (IFCB)

The DBA may need to know information about a specific file, such as how many records are currently in the file, the maximum number of records the file may contain, whether ISN and SPACE REUSE are set on or off, the file's maximum compressed record length, and the assignment of RABNs for the Associator and the Data datasets. This information may be viewed using the File Control Block function. The DBA may invoke this function by entering "B" from the Database Information Main Menu screen or the function name IFCB from any RTM screen. The following pop-up window is displayed.

```
+--------------------------------+
| Please enter the File Number   |
| you wish to view FCB information|
| on, or press PF9 for a selection|
| list.  FNR: _____              |
+--------------------------------+
```

Assume PF9 is pressed. The following screen is displayed.

```
08-01-31   IFCB            File  Selection  List          227         14:34:17
                              TEST-DATABASE
Enter 'S' beside FNR to select file or enter desired FNR here:___

FNR        FILE NAME          FNR     FILE NAME         FNR       FILE NAME
_1         EMPLOYEES          _232    PRD313-FDIC
_35        CONTROL
_90        TAPES
_91        PRODUCT
_92        CUSTOMER
_200       PAYROLL
_201       ARCHIVE
_202       PERSONNEL
_211       BENEFITS
_212       ACC-PAYABLE
_213       RECEIVABLES
_214       DEBITS-CREDITS
_220       PROBLEM-LOG
_222       TIME-RECORDING
_223       NON-RES-TIME
_230       NAT216-FNAT
_231       NAT216-FUSER
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                   PREV  NEXT                  EXIT
```

The file selection list is limited to files 1-255. If the file desired is higher than 255, the user will have to know and enter the file number.

For either method, the DBA is prompted for a file number. After entering the file number and pressing the ENTER key, the IFCB screen is displayed.

```
08-01-31   IFCB              File  Information          227         14:34:26
                               TEST-DATABASE

                        FILE 202     Personnel

Status:  AVAILABLE

High ISN Used     36911            Highest Index Level       3
Max ISN           38135
Min ISN           0                Max Compressed RECL       4088

ISN Reuse         No               ASSO Padding Factor       10%
Space Reuse       Yes              DATA Padding Factor       10%
ADAM File         No
Ciphered          No               Max DS Blks/Xtnt          0
Coupled Files     None             Max MI Blks/Xtnt          0
                                   Max NI Blks/Xtnt          0
Loaded   99-01-01 10:55:10
Updated  99-01-01 15:32:28         Updated Count        87521

                 *****  Press ENTER for RABN Usage  *****
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                              SEL              EXIT
```

Pressing PF9 displays the File Selection list.

The second screen displayed by the IFCB function displays the RABN usage of the file's Associator and Data datasets. The DBA presses ENTER for RABN USAGE.

```
08-01-31   IFCB              File  RABN  Usage          227            14:34:34
                               TEST-DATABASE

                          FILE 202     Personnel

                                                                          RABNS
       DEVICE BLKSZ  TYPE  FIRST RABN  LAST RABN       TOTAL    UNUSED   /CYL

 ASSO   3350   1564  DSST         532        532           1         0   330
        3350   1564  AC           900        905           6         0   330
        3350   1564  AC         2,425      2,426           2         0   330
        3350   1564  UI           906        937          32        27   330
        3350   1564  NI           938        943           6         0   330
        3350   1564  NI         2,334      2,424          91         0   330
        3350   1564  NI         2,427      2,460          34        18   330

 DATA   3350   3008  DS         1,973      2,048          76         1   180









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

Pressing PF9 displays the File Selection list.

II.12.4 Field Definition Table (IFDT)

The DBA or the NATURAL Administrator may need to know the true file definition as defined (loaded via ADACMP) in a particular ADABAS database.

All calls to ADABAS reference files as numbers (1-255) and fields as 2-character names (e.g., AA, BB). NATURAL compiles programs containing long names (e.g., File PERSONNEL, Field SALARY) and converts these long names to file numbers and 2-characters names.

The basis for this conversion is a Data Definition Module (DDM) created by PREDICT and stored in the PREDICT-maintained FDIC ADABAS files. The DDM may or may not bear any resemblance to the actual file definition on the database being accessed when the NATURAL program is being executed. Therefore, it is sometimes necessary to view a file's field definition as defined to ADABAS.

Note: The ADAREP utility displays FDT information. However, this information may not be available to the on-line user, and the old, hard-copy reports are possibly not current.

The DBA may invoke this function by entering "C" from the Database Information Main Menu screen or the function name IFDT from any RTM screen. The following pop-up window is displayed.

```
+--------------------------------+
| Please enter the File Number   |
| you wish to view FCB information|
| on, or press PF9 for a selection|
| list.  FNR: _____              |
+--------------------------------+
```

Assume PF9 is pressed. The following screen is displayed.

```
08-01-31   IFDT            File  Selection  List          227         14:34:17
                                TEST-DATABASE
 Enter 'S' beside FNR to select file or enter desired FNR here:___

FNR        FILE NAME          FNR      FILE NAME         FNR       FILE NAME
_1         EMPLOYEES          232      PRD313-FDIC
_35        CONTROL
_90        TAPES
_91        PRODUCT
_92        CUSTOMER
_200       PAYROLL
_201       ARCHIVE
_202       PERSONNEL
_211       BENEFITS
_212       ACC-PAYABLE
_213       RECEIVABLES
_214       DEBITS-CREDITS
_220       PROBLEM-LOG
_222       TIME-RECORDING
_223       NON-RES-TIME
_230       NAT216-FNAT
_231       NAT216-FUSER
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                    PREV  NEXT                   EXIT
```

If the TRMIPSWD program is not used, the user will be prompted for Password information on protected files.

The file selection list is limited to files 1-255. If the file desired is higher than 255, the user will have to enter the file number.

For either method, the DBA is prompted for a file number. After entering the file number and pressing the ENTER key, the IFDT screen is displayed.

```
08-01-31   IFDT              Field  Descriptions            227        14:34:41
                                                        File 202
       LVL NAME LNGTH FMT OPTIONS              LVL NAME LNGTH FMT OPTIONS
   1    1   GA                              19   1   LI   32    A  NU,DE
   2    2   AA    8     A  NU                       o
   3    2   AB   12     A  NU                       o
   4    2   AC    6     A  NU                       o
   5    1   GB
   6    2   BA    2     A
   7    2   BB   14     A
   8    2   BC    3     A  MU,DE
   9    2   BD    3     A
  10    1   GC
  11    2   CA   14     A  NU
  12    2   CB   30     A  NU
  13    2   CC    1     A  NU
  14    2   CZ   30     A  NU,DE
   o
   o
   o


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

The first screen displayed when the IFDT function is invoked displays the fields and their formats for the files. The display may encompass several screens. The user may scroll forward through the file by pressing the ENTER key.

Pressing PF9 displays the File Selection list.

When the file's field list is complete, TRIM displays the various Super-Descriptor, Sub-Descriptors, and Hyper-descriptors defined for the file. The component fields making up each descriptor and each component field's starting and ending bytes are displayed.

```
08-01-31   IFDT              Special Descriptors            227        14:34:49
                                                        File 202
  TYPE    NAME  LNGTH   FMT      COMPONENTS (POSITIONS)
  PHONDE   PH                     BB
  SUBDE    SB    5        A      BB(3:7)
  SUPDE    SA    9        A      AA(1:3)   AB(10:12) AC(1:3)
                                *** CONTAINS NU FIELD(S)
  SUPDE    SC   12        A      AA(1:3)   CB(12:15) CC(1:1)   AC(3:6)
                                *** CONTAINS NU FIELD(S)
  SUPDE    SD   19        A      AA(1:3)   BB(12:15) CB(15:17) AC(1:6)  BC(1:3)
                                *** CONTAINS MU NU FIELD(S)
  SUPDE    SE   25        A      AA(1:8)   AB(5:7)   CA(1:14)
                                *** CONTAINS NU FIELD(S)
  SUPDE    S8   104       A      AA(5:7)   AB(3:9)   AC(10:13) AD(4:8)
AE(12:17)
                                  AF(1:5)   AG(2:5)   AH(11:15) AI(3:9)
AK(16:19)
                                  AL(7:12)  AM(1:4)   AN(3:6)   AO(7:9)  AP(4:8)
                                  BB(12:16) BC(5:12)  BD(6:10)  BE(8:15) BF(7:13)
                                *** CONTAINS NU FIELD(S)




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

This screen displays the descriptor type, the ADABAS name, the format length, and component fields for each Super-Descriptor or Sub-Descriptor. Multiple screens may exist for any file containing a large number of Super-Descriptors or Sub-Descriptors. The user may scroll forward through the list by pressing the ENTER key.

Pressing PF9 displays the File Selection list.

At the completion of the Field and the Descriptor display screens, TRIM displays a final screen summarizing the different fields the file contains.

The report is separated into two sections: fields defined to the database and types of descriptors defined. An example of this screen is displayed below.

All Super-Descriptors and Sub-Descriptors are noted with warnings. By pressing the ENTER key, the total screen below is displayed.

```
08-01-31   IFDT      Field Description Table Totals          227      14:34:55
                              File: 202

-------   F I E L D S   -------      --- Special Fields / Descriptors ---

   Total Fields           71              Descriptors          4
   Non-PE Groups           0              Unique Descriptor    0
   PE Groups
        with MU Field      0              Sub Descriptors      0
        without MU Field   3              Super Descriptors   10
   Multi-Value             0              Hyper Descriptors    0
                                          Phonetic Descriptors         0
----- S U P P R E S S I O N  -----
Null Suppressed           69              Sub Field            0
Fixed                      2              Super Field          0
Normal                     0



                            Record Length of file:   552


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

In the example above file 202 contains 71 fields. 69 of the fields are null suppressed, and two of the fields have fixed suppression. Three Periodic Groups (PE) exist on the file and no Multiple Occurring Fields (MU) exist. The file also has four Descriptors and 10 Super-Descriptors defined.

The maximum Decompressed Record Length is shown, along with several useful totals for this file.

The Record Length assumes default lengths and one occurrence of each PE and MU field.

II.12.5 Device Type Database Information Main Menu (IDEV)

Information on the various devices involved in ADABAS may be viewed by entering "D" on the Database Information Main Menu screen or the function name IDEV on any RTM screen.

```
08-01-31   IDEV        Database Device Definition          227        14:35:05
                              TEST-DATABASE

          TRKS                        BLOCK SIZE
DEVICE    /CYL      ASSO      DATA      WORK     TP/SR      PLOG      CLOG
------    ----     -----     -----     -----     -----     -----     ------
  3310      11      2044      4092      4096      8192      4096      4096
  3330      19      1510      3140      4252      3140      4252      3156
  3340      12      1255      2678      3516      3500      3516      3516
  3350      30      1564      3008      4628      3008      4628      3024
  3359      30      2048      4096      4628      4096      4628      4096
  3370      12      2044      3068      5120      7680      5120      3072
  3375      12      2016      4092      4096      8608      4096      4096
  3379      12      2048      4096      4096      4096      4096      4096
  3380      15      2004      4820      5492      7476      5492      4820
  3389      15      2048      4092      5492      4096      5492      4096
  8350      30      3008      6232      9442      9442      9442      9442
  8380      15      3476      6356      9076      9076      9076      9076
  8381      15      3476      9076      1476      9076      1476      9076
  9332       6      2044      4092      5120       240      5120       240
  9335       6      2556      3580      5120      7168      5120      7168

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

```
08-01-31   IDEV        Database Device Definition          227        14:35:05
                              TEST-DATABASE

          TRKS                     RABNS PER CYLINDER
DEVICE    /CYL      ASSO      DATA      WORK     TP/SR      PLOG      CLOG
------    ----     -----     -----     -----     -----     -----     ------
  3310      11        88        44        44        22        44        44
  3330      19       152        76        57        76        57        76
  3340      12        72        36        24        24        24        24
  3350      30       330       180       120       180       120       180
  3359      30       240       120       120       120       120       120
  3370      12       180       120        72        48        72       120
  3375      12       180        96        96        48        96        96
  3379      12       168        96        96        96        96        96
  3380      15       285       135       120        90       120       135
  3389      15       270       150       120       150       120       150
  8350      30       180        90        60        60        60        60
  8380      15       180       105        75        75        75        75
  8381      15       180        75        60        75        60        75
  9332       6        60        30        24        12        24        12
  9335       6        84        60        42        30        42        30

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

These screens display the characteristics of the storage devices supported for the DBID being monitored. This information may be useful for space management activities.

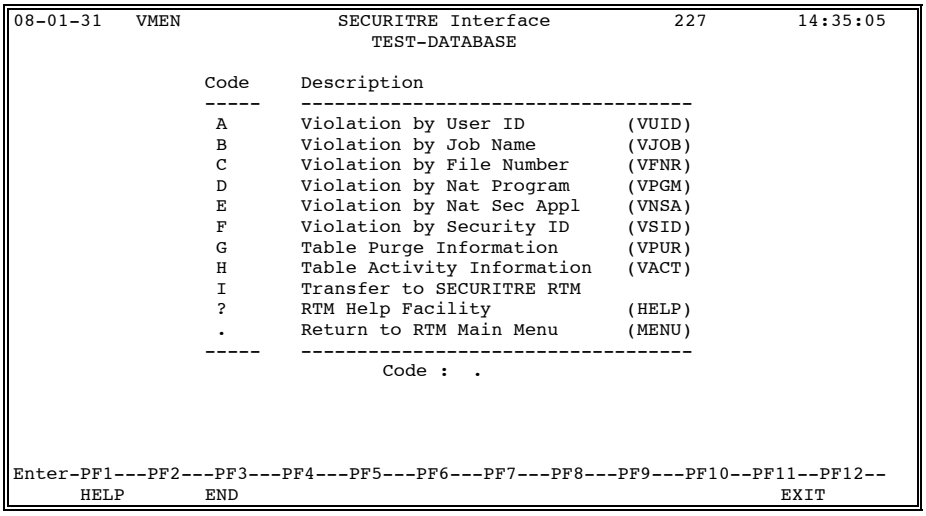
II.13 SECURITRE Interface

TRIM's SECURITRE interface subsystem enables those sites operating both TRIM and the security package SECURITRE to monitor the operation of SECURITRE.

From this subsystem, the user may view violations that have occurred on the database. The SECURITRE interface subsystem also allows the RTM user to monitor SECURITRE's performance with table purge information and table activity.

II.13.1 SECURITRE Interface Main Menu (VMEN)

SECURITRE statistics may be viewed by entering “H” on the main menu or VMEN on any RTM screen.



```
08-01-31   VMEN              SECURITRE Interface          227        14:35:05
                                TEST-DATABASE

                 Code     Description
                 -----    -----------------------------------
                  A       Violation by User ID          (VUID)
                  B       Violation by Job Name         (VJOB)
                  C       Violation by File Number      (VFNR)
                  D       Violation by Nat Program      (VPGM)
                  E       Violation by Nat Sec Appl     (VNSA)
                  F       Violation by Security ID      (VSID)
                  G       Table Purge Information       (VPUR)
                  H       Table Activity Information    (VACT)
                  I       Transfer to SECURITRE RTM
                  ?       RTM Help Facility             (HELP)
                  .       Return to RTM Main Menu       (MENU)
                 -----    -----------------------------------
                                 Code :  .



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

Note: The DBA may transfer directly to the SECURITRE RTM by selecting "I". From SECURITRE, the DBA may transfer directly back to TRIM.

II.13.2 SECURITRE Violations by ADABAS User-ID (VUID)

The violations by user-ID may be viewed by entering “A” on the SECURITRE Interface Main Menu or VUID on any RTM screen.

```
08-01-31   VUID    SECURITRE Violations - User ID          227       14:35:21


           UID         COUNT               UID         COUNT
         --------   ----------           --------   ----------
         0000005C            2
         000000A2            3
         C3E2E3F2            1
         C3E2E3F5            1









                              Total Violations: 7

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

This SECURITRE violation screen shows the count of violations for each ADABAS User-ID.

II.13.3 SECURITRE Violations by Job Name (VJOB)

The violations by Job Name may be viewed by entering “B” on the SECURITRE Main Menu or VJOB on any RTM screen.

```
08-01-31   VJOB         SECURITRE Violations - Job Name        227    14:35:33


          JOB NAME      COUNT              JOB NAME      COUNT
          --------   ----------            --------   ----------
          CICSTEST            2
          MAINT16A            3
          PRDEV04             2









                              Total Violations: 7

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

This SECURITRE violation screen shows the count of violations for each job.

II.13.4 SECURITRE Violations by File Number (VFNR)

The violations by file number may be viewed by entering “C” on the SECURITRE Interface Main Menu or the screen name VFNR on any RTM screen.

```
08-01-31   VFNR    SECURITRE Violations - File Number      227        14:35:58


          FNR           COUNT              FNR           COUNT
          --------   ----------            --------   ----------
          9                   3
          12                  2
          13                  2









                              Total Violations: 7

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

This SECURITRE violation screen shows the count of violations for each ADABAS File Number.

II.13.5 SECURITRE Violations by Program Name (VPGM) - formerly VNAT

The violations by program may be viewed by entering “D” on the SECURITRE Interface Main Menu or the screen name VPGM on any RTM screen.

```
08-01-31   VPGM       SECURITRE Violations - Program          227     14:35:37


          PROGRAM      COUNT              PROGRAM      COUNT
          --------   ----------            --------   ----------
          #NOTEB01            3
          PR04ABC             1
          PRO4XYZ             1
          USCN                2









                              Total Violations: 7

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

This SECURITRE violation screen shows the count of violations for each program.

II.13.6 SECURITRE Violations by Application Library (VNSA)

The violations by application library may be viewed by entering “E” on the SECURITRE Interface Main Menu or the screen name VNSA on any RTM screen.

```
08-01-31   VNSA   SECURITRE Violations - Application Library   227    14:36:13


          LIBRARY       COUNT              LIBRARY       COUNT
          --------   ----------            --------   ----------
          #NOTEB01            3
          PRDEV               2
          USC01               2









                                Total Violations: 7

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

This SECURITRE violation screen shows the count of violations for each Application Library.

II.13.7 SECURITRE Violations by Security-ID (VSID)

The violations by security ID may be viewed by entering “F” on the SECURITRE Interface Main Menu or VSID on any RTM screen.

```
08-01-31   VSID     SECURITRE Violations - Security ID      227      14:36:13


          SEC ID       COUNT              SEC ID       COUNT
          --------   ----------            --------   ----------
          TREE01              3
          TREE02              2
          TREE03              2









                                Total Violations: 7

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

This SECURITRE violation screen shows the count of violations for each Security-ID.

II.13.8 SECURITRE Table Purge Information (VPUR)

The SECURITRE Table Purge Information may be viewed by entering "G" on the SECURITRE Interface Main Menu or VPUR on any RTM screen.

```
08-01-31   VPUR        SECURITRE Table Purge Information       227    14:36:24



   Counts Of SECURITRE Table Purges:

         Inactive Users Due To Table Full  2

         All Users Due To Table Full       0

         Inactive Users Due To Time Interval       5

         All Users Due To Time Interval    0

         All Users On Demand               0




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

SECURITRE table purges may happen as a result of various factors. Generally, SECURITRE is more efficient with fewer table purges. To modify SECURITRE tables for efficiency, refer to the *SECURITRE Manual*.

II.13.9 SECURITRE Table Activity Information (VACT)

The SECURITRE Table Activity Information may be viewed by entering "H" on the SECURITRE Interface Main Menu or VACT on any RTM screen.

```
08-01-31   VACT      SECURITRE Table Activity Information    227     14:36:54



   Counts Of SECURITRE Table And Security Package Accesses:

         Direct Table Access, No RACF Check Needed  417

         Direct Table Access, Also RACF Check Needed        22

         Found In Table, No RACF Check Needed       9

         Found In Table, Also RACF Check Needed     7

         Not Found In Table, RACF Check Needed      15

         Non-File-Related RACF Checks (STRNAT, etc.)        0

         RACF Calls Issued For Logging Only                 0


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

SECURITRE maintains a table of users and their file accessibility indicators to avoid redundant calls to the security package (i.e., RACF, ACF2, or TOP SECRET). Refer to the *SECURITRE Manual* for information on tuning the SECURITRE environment.

II.14 Environment Information

The Environment Information subsystem displays information about the ADABAS and TRIM environment in use at the site. From this subsystem, the DBA may view the current version of ADABAS installed. Addresses are available for ADALNK, ADAIOR, ADABAS UEX11, UEX4, UEX8, ADABAS Nucleus and Hyper Exits, ADABAS Queues and Tables, etc.

Information about actual TRIM user-exits in use may also be displayed. This enables the DBA to know when the user-exits were assembled, the version of TRIM, and what parameters are set for each user-exit. Addresses are available for the various TRIM modules and tables.

II.14.1 Environment Information Main Menu (EMEN)

The main menu of the Environment Information subsystem displays the functions available to the DBA. This subsystem may be invoked by entering "K" on the RTM Main Menu screen or the function name EMEN on any RTM screen.

```
08-01-31    EMEN          Environment Information          227       14:37:01
                               TEST-DATABASE

Code  Description                          Code  Description
----  ---------------------------------   ----  ---------------------------------
 A    ADABAS Information        (EAIN)     J  UEX11 Comm Run Parms (E1PA)
 B    ADABAS Addresses of Mods  (EAAM)     K  TRIM UEX4 Addr of Modules (E4AM
 C    ADABAS Addresses of Tbls  (EAAT)     L  TRIM UEX4 Addr of Tables  (E4AT)
 D    NATURAL Information        (ENIN)    M  TRIM UEX4 Logging Parms   (E4LO)
 E    NATURAL Buffer Pool       (ENBP)     N  TRIM UEX4 Resp Code Parms (E4RS)
 F    TRIM User-Link-1 Info     (EUX1)     ?  RTM Help Facility         (HELP)
 G    TRIM User-Link-2 Info     (EUX2)     .  Return to RTM Main Menu   (MENU)
 H    TRIM User-Exit-4 Info     (E4IN)
 I    TRIM User-Exit-11 Info    (E1IN)

                                    Code:  .




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

Each function displayed on this screen may be invoked by either entering the function code or by entering the appropriate function name from any RTM screen.

The functions available in the Environment subsystem are briefly described below.

- ADABAS Information (EAIN)

  Displays the database name and version of ADABAS in use for the current database, the name of the ADABAS link routine loaded by the NATURAL nucleus currently being used, the SVC used by the link routine, the size of the UINFO area, the file numbers for the Checkpoint and Security files, and the logical ID of the database.

- ADABAS Addresses of Modules (EAAM)

  Displays information about address locations of modules, such as ADALNK, ADAIOR, ADABAS UEXnn, the ADABAS Nucleus, and ADABAS Hyper-Exits.

- ADABAS Addresses of Tables (EAAT)

  Displays information about the address locations of the ADABAS Queues and Tables.

- NATURAL Information (ENIN)

  Displays the Software AG products installed and the LFILE/NTFILEs defined in the NATPARM of the NATURAL nucleus being used to execute the RTM.

- NATURAL Buffer Pool (ENBP)

  Displays the objects currently in the NATURAL buffer pool, the status of each, and the use count of each. This function also allows the site to modify the status of the buffer pool objects.

- TRIM Link-Exit-1 Information (EUX1)

  Displays information about Link-Exit-1, including the date and time the user-exit was assembled, the version of TRIM exit is for, the Zap switch settings, and the parameters specified for Batch Slowdown.

- TRIM Link-Exit-2 Information LX2NAME(EUX2)

  Displays Link-Exit-2name, version, and the time it was assembled.

- TRIM User-Exit-4 Information UEX4(E4IN)

  Displays information about UEX4, including the date and time the user-exit was assembled, the TRIM version, the number of UEX4 Communication runs that have been executed during the session, and the number of CLOG Detail, PRESUM, and TRELOG Records written.

- TRIM User-Exit-11 UEX11 Information (E1IN)

  Displays information about User-Exit-11 including the date the user-exit was assembled, the version of TRIM the user-exit is for, and the number of User-Exit-11 Communication runs that have been executed during the session.

- TRIM User-Exit-11 Parameters (E1PA)

  Displays information about the User-Exit-11 parameters currently in effect.

- TRIM UEX4 Addresses of Modules (E4AM)

  Displays information about the UEX4 module addresses.

- TRIM UEX4 Addresses of Tables (E4AT)

  Displays information about the UEX4 table addresses.

- TRIM UEX4 Logging Parameters (E4LO)

  Displays information about the UEX4 logging parameters currently in effect.

- TRIM UEX4 Response Codes (E4RS)

  Displays information about the exceptional response codes TRIM should monitor.

II.14.2 ADABAS Information (EAIN)

General ADABAS information may be viewed by entering "A" on the Environment Information Main Menu screen or the function name EAIN on any RTM screen.

```
08-01-31     EAIN            ADABAS Information           227      10:43:53

                     Database Name:  TEST-DATABASE
                     ADABAS Version: 8.1.3

                             ADABAS Link
                          Routine Information
                          -------------------
                                Name: ADALNK
                                 SVC: 201
                           UINFO Size: 240

                          Database 227 Information
                         --------------------------
                              Checkpoint:      1
                         ADABAS Security:    N/A
                              Logical ID:      1




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

This screen displays the database name and version of ADABAS in use for this database (e.g., 227), the name of the ADABAS link routine loaded by the NATURAL nucleus currently being used, the SVC used by the link routine, the size of the UINFO area, the file numbers for the Checkpoint and Security files, and the logical ID of the database. The UINFO Size field shows the total size of UINFO defined in the ADABAS link module (refer to Section 10 for more information on setting the size of UINFO).

II.14.3 ADABAS Addresses of Modules (EAAM)

The addresses of certain ADABAS modules may be invoked by entering "B" on the Environment Information Main Menu screen or the function name EAAM on any RTM screen.

```
08-04-17   EAAM            ADABAS Module Addresses        3          11:52:26

 ADAAFP: 00000000    ADAATM: 00000000    ADAAVI: 00000000    ADACLU: 00000000
 ADADSF: 00000000    ADAIOR: 8000F9E0    ADALNK: 800416B8    ADALOG: 00124998
 ADAMIM: 8004D000    ADAMPM: 8012B4B0    ADAMXI: 00000000    ADANCX: 00000000
 ADAPUK: 00000000    ADARAC: 8012EF50    ADARVU: 80048F00    ADASAF: 00000000
 ADASMC: 00000000    ADASML: 00000000    ADASMM: 00000000    ADATCP: 00000000
 ADATSP: 00000000    ADAXCF: 00000000    ADAXEC: 00000000    ADAXEL: 00000000


                                ADABAS Nucleus
 ------------------------------------------------------------------------------
     0: 0004E000   1: 00053C00   2: 00060C00   3: 00082000   4: 00095000
     5: 000A8C00   6: 000BA800   7: 000CD800   8: 000E6C00   9: 000FD000
     A: 00105400   B: 00115000   C: 00119940   D: 00000000   E: 00000000

                                ADABAS Exits
 ------------------------------------------------------------------------------
           2: 8004B1D0   3: 00000000   4: 8013B510   7: 00000000
           8: 9DF01DF0  10: 00000000  11: 8014F3D0  12: 00000000
```

These addresses also appear automatically on the hard-copy Nucleus Session Statistics. The addresses of ADABAS and TRIM modules and Tables may be very useful if the database ABENDs.

II.14.4 ADABAS Addresses of Tables (EAAT)

The addresses of certain ADABAS Tables and Queues may be invoked by entering "C" on the Environment Information Main Menu screen or the function name EAAT on any RTM screen.

```
08-01-31   EAAT              ADABAS Table Addresses           227     14:37:39



                                Command Queue: 003A38D0
                                   Hold Queue: 00289E00
                              Upper User Queue: 002959E0

                  Internal Format Buffer Table: 00297040
                       Table Of Search Results: 002A1E00
                  Table Of Sequential Commands: 002A4540

                                  Thread Table: 00287AE0

              Upper Header To Large Buffer Pool: 002F1C80









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

These addresses also appear automatically on the hard-copy Nucleus Session Statistics. The addresses of ADABAS and TRIM modules and Tables may be very useful if the database ABENDs.

II.14.5 NATURAL Information (ENIN)

This function displays the environment for the NATURAL nucleus currently being used. It may be invoked by entering “D” from the Environment Information Main Menu screen, or by entering the function name ENIN.

```
 08-01-31   ENIN              NATURAL Information           14:36:19



    NATURAL System Files              NATURAL Products Installed
                                                                  Update
 File          DBID   FNR Type    Product               Ver SM   Date  Level
 ------------------------------------------------------------------------------
 LFILE 155        1    73 ADA8    NATURAL               4.1 4 2008-01-11
 LFILE 156        1    74 ADA8    ADABAS ONLINE SERVIC 8.1 3 2008-01-11
 LFILE 157        1    75 ADA8    PREDICT               4.4 13.4  1 2008-01-15
 STEPLIB          1   231 ADA8
 FSPOOL           1     8 ADA8
 FDIC             1    11 ADA8
 FSEC             1     8 ADA8
 FNAT             1     8 ADA8




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

The left column lists the LFILEs currently defined for this NATURAL session. It includes all system files. If there ARE more than 12 system files, PF8 and PF7 can be used to scroll through the list. The right column lists the products currently installed, the version, the SM level, the release date, and the update level.

II.14.6 NATURAL Buffer Pool Objects (ENBP)

This function displays up to 200 objects from the NATURAL buffer pool. It can be invoked by entering "E" from the Environment Information Main Menu screen or by entering the function name ENBP.

```
08-01-31      ENBP          Buffer Pool Objects            15:04:09

 CD
 IR   Library   Object     DBID  FNR  Res Load Delete Curr Use
 --   -------- --------    ---- ----- --- ---- ------ --------
  _   SYSTEM   SYSPROD        1   231   N    N      N
  _   SYSLIBS  NAT00030       1     8   N    N      N
  _   SYSLIB   PRFBCKN        1     8   N    N      N
  _   SYSLIB   USR0050N       1     8   N    N      N
  _   SYSLIB   INTSUB2        1     8   N    N      N
  _   SYSLIBS  NAT00002       1     8   N    N      N
  _   SYSLIB   XLOGON         1     8   N    N      N
  _   TRMV710  MENU           1   231   N    N      N
  _   TRMV710  TRMGDA         1   231   N    N      N
  _   SYSTEM   USR0050N       1   231   N    N      N
  _   SYSTEM   INTSUB2        1   231   N    N      N
  _   TRMV710  TRMDBID        1   231   N    N      N
  _   SYSTEM   USR0011N       1   231   N    N      N
  _   SYSLIBS  NAT00050       1     8   N    N      N
  _   SYSLIBS  NAT00005       1     8   N    N      N
  _   TRMV710  TRMCUST        1   231   N    N      N
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END                    +     -                    EXIT
```

The following fields are displayed:

Field	Description
CD IR	Allows the user to enter the action to perform on the object. Valid values are: C Clear the resident status of the object D Delete the object from the buffer pool I Inquire on the object R Mark the object as resident in the buffer pool
Library	The library where the object is stored.
Object	The name of the object.
DBID	The physical database where the object is located.
FNR	The physical file number of the FUSER/FNAT where the object is located.
Res	Indicates if the object is resident in the buffer pool or may be removed by NATURAL.
Load	Indicates if the object is currently being locked or being loaded by NATURAL.
Delete	Indicates if the object is marked for deletion.
Curr Use	Displays the number of users who are currently using the object.

If an 'I' is entered next to an object on the previous screen, the following screen is displayed:

```
08-01-31     ENBP           Buffer Pool Objects        227            15:18:32

                  Object:  MAINMENU  Current User:           Date:
                 Library:  SYSLIB            Term:           Time:

       Object Address                          Object Flags
  -------------------------                  --------------------
     Dir Address:  0619C100                          Resident:  N
  Object Address:  0619DA30                    Locked/Loading:  N
                                             Marked for Delete:  N

   Object Location                                  Object Sizes
  -------------------                        ---------------------------------
  Database-ID:      1                           Object Size:        3520 bytes
  File Number:      8                         Allocated Size:        4096 bytes

         Use Counts                                    Timestamps
  --------------------------                 -------------------------------------
--
  Max Concurrent:           1                     Loaded:  1998-08-11 15:18:15.0
         Current:           0                 Last Action:  1998-08-11 15:18:15.0
           Total:           3
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12--
-
       HELP        END                                INFO               EXIT
```

This screen displays various information about the object. The following fields are displayed:

Field	Description
Object	The name of the object.
Library	The library from which the object was loaded.
Current User	The ID of the user who is currently using the object. If this field is blank, no user is using the object.
Term	The terminal-ID of the user is currently using the object. If this field is blank, no user is using the object.
Date	The date when the current user started using the object. If this field is blank, no user is using the object.
Time	The time when the current user started using the object. If this field is blank, no user is using the object.
Dir Address	The address of the object's directory entry in the buffer pool.
Object Address	The address of the object in the buffer pool.
Resident	Indicates if the object is resident in the buffer pool.
Locked/Loading	Indicates if NATURAL has locked or is loading the object into the buffer pool.
Marked for Delete	Indicates if the object will be deleted from the buffer pool by NATURAL when the current use count is reduced to zero.

(continued from previous page)

Field	Description
Database-ID	The physical ID of the database where the object is located.
File Number	The physical file number of the FUSER/FNAT where the object is located.
Object Size	The total size of the object in the buffer pool.
Allocated Size	The size that the object uses in the buffer pool. This is typically larger that the actual size of the object and is allocated in the increments defined by the BPTEXT parameter in the NATPARM file.
Max Concurrent	The maximum number of users that used the object concurrently.
Current	The number of concurrent users that are using the object now.
Total	The total number of users of this object since it was loaded into the buffer pool. This number reflects each use, not each user (i.e. if a user uses the object twice, they will be counted 2 times).
Loaded	The date and time the object was loaded into the buffer pool.
Last Action	The date and time the object was last used.

Additional information may be displayed on this object by pressing the PF9 key. If this function key is pressed, the following windows will be displayed:

```
SOURCE MODULE INFO FOR: TRMCUST

Object Type:  Subprogram
Saved on: 08-02-02 at 14:45:41
-----------------------------------
Saved with NAT ver: 4.1.4
Saved by user:      TSI1
From terminal:      TCP00006
Original library:   TRMV811
Original name:      TRMCUST
Mode:               Structured Mode
REC Size:           2250
Size in ESIZE:      4226
Size in USIZE:      360
Buffer Pool Size:   1040
Turbo Code Length:  0
Recatalog Possible: YES
```

```
SOURCE MODULE INFO FOR: TRMCUST

Object Type:  Subprogram
CAT on: 08-02-02 at 14:45:41
-----------------------------------
CAT with NAT ver:   4.1.4
CAT by user:        TSI1
From terminal:      TCP00006
Original library:   TRMV811
Original name:      TRMCUST
Mode:               Structured Mode
REC Size:           2250
Size in ESIZE:      0
Size in USIZE:      360
Buffer Pool Size:   1040
Turbo code length:  0
Recatalog Possible: YES
GDA Size:           0
Num of subroutines  0
Num of repeats:     0
Num of Write Files: 12
```

The windows above display the information from the object's header records on the FUSER/FNAT file from which the object was loaded. If a global buffer is being used, this information may not be available if the database is not accessible from the current NATURAL nucleus.

If source information is not available for the object, the source window (the left side of the screen) will display the message:

```
     SOURCE MODULE NOT FOUND
ON FUSER/FNAT FOR MODULE SELECTED
```

If catalog information is not available for the object, the catalog window (the right side of the screen) will display the message:

```
     CATALOG MODULE NOT FOUND
ON FUSER/FNAT FOR MODULE SELECTED
```

These messages indicate that one of the following has occurred:

1) The DBID and FNR displayed on the ENBP screen is not accessible. This can occur if the database is not on the same SVC as the database that NATURAL nucleus is current using (shown on the EAIN screen) or if a router has re-directed the call to another database.

2) The DBID and FNR displayed on the ENBP screen no longer contains the object displayed. This can occur if the object was purged from the FUSER or FNAT after the object was loaded into the buffer pool.

II.14.7 TRIM User-exit Information

To enable TRIM to monitor a database, the DBA must install the necessary user-exits on the database. Each user-exit is invoked at a specified time during the execution of a command for TRIM to properly monitor the command and keep information about the command.

The following are the three user-exits required by TRIM:

- LX1NAME — Invoked before the command is executed from the ADABAS Link Routine(s).
- LX2NAME — Invoked after the command from the ADABAS Link Routine.
- UEX11 — In the ADABAS Partition, invoked before the command is executed.
- UEX4 — In the ADABAS Partition, invoked after the command has executed.

II.14.8 TRIM Link-Exit-1 (LX1NAME) Information (EUX1)

The information available about TRIM Link-Exit-1 includes the type of exit (e.g., Batch, COM-PLETE, CICS), the date the exit was assembled, the version and the Zap switch settings.

The information about TRIM Link-Exit-1 may be displayed by entering "F" on the Environment Information Main Menu screen or the function name EUX1 on any RTM screen.

```
 08-09-16   EUX1           User-Link-1 Environments        3          13:05:40

   USER ASSEM TRIM       ZAP SWITCHES             BATCH SLOW DOWN PARAMETERS
BS EXIT DATE  VER   1  2  3  4  5  6  7  8       WAIT VALUES          FROM TO
-- ---- ----- ---- -- -- -- -- -- -- -- --  ------------------------- ---- --
    TS  10/08 812  00 00 00 00 00 00 00 00
    CI  05/30 812  00 00 00 00 00 00 00 00
    BA  12/03 812  00 00 00 00 0F 00 00 00  5000 MS EVERY 10 COMMANDS  10  21



 TRIM LINK-EXIT-1'S: 03
 Calls with no User Info Area were encountered



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

The BS column is obsolete and will be removed from this screen in the next release.

The User Exit column indicates the TPMON value from the LGBLSET generation used to create the ADALNKs running against this TRIM-monitored database:

BA	-	Batch (slowdown settings optional)
TS	-	TSO
CI	-	CICS
CO	-	COMPLETE
IM	-	IMS
UT	-	UTM (Siemens)

In addition, it is noted near the bottom of the screen that ADALNK modules without a TRIM Link_Exit-1 have been detected, and some Link Routines may not have been properly defined with the correct size for the user info buffer (LUINFO) . The "??" entry and this note about improperly set Link Routines results in missing NATPROG, NSA, and NSU information (i.e., #NOTE entries) on NATURAL related statistics screens. Vxxx will display on the screen as the installed version.

All batch jobs are to be delayed between the hours of 09:00 and 17:00, with the delay factor being five seconds for every 10 commands. Note that the time setting is in milliseconds.

When Batch jobs execute during the time allotted for on-line activity, these jobs may impact the performance of the on-line environment. Batch jobs issue commands at a faster rate than the on-line environment, creating a bottleneck for the execution of commands for on-line programs.

TRIM Link-Exit-1 may be used to slow down the execution of Batch jobs and enable the on-line environment to issue commands with decreased impact on response time. The DBA may define what times these batch jobs are to be delayed. If the on-line environment is active from 09:00 until 18:00, this may be when the DBA wishes to delay the batch jobs. After this time, however, the DBA may not want to impede the performance of the batch jobs.

To delay a batch job, TRIM Link-Exit-1 causes the commands that the job is issuing to be queued for a specified number of seconds (set by the DBA). The commands are queued after a specified number of commands have already executed. This delay enables the on-line environment to have increased access to the database.

II.14.9 TRIM Link-Exit-2 LX2NAME Information (EUX2)

The information about Trim Link-Exit-2 may be displayed by entering 'G' on the Environment Information main menu or the function name EUX2 on any RTM screen. The EUX2 screen displays information about TRIM LX2NAME (name, version, and assembly date/time)..

```
08-01-31     EUXA         TRIM Link-Exit-2 Information          227
14:38:02

                                    Name:  TRMUEX2
                                 Version:  812

                              Date Assembled:  mm/dd/yy
                              Time Assembled:  03:12 PM









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

II.14.10 TRIM User-Exit-4 Information (E4IN)

UEX4 is called by ADABAS after execution of each command. Command Logging is performed in this user-exit. The DBA may want to know the number of CLOG records written, what the addresses are for the TRIM user-exits and tables, and what parameters are in effect for the logging of commands.

The general information about TRIM UEX4 may be viewed by entering "H" on the Environment Information Main Menu screen or the function name E4IN on any RTM screen.

```
08-01-31   E4IN             User-Exit-4 Information          227      14:38:45



                              Date Assembled: mm/dd/yy

                         TRIM Version Number: v.r.s

                            User-Exit-4 Size: REGULAR

                    UEX4 Communication Runs: 1

                            ADABAS CLOG Type: 5

                         Clog Records Written
                         --------------------
                            DETAIL:      17
                            PRESUM:     650
                            TRELOG:       5



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

The small number of CLOG Detail Records written indicates proper usage of TRIM to selectively log detail records and use PRESUM data to gather gross statistics for resource utilization analysis. TRMLOG parameters and/or User-Exit-4 Communication Run parameters have reduced the Detail logging to a minimum. TRELOG indicates tRelational statistics are being collected.

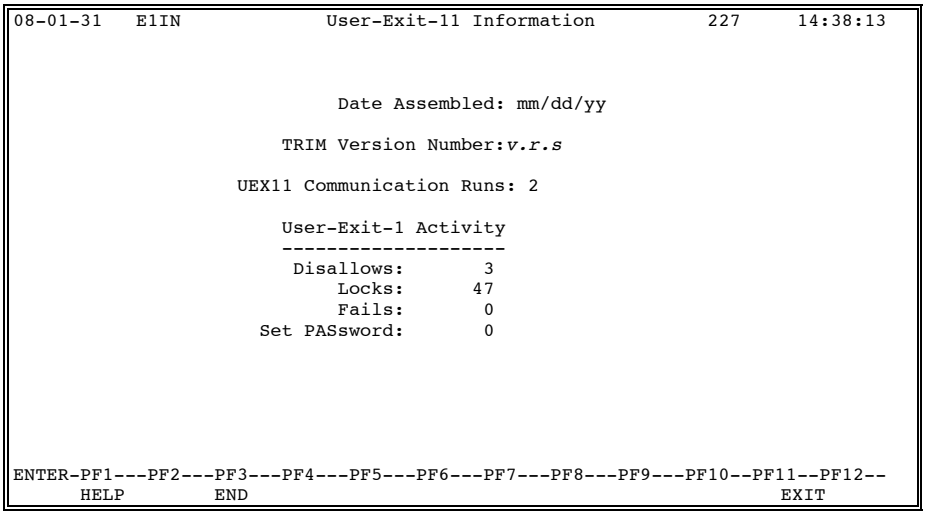
II.14.11 TRIM User-Exit-11 UEX11 Information (E1IN)

TRIM UEX11 may be used to control the types of commands issued to the database, which files the commands may access, and which users may issue the commands.

This user-exit may be used to prevent specific inefficient commands (e.g., S2, S9) from being issued against the database and possibly impacting the performance of the applications currently executing.

UEX11 may also be used to LOCK certain files from access by users or jobs. If a file is LOCKed, commands cannot be issued against the file. TRIM has the capability to LOCK a selected group of users, jobs, or programs from accessing a specified file. This capability enables the DBA to lock a file while executing specific ADABAS utilities requiring exclusive use of the file without interference from an accidental access attempt.

The UEX11 information may be viewed by entering "I" on the Environment Information Main Menu screen or the function name E1IN on any RTM screen.



This screen indicates that two UEX11 Communication Runs have been made, the second overriding the first. In this session, some UEX11 Command Disallows and Locks have occurred due to the UEX11 parameters.

II.14.12 TRIM User-Exit-11 Communication Run Parameters (E1PA)

The information about TRIM UEX11 Communication Run parameters currently in effect may be displayed by entering "J" on the Environment Information Main Menu screen or the function name E1PA on any RTM screen.

```
08-01-31   E1PA           TRMUEX11 Parameter Display            227   14:38:28

   UEX1 PARAMETERS    EFFECTIVE DATE: 12/31/99    EFFECTIVE TIME: 14:38:28
--------------------------------------------------------------------------------
DISALLOW
  S2,FNR=(1-17,19-65535)
LOCK
  137,JOB   (DBAAAAAA-DBAZZZZZ)









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

The DBA is disallowing S2 (FIND SORTED) commands for all files except file 18. Also, all commands to file 137 are locked out to everybody except the DBA's jobs.

II.14.13 User-Exit-4 Addresses of Modules (E4AM)

The address of the various parts of TRIM UEX4 may be viewed by entering "K" on the Environment Information Main Menu screen or the function name E4AM on any RTM screen.

```
08-01-31   E4AM           User-Exit-4 Module Addresses        227     14:38:54



                              TRMX4MAL: 00074D48

                              TRMX4S1L: 00112388
                              TRMX4S2L: 001145D0
                              TRMX4S3L: 00077E30

                                DATACS: 0007A850

                 End Of TRIM User-Exit-4: 00119EC0









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

These addresses also appear automatically on the hard-copy Nucleus Session Statistics. The addresses of ADABAS and TRIM modules and Tables may be very useful if the database ABENDs.

II.14.14 UEX4 Addresses of Tables (E4AT)

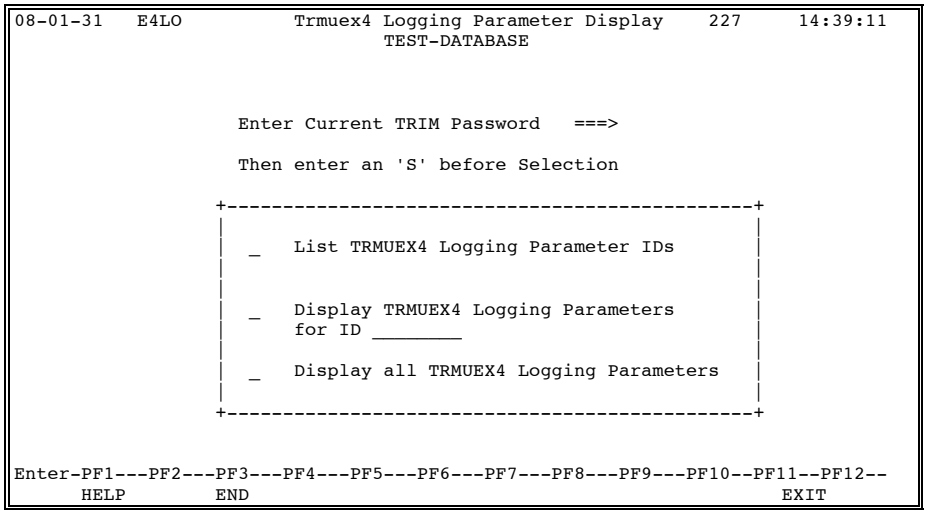
The addresses of the various accumulator tables used by TRIM may be viewed by entering "L" on the Environment Information Main Menu screen or the function name E4AT on any RTM screen.

```
08-01-31   E4AT          User-Exit-4 Table Addresses         227      14:39:01

                            BY          BY 5 HOURS  BY NUCLEUS  SECURITRE
                            5 MINUTES   AND PRESUM  SESSION     VIOLATORS
                            ----------  ----------  ----------  ----------
        Commands Within File  00000000    00000000    00181C38    00000000
  ADABAS or Alternate User ID 00142EE0    0015C490    0019C7F8    001A09B0
                  Job Name    0013F3D0    0014F8C0    0018A780    001A0AC0
               Program Name   00140780    00152CB0    0018D798    001A0C58
             Response Code    0013D3F0    001481B0    00186438    00000000
          ADABAS Command Code 0013DBE8    001495C0    00186A48    00000000
            ADABS File Number 0013E3E0    00149AA0    00186B48    001A0DF0
                      Thread  0013EBD8    0014E4B0    00187158    00000000
                   User Area  001475D0    0017C988    0019E808    00000000
                 NSS User ID  00146220    0016DF20    001967C8    00000000
          Application Library 00144E70    00167B30    001937B0    001A0EC0
          CICS Transaction ID 00143AC0    00161740    00187768    00000000
           System Security ID 00141B30    001590A0    001997E0    001A0818


          Extended User Queue 000F8430            Trace Tables    0013AB48
     User-Exit-B Environments 00110070     High Durations Table    0010A480
                              00000000   00174310     00000000    00000000

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

These addresses also appear automatically on the hard-copy Nucleus Session Statistics. The addresses of ADABAS and TRIM modules and Tables may be very useful if the database ABENDs.

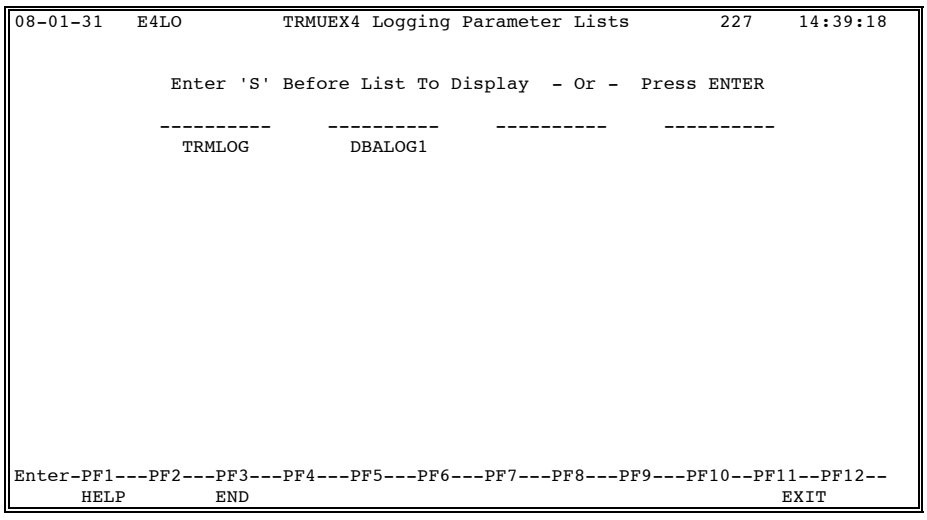
II.14.15 TRIM UEX4 Logging Parameters (E4LO)

The Command Logging parameters used by TRIM may be viewed by entering "M" on the Environment Information Main Menu screen or the function name E4LO on any RTM screen.



The "Enter Current TRIM Password" message does not appear after the first display of this selection screen in a single execution of this program.

This screen displays three options for the RTM user. After entering the TRIM password, the RTM user may view a selection list, a specific UEX4 setting, or all of the settings for UEX4, as shown on the following pages.



This screen displays up to 4 columns with up to 15 lines, for a maximum list of 60. This screen indicates two sets of logging parameters are currently in effect: TRMLOG-generated start-up default logging (refer to ***Section VII.2 Start-Up Logging (TRMLOG)*** of the ***TRIM Installation and Operations Manual***) and DBALOG1 additional logging via a UEX4 Communication Run (refer to the ***TRIM Installation and Operations Manual***). An individual list may be selected for viewing. However, the DBA returns to the previous screen and selects "Display All Logging Parameters".

The screen below is displayed.

```
08-01-31   E4LO       TRMUEX4 Logging Parameter Display        227    14:39:26

LIST ID                L O G G I N G   P A R A M E T E R S
-------- ------------------------------------------------------------------
TRMLOG   LOGCB
         LOGFB
          &  FNR=21463
         LOG JOB=(DBAUPDT,PAYROLL,SPECIAL)
          &  CMD=(N1,E1)
          &  FNR=(14,16)
         LOG FNR=115
          &  DUR>15000
         LOG DUR>200000
DBALOG1  LOGVB
          &  FNR=(8,9,10)
         LOGSB
          &  FNR=(8,9,10)




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

This is the format for the Logging Parameters Display. When logging parameters exceed one page, "ENTR=MORE" appears at the bottom of the screen, guiding the DBA to view all the parameters by pressing ENTER.

The screen above indicates seven parameters are specified for UEX4. These parameters are

- Log the Control Block
- Log the Format Buffer if:
  - the command is issued against file 21463
  - the command is an N1 or E1 against files 14 or 16 and issued from job DBAUPDT, PAYROLL, or SPECIAL
  - the command is issued against file 115 and the command duration is greater than 1.5 seconds
  - the command has a duration greater than 20 seconds
- Log the Value Buffer if:
  - the command is issued against file 8, 9, or 10
- Log the Search buffer if:
  - the command is issued against file 8, 9, or 10

II.14.16 UEX4 Exceptional Response Codes (E4RS)

The exceptional response codes TRIM is to monitor may be viewed by entering "N" on the Environment Information Main Menu screen or the function name E4RS on any RTM screen. An example of the E4RS screen is displayed below.

```
08-01-31   E4RS      Exceptional Response Code Selections     227     14:39:37
                                TEST-DATABASE

 RSP    DESIGNATED TEXT                  RSP  DESIGNATED TEXT
 ---    ------------------------------    ---  ------------------------------
 19     ATTEMPT TO UPDATE BY ACC USER   86   HYPEREXIT RETURN ERROR
 46     MAX NQCID EXCEEDED              98   DUPLICATE FOR UNIQUE DE
 47     MAX NISNHQ EXCEEDED             152  LU VALUE TOO SMALL
 48     OPEN ERROR ENCOUNTERED          162  SHORT ON SPACE- BUFR POOL HDRS
 76     OVERFLOW IN INVERTED LIST INDX  173  INVALID DATA STORAGE RABN
 79     HYPEREXIT NOT IN ADARUN PARMS   255  ALL ATTACHED BUFFERS ALLOCATED






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

This display indicates that there has been a valid TRMRSP member assembled and linked with User-Exit-4 (refer to ***Section VII.3 Exceptional Response Setup (TRMRSP)*** of the ***TRIM Installation and Operations Manual***). The number of entries in that member are shown. In the case above, the default responses are to be checked. The TRMRSP member could have been assembled to check for only the specified values and omit the default values.

Up to 32 selected responses may be displayed on each screen. Multiple screens are used if necessary.

If no TRMRSP member was present, that fact would be noted as the first message line on this screen, and "ENTR=MORE" would not be displayed on the PF-key line.

II.15 Exceptional Response Codes

At any time, the DBA may be warned of any exceptional conditions on the database by the screen below.

```
 08-01-31           Exceptional Response Code Warnings     227        14:33:43
                             TEST-DATABASE



                                 There Are

                     Exceptional Response Code Warnings

                             For This Database


                               PF1  = DISPLAY

                               ENTR = IGNORE
```

The DBA would typically respond by pressing PF1 to display the exceptional conditions.

Note that the user may view the exceptional response codes at any time by entering screen name WARN.

II.15.1 Exceptional Response Code Warnings (WARN)

An example of the type of information that may be displayed is shown on the screen below.

```
08-01-31   WARN    Exceptional  Response  Code  Warnings      227     14:33:56

   RC   DATE     TIME   UID      PROGRAM CMD   FNR EXPLANATION
      12-31-01 15:11:59                           XUQ REINITIALIZED
    2 12-31-01 09:45:49 C4C1D9D7 FINDXYZ L4    123 OFLO HQ, PROB:C1C4D9D7 743
   70 12-31-01 13:55:03 C8D7D1D3 CHECKER L4     81 OFLO TSQ,PROB:D6D5C3C2 98









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

This display indicates that earlier in the day two exceptional conditions occurred:

- the Hold Queue filled up, with User-ID C1C4D9D7 holding 743 ISNs at the time
- the Table of Sequential Commands filled up, with User-ID D6D5C3C2 probably causing this condition by having 98 of the 100 potential table entries

The third message indicates the XUQ has been reinitialized. This only occurs when an internal error has been detected and the integrity of the XUQ has been lost. The table and the corresponding statistics have been reinitialized. Statistics will be accumulated from the re-initialization time forward.

These conditions caused Response Codes 2 (or 145) and 70, respectively, which were probably received by many users.

TRIM keeps record of each exceptional Response, but only one occurrence of each Response per minute. These samples indicate "fill-up" conditions. Therefore, the above warnings could result for each second until either the offending users time out or are stopped. The exceptional responses to be reported may be user-defined (TRMRSP).

Once the DBA uses the RTM, the DBA finds out about these pre-existing conditions and may Print (PF4) or Print and Clear (PF5) these messages. If the RTM is not used, the DBA is informed of these conditions in the hard copy Nucleus Session Statistics, which automatically contains these messages.

II.16 TRIM NATURAL Monitor (TNM)

TNM collects comprehensive information on all NATURAL programs and user activities by recognizing the following events:

- **NATURAL Start:** This event occurs when the user first invokes NATURAL.
- **NATURAL End:** This event occurs when the user exits NATURAL.
- **Program Start:** This event occurs when the user begins to execute a NATURAL program or when a program the user is executing invokes another module. In the context of TNM, a program is any executable NATURAL object, including programs, subprograms, subroutines, and maps.
- **Program End:** This event occurs when the currently executing NATURAL program stops executing or returns control to the calling program.
- **ADABAS Call Start:** This event occurs when a NATURAL program is prepared to issue a command to ADABAS.
- **ADABAS Call End:** This event occurs after ADABAS responds to a command issued by a NATURAL program.
- **Terminal I/O:** This event occurs when the user exits a screen (e.g., presses Enter, a PF-key, or an Attention key).

When TNM recognizes one of the events above, it retains the User-ID, program name, execution counts, times, etc. Periodically, this information is written to the TNM file. Once written to this file, the information is available to all users of the TNM reports.

The collection of statistics can be activated and deactivated, as needed, using the administrative functions of TNM.

Note: TNM does not collect summary or detail data on programs executed in the TRMVxxx library or any library with the prefix SYS (except for SYSTEM). Programs in these libraries could occasionally appear in the Last Executed Library/Program/Line fields of the User Activity Summary Report, User Activity History Report, and User Percentage Summary Report.

To illustrate the events monitored by TNM, consider the following sample NATURAL session, showing the actions a user and an application performed and the events recorded by TNM:

User's or Program's Action	Event Recorded by TNM
1. User logs on to NATURAL	NATURAL Start
2. User executes a program	Program Start
3. Program calls a map	Program Start (map)
4. Program displays a map to the user	Terminal I/O
5. User requests help for the map	Terminal I/O
6. Program fetches a helproutine	Program Start (helproutine)
7. User reads help, presses PF3 to end it	Terminal I/O
8. Helproutine returns to caller	Program End (helproutine)
9. User enters transaction data	Terminal I/O
10. Map ends	Program End (map)
11. Program issues an update command to ADABAS	ADABAS Call Start
12. ADABAS update is completed response returns from ADABAS	ADABAS Call End
13. Program fetches a subprogram	Program Start (subprogram)
14. Subprogram returns to caller	Program End (subprogram)
15. Program displays results to user	Terminal I/O
16. Program ends	Program End
17. User logs off NATURAL	NATURAL End

By noting information about these events, TNM is able to determine program duration, elapsed time for ADABAS calls, and other performance characteristics.

TNM Administrative Functions

TNM includes a collection of NATURAL programs that perform various administrative and reporting functions, including:

- Defining (updating) data collection parameters to determine which statistics are to be collected, for which users and programs, etc.
- Converting (expanding) the compressed statistics on the TNM file for reporting purposes
- Purging (deleting) obsolete data from the TNM file

These functions can be performed on-line or in batch (except for Defining Data Collection Parameters) and are password-controlled to prevent unauthorized use.

Note: Detail collection will provide a large amount of data on NATURAL programs and user activity. The user of TNM should exercise caution when selecting detail data collection in a production environment. Defining the Detail Data Collection parameters to collect data for all programs, users, and libraries would create excessive data and quickly fill up the TNM file.

TNM Reporting Functions

TNM reporting functions use the converted statistics on the TNM file to produce a variety of reports on NATURAL activity and performance.

All reports are available on-line and in batch. On-line reports are thorough, informative, and easy to follow. Batch reports return the same information as on-line reports, but provide hard-copy reports and can be scheduled to run at off-peak hours.

TNM Summary Reports include:

Program Activity Summary Report

Displays program statistics collected during the current day. Its uses include displaying comprehensive program information and identifying performance problems caused by a particular program or programs.

Program Activity History Report

Displays program statistics collected over a period of time. Its uses include monitoring performance trends and identifying abnormal activity levels for a given program or application.

Program Percentage Summary Report

Displays the percentage of total system resource usage attributed to a program or set of programs. Its uses include determining which programs in an application account for the bulk of resource usage by the application.

User Activity Summary Report

Displays statistics collected about a user during the current day. Its uses include identifying the most active users of NATURAL.

User Activity History Report

Displays statistics collected about users over a period of time. Its uses include detecting abnormal activity levels for a given user, analysis of performance trends, and capacity planning.

User Percentage Summary Report

Displays the percentage of total resource usage attributed to particular users. Its uses include identifying users running inefficient programs and comparing user activity levels with one another.

TNM Detail Reports include:

Program Nest Report

Displays program relationships in a nested format, demonstrating how an application flows from one program to another. Its uses include learning an application's structure or design.

Program Summary Report

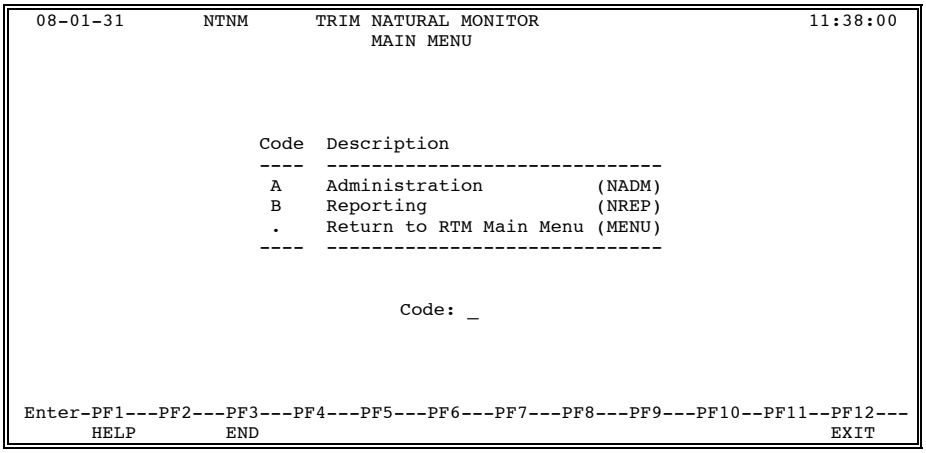
Displays the most heavily used programs, programs making the most ADABAS calls, and programs with the best/worst response times. Its uses include identifying programs which have, or are causing, performance problems.

User Trace Report

Follows a given user's interaction with NATURAL, showing the events associated with the user's actions and the impact of each of these events on system performance. Its uses include application debugging.

II.16.1 Main Menu Screen

The TRIM NATURAL Monitor Main Menu may be invoked by entering “K” on the main menu or NTNM on any RTM screen.



Field	Description
ENTER CODE	The function to be executed. Valid values are as follows: **A** **Administration** Accesses the Administration menu. **B** **Reporting** Accesses the Reporting menu. **.** **Return to RTM Main Menu** (If RTM is active) OR **Exit Monitor** (If RTM is not active)

II.16.2 TNM Administration

II.16.2.1 Introduction

TNM Administration functions allow users to define data collection parameters, convert (expand) detail data for use in reporting, and purge (delete) obsolete historical data. TNM administrative tasks are performed using the following functions: Define Data Collection Parameters, Convert Detail Data, Purge Summary Data, and Purge Detail Data.

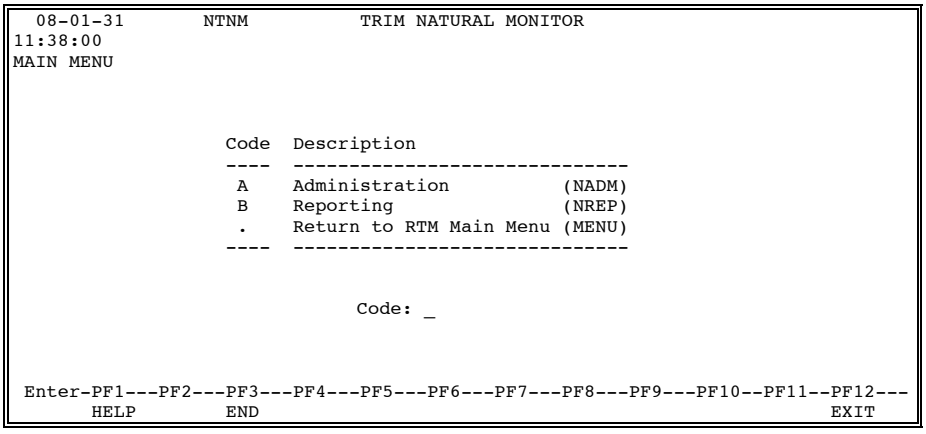
The Administration section presents topics in the following order:

- Define Data Collection Parameters
- Convert Detail Data
- Purge Summary Data
- Purge Detail Data
- Batch Administration Functions

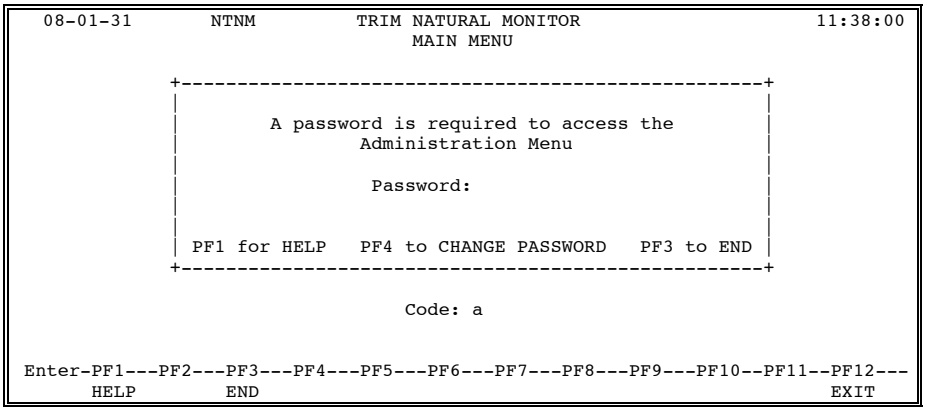
Note: A password is required to access TNM Administration.

All TNM Administration functions that are available on-line are also available in batch with the exception of the Define Data Collection Parameters function. Executing Administration functions in batch is recommended when functions access large amounts of data. The Batch Administration Functions are described in ***Section V.10 Batch TNM Administration Functions*** of the ***TRIM Installation and Operations Manual***.

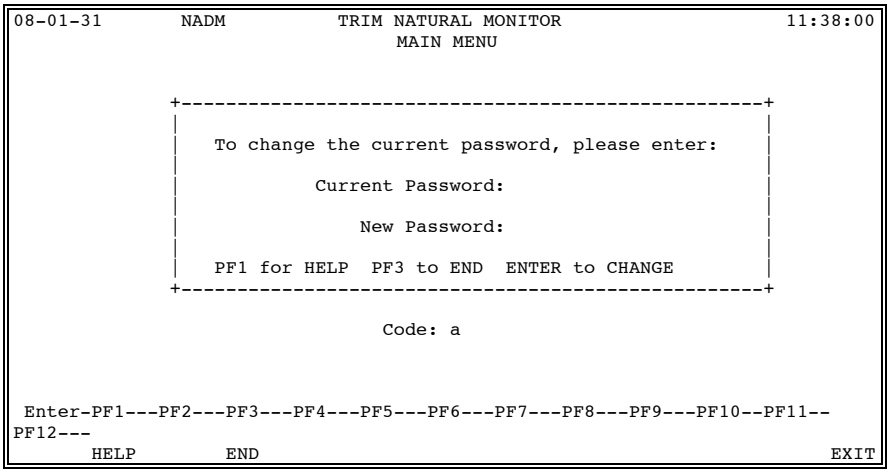
The Administration menu may be invoked by entering "A" in the Enter Code field on the TNM Main Menu or the direct command NADM on any RTM screen.



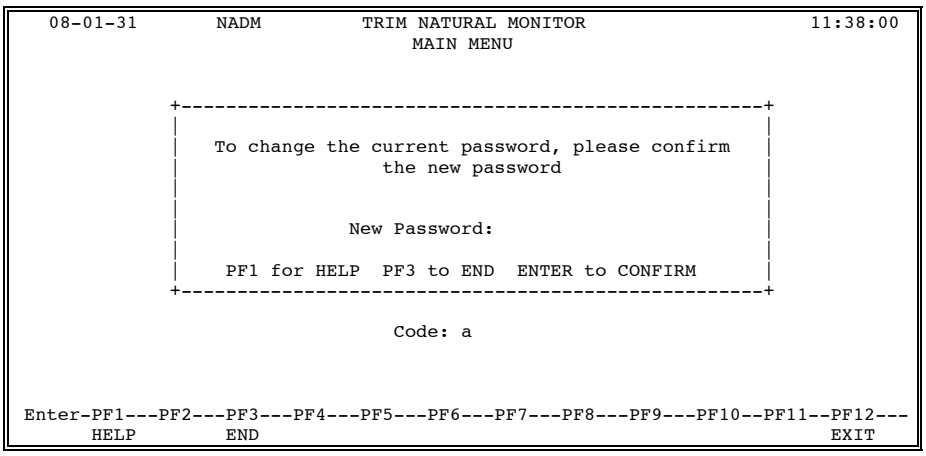
After entering "A" in the Enter Code field on the TNM Main Menu or the direct command NADM on any screen, the password input window is displayed. Users may enter a password, change the current password (PF4), or exit the password input window (PF3).



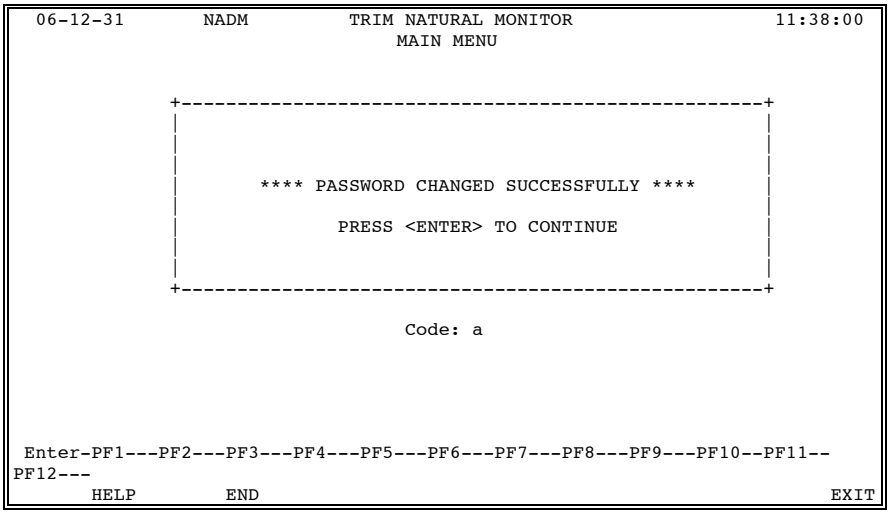
To change the password, enter the current password and the new password in the appropriate fields. The passwords will not appear on the screen.



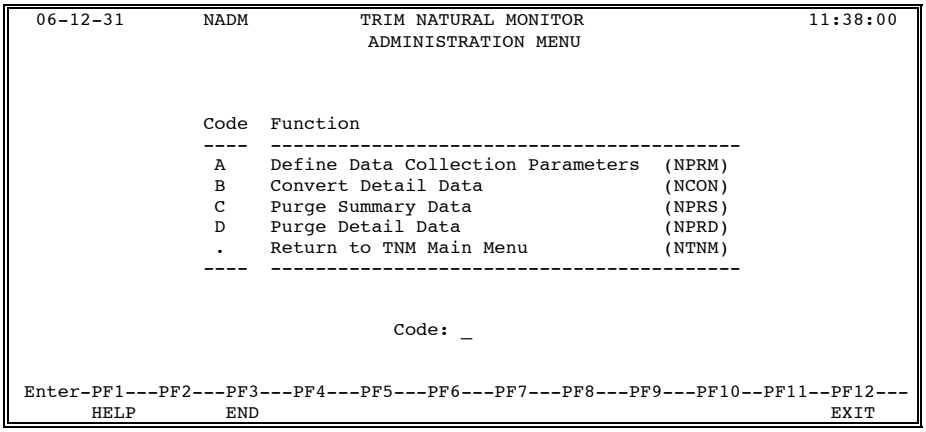
After the current and new passwords have been entered, a confirmation window is displayed. To confirm the new password, enter the new password and press Enter. The password will not appear on the screen.



After the new password has been confirmed, the following message window is displayed.



Once the current password is entered, the TNM Administration menu is displayed.



Field	Description
ENTER CODE	The function to be executed. Valid values are as follows: **A** **Define Data Collection Parameters** Updates TNM parameters used to select Detail and Summary data to be collected by TNM and stored in the TNM file. **B** **Convert Detail Data** Expands Detail data records to be included in Detail reports. **C** **Purge Summary Data** Deletes obsolete Summary data from the TNM file. **D** **Purge Detail Data** Deletes obsolete Detail data from the TNM file. **.** **Return to TNM Main Menu** Exits the TNM Administration menu, and returns to the TNM Main Menu.

The following PF-keys are provided for the TNM Administration menu:

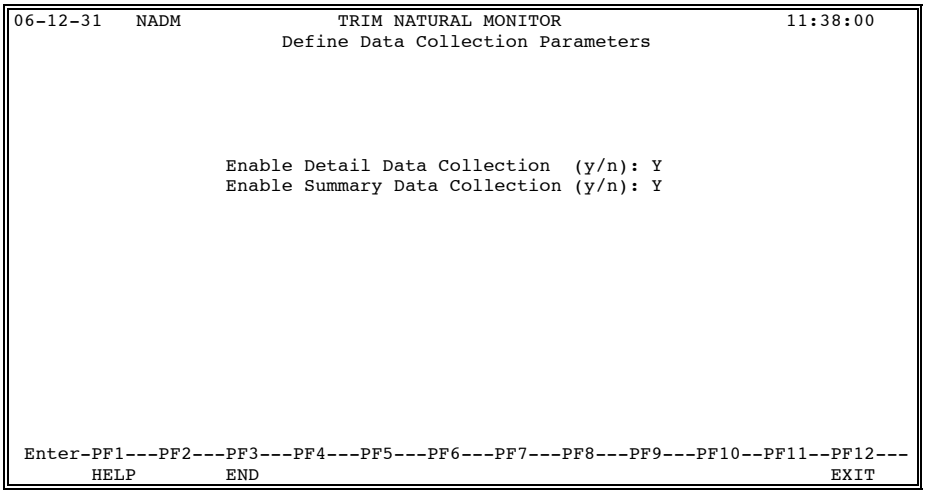
PF-key	Function	Description
PF1	HELP	Provides information about the TNM Administration menu.
PF3	END	Exits the TNM Administration menu, and returns to the TNM Main Menu.
PF12	EXIT	Exits TNM, and returns to the NATURAL Main Menu.

II.16.2.2 Define Data Collection Parameters

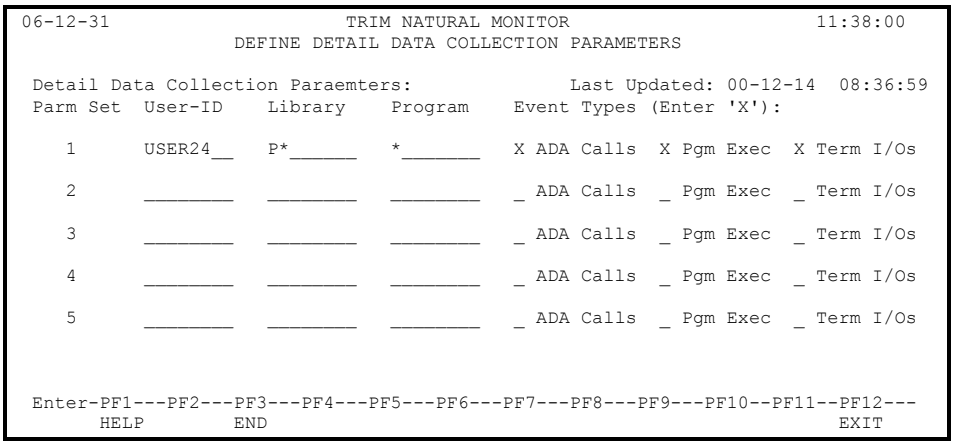
The Define Data Collection Parameters function allows users to define and update TNM parameters used to select data to be stored in the TNM file. There are two types of collection parameters, Enable Detail Data Collection and Enable Summary Data Collection.

Note: TNM does not collect summary or detail data on programs executed in the TRMV620 library or any library with the prefix SYS with the exception of the SYSTEM library.

The Define Data Collection Parameters input screen may be viewed by entering "A" on the Administration menu or the direct command NPRM on any RTM screen.



Field	Description	
Enable Detail Data Collection	Y	Activates detail data collection
	N	Does not collect detail data
Enable Summary Data Collection	Y	Activates summary data collection
	N	Does not collect summary data



Field	Description
Last Supplied (supplied)	Identifies the date and time that the data collection parameters were last updated.
Parm Set (supplied)	Identifies the parameter set number. TNM allows up to 5 sets of Detail parameters to be specified. Each set of parameters includes a User-ID, library, program, and event types. An event is only selected to be written to the TNM file for reporting if it matches all of the criteria in a parameter set. At least one parameter set must be specified to collect detail data.
User-ID (optional)	Limits Detail data collection to the specified User-ID or mask. If a User-ID is entered in this field, a library and a program must be entered in the appropriate fields of the same parameter set.
Library (optional)	Limits Detail data collection to the specified library or mask. This field is required if a User-ID is entered in the User-ID field of the same parameter set.
Program (optional)	Limits Detail data collection to the specified program or mask. This field is required if a User-ID is entered in the User-ID field of the same parameter set.
Event Types (required)	Limits Detail data collection to the specified event types. If no event types are selected, no data will be collected.

Note: At least one event type must be selected to collect detail data.

Note: The Define Detail Data Collection Parameters screen supports the following mask options for the User-ID, Library, and Program fields:

"*" will match any characters in the remainder of the string.

"?" will match any single character in the same position.

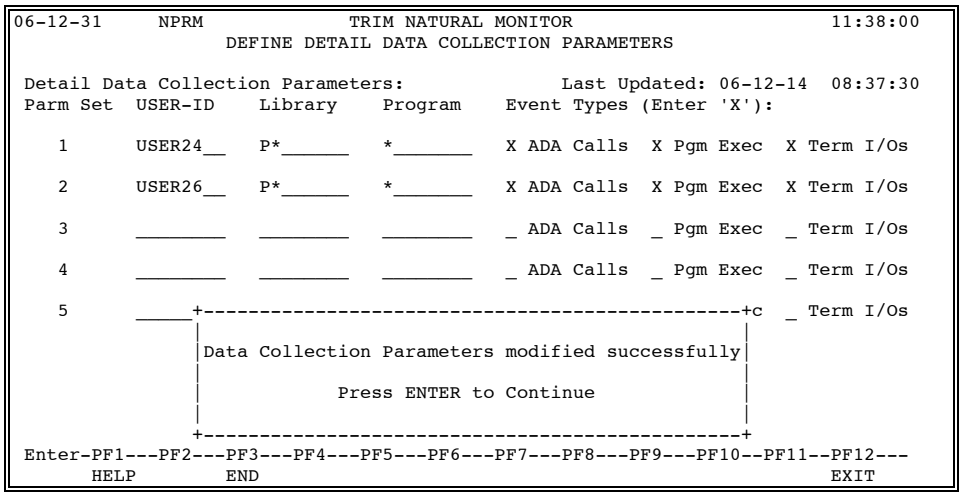
"." will match any numeric character in the same position.

"@" will match any non-numeric character in the same position.

The following PF-keys are provided for the input screen:

PF-key	Function	Description
PF1	HELP	Provides information about the input screen.
PF3	END	Returns to the TNM Administration menu.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

After the required information has been entered on the Define Data Collection Parameters input window, a message window is displayed that indicates the data collection parameters have been modified successfully.



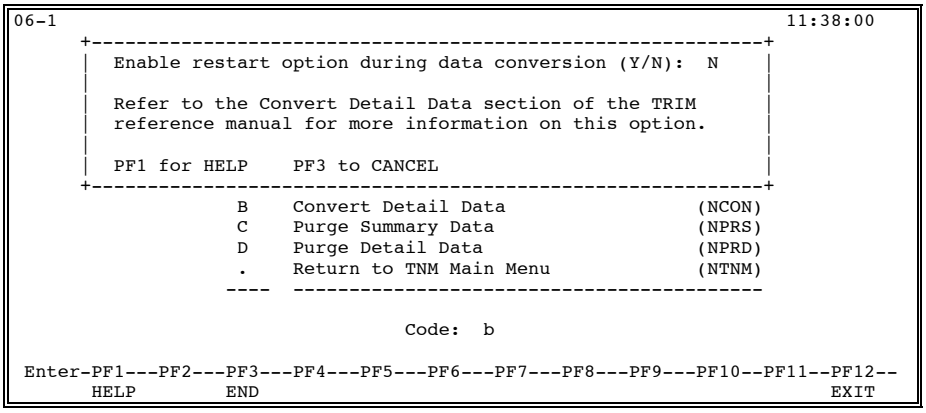
II.16.2.3 Convert Detail Data

TNM holds up to 50 recorded events for each user at any one time. When the 50th event is recorded or after a user-defined amount of time (default is 3 minutes), TNM creates one record containing those 50 events and stores it in the TNM file as non-converted data. This process is repeated as necessary. The Convert Detail Data function expands non-converted data in the TNM file into 50 separate records, which can then be included in Detail reports.

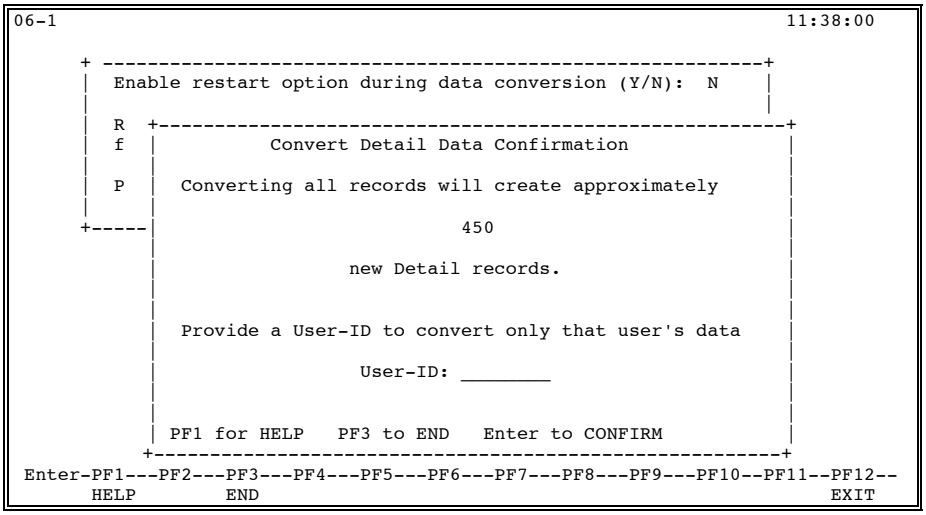
The Convert Detail Data input window may be invoked by entering "B" on the Administration menu or the direct command NCON on any RTM screen.

A window is displayed prompting to enable the restart option during data conversion. The Enable Restart Option allows users to choose to convert data most efficiently by not keeping track of the last record converted. Specifying 'N' will cause duplicate records to be created if the data conversion process is restarted due to an error. Specifying 'Y' will cause TNM to keep track of the last record converted. This will prevent duplicate detail records from being created if the data conversion process is restarted due to an error.

Entering 'Y' in this field is only necessary for sites that anticipate having to restart the data conversion process.



The next screen will allow the user to convert detail data by user-ID. If you do not specify a user-ID, detail data will be converted for all user-IDs.

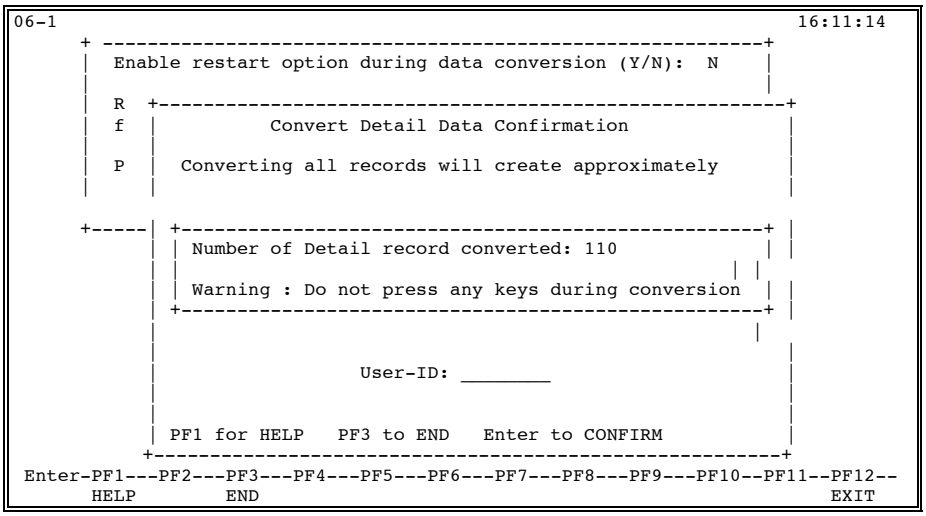


Field	Description
User-ID (optional)	Limits the conversion of Detail records to the specified User-ID.

The following PF-keys are provided for the input window:

PF-key	Function	Description
PF1	HELP	Provides information about the input window.
PF3	END	Returns to the TNM Administration menu.

After the required information has been entered in the Convert Detail Data Conversion input window, a message window that tallies (in multiples of 10) how many Detail records have been converted is displayed. If the number of records to be converted is less than 10, this window is not displayed.



After the Detail data conversion is complete, a message indicating the number of Detail records converted is displayed in the top left corner of the TNM Administration menu.

Warning: Pressing any keys during the conversion process will result in a NATURAL error. The conversion process may be restarted if this occurs. If the Enable Restart Option During Data Conversion is in use, duplicate data records may be created when restarting the conversion process.

II.16.2.4 Purge Summary Data

The Purge Summary Data functions allow users to delete obsolete summary data from the TNM file. The Purge Summary Data menu is invoked by entering "C" on the Administration menu or the direct command NPRS on any RTM screen.

```
06-12-31       NPRS          TRIM NATURAL MONITOR                    11:38:00
                           PURGE SUMMARY DATA MENU




              Code   Description
              ----   -------------------------------------------
               A     Purge Program Summary Data By Date    (NPDT)
               B     Purge Program Summary Data By Days    (NPDY)
               C     Purge Program Summary Data By Library (NPLI)
               D     Purge User Summary Data By Date       (NUDT)
               E     Purge User Summary Data By Days       (NUDY)
               F     Purge User Summary Data By User-ID    (NUUS)
               .     Return to TNM Administration Menu     (NADM)
              ----   -------------------------------------------


                                   Code: _

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

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows: **A** **Purge Program Summary Data By Date** Deletes Program Summary data collected on or before a specified date. **B** **Purge Program Summary Data By Days** Deletes Program Summary data based on the number of days Program Summary data is to be retained. **C** **Purge Program Summary Data By Library** Deletes Program Summary data belonging to a specified library. **D** **Purge User Summary Data By Date** Deletes User Summary data collected on or before a specified date. **E** **Purge User Summary Data By Days** Deletes User Summary data based on the number of days User Summary data is to be retained.

(continued from previous page)

Field	Description
	F **Purge User Summary Data By User-ID** Deletes User Summary data belonging to a specified User-ID.
	. **Return to TNM Administration Menu** Exits the Purge Summary Data menu, and returns to the TNM Administration menu.

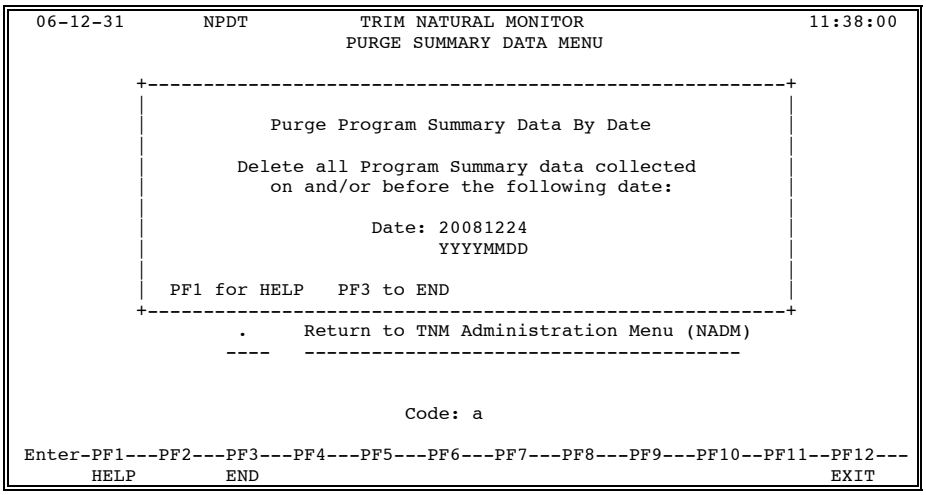
The following PF-keys are provided for the menu screen:

PF-key	Function	Description
PF1	HELP	Provides information about the menu screen.
PF3	END	Returns to the TNM Administration menu.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

II.16.2.4.1 Purge Program Summary Data By Date

The Purge Program Summary Data By Date function allows users to delete all Program Summary data collected on or before a specified date.

The Purge Program Summary Data By Date input window may be displayed by entering "A" on the Purge Summary Data menu or the direct command NPDT on any RTM screen.

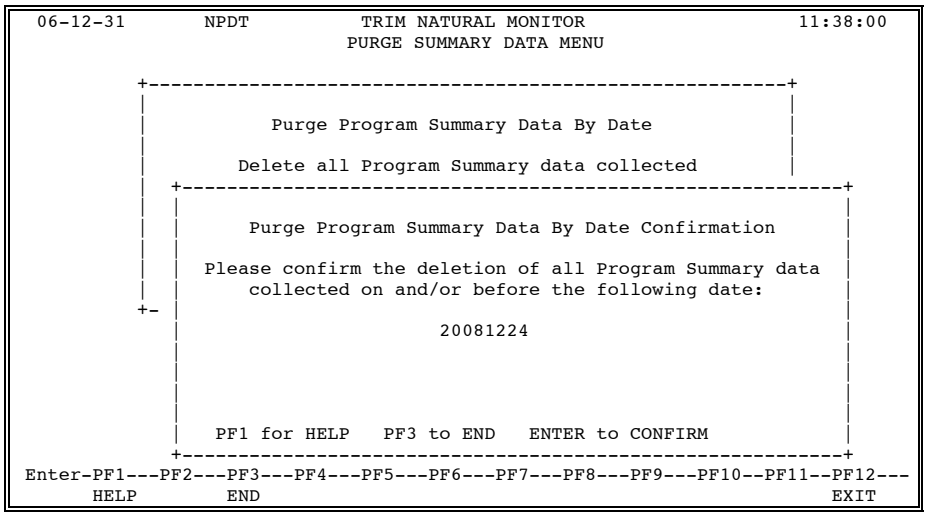


Field	Description
Date (required)	Indicates all Program Summary data collected on or before this date will be deleted. (Default date is one week prior to the current date.)

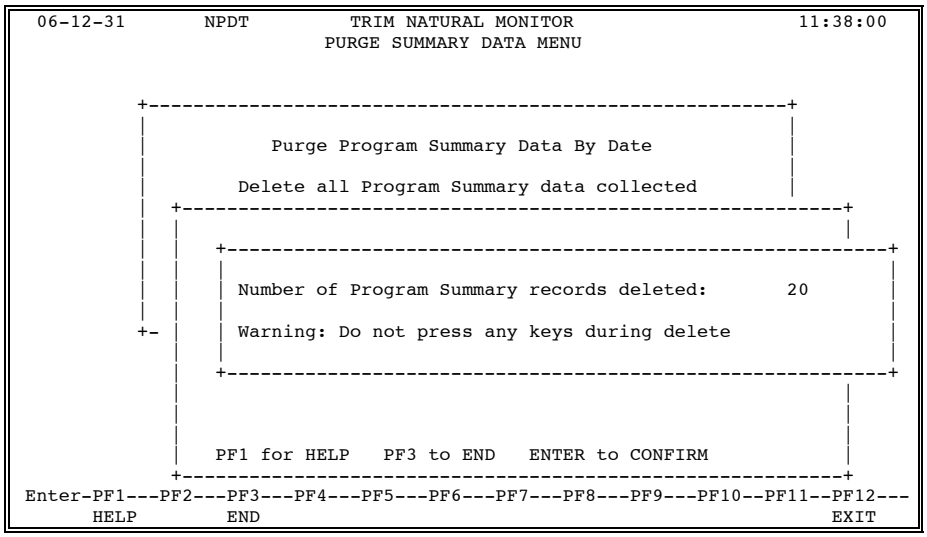
The following PF-keys are provided for the input and confirmation windows:

PF-key	Function	Description
PF1	HELP	Provides information about the input and confirmation windows.
PF3	END	Returns to the Purge Summary Data menu.

After the required information has been entered on the Purge Program Summary Data By Date input window, a confirmation window is displayed. To confirm the purge request, press Enter.



After the purge request has been confirmed, a message window that tallies (in multiples of 10) how many Program Summary records have been deleted is displayed. If the number of records to be deleted is less than 10, this window is not displayed.



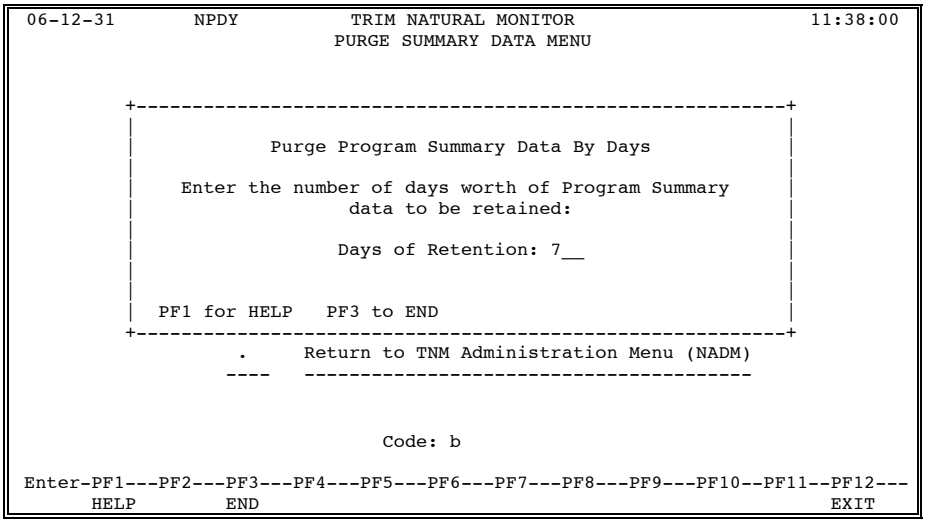
After the specified data has been purged, a message indicating the number of Program Summary records deleted is displayed in the top left corner of the Purge Summary Data menu.

Warning: Pressing any keys during the deletion process will result in a NATURAL error. If this occurs, the deletion process may be restarted from the point where the error occurred.

II.16.2.4.2 Purge Program Summary Data By Days

The Purge Program Summary Data By Days function allows users to delete Program Summary data based on the number of days that Program Summary data is to be retained. (For example, if the default value of 7 days is used, data collected within the past 7 days will be retained. All other data will be deleted.)

The Purge Program Summary Data By Days input window may be displayed by entering "B" on the Purge Summary Data menu or the direct command NPDY on any RTM screen.

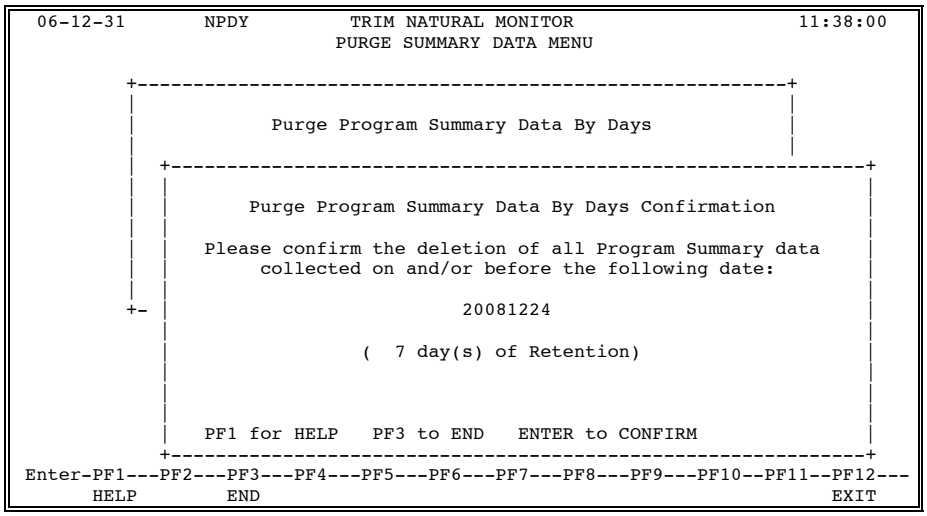


Field	Description
Days Of Retention (required)	The number of days for which Program Summary data is to be retained. Accepts values between 0 and 999. (Defaults to 7 days.)

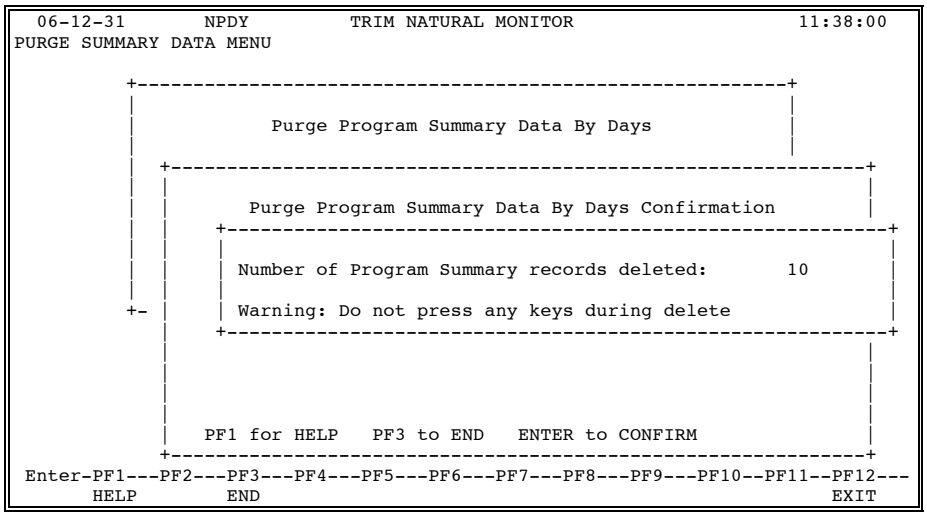
The following PF-keys are provided for the input and confirmation windows:

PF-key	Function	Description
PF1	HELP	Provides information about the input and confirmation windows.
PF3	END	Returns to the Purge Summary Data menu.

After the required information has been entered on the Purge Program Summary Data By Days input window, a confirmation window is displayed. To confirm the purge request, press Enter.



After the purge request has been confirmed, a message window that tallies (in multiples of 10) how many Program Summary records have been deleted is displayed. If the number of records to be deleted is less than 10, this window is not displayed.



After the specified data has been purged, a message indicating the number of Program Summary records deleted is displayed in the top left corner of the Purge Summary Data menu.

Warning:	Pressing any keys during the deletion process will result in a NATURAL error. If this occurs, the deletion process may be restarted from the point where the error occurred.

II.16.2.4.3 Purge Program Summary Data By Library

The Purge Program Summary Data By Library function allows users to delete Program Summary data belonging to a specified library.

The Purge Program Summary Data By Library input window may be displayed by entering "C" on the Purge Summary Data menu or the direct command NPLI on any RTM screen.

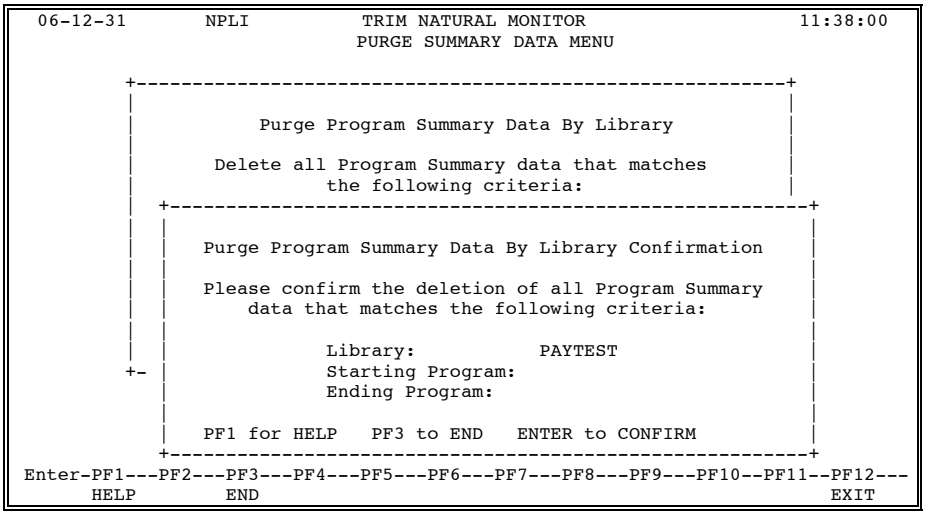
```
 06-12-31       NPLI          TRIM NATURAL MONITOR                    11:38:00
                            PURGE SUMMARY DATA MENU

         +-----------------------------------------------------------+
         |                                                           |
         |           Purge Program Summary Data By Library           |
         |                                                           |
         |       Delete all Program Summary data that matches        |
         |                 the following criteria:                   |
         |                                                           |
         |              Library:              ________               |
         |                                                           |
         |              Starting Program:     ________               |
         |              Ending Program:       ________               |
         |                                                           |
         |                                                           |
         |   PF1 for HELP   PF3 to END                               |
         +-----------------------------------------------------------+

                                 Code: c

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

Field	Description
Library (required)	The library to which the Program Summary data belongs. If the Starting Program and Ending Program fields are left blank, all Program Summary Data belonging to the specified library will be deleted.
Starting Program (optional)	Indicates Program Summary data will be deleted beginning with the program entered in this field. If this field is left blank, data deletion will begin with the first program of the specified library.
Ending Program (optional)	Indicates Program Summary data will be deleted until the program specified in this field is reached. If this field is left blank, data deletion will stop at the last program of the specified library.

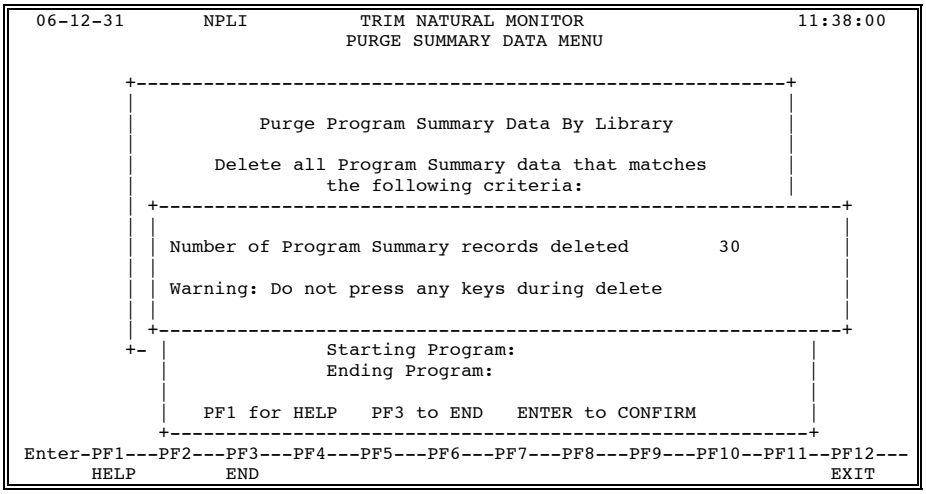
The following PF-keys are provided for the input and confirmation windows:

PF-key	Function	Description
PF1	HELP	Provides information about the input and confirmation windows.
PF3	END	Returns to the Purge Summary Data menu.

After the required information has been entered on the Purge Program Summary By Library input window, a confirmation window is displayed. To confirm the purge request, press Enter.



After the purge request has been confirmed, a message window that tallies (in multiples of 10) how many Program Summary records have been deleted is displayed. If the number of records to be deleted is less than 10, this window is not displayed.



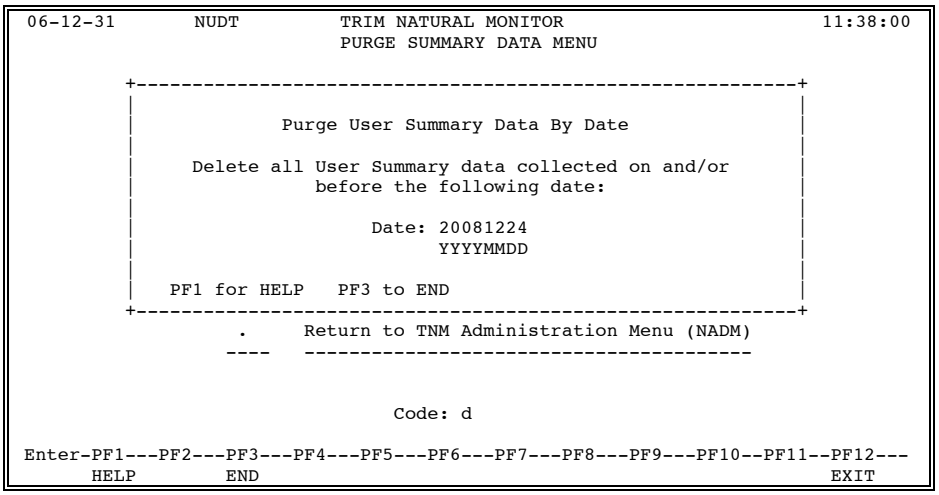
After the specified data has been purged, a message indicating the number of Program Summary records deleted is displayed in the top left corner of the Purge Summary Data menu.

Warning: Pressing any keys during the deletion process will result in a NATURAL error. If this occurs, the deletion process may be restarted from the point where the error occurred.

II.16.2.4.4 Purge User Summary Data By Date

The Purge User Summary Data By Date function allows users to delete User Summary data collected on or before a specified date.

The Purge User Summary Data By Date input window may be displayed by entering "D" on the Purge Summary Data menu or the direct command NUDT on any RTM screen.

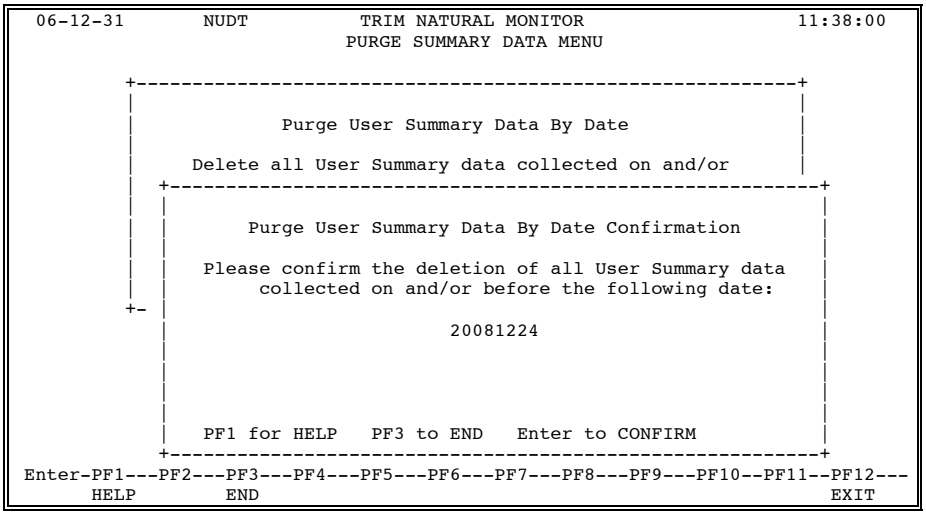


Field	Description
Date (required)	Indicates all User Summary data collected on or before this date will be deleted. (Default date is one week prior to the current date.)

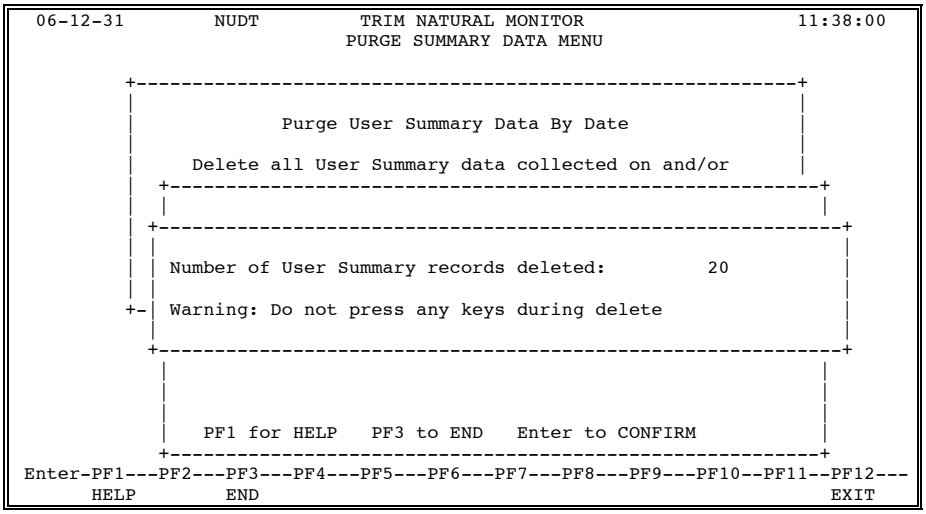
The following PF-keys are provided for the input and confirmation windows:

PF-key	Function	Description
PF1	HELP	Provides information about the input and confirmation windows.
PF3	END	Returns to the Purge Summary Data menu.

After the required information has been entered on the Purge User Summary By Date input window, a confirmation window is displayed. To confirm the purge request, press Enter.



After the purge request has been confirmed, a message window that tallies (in multiples of 10) how many User Summary records have been deleted is displayed. If the number of records to be deleted is less than 10, this window is not displayed.



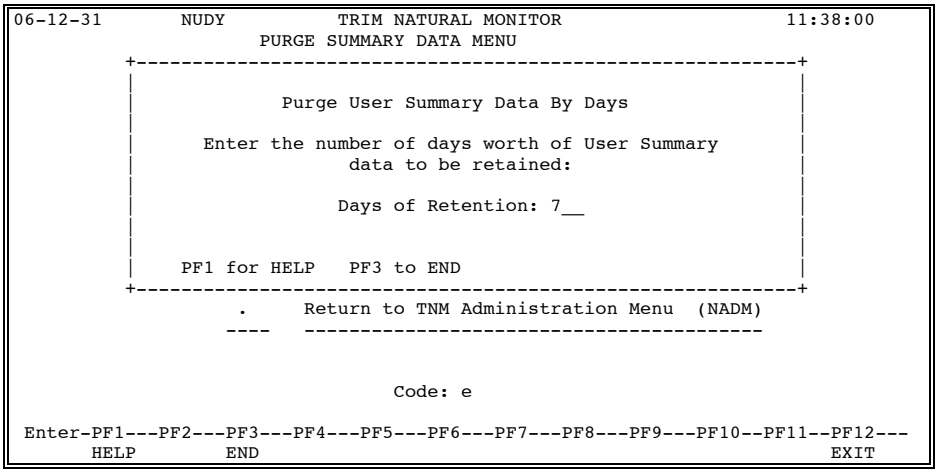
After the specified data has been purged, a message indicating the number of User Summary records deleted is displayed in the top left corner of the Purge Summary Data menu.

Warning: Pressing any keys during the deletion process will result in a NATURAL error. If this occurs, the deletion process may be restarted from the point where the error occurred.

II.16.2.4.5 Purge User Summary Data By Days

The Purge User Summary Data By Days function allows users to delete User Summary data based on the number of days the User Summary data is to be retained. (For example, if the default value of 7 days is used, data collected within the past 7 days will be retained. All other data will be deleted.)

The Purge User Summary Data By Days input window may be displayed by entering "E" on the Purge Summary Data menu or the direct command NUDY on any RTM screen.

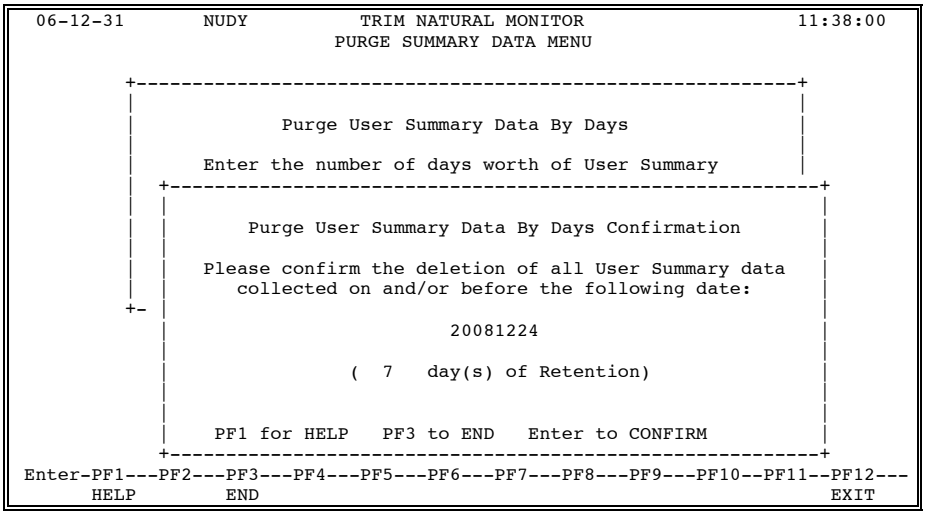


Field	Description
Days Of Retention (required)	The number of days for which User Summary data is to be retained. Accepts values between 0 and 999. (Defaults to 7 days.)

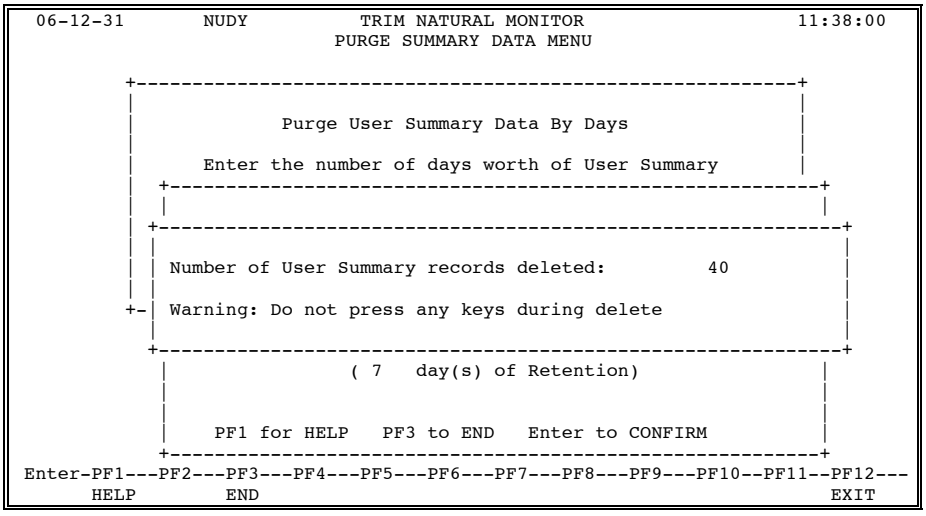
The following PF-keys are provided for the input and confirmation windows:

PF-key	Function	Description
PF1	HELP	Provides information about the input and confirmation windows.
PF3	END	Returns to the Purge Summary Data menu.

After the required information has been entered on the Purge User Summary By Days input window, a confirmation window is displayed. To confirm the purge request, press Enter.



After the purge request has been confirmed, a message that tallies (in multiples of 10) how many User Summary records have been deleted is displayed. If the number of records to be deleted is less than 10, this window is not displayed.



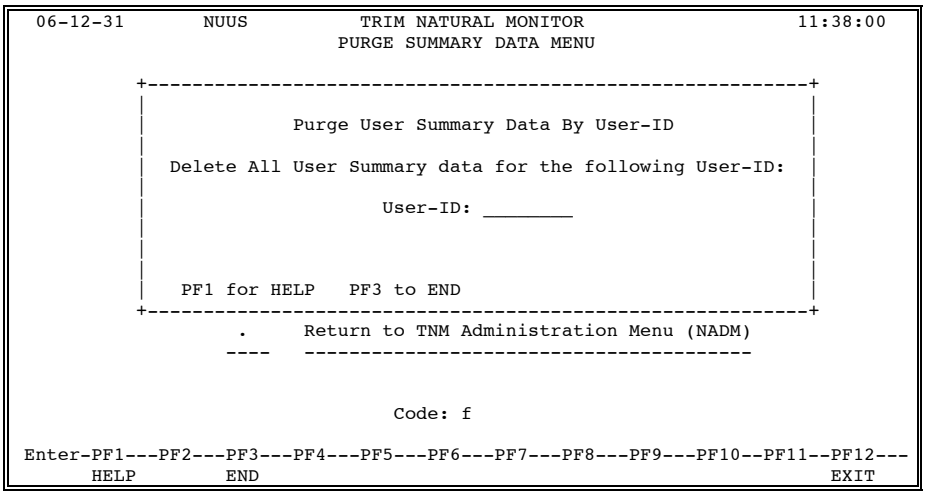
After the specified data has been purged, a message indicating the number of User Summary records deleted is displayed in the top left corner of the Purge Summary Data menu.

Warning: Pressing any keys during the deletion process will result in a NATURAL error. If this occurs, the deletion process may be restarted from the point where the error occurred.

II.16.2.4.6 Purge User Summary Data By User-ID

The Purge User Summary Data By User-ID function allows users to delete all User Summary data belonging to a specified User-ID.

The Purge User Summary Data By User-ID input window may be displayed by entering "F" on the Purge Summary Data menu or the direct command NUUS on any RTM screen.

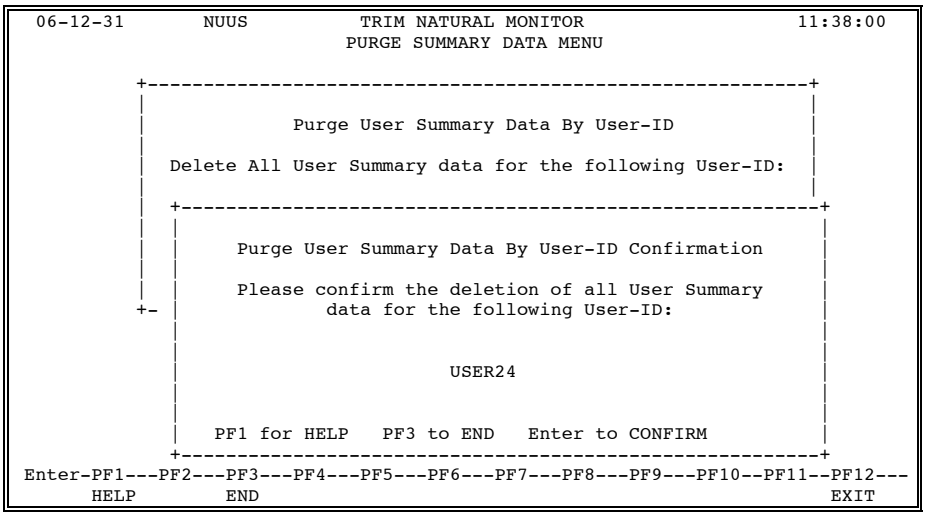


Field	Description
User-ID (required)	User Summary data belonging to the specified User-ID will be deleted.

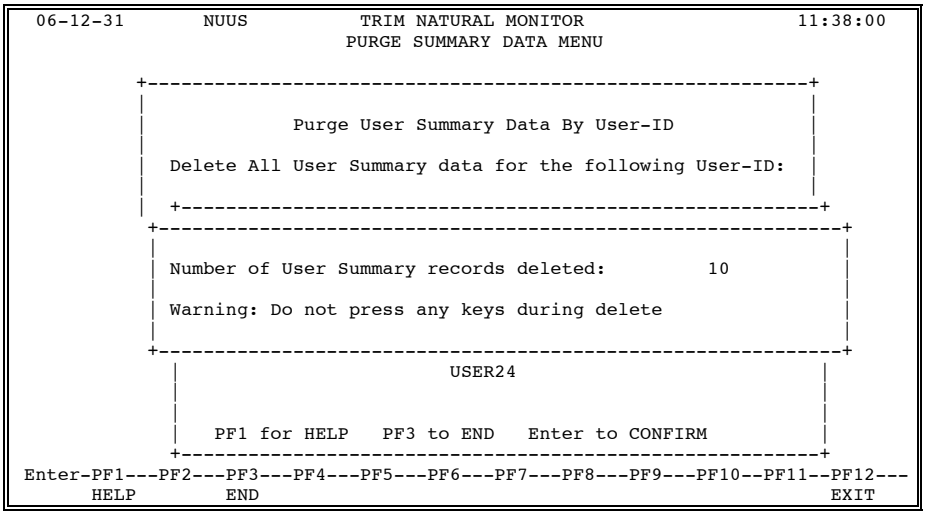
The following PF-keys are provided for the input and confirmation windows:

PF-key	Function	Description
PF1	HELP	Provides information about the input and confirmation windows.
PF3	END	Returns to the Purge Summary Data menu.

After the required information has been entered on the Purge User Summary Data By User-ID input window, a confirmation window is displayed. To confirm the purge request, press Enter.



After the purge request has been confirmed, a message window that tallies (in multiples of 10) how many User Summary records have been deleted is displayed. If the number of records to be deleted is less than 10, this window is not displayed.



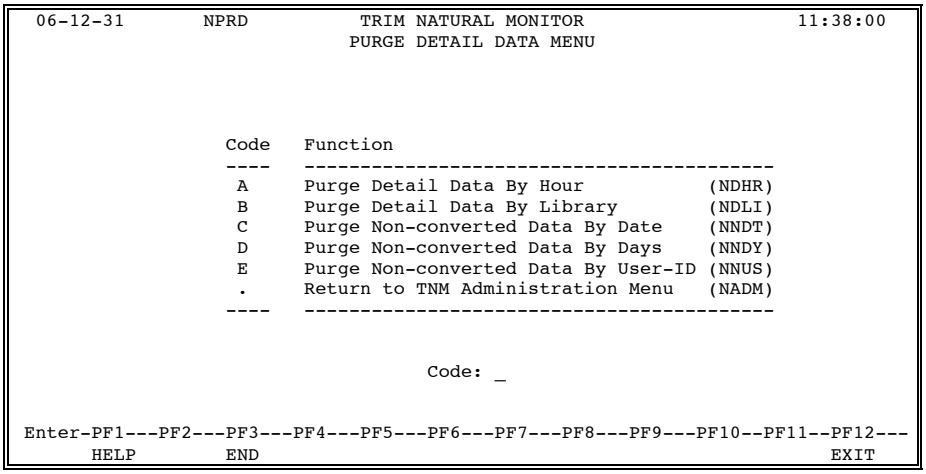
After the specified data has been purged, a message indicating the number of User Summary records deleted is displayed in the top left corner of the Purge Summary Data menu.

Warning: Pressing any keys during the deletion process will result in a NATURAL error. If this occurs, the deletion process may be restarted from the point where the error occurred.

II.16.2.5 Purge Detail Data Menu

The Purge Detail Data function allows users to delete obsolete Detail data from the TNM file.

The Purge Detail Data menu may be invoked by entering "D" on the Administration menu or the direct command NPRD on any RTM screen.



Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows: **A** **Purge Detail Data By Hour** Deletes Detail data based on the number of hours Detail data is to be retained. **B** **Purge Detail Data By Library** Deletes Detail data belonging to a specified library. **C** **Purge Non-converted Data By Date** Deletes all non-converted data collected on or before a specified date. **D** **Purge Non-converted Data By Days** Deletes non-converted data based on the number of days the non-converted data is to be retained. **E** **Purge Non-converted Data By User-ID** Deletes all non-converted data belonging to a specified User-ID. **.** **Return to TNM Administration Menu** Exits the Purge Detail Data menu, and returns to the TNM Administration menu.

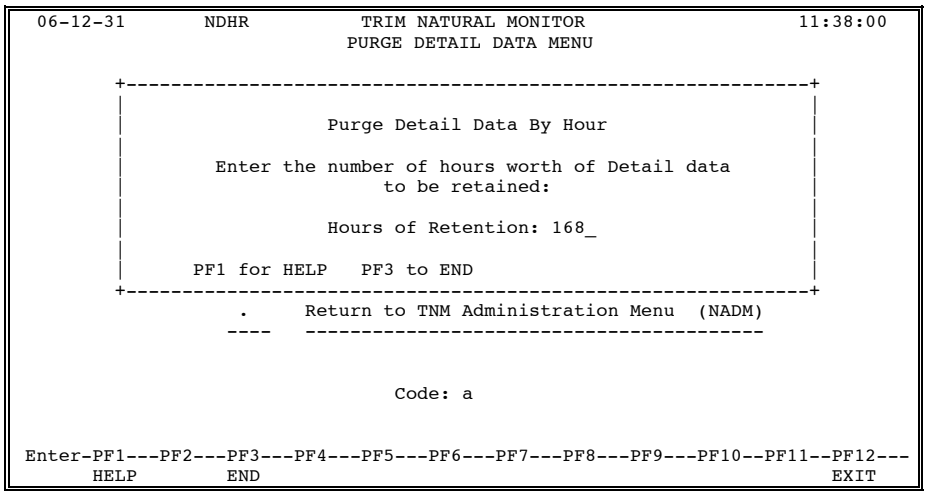
The following PF-keys are provided for the menu screen:

PF-key	Function	Description
PF1	HELP	Provides information about the menu screen.
PF3	END	Returns to the TNM Administration menu.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

II.16.2.5.1 Purge Detail Data By Hour

The Purge Detail Data By Hour function allows users to delete Detail data based on the number of hours the Detail data is to be retained.

The Purge Detail Data By Hour input window may be displayed by entering "A" on the Purge Detail Data menu or the direct command NDHR on any RTM screen.

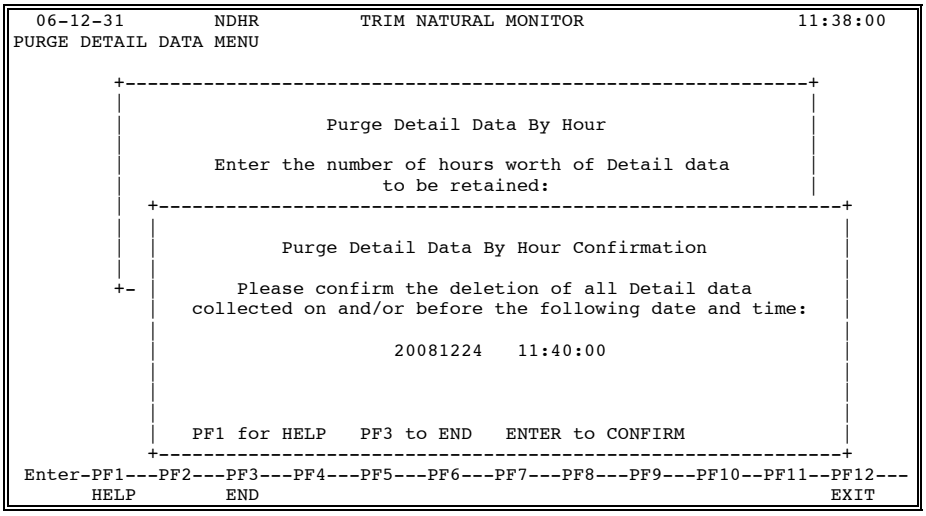


Field	Description
Hours Of Retention (required)	The number of hours for which Detail data is to be retained. Accepts values between 0 and 9999. (Defaults to 168 hours.)

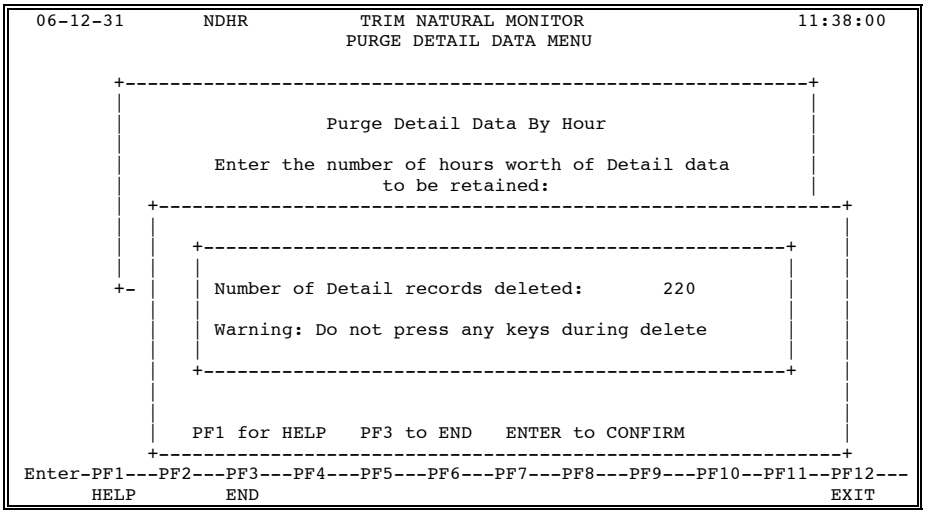
The following PF-keys are provided for the input and confirmation windows:

PF-key	Function	Description
PF1	HELP	Provides information about the input and confirmation windows.
PF3	END	Returns to the Purge Detail Data menu.

After the required information has been entered on the Purge Detail Data By Hour input window, a confirmation window is displayed. To confirm the purge request, press Enter.



After the purge request has been confirmed, a message window that tallies (in multiples of 10) how many Detail records have been deleted is displayed. If the number of records to be deleted is less than 10, this window is not displayed.



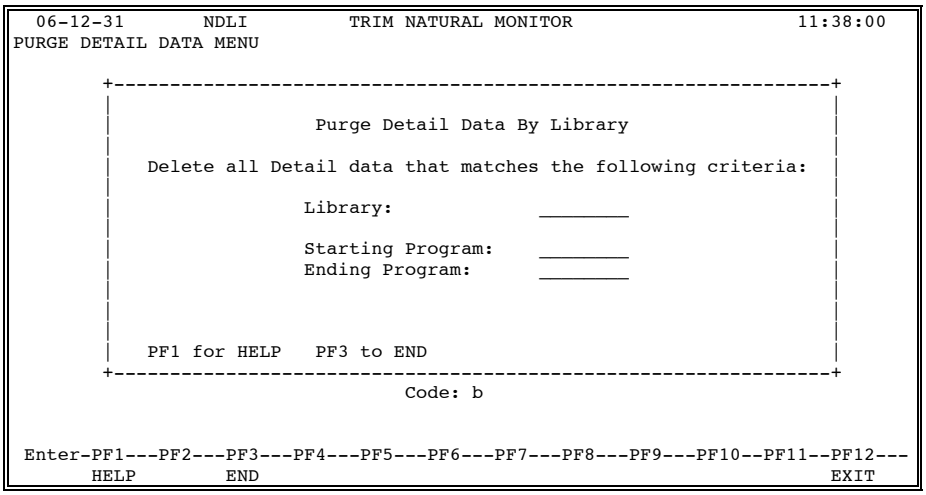
After the specified data has been purged, a message indicating the number of Detail records deleted is displayed in the top left corner of the Purge Detail Data menu.

Warning: Pressing any keys during the deletion process will result in a NATURAL error. If this occurs, the deletion process may be restarted from the point where the error occurred.

II.16.2.5.2 Purge Detail Data By Library

The Purge Detail Data By Library function allows users to delete Detail data belonging to a specified library.

The Purge Detail Data By Library input window may be displayed by entering "B" on the Purge Detail Data menu or the direct command NDLI on any RTM screen.

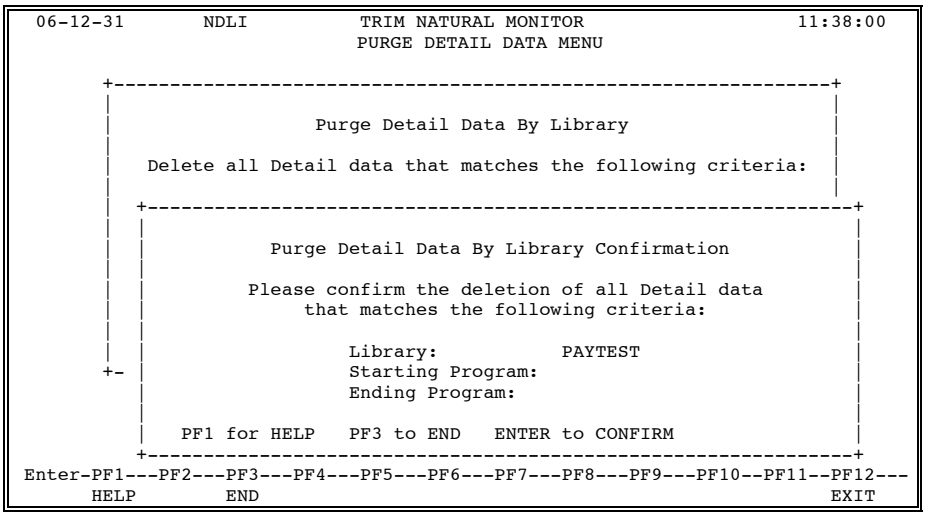


Field	Description
Library (required)	The library to which the Detail data belongs. If the Starting Program and Ending Program fields are left blank, all Program Summary Data in the specified library will be deleted.
Starting Program (optional)	Indicates Detail data will be deleted beginning with the program entered in this field. If this field is left blank, data deletion will begin with the first program of the specified library.
Ending Program (optional)	Indicates Detail data will be deleted until the program specified in this field is reached. If this field is left blank, data deletion will stop at the last program of the specified library.

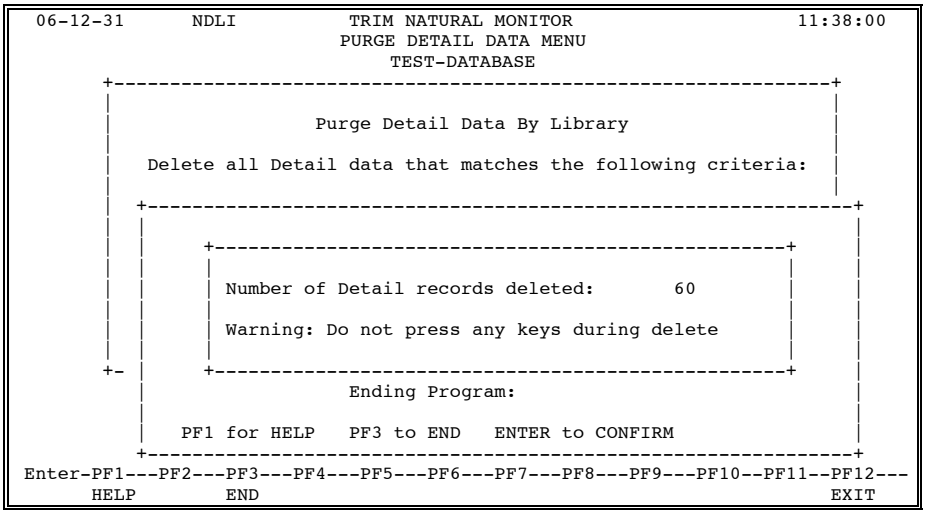
The following PF-keys are provided for the input and confirmation windows:

PF-key	Function	Description
PF1	HELP	Provides information about the input and confirmation windows.
PF3	END	Returns to the Purge Detail Data menu.

After the required information has been entered on the Purge Detail Data By Library input window, a confirmation window is displayed. To confirm the purge request, press Enter.



After the purge request has been confirmed, a message window that tallies (in multiples of 10) how many Detail records have been deleted is displayed. If the number of records to be deleted is less than 10, this window is not displayed.



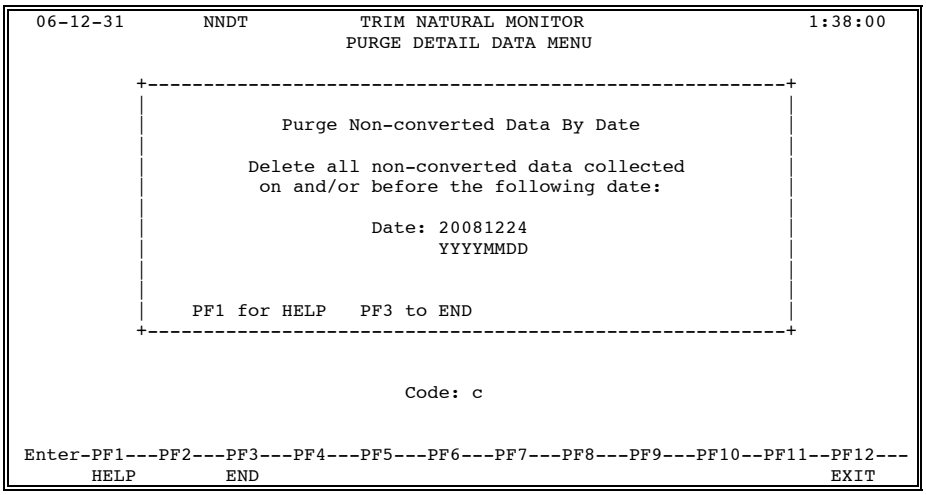
After the specified data has been purged, a message indicating the number of Detail records deleted is displayed in the top left corner of the Purge Detail Data menu.

Warning: Pressing any keys during the deletion process will result in a NATURAL error. If this occurs, the deletion process may be restarted from the point where the error occurred.

II.16.2.5.3 Purge Non-converted Data By Date

The Purge Non-converted Data By Date function allows users to delete all non-converted data collected on or before a specified date.

The Purge Non-converted Data By Date input window may be displayed by entering "C" on the Purge Detail Data menu or the direct command NNDT on any RTM screen.

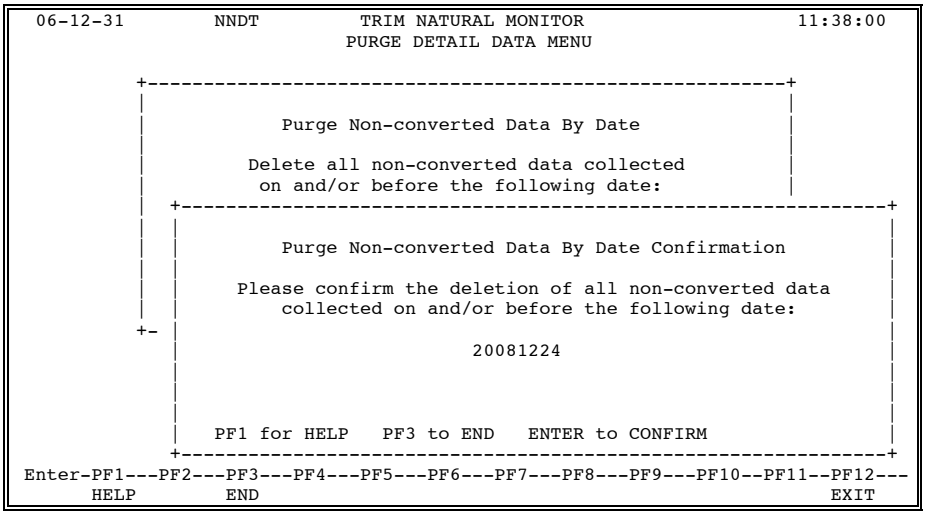


Field	Description
Date (required)	Indicates all non-converted data collected on or before this date will be deleted. (Default date is one week prior to the current date.)

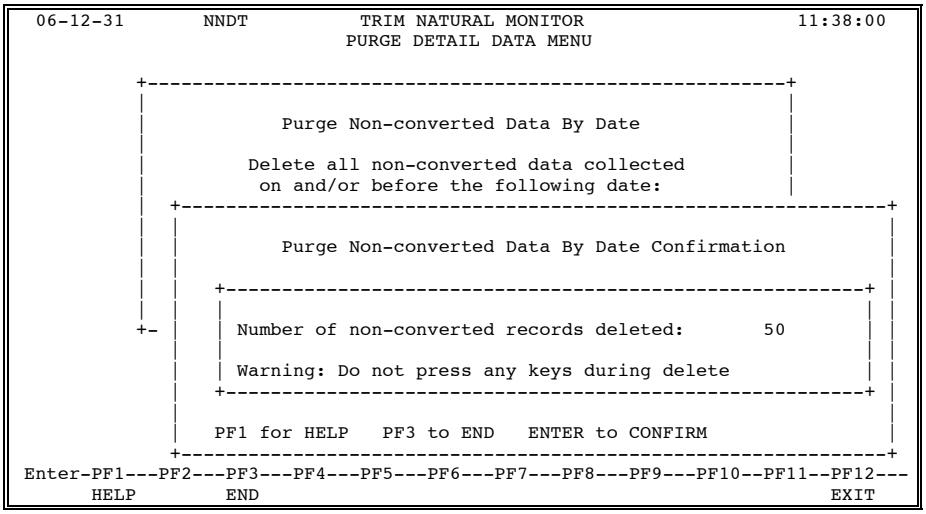
The following PF-keys are provided for the input and confirmation windows:

PF-key	Function	Description
PF1	HELP	Provides information about the input and confirmation windows.
PF3	END	Returns to the Purge Detail Data menu.

After the required information has been entered on the Purge Non-converted Data By Date input window, a confirmation window is displayed. To confirm the purge request, press Enter.



After the purge request has been confirmed, a message window that tallies (in multiples of 10) how many non-converted records have been deleted is displayed. If the number of records to be deleted is less than 10, this window is not displayed.



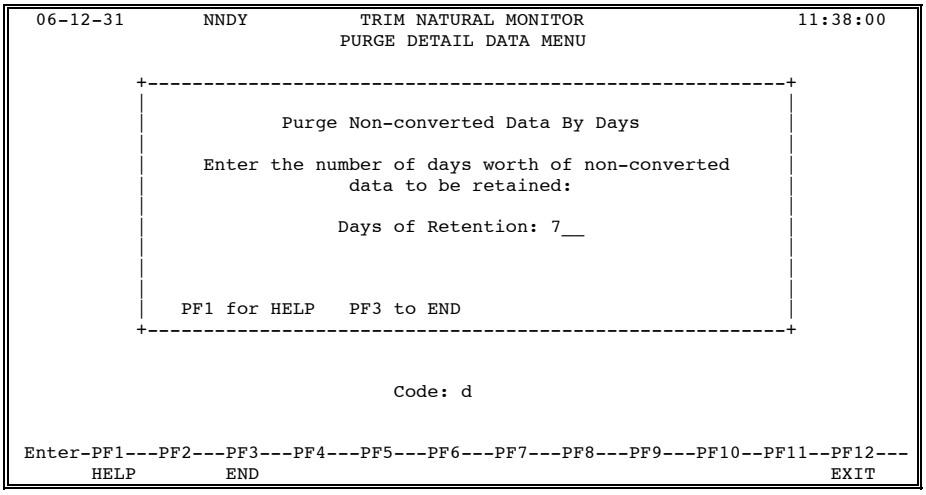
After the specified data has been purged, a message indicating the number of non-converted records deleted is displayed in the top left corner of the Purge Detail Data menu.

Warning: Pressing any keys during the deletion process will result in a NATURAL error. If this occurs, the deletion process may be restarted from the point where the error occurred.

II.16.2.5.4 Purge Non-converted Data By Days

The Purge Non-converted Data By Days function allows users to delete non-converted data based on the number of days the non-converted data is to be retained. (For example, if the default value of 7 days is used, data collected within the past 7 days will be retained. All other data will be deleted.)

The Purge Non-converted Data By Days input window may be displayed by entering "D" on the Purge Detail Data menu or the direct command NNDY on any RTM screen.

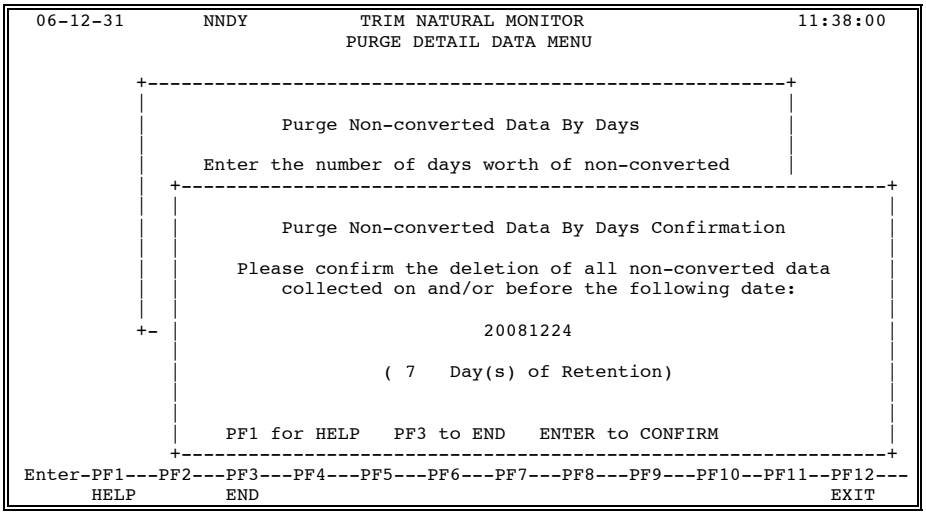


Field	Description
Days Of Retention (required)	The number of days for which non-converted data is to be retained. Accepts values between 0 and 999. (Defaults to 7 days.)

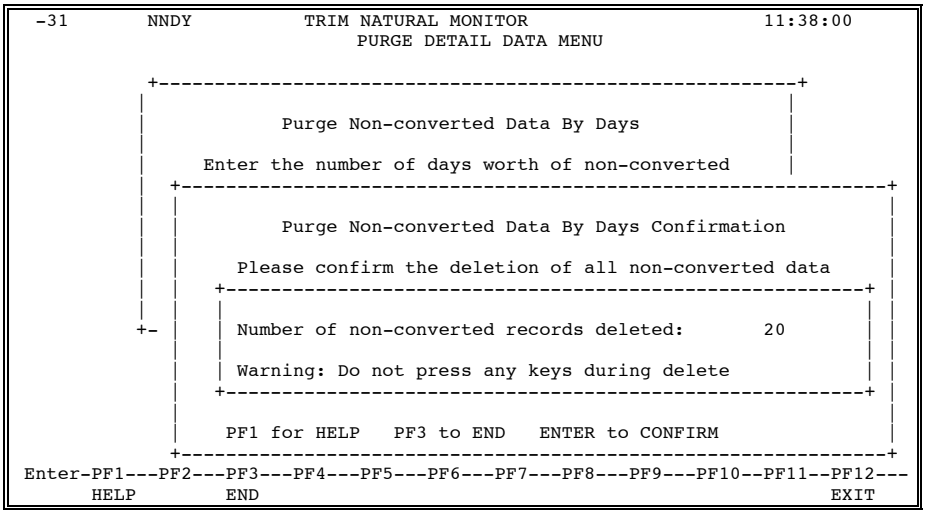
The following PF-keys are provided for the input and confirmation windows:

PF-key	Function	Description
PF1	HELP	Provides information about the input and confirmation windows.
PF3	END	Returns to the Purge Detail Data menu.

After the required information has been entered on the Purge Non-converted Data By Days input window, a confirmation window is displayed. To confirm the purge request, press Enter.



After the purge request has been confirmed, a message window that tallies (in multiples of 10) how many non-converted records have been deleted is displayed. If the number of records to be deleted is less than 10, this window is not displayed.



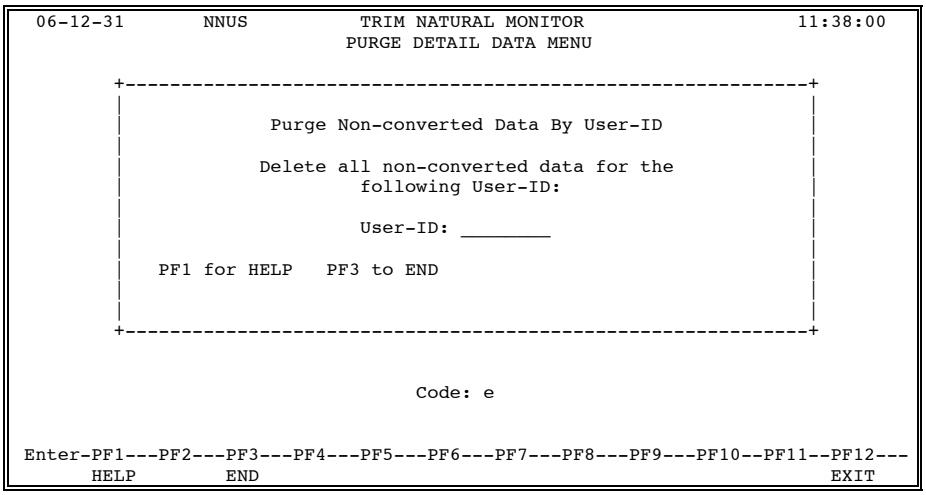
After the specified data has been purged, a message indicating the number of non-converted records deleted is displayed in the top left corner of the Purge Detail Data menu.

Warning: Pressing any keys during the deletion process will result in a NATURAL error. If this occurs, the deletion process may be restarted from the point where the error occurred.

II.16.2.5.5 Purge Non-converted Data By User-ID

The Purge Non-converted Data By User-ID function allows users to delete all non-converted data belonging to a specified User-ID.

The Purge Non-converted Data By User-ID input window may be displayed by entering "E" on the Purge Detail Data menu or the direct command NNUS on any RTM screen menu.

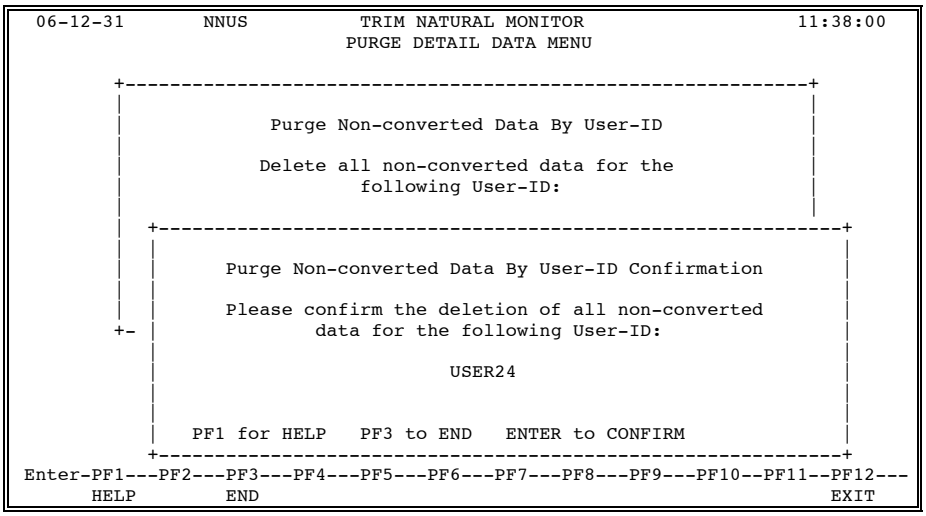


Field	Description
User-ID (required)	Non-converted data belonging to the specified User-ID will be deleted.

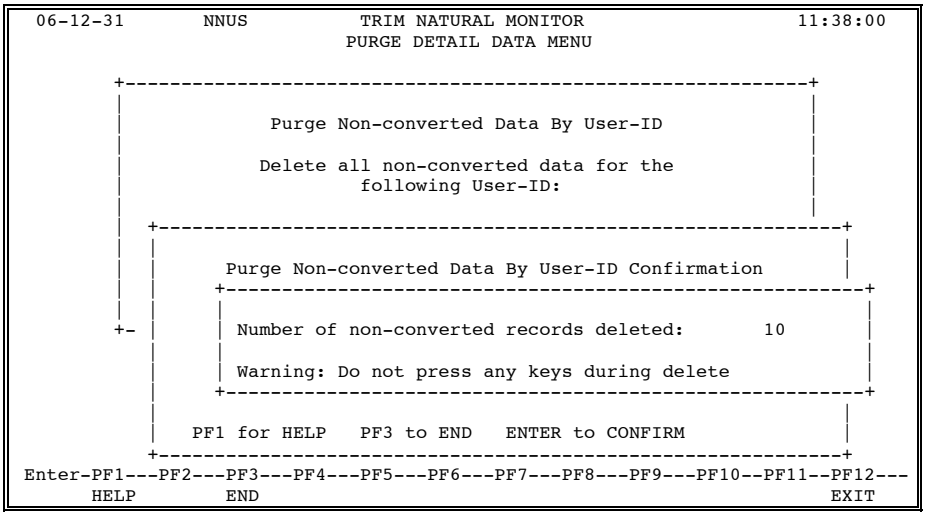
The following PF-keys are provided for the input and confirmation windows:

PF-key	Function	Description
PF1	HELP	Provides information about the input and confirmation windows.
PF3	END	Returns to the Purge Detail Data menu.

After the required information has been entered on the Purge Non-converted Data By User-ID input window, a confirmation window is displayed. To confirm the purge request, press Enter.



After the purge request has been confirmed, a message window that tallies (in multiples of 10) how many non-converted records have been deleted is displayed. If the number of records to be deleted is less than 10, this window is not displayed.



After the specified data has been purged, a message indicating the number of non-converted records deleted is displayed in the top left corner of the Purge Detail Data menu.

Warning: Pressing any keys during the deletion process will result in a NATURAL error. If this occurs, the deletion process may be restarted from the point where the error occurred.

II.16.3 Reporting

II.16.3.1 Introduction

TNM captures information about NATURAL activity through NATURAL user-exits, stores the data internally for a specified period of time, and periodically transmits it to the TNM file for future reporting. Two types of information are captured: summary and detail data.

This section is intended to guide users through the use of the TNM reports. An explanation, several uses, and an example are given for each report.

Summary Reporting

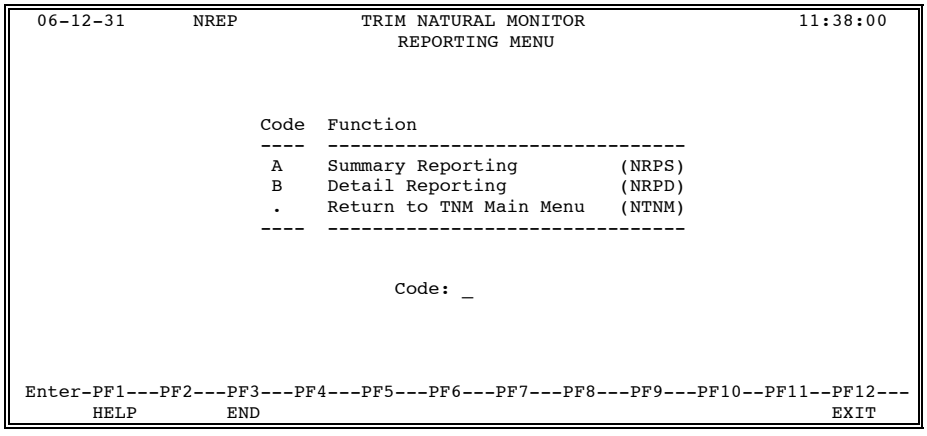
Summary Reports return summarized information on NATURAL activity. These reports can be used to quickly identify user and program activity. Problem areas can be easily determined. All reports are available on-line and in batch.

Detail Reporting

Detail Reports return extensive information on selected NATURAL activity. These reports can be used to further investigate activity or problems detected by the TNM Administrator after viewing information provided by any of the Summary Reports. Using the Define Data Collection Parameters function on the TNM Administration Menu, the TNM Administrator can instruct TNM to collect detail data for particular users or programs. This data is written to the TNM file in a compressed form. After the data has been collected and placed on the TNM file, it must be converted using the Convert Detail Data function, which is also located on the TNM Administration Menu. Detail Reports only return information on converted detail data.

Detail Reports display information about the NATURAL system events program start, program end, ADABAS call start, ADABAS call end, and terminal I/O. All reports are available on-line and in batch.

The TNM Reporting Menu may be invoked by entering "B" on the Main Menu or the direct command NREP on any menu.



Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows: **A** **Summary Reporting** Displays summarized information on program and user NATURAL activity. **B** **Detail Reporting** Displays detailed information on selected NATURAL activity. **.** **Return to TNM Main Menu** Returns to the TNM Main Menu.

The following PF-keys are provided for the TNM Reporting Menu:

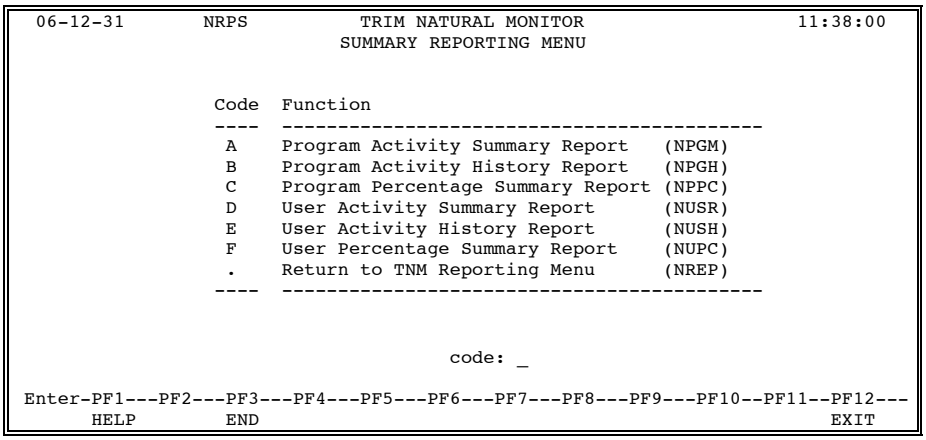
PF-key	Function	Description
PF1	HELP	Provides information about the TNM Reporting Menu.
PF3	END	Returns to the TNM Main Menu.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

II.16.3.2 Summary Reporting Menu

Summary Reports return summarized information on NATURAL activity. These reports can be used to quickly identify user and program activity and detect potential problems. All reports are available on-line and in batch. There are six Summary Reports:

- Program Activity Summary Report
- Program Activity History Report
- Program Percentage Summary Report
- User Activity Summary Report
- User Activity History Report
- User Percentage Summary Report

The Summary Reporting Menu may be displayed by entering "A" on the TNM Reporting Menu or the direct command NRPS on any menu.



```
 06-12-31       NRPS          TRIM NATURAL MONITOR                  11:38:00
                            SUMMARY REPORTING MENU


                 Code  Function
                 ----  ------------------------------------------
                  A    Program Activity Summary Report   (NPGM)
                  B    Program Activity History Report   (NPGH)
                  C    Program Percentage Summary Report (NPPC)
                  D    User Activity Summary Report      (NUSR)
                  E    User Activity History Report      (NUSH)
                  F    User Percentage Summary Report    (NUPC)
                  .    Return to TNM Reporting Menu      (NREP)
                 ----  ------------------------------------------


                                      code: _

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

Field	Description
ENTER CODE (required)	The function to be executed. Valid values are as follows: **A** **Program Activity Summary Report** Displays current day statistics about programs. **B** **Program Activity History Report** Displays program statistics compiled over time. **C** **Program Percentage Summary Report** Displays the percentage of total system usage that is attributed to all monitored programs. **D** **User Activity Summary Report** Displays current day statistics about a User-ID.

(continued from previous page)

Field	Description
	E **User Activity History Report** Displays User-ID statistics compiled over time.
	F **User Percentage Summary Report** Displays the percentage of total system usage that is attributed to all monitored users.
	. **Return to TNM Reporting Menu** Returns to the TNM Reporting Menu.

The following PF-keys are provided for the Summary Reporting Menu.

PF-key	Function	Description
PF1	HELP	Provides information about the Summary Reporting Menu.
PF3	END	Returns to the TNM Reporting Menu.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

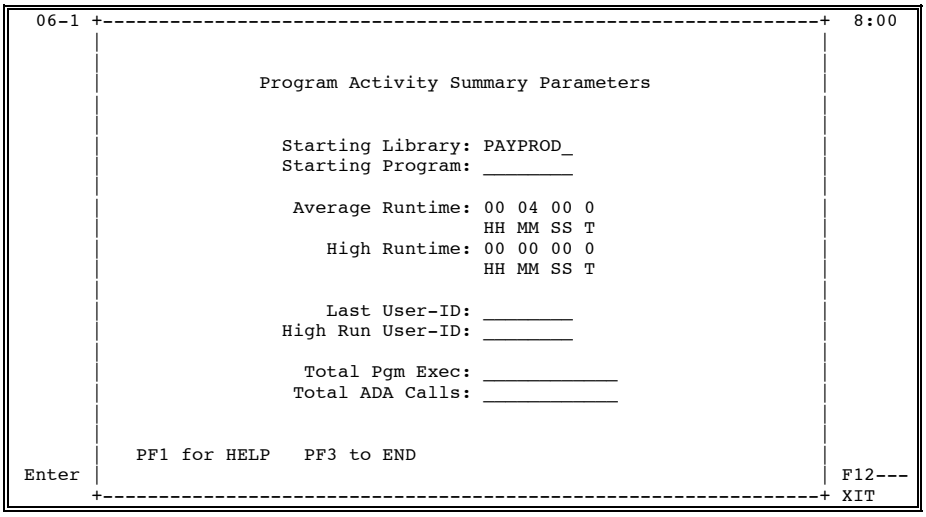
II.16.3.2.1 Program Activity Summary Report

To display the Program Activity Summary input window, enter "A" on the Summary Reporting Menu or the direct command NPGM on any menu.

The Program Activity Summary Report displays current day statistics about programs. The Program Activity Summary Report has many uses, including the following:

- Displaying comprehensive program information, including average runtime, high runtime, and high run user
- Identifying performance problems caused by a particular program or programs

For example, the TNM Administrator receives several complaints of heavy response time in library PAYPROD. The Administrator believes the problem may be the result of an increased level of payroll activity (e.g., many new employees, issuance of W2 forms for the prior year) or a problem in the application (e.g., application making many more calls to the database than normal to process the usual number of transactions). The Administrator uses the Program Activity Summary Report to examine activity in library PAYPROD.



The TNM Administrator specifies the following parameters for the report:

- "PAYPROD" in the Starting Library field to return statistics on the production library
- "00:04:00.0" in the Average Runtime field to see programs with over 4 minutes runtime

Field	Description
Starting Library (optional)	Limits statistics to libraries including and/or alphabetically following this value.
Starting Program (optional)	Limits statistics to programs including and/or alphabetically following this value. (Must also enter in a starting library.)
Average Runtime (optional)	Limits statistics to programs with an average elapsed time equal to and/or exceeding this value.
High Runtime (optional)	Limits statistics to programs with high elapsed times equal to and/or exceeding this value.
Last User-ID (optional)	Limits statistics to programs last executed by this user.
High Run User-ID (optional)	Limits statistics to programs that had the longest elapsed time for this user.
Total Pgm Exec (optional)	Limits statistics to programs which were executed a number of times equal to and/or exceeding this value.
Total ADA Calls (optional)	Limits statistics to programs that issued a total number of ADABAS calls equal to and/or exceeding this value.

The following PF-keys are provided for the input window:

PF-key	Function	Description
PF1	HELP	Provides information about the input window.
PF3	END	Returns to the Summary Reporting Menu.

The following screen displays the Program Activity Summary Report, based on the parameters specified by the TNM Administrator.

```
 06-12-31                    TRIM NATURAL MONITOR                    11:38:00
                           PROGRAM ACTIVITY SUMMARY
                                                                     Page 1
   Starting Library/Program:   PAYPROD   /   ****             Date: 01-12-31

 Reposition Library/Program: ________ / ________

                       Average  -------- Total ---------         High  Last     High Run  --- Cataloged ---
 Library  Program      Runtime     Pgm Exec    ADA Calls      Runtime  User-ID   User-ID   Date     Time
 -------- --------  ----------  ---------- ------------   ----------  --------  --------  -------- --------
 PAYPROD  PAYROLL   00:04:00.2           6            6   00:00:01.0  USER22    USER28    06-12-07 17:29:53
 PAYPROD  PGM1      00:14:32.1         883        11104   00:19:11.1  USER34    USER34    06-12-30 17:06:24
 PAYPROD  PGM2      00:06:00.1          16          208   00:00:01.0  USER11    USER22    06-12-07 17:06:29
 PAYPROD  PGM4      00:04:00.6           5            0   00:00:01.0  USER58    USER54    06-12-07 17:06:34
 PAYPROD  PGM5      00:04:06.1          11           61   00:00:48.0  USER33    USER22    06-12-07 17:30:03
 PAYPROD  PGM9      00:04:14.0          11           60   00:00:57.0  USER16    USER19    06-12-07 17:30:12
 PAYPROD  TEST      00:04:37.5           4           12   00:01:25.0  USER23    USER73    06-12-07 17:30:40
 PAYPROD  TESTRUN   00:04:01.6           3           70   00:08:49.0  USER33    USER23    06-12-14 11:24:05
 PAYPROD  TESTRUN2  00:04:26.0           3           18   00:01:13.0  USER12    USER12    06-12-07 17:32:26
 PAYPROD  VER3T     00:04:32.6           3           16   00:01:02.0  USER43    USER10    06-12-07 17:32:32
------------------------------------------------------------------------------
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  PARM  END                    UP    DOWN        LEFT  RIGHT EXIT
```

Field	Description
Starting Library/Program	The starting library/program specified on the input window. If these fields were left blank in the input window, asterisks are displayed here.
Date	The date for which statistics are returned.
Reposition Library/Program	Repositions the report starting at a different library/program.
Library	The library in which the program is stored.
Program	The program for which statistics are returned.
Average Runtime	The average elapsed time for all executions of the program.
Total Pgm Exec	The number of times the program was executed.
Total ADA Calls	The total number of ADABAS calls issued by the program.
High Runtime	The longest program elapsed time for all executions of the program.
Last User-ID	The User-ID of the user who last executed the program.
High Run User-ID	The User-ID of the user who had the longest program elapsed time.
Cataloged Date	The date the program was cataloged.
Cataloged Time	The time the program was cataloged.

The following PF-keys are provided for the Program Activity Summary Report:

PF-key	Function	Description
PF1	HELP	Provides information about the Program Activity Summary Report.
PF2	PARM	Returns to the input window.
PF3	END	Returns to the Summary Reporting Menu.
PF7	UP	Scrolls up.
PF8	DOWN	Scrolls down.
PF10	LEFT	Scrolls left.
PF11	RIGHT	Scrolls right.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

Information returned by the report indicates potential performance problems with program PGM1:

- Program PGM1 was executed 883 times and issued 11,104 ADABAS calls. This is a dramatically higher level activity than any other program shown on this report.
- USER34 experienced the highest runtime for PGM1.

The report also indicates USER34 is experiencing the most problems with PGM1:

- USER34 is the high runtime User-ID for program PGM1.
- According to the cataloged date, program PGM1 was changed the previous day. The TNM Administrator suspects that a coding error or inefficient algorithm now exists in the program.

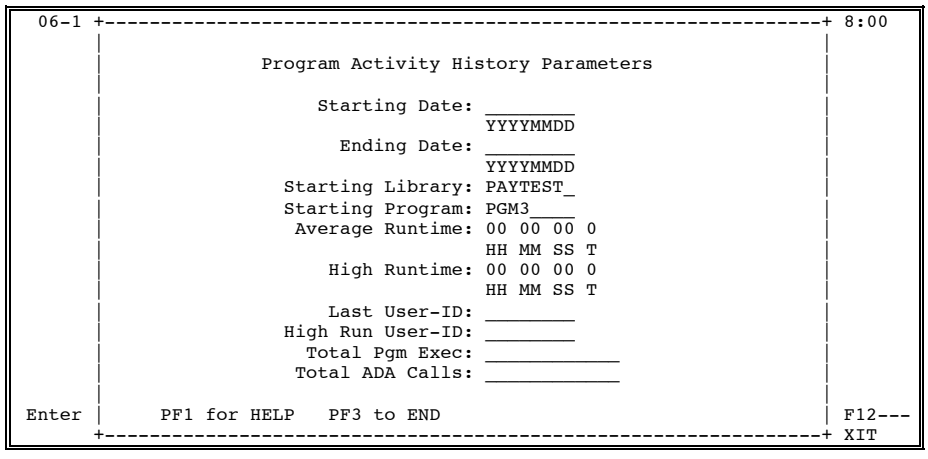
II.16.3.2.2 Program Activity History Report

The Program Activity History input window may be displayed by entering "B" on the Summary Reporting Menu or the direct command NPGH on any menu.

The Program Activity History Report displays program statistics compiled over time. TNM compiles this report by library/program first and then by date. Therefore, it is recommended that the Program Activity Summary Report be used to gather current day statistics, as it will return such information more quickly. The Program Activity History Report has many uses, including the following:

- Comparing program activity over different points in time
- Identifying typical runtime amounts and simplifying problem detection through the use of the average program runtime and high runtime
- Identifying the total number of program executions and ADABAS calls for a particular program

For example, several users complain of slow response time while executing program PGM3. The TNM Administrator uses the Program Activity History Report to determine how long program PGM3 has been causing problems.



The TNM Administrator specifies the following parameter for the report:

- "PGM3" in the Starting Program field to return statistics for program PGM3

Field	Description
Starting Date (optional)	Limits statistics to dates including and/or following this date.
Ending Date (optional)	Limits statistics to dates including and/or preceding this date.
Starting Library (optional)	Limits statistics to libraries including and/or alphabetically following this value.
Starting Program (optional)	Limits statistics to programs including and/or alphabetically following this value. (Must also enter in starting library.)
Average Runtime (optional)	Limits statistics to programs with an average elapsed time equal to and/or exceeding this value.
High Runtime (optional)	Limits statistics to programs with a high elapsed time equal to and/or exceeding this value.
Last User-ID (optional)	Limits statistics to programs last executed by a user.
High Run User-ID (optional)	Limits statistics to programs that had the longest elapsed time for a user.
Total Pgm Exec (optional)	Limits statistics to programs which were executed a number of times equal to and/or exceeding this value.
Total ADA Calls (optional)	Limits statistics to programs that issued a total number of ADABAS calls equal to and/or exceeding this value.

The following PF-keys are provided for the input window:

PF-key	Function	Description
PF1	HELP	Provides information about the input window.
PF3	END	Returns to the Summary Reporting Menu.

The following screen displays the Program Activity History Report based on the parameters specified by the TNM Administrator.

```
 06-12-31                    TRIM NATURAL MONITOR                    11:38:00
                           PROGRAM ACTIVITY HISTORY
                                                                     Page 1
    Starting Library/Program:   PAYTEST/   PGM3

  Reposition Library/Program: ________ / ________

                         Average  --------- Total ---------       High             High Run  Last      --- Cataloged ---
 Library  Program        Runtime       Pgm Exec    ADA Calls     Runtime  Date       User-ID  User-ID   Date     Time
 -------- --------  ----------  ------------ ------------  ----------  --------   --------  --------  -------- --------
 PAYTEST  PGM3       00:00:01.0            8           91  00:00:01.7  06-11-12   USER22    USER22    06-11-12 13:59:49
 PAYTEST  PGM3       00:00:01.0           10          131  00:00:01.3  06-11-14   USER17    USER19    06-11-12 13:59:49
 PAYTEST  PGM3       00:00:00.1           11          110  00:00:00.7  06-11-15   USER17    USER17    06-11-12 13:59:49
 PAYTEST  PGM3       00:00:07.0            9           86  00:00:07.9  06-11-17   USER14    USER32    06-11-12 13:59:49
 PAYTEST  PGM3       00:00:05.0            7           94  00:00:05.0  06-11-22   USER14    USER14    06-11-12 13:59:49
 PAYTEST  PGM3       00:00:03.0           10           94  00:00:04.2  06-11-23   USER24    USER23    06-11-12 13:59:49
 PAYTEST  PGM3       00:00:02.0            8          115  00:00:02.0  06-12-02   USER17    USER54    06-11-12 13:59:49
 PAYTEST  PGM3       00:00:00.1            9           83  00:00:00.2  06-12-14   USER19    USER34    06-11-12 13:59:49
 PAYTEST  PGM3       00:08:22.0           11         1528  00:11:22.0  06-12-30   USER17    USER17    06-12-30 14:31:18

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

Field	Description
Starting Library/ Program	The starting library/program specified on the input window. If these fields were left blank in the input window, asterisks are displayed here.
Reposition Library/ Program	Repositions the report starting at a different library/program.
Library	The library in which the program is stored.
Program	The program for which statistics are returned.
Average Runtime	The average elapsed time for all executions of the program.
Total Pgm Exec	The number of times the program was executed.
Total ADA Calls	The total number of ADABAS calls issued by the program.
High Runtime	The longest program elapsed time for all executions of the program.
Date	The date for which statistics are returned.
High Run User-ID	The User-ID of the user who had the longest program elapsed time.
Last User-ID	The User-ID of the user who last executed the program.
Cataloged Date	The date the program was cataloged.
Cataloged Time	The time the program was cataloged.

The following PF-keys are provided for the Program Activity History Report:

PF-key	Function	Description
PF1	HELP	Provides information about the Program Activity History Report.
PF2	PARM	Returns to the input window.
PF3	END	Returns to the Summary Reporting Menu.
PF7	UP	Scrolls up.
PF8	DOWN	Scrolls down.
PF10	LEFT	Scrolls left.
PF11	RIGHT	Scrolls right.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

The TNM Administrator sees that the performance of program PGM3 appears to have changed recently and identifies a possible cause for this change:

- The report shows a consistent number of executions per day for PGM3 for the past few weeks. It has been executed between 7 and 11 times since November 12
- PGM3 has also shown consistent performance and level of ADABAS activity until December 30. After December 30 it began to issue an unusually high level of ADABAS calls

The TNM Administrator wonders if the increase in ADABAS activity by PGM3 is associated with a change made to the program on or before that date.

- According to the cataloged date, program PGM3 changed on 12/30

After this change was made, PGM3 began to issue many more ADABAS calls than it had recently issued. The TNM Administrator contacts the Payroll application developers and asks them to review their recent changes to PGM3 for problems associated with ADABAS calls.

The developers examine PGM3 and learn that the program was incorrectly coded in the latest revision, causing it to read many more records than it needed to read for every transaction processed by the program. This error caused the increase in ADABAS call totals.

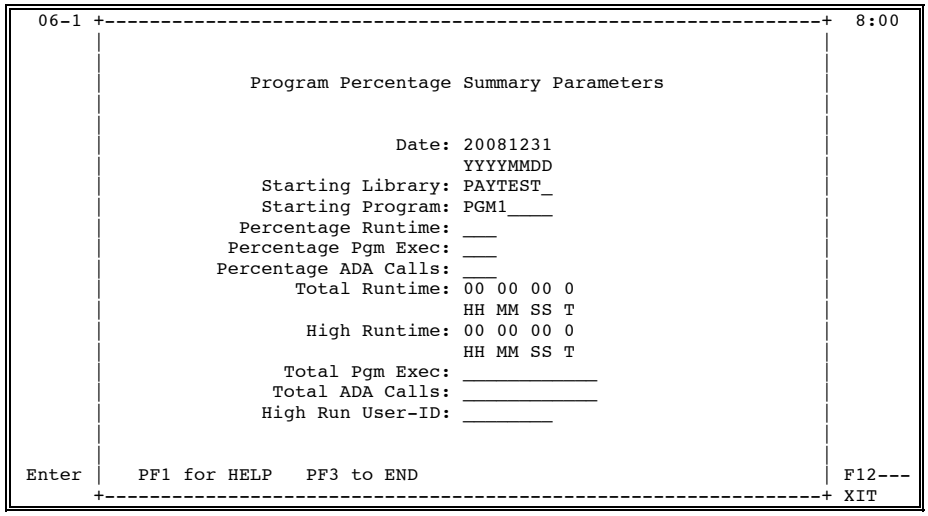
II.16.3.2.3 Program Percentage Summary Report

The Program Percentage Summary input window may be displayed by entering "C" on the Summary Reporting Menu or the direct command NPPC on any menu.

The Program Percentage Summary Report displays the percentage of total system usage that is attributed to a program. The Program Percentage Summary Report has many uses, including:

- Quickly identifying program status in relation to all programs executed and monitored by TNM on a specific date
- Identifying the high run User-ID and high runtime for a particular program
- Identifying the percentage of runtime, programs executed, and ADABAS calls attributed to each program, which reveals resource-intensive programs

For example, management reports that the company anticipates increased business in the coming months and asks the Information Systems (IS) department to prepare for the increase in activity. After evaluating resource utilization statistics for the system, the IS department learns that CPU usage on the company's mainframe is approaching 100% during prime time. Funding is not yet available for a hardware upgrade, so the IS staff must reduce resource consumption by the site's applications, shifting as much of the workload as possible to batch jobs that run outside prime time, when more resources are typically available. The TNM Administrator uses the Program Percentage Summary Report to assist the Payroll application team in determining where it should focus its efforts to obtain the greatest benefit.



The TNM Administrator specifies the following parameter for the report:

- "20081231" in the Date field (the current date is the default)

Field	Description
Date (required)	Limits statistics to dates including and/or following this value (defaults to the current date).
Starting Library (optional)	Limits statistics to libraries including and/or alphabetically following this value.
Starting Program (optional)	Limits statistics to programs including and/or alphabetically following this value. (Must also enter in starting library.)
Percentage Runtime (optional)	Limits statistics to programs with a percentage of elapsed time equal to and/or exceeding this value.
Percentage Pgm Exec (optional)	Limits statistics to programs with a percentage of executions equal to and/or exceeding this value.
Percentage ADA Calls (optional)	Limits statistics to programs with a percentage of ADABAS calls equal to and/or exceeding this value.
Total Runtime (optional)	Limits statistics to programs with a total elapsed time equal to and/or exceeding this value.
High Runtime (optional)	Limits statistics which were executed a number of times equal to and/or exceeding this value.
Total Pgm Exec (optional)	Limits statistics to programs that have an execution total equal to and/or exceeding this value.
Total ADA Calls (optional)	Limits statistics to programs that issued a total number of ADABAS calls equal to and/or exceeding this value.
High Run User-ID (optional)	Limits statistics to programs that had the longest elapsed time for a User-ID.

The following PF-keys are provided for the input window:

PF-key	Function	Description
PF1	HELP	Provides information about the input window.
PF3	END	Returns to the Summary Reporting Menu.

The following screen displays the Program Percentage Summary Report based on the parameters specified by the TNM Administrator.

```
 06-12-31                    TRIM NATURAL MONITOR                    11:38:00
                          PROGRAM PERCENTAGE SUMMARY
                                                                      Page 1
   Starting Library/Program:   PAYTEST/   PGM1                Date: 01-12-31

  Reposition Library/Program: ________ / ________

                   ---- Percentage -----
                               Pgm      ADA     ---------- Total ----------  ---- High Run -----  --- Cataloged ---
    Library  Program  Runtime Exec     Calls   Runtime      Pgm Exec  ADA Calls  User-ID  Runtime     Date     Time
    -------- -------- ------- -----    -----   ------------------- ----------  -------- ----------  -------- --------
    PAYTEST  PGM1      44.8    6.0      52.0   00:00:55.5          7         809  USER17   00:00:33.0  04-12-30 17:29:53
    PAYTEST  PGM3       0.7    7.7       0.0   00:00:00.9          9           0  USER17   00:00:00.1  04-12-07 17:06:24
    PAYTEST  PGM4       4.1    3.4       4.1   00:00:05.0          4          64  USER24   00:00:02.0  04-12-07 17:06:29
    PAYTEST  PGM5       6.5    4.3       3.1   00:00:08.0          5          49  USER12   00:00:02.0  04-12-07 17:06:34
    PAYTEST  PGM6       0.8    0.9       0.4   00:00:01.0          1           7  USER23   00:00:01.0  04-12-07 17:30:03
    PAYTEST  PGM7       5.7    2.6       6.4   00:00:07.0          3          99  USER23   00:00:04.0  04-12-07 17:30:12
    PAYTEST  PGM9      11.4   25.6       9.2   00:00:14.0         30         144  USER22   00:00:02.0  04-12-07 17:30:40
    PAYTEST  PRO1       0.7    6.8       2.1   00:00:00.8          8          32  USER24   00:00:00.1  04-12-14 11:24:05
    PAYTEST  PRO3       0.4    4.3       1.3   00:00:00.5          5          20  USER24   00:00:00.1  04-12-07 17:32:26
 ------------------------------------------------------------------------------
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  PARM END                    UP   DOWN        LEFT  RIGHT EXIT
```

Field	Description
Starting Library/ Program	The starting library/program specified on the input window. If these fields were left blank in the input window, asterisks are displayed here.
Date	The date for which statistics are returned.
Reposition Library/ Program	Repositions the report starting at a different library/program.
Library	The library in which the program is stored.
Program	The program for which statistics are returned.
Percentage Runtime	The program's percentage of total program elapsed time for all monitored programs.
Percentage Pgm Exec	The program's percentage of total program executions for all monitored programs.
Percentage ADA Calls	The program's percentage of total ADABAS calls for all monitored programs.
Total Runtime	The total elapsed time for all executions of the program.
Total Pgm Exec	The total number of times the program executed.
Total ADA Calls	The total number of ADABAS calls issued by the program.
High Run User-ID	The User-ID of the user who had the longest program elapsed time.
High Run Runtime	The longest program elapsed time for all executions of a program.
Cataloged Date	The date the program was cataloged.
Cataloged Time	The time the program was cataloged.

The following PF-keys are provided for the Program Percentage Summary Report:

PF-key	Function	Description
PF1	HELP	Provides information about the Program Percentages Summary Report.
PF2	PARM	Returns to the input window.
PF3	END	Returns to the Summary Reporting Menu.
PF7	UP	Scrolls up.
PF8	DOWN	Scrolls down.
PF10	LEFT	Scrolls left.
PF11	RIGHT	Scrolls right.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

Information returned by the report indicates programs PGM1 and PGM9 are using more system resources than other programs:

- Program PGM1 used 44.8% of the total program runtimes on 12/31/99. Also, its execution accounted for 6% of all program executions and executed 52% of all ADABAS calls
- Although the percentages of PGM9 are not as substantial as those of PGM1, they are large in comparison to those of the remaining programs

The report also indicates USER17 and USER22 may have experienced the most problems:

- USER17 experienced the highest runtime for program PGM1, while USER22 had the highest runtime for program PGM9

Given that programs PGM1 and PGM9 account for the majority of Payroll application processing and resource utilization, any improvements associated with these two programs will do much to reduce the overall resource utilization by the Payroll application.

The TNM Administrator instructs the Payroll application team to focus its efforts on reducing the volume of transactions these programs process during prime time and suggests that effort also be directed toward tuning these two programs for maximum efficiency.

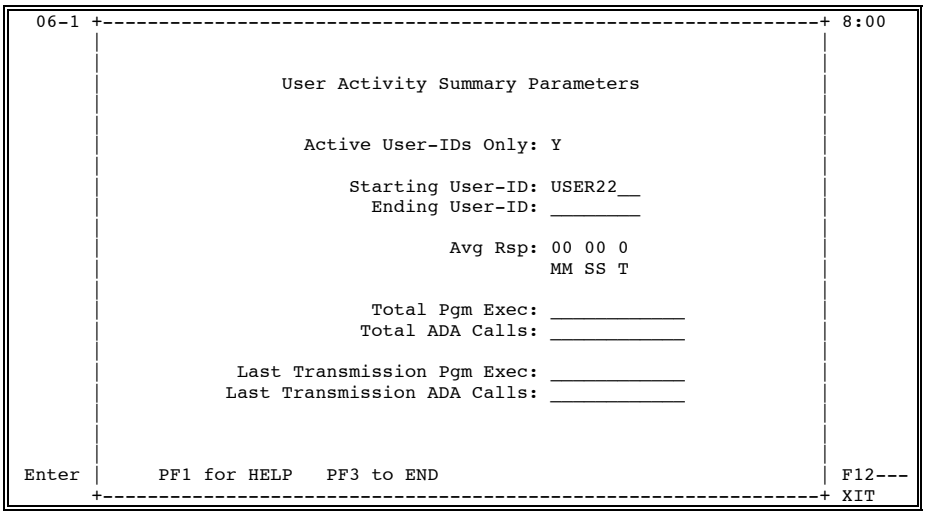
II.16.3.2.4 User Activity Summary Report

The User Activity Summary input window may be displayed by entering "D" on the Summary Reporting Menu or the direct command NUSR on any menu.

The User Activity Summary Report displays current day statistics about a User-ID. The User Activity Summary Report has many uses, including:

- Displaying comprehensive user information, including average response time, total programs executed, and total ADABAS calls
- Identifying performance problems caused by a particular user or users
- Identifying users logged on currently or on a particular date

For example, USER22 calls the TNM Administrator, complaining of a response time problem with the Payroll application. The Administrator has received no complaints from other users and suspects that the problem must stem from something unusual that only USER22 is doing. Using the User Activity Summary Report, the Administrator checks statistics on USER22.



The TNM Administrator specifies the following parameters for the report:

- "USER22" in the Starting User-ID field. The Ending User-ID is left blank so that statistics for other users will appear as well
- The Total Program Executions field can be used after the administrator inspects USER22's statistics. For instance, if USER22 has 8,000 program executions for a certain program, the administrator can enter "8000" in the Total Program Executions field to see if other users had similar numbers

Field	Description
Active User-IDs Only (required)	"Y" limits statistics to users who are currently logged on to NATURAL (defaults to "Y"). "N" returns statistics on active and inactive User-IDs.
Starting User-ID (optional)	Limits statistics to User-IDs including and/or alphabetically (or numerically) following this value.
Ending User-ID (optional)	Limits statistics to User-IDs including and/or alphabetically (or numerically) preceding this value.
Avg Rsp (optional)	Limits statistics to users with average response times equal to and/or exceeding this value.
Total Pgm Exec (optional)	Limits statistics to users with a total number of program executions equal to and/or exceeding this value.
Total ADA Calls (optional)	Limits statistics to programs that issued a total number of ADABAS calls equal to and/or exceeding this value.
Last Transmission Pgm Exec (optional)	Limits statistics to users for whom the number of program executions included in the last transmission were equal to and/or exceeded this value. (Data collected by TNM is transmitted to the TNM file for reporting).
Last Transmission ADA Calls (optional)	Limits statistics to users for whom the number of ADABAS calls included in the last transmission were equal to and/or exceeded this value.

The following PF-keys are provided for the input window:

PF-key	Function	Description
PF1	HELP	Provides information about the input window.
PF3	END	Returns to the Summary Reporting Menu.

The following screen displays the User Activity Summary Report based on the parameters specified by the TNM Administrator.

```
 06-12-31                      TRIM NATURAL MONITOR                    11:38:00
                              USER ACTIVITY SUMMARY
                                                                       Page 1
  Starting User-ID:   USER22      Ending User-ID:   ****        Date: 01-12-31
                                                      Active User-IDs Only: Y

 Reposition User-ID: _______

         Avg Rsp  --- Last Executed ---- --------- Total --------- Last Trans
  User-ID  (secs)   Library  Program  Line      Pgm Exec    ADA Calls Time
  -------- -------  -------- -------- ----- ------------ ------------ ----------
 *USER22   03:42.3  PAYSYS   TEST12   0032         3048        44092 10:32:05
 *USER23   00:03.3  PAYLIB   PGM1     5172         8096          709 09:22:48
 *USER26   00:22.7  PAYTEST  PGM7     0032          943         3571 11:13:00
 *USER31   00:12.7  PAYLIB   XLOGON   0032          861         2638 02:19:04
 *USER33   00:02.0  PAYTEST  PGM3     0032         5599         5205 08:03:44
 *USER43   00:05.4  PAYSYS   FIN24    5440         1380         3620 09:44:59
 *USER48   00:02.3  PAYLIB   TEST     0032           26          170 09:33:11


 -------- Last Transmission ------- -- NATURAL Start ---
 Date        Pgm Exec     ADA Calls Date        Time
 -------- ------------ ------------ -------- ---------
 06-12-31           66         9126 06-12-31  11:22:02
 06-12-31           11           55 06-12-31  10:13:25
 06-12-31           92          237 06-12-31  09:12:12
 06-12-31            0            0 06-12-31  07:13:15
 06-12-31           23           81 06-12-31  07:13:00
 06-12-31            5           37 06-12-31  10:45:11
 06-12-31           26          170 06-12-31  08:00:49

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

Field	Description
Starting User-ID	The starting User-ID specified on the input window. If this field is left blank in the input window, asterisks are displayed.
Ending User-ID	The ending User-ID specified on the input window. If this field is left blank in the input window, asterisks are displayed.
Date	The date for which statistics are returned.
Active User-Ids Only	If "Y" was entered in this field on the input window, statistics are returned on active User-IDs only. If "N" was entered, statistics are returned on active and inactive User-IDs.
Reposition User-ID	Repositions the report starting at a different User-ID.
User-ID	The User-ID for which statistics are returned. An asterisk is displayed next to active User-IDs.
Avg Rsp (Secs)	The average time between the user pressing Enter and the start of map execution.
Last Executed Library	The library in which the last executed program is stored.
Last Executed Program	The last program executed by the user.
Last Executed Line	The last executed program line.
Total Pgm Exec	The total number of programs executed by the user.
Total ADA Calls	The total number of ADABAS calls issued by the user.
Last Trans Time	The last time data was transmitted to the TNM file for the user.

(continued from previous page)

Field	Description
Last Transmission Date	The last date data was transmitted to the TNM file for the user.
Last Transmission Pgm Exec	The number of program executions included in the last transmission to the TNM file for the user.
Last Transmission ADA Calls	The number of ADABAS calls included in the last transmission to the TNM file for the user.
Natural Start Date	The date the user last logged on to NATURAL.
Natural Start Time	The time the user last logged on to NATURAL.

The following PF-keys are provided for the User Activity Summary Report:

PF-key	Function	Description
PF1	HELP	Provides information about the User Activity Summary Report.
PF2	PARM	Returns to the input window.
PF3	END	Returns to the Summary Reporting Menu.
PF7	UP	Scrolls up.
PF8	DOWN	Scrolls down.
PF10	LEFT	Scrolls left.
PF11	RIGHT	Scrolls right.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

Information returned by the report indicates the programs being executed by USER22 are using more system resources than programs executed by other users.

- USER22 has an average response time of 3:42.3. This response time is much higher than the response time of other users
- The programs executed by USER22 are issuing a large number of ADABAS calls in comparison to the other users
- The number of ADABAS calls last transmitted for USER22 is high in comparison to that of other users

The TNM Administrator calls USER22 and asks if USER22 is processing typical transactions or using a function of the application not normally used. The Administrator learns that USER22 is doing something no one has ever had to do before, issue replacement paychecks for employees of a department that recently lost its original paychecks in a fire. This prompts the Administrator to think that the problem is probably related to the fact that USER22 is executing code that was never tested and may contain inefficient logic or a bug.

The Administrator reports this information to the Payroll application developers and asks them to investigate the problem. They find that one of the programs associated with the function being performed by USER22 contained some test code that was writing diagnostic information to an ADABAS file. This test code should have been removed before the program was placed in production, but it was not. The problem was never discovered because this function had never been used.

II.16.3.2.5 User Activity History Report

The User Activity History input window may be displayed by entering "E" on the Summary Reporting Menu or the direct command NUSH on any menu.

The User Activity History Report displays User-ID statistics compiled over time. TNM compiles this report by User-ID first and then by date. Therefore, it is recommended that the User Activity Summary be used to gather current day statistics, as it will return this information more quickly. The User Activity History Report has many uses, including the following:

- Comparing user activity over a specified period of time
- Identifying typical runtime amounts and simplifying problem detection through the use of average response times, ADABAS calls, and program executions for each user

For example, the TNM Administrator receives a complaint of poor response time from USER17. USER17 claims that other users are getting much better response time. To determine the length of time USER17 has been experiencing problems, the administrator uses the User Activity History Report.

```
 06-1 +-------------------------------------------------------------+  8:00
      |                                                             |
      |                                                             |
      |                User Activity History Parameters              |
      |                                                             |
      |                                                             |
      |                          Starting Date: 20061226            |
      |                                         YYYYMMDD            |
      |                            Ending Date: _________           |
      |                                         YYYYMMDD            |
      |                        Starting User-ID: USER17__           |
      |                          Ending User-ID: _________          |
      |                                                             |
      |                                 Avg Rsp: 00 00 0            |
      |                                          MM SS T            |
      |                        Total Pgm Exec: _____________        |
      |                       Total ADA Calls: _____________        |
      |                                                             |
      |            Last Transmission Pgm Exec: _____________        |
      |           Last Transmission ADA Calls: _____________        |
      |                                                             |
      |                                                             |
Enter |     PF1 for HELP   PF3 to END                               | F12---
      +-------------------------------------------------------------+ XIT
```

The TNM Administrator specifies the following parameters for the report:

- "20061226" in the Starting Date field. This will return statistics from 20061226 to 20061231. If necessary, the administrator can return to the input screen using PF2 and enter a different date
- "USER17" in the Starting User-ID field to return statistics on USER17

Field	Description
Starting Date (optional)	Limits statistics to dates including and/or following this date.
Ending Date (optional)	Limits statistics to dates including and/or preceding this date.
Starting User-ID (optional)	Limits statistics to User-IDs including and/or alphabetically (or numerically) following this value.
Ending User-ID (optional)	Limits statistics to User-IDs including and/or alphabetically (or numerically) preceding this value.
Avg Rsp (optional)	Limits statistics to users with average response times equal to and/or exceeding this value.
Total Pgm Exec (optional)	Limits statistics to users with a total number of program executions equal to and/or exceeding this value.
Total ADA Calls (optional)	Limits statistics to programs that issued a total number of ADABAS calls equal to and/or exceeding this value.
Last Transmission Pgm Exec (optional)	Limits statistics to users for whom the number of program executions included in the last transmission were equal to and/or exceeded this value. (Data collected by TNM is transmitted to the TNM file for reporting).
Last Transmission ADA Calls (optional)	Limits statistics to users with a number of ADABAS calls included in the last transmission equal to and/or exceeding this value.

The following PF-keys are provided for the input window:

PF-key	Function	Description
PF1	HELP	Provides information about the input window.
PF3	END	Returns to the Summary Reporting Menu.

The following screen displays the User Activity History Report, based on the parameters specified by the TNM Administrator.

```
 06-12-31                    TRIM NATURAL MONITOR                    11:38:00
                           USER ACTIVITY HISTORY
                                                                     Page 1
  Starting User-ID:   USER17  Ending User-ID:   ****

 Reposition User-ID: ________

        Avg Rsp --- Last Executed ---- --------- Total ---------
 User-ID (secs)  Library  Program  Line Pgm Exec     ADA Calls    Date
 ------- -------- -------- -------- ---- ---------- ---------- --------
 USER17  00:01.8 PAYSYS   TEST1    1230          942        923  06-12-26
 USER17  00:01.3 PAYLIB   TEST1    1100          821        788  06-12-27
 USER17  00:00.9 PAYTEST  PRO5     2981          781        602  06-12-28
 USER17  00:00.2 PAYSYS   PAYROLL  0912          887        822  06-12-29
 USER17  00:12.4 PAYLIB   PGM2     1198          769      21351  06-12-30
 USER19  00:01.5 PAYTEST  PGM10    0193          832        900  06-12-27
 USER22  00:01.3 PAYLIB   PAYROLL  1100          791        750  06-12-28
 USER22  00:01.8 PAYLIB   PGM1     0200          905        623  06-12-29
 USER22  00:00.9 PAYSYS   TEST2    0450          896        822  06-12-30
 USER25  00:01.1 PAYTEST  PGM9     1250          778        793  06-12-30
--------------------------------------------------------------------------
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12
      HELP   PARM   END              UP    DOWN              LEFT  RIGHT EXIT

-------- Last Transmission -------- -- NATURAL Start ---
Time      Pgm Exec     ADA Calls     Date      Time
--------  ----------  ------------  --------  --------
08:33:26          448           321  06-12-26  07:03:22
01:10:35          100           109  06-12-27  12:05:52
11:19:26          593           319  06-12-28  08:05:43
04:10:27          301           382  06-12-29  03:12:36
09:44:11          113          7693  06-12-30  07:22:13
10:23:12          202           229  06-12-27  08:00:33
06:39:00          302           137  06-12-28  08:10:22
05:22:50           92           109  06-12-29  02:45:02
03:11:21          393           592  06-12-30  08:22:10
02:12:39          429            92  06-12-30  09:39:34
```

Field	Description
Starting User-ID	The starting User-ID specified on the input window. If this field is left blank in the input window, asterisks are displayed.
Ending User-ID	The ending User-ID specified on the input window. If this field is left blank in the input window, asterisks are displayed.
Reposition User-ID	Repositions the report starting at a different User-ID.
User-ID	The User-ID of the user for which statistics are returned. An asterisk is displayed next to active User-IDs.
Avg Rsp (Secs)	The average time between the user pressing Enter and the start of map execution.
Last Executed Library	The library in which the last executed program is stored.
Last Executed Program	The last program executed by the user.
Last Executed Line	The last executed program line.
Total Pgm Exec	The total number of programs executed by the user.
Total ADA Calls	The total number of ADABAS calls issued by the user.
Date	The date for which statistics are returned.
Last Transmission Time	The last time data was transmitted to the TNM file for the user.
Last Transmission Pgm Exec	The number of program executions included in the last transmission to the TNM file for the user.

(continued from previous page)

Field	Description
Last Transmission ADA Calls	The number of ADABAS calls included in the last transmission to the TNM file for the user.
Natural Start Date	The date the user last logged on to NATURAL.
Natural Start Time	The time the user last logged on to NATURAL.

The following PF-keys are provided for the User Activity History Report:

PF-key	Function	Description
PF1	HELP	Provides information about the User Activity History Report.
PF2	PARM	Returns to the input window.
PF3	END	Returns to the Summary Reporting Menu.
PF7	UP	Scrolls up.
PF8	DOWN	Scrolls down.
PF10	LEFT	Scrolls left.
PF11	RIGHT	Scrolls right.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

Information returned by the report indicates USER17 experienced problems on 12/30.

- USER17 had approximately the same number of program executions and ADABAS calls from 12/26 to 12/29
- On 12/30, the number of ADABAS calls increased significantly

The report also indicates transmission values for USER17 were somewhat higher on 12/30 than the recent transmission values for other users.

- The number of ADABAS calls included in the last transmission on 12/30 for USER17 was 7,693. This is high in comparison to ADABAS calls last transmitted on previous dates for USER17

At this point, the TNM Administrator collects detail data on USER17 and uses the Detail Reports to pinpoint the reason for USER17's high ADABAS calls and slow response time.

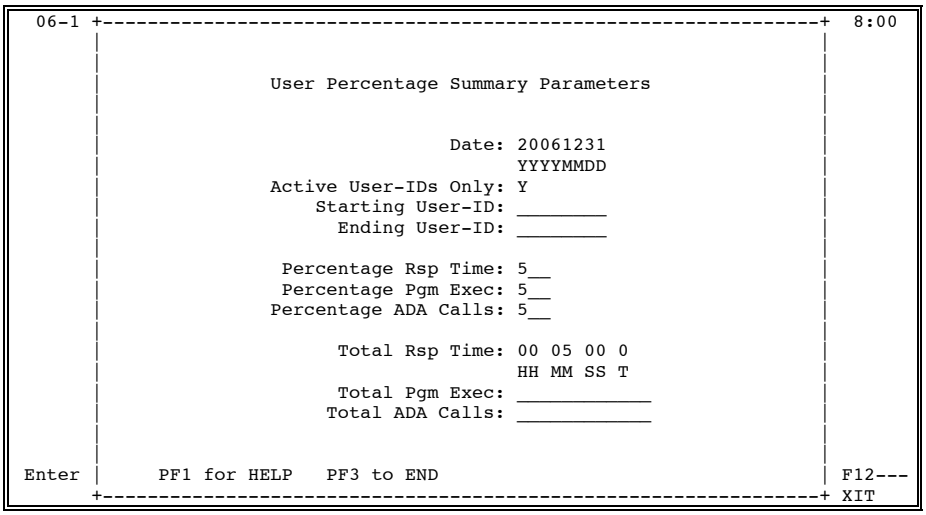
II.16.3.2.6 User Percentage Summary Report

The User Percentage Summary input window may be displayed by entering "F" on the Summary Reporting Menu or the direct command NUPC on any menu.

The User Percentage Summary Report displays the percentage of total system usage that is attributed to the NATURAL activity associated with each User-ID. The User Percentage Summary Report has many uses, including the following:

- Quickly identifying user status, including percentages and totals of response time, program executions, and ADABAS calls
- Comparing user percentages of system resources

For example, several users complain that the system is running unusually slow. To determine if a problem exists with a user or users, the TNM Administrator uses the User Percentage Summary Report to determine the percentage of total system usage for all users.



The TNM Administrator specifies the following parameters for the report:

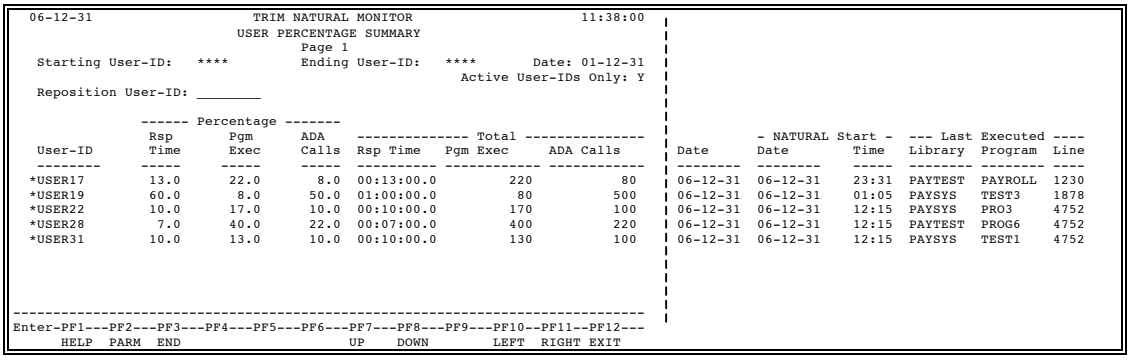
- "20061231" in the Date field to return information for the current day
- "Y" in the Active User-IDs Only field to return information on users currently logged on to the system
- "00 05 00 0" in the Total Response Time field. This will return information for all users that had response times of five minutes or more
- "5" in all of the percentages fields. This will return information on all users who accounted for five percent or more of the system's response time, program executions, and ADABAS calls

Field	Description
Date (required)	Limits statistics to dates including and/or following this value (defaults to the current date).
Active User-IDs Only (required)	"Y" limits statistics to users who are currently logged on to NATURAL (defaults to "Y"). "N" returns statistics on active and inactive User-IDs.
Starting User-ID (optional)	Limits statistics to User-IDs including and/or alphabetically (or numerically) following this value.
Ending User-ID (optional)	Limits statistics to User-IDs including and/or alphabetically (or numerically) preceding this value.
Percentage Rsp Time (optional)	Limits statistics to users with a percentage of response time equal to and/or exceeding this value.
Percentage Pgm Exec (optional)	Limits statistics to users with a percentage of program executions equal to and/or exceeding this value.
Percentage ADA Calls (optional)	Limits statistics to users with a percentage of ADABAS calls equal to and/or exceeding this value.
Total Rsp Time (optional)	Limits statistics to users with a total response time equal to and/or exceeding this value.
Total Pgm Exec (optional)	Limits statistics to users with a total number of programs executed equal to and/or exceeding this value.
Total ADA Calls (optional)	Limits statistics to users with programs that issued a total number of ADABAS calls equal to and/or exceeding this value.

The following PF-keys are provided for the input window:

PF-key	Function	Description
PF1	HELP	Provides information about the input window.
PF3	END	Returns to the Summary Reporting Menu.

The following screen displays the User Percentage Summary Report based on the parameters specified by the TNM Administrator.



```
 06-12-31                  TRIM NATURAL MONITOR                      11:38:00
                          USER PERCENTAGE SUMMARY
                                Page 1
  Starting User-ID:   ****        Ending User-ID:   ****       Date: 01-12-31
                                                     Active User-IDs Only: Y

  Reposition User-ID: ________

              ------ Percentage -------
               Rsp       Pgm      ADA    -------------- Total ---------------
  User-ID      Time      Exec     Calls  Rsp Time   Pgm Exec     ADA Calls
  --------    -----     -----     -----  ----------  ----------  ------------
 *USER17       13.0      22.0       8.0  00:13:00.0         220           80
 *USER19       60.0       8.0      50.0  01:00:00.0          80          500
 *USER22       10.0      17.0      10.0  00:10:00.0         170          100
 *USER28        7.0      40.0      22.0  00:07:00.0         400          220
 *USER31       10.0      13.0      10.0  00:10:00.0         130          100

                                                                                 - NATURAL Start -  --- Last Executed ----
                                                                  Date      Date       Time   Library  Program  Line
                                                                  --------  --------   -----  -------- -------- ----
                                                                  06-12-31  06-12-31   23:31  PAYTEST  PAYROLL  1230
                                                                  06-12-31  06-12-31   01:05  PAYSYS   TEST3    1878
                                                                  06-12-31  06-12-31   12:15  PAYSYS   PRO3     4752
                                                                  06-12-31  06-12-31   12:15  PAYTEST  PROG6    4752
                                                                  06-12-31  06-12-31   12:15  PAYSYS   TEST1    4752

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

Field	Description
Starting User-ID	The starting User-ID specified on the input window. If this field was left blank in the input window, asterisks are displayed here.
Ending User-ID	The ending User-ID specified on the input window. If this field was left blank in the input window, asterisks are displayed here.
Date	The date for which statistics are returned.
Active User-IDs Only	If "Y" was entered on the input window, statistics are limited to active User-IDs only. If "N" was entered, statistics are returned on active and inactive User-IDs.
Reposition User-ID	Repositions the report starting at a different User-ID.
User-ID	The User-ID for which statistics are returned. An asterisk is displayed next to active User-IDs.
Percentage Rsp Time	The user's percentage of total response time for all monitored users.
Percentage Pgm Exec	The user's percentage of total programs executed for all monitored users.
Percentage ADA Calls	The user's percentage of total ADABAS calls for all monitored users.
Total Rsp Time	The user's total response time for the day.
Total Pgm Exec	The total number of programs executed by the user for the day.
Total ADA Calls	The total number of ADABAS calls issued by the user.

(continued from previous page)

Field	Description
Date	The date for which statistics are returned.
Natural Start Date	The date the user last logged on to NATURAL.
Natural Start Time	The time the user last logged on to NATURAL.
Last Executed Library	The library in which the last executed program is stored.
Last Executed Program	The last program executed by the user.
Last Executed Line	The last executed program line.

The following PF-keys are provided for the User Percentage Summary Report:

PF-key	Function	Description
PF1	HELP	Provides information about the User Percentage Summary Report.
PF2	PARM	Returns to the input window.
PF3	END	Returns to the Summary Reporting Menu.
PF7	UP	Scrolls up.
PF8	DOWN	Scrolls down.
PF10	LEFT	Scrolls left.
PF11	RIGHT	Scrolls right.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

Information returned by this section of the report indicates USER19 is using more system resources than other users.

- The percentages of response time and ADABAS calls for USER19 are significantly higher than those of other users
- The total response time and ADABAS calls for USER19 are significantly higher than those of other users

The TNM Administrator decides that detail data should be collected for USER19 to determine the source of USER19's slow response times and high ADABAS calls.

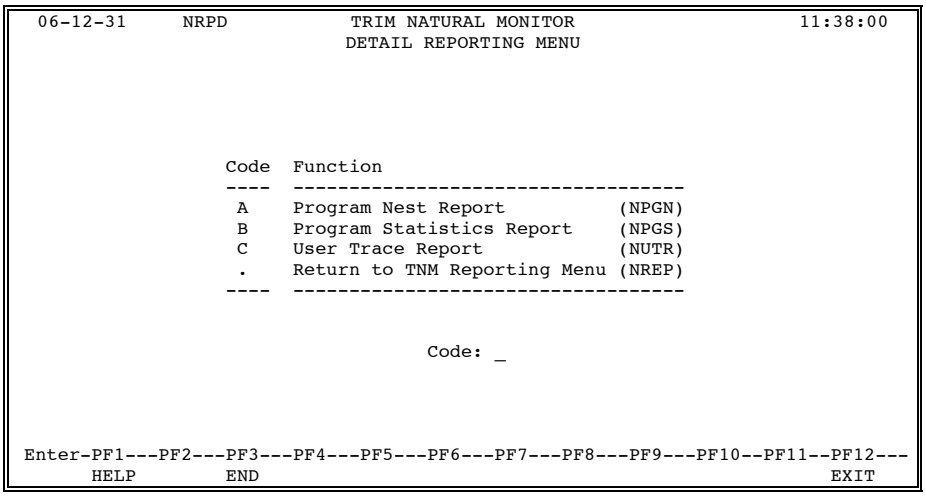
II.16.3.3 Detail Reporting Menu

Detail Reports return extensive information on selected NATURAL activity. These reports can be used to further investigate activity or problems detected by the TNM Administrator after viewing information provided by any of the Summary Reports. Using the Define Data Collection Parameters function on the TNM Administration Menu, the TNM Administrator can instruct TNM to collect detail data for particular users or programs. This data is written to the TNM file in a compressed form. After the data has been collected and placed on the TNM file, it must be converted using the Convert Detail Data function, which is also located on the TNM Administration Menu. Detail Reports only return information on converted detail data.

Detail Reports display information captured whenever the user executes one of the following system events: program start, program end, ADABAS call start, ADABAS call end, and terminal I/O. All reports are available on-line and in batch. There are three Detail Reports:

- Program Nest Report
- Program Statistics Report
- User Trace Report

The Detail Reporting Menu may be invoked by entering "B" on the TNM Reporting Menu or the direct command NRPD on any menu.



Note: Detail report data is only collected when requested by the TNM Administrator. Using the Define Data Collection Parameters function on the TNM Administration Menu, the Administrator can instruct TNM to monitor particular users or programs for a specific amount of time. TNM will collect the desired data and write it to the TNM file in a compressed format. After the data is captured, it must be converted using the Convert Detail Data function, which is also located on the TNM Administration menu. Detail Reports return information on converted detail data only.

Field	Description
Enter Code (required)	Valid values are as follows: **A** **Program Nest Report** Displays program relationships in a nested format. It also identifies programs, external subroutines, and maps that are called from programs. **B** **Program Statistics Report** Displays the most heavily used programs, programs making the most ADABAS calls, and programs with the best/worst response times. **C** **User Trace Report** Displays the events resulting from user activity and the impact of each event on system performance. **.** **Return to TNM Reporting Menu** Returns to the TNM Report Menu.

The following PF-keys are provided for the TNM Reporting Menu:

PF-key	Function	Description
PF1	HELP	Provides information about the TNM Reporting Menu.
PF3	END	Returns to the TNM Main Menu.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

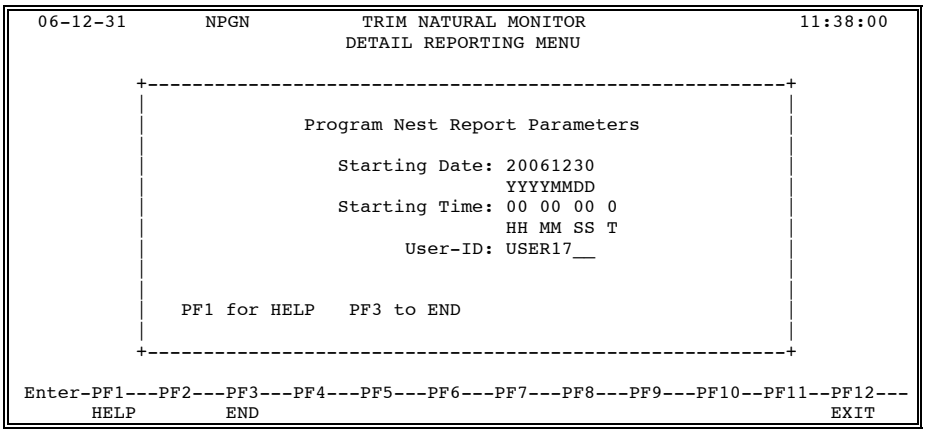
II.16.3.3.1 Program Nest Report

The Program Nest Report input window may be displayed by entering "A" on the Detail Reporting Menu or the direct command NPGN on any menu.

The Program Nest Report is designed to make it easy to see the flow of execution for an application's objects. The Program Nest Report has many uses, including identifying programs, external subroutines, and maps that are called during the execution of the application by the user:

- Detecting time-consuming programs used by a particular User-ID
- Pinpointing program starting and ending times
- Identifying program execution order

For example, USER17 complains of poor response time while executing program PAYROLL. Using the Summary Reports, the TNM Administrator determined that the problem occurs only when USER17 executes PAYROLL. After capturing detail information on USER17 (while program PAYROLL was executed), the administrator uses the Program Nest Report to further investigate USER17's problem with program PAYROLL.



The TNM Administrator specifies the following parameters for the report:

- "USER17" in the User-ID field to return information on USER17 only
- "20061230" in the Starting Date field, which is the date that the detail data was collected for USER17

Field	Description
Starting Date (required)	Limits statistics to dates including and/or following this value (defaults to the current date).
Starting Time (required)	Limits statistics to times including and/or following this value.
User-ID (required)	Limits statistics to the specified user (defaults to the current user).

The following PF-keys are provided for the input window:

PF-key	Function	Description
PF1	HELP	Provides information about the input window.
PF3	END	Returns to the Detail Reporting Menu.

The following screen displays the Program Nest Report based on the parameters specified by the TNM Administrator.

```
 06-12-31                    TRIM NATURAL MONITOR                        11:38:00
                           PROGRAM NEST REPORT
                                                                          Page 1
 User-ID: USER17     Starting Date: 01-12-30    Starting Time: 00:00:00.0

                  Program       Program
 Elapsed Time     Start Time    End Time      Lev  Library/Program                    Date
 -------------    ----------    -----------   ---  ---------------------------------  --------
                  16:08:14.7                    1   PAYTEST PAYROLL                    06-12-30
                  16:08:15.0                    2      PAYTEST PGM1                    06-12-30
                  16:08:15.0                    3         PAYTEST MAP1                 06-12-30
 00:00:01.0001                 16:08:16.1       3         PAYTEST MAP1                 06-12-30
 00:00:01.3207                 16:08:16.3       2      PAYTEST PGM1                    06-12-30
                  16:08:16.3                    2      PAYTEST PGM2                    06-12-30
                  16:08:16.3                    3         PAYTEST PGM3                 06-12-30
 00:00:06.9810                 16:08:23.2       3         PAYTEST PGM3                 06-12-30
 00:00:07.3207                 16:08:23.5       2      PAYTEST PGM2                    06-12-30
```

Using PF8 to scroll down through the report, the administrator can see that program PGM30 had an excessive elapsed time compared to other programs called by PAYROLL:

```
                  16:09:08.3                    2      PAYTEST PGM28                   06-12-30
                  16:09:09.1                    3         PAYTEST PGM29                06-12-30
 00:00:01.1140                 16:09:10.2       3         PAYTEST PGM29                06-12-30
 00:00:04.2207                 16:09:12.5       2      PAYTEST PGM28                   06-12-30
                  16:09:12.6                    2      PAYTEST PGM30                   06-12-30
 00:01:21.2019                 16:10:33.8       2      PAYTEST PGM30                   06-12-30
                  16:10:33.8                    2      PAYTEST PGM34                   06-12-30
 00:00:05.4210                 16:10:39.2       2      PAYTEST PGM34                   06-12-30
 00:02:24.7207                 16:10:39.4       1   PAYTEST PAYROLL                    06-12-30
 ------------------------------------------------------------------------------
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP  PARM  END                     UP    DOWN        LEFT  RIGHT EXIT
```

Field	Description
User-ID	The User-ID for which statistics are returned.
Starting Date	The starting date specified on the input window.
Starting Time	The starting time specified on the input window.
Elapsed Time	The length of time a program executed from program start to program end, including the elapsed time of any programs called by the program.
Program Start Time	The time a program execution started.
Program End Time	The time a program execution ended.
Lev	The execution level of a program.
Library/Program	The library and program executed. Displayed in nested form, allowing users to determine the level at which each program is called.
Date	The program execution date.

The following PF-keys are provided for the Program Nest Report:

PF-key	Function	Description
PF1	HELP	Provides information about the Program Nest Report.
PF3	END	Returns to the Detail Reporting Menu.
PF7	UP	Pages up.
PF8	DOWN	Pages down.
PF10	LEFT	Scrolls left.
PF11	RIGHT	Scrolls right.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

Information returned by the report indicates that possible problems with PAYROLL are related to PGM30.

- The execution of PGM30 had an elapsed time of over one minute. This is by far the longest elapsed time of the group of programs executed

The TNM Administrator instructs the application programmers to tune program PGM30 for better performance.

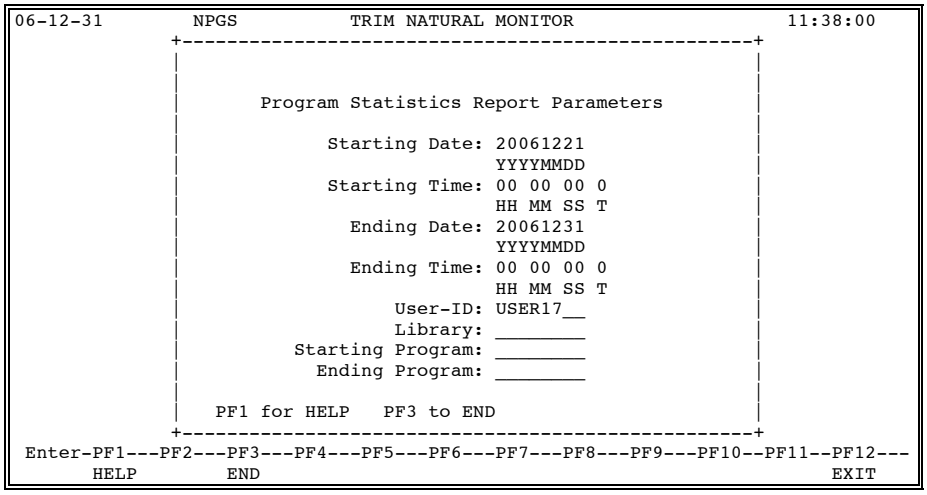
II.16.3.3.2 Program Statistics Report

The Program Statistics Report input window may be displayed by entering "B" on the Detail Reporting Menu or the direct command NPGS on any menu.

The Program Statistics Report displays a comprehensive listing of program statistics captured while Detail Data Collection was in effect. The Program Statistics Report has many uses, including:

- Identifying time-consuming programs
- Identifying time-consuming ADABAS calls
- Detecting excessive program executions and ADABAS calls
- Reporting statistics, including average runtime and ADABAS average elapsed time

For example, USER17 complains of poor response time while executing certain programs. Using the Summary Reports, the TNM Administrator determined that these problems occur only when USER17 executes the programs in question. After capturing detail information on USER17, the administrator uses the Program Statistics Report to gather statistics on the problem programs.



The TNM Administrator specifies the following parameters for the report:

- "20061221" in the Starting Date field and "20061231" in the "Ending Date" field. These parameters indicate the period during which detail data was collected for USER17
- "USER17" in the User-ID field

Field	Description
Starting Date (required)	Limits statistics to dates including and/or following this value (defaults to the current date).
Starting Time (required)	Limits statistics to times including and/or following this value.
Ending Date (required)	Limits statistics to dates including and/or preceding this value (defaults to the current date).
Ending Time (required)	Limits statistics to times including and/or preceding this value (defaults to the current time).
User-ID (optional)	Limits statistics to the specified user (defaults to the current User-ID).
Library (optional)	Limits statistics to the specified library.
Starting Program (optional)	Limits statistics to programs including and/or alphabetically following this value.
Ending Program (optional)	Limits statistics to programs including and/or alphabetically preceding this value.

The following PF-keys are provided for the input window:

PF-key	Function	Description
PF1	HELP	Provides information about the input window.
PF3	END	Returns to the Detail Reporting Menu.

The following screen displays the Program Statistics Report based on the parameters specified by the TNM Administrator.

```
06-12-31                        TRIM NATURAL MONITOR                      11:38:00
11:38:00                     PROGRAM STATISTICS REPORT
                                                                            Page 1
   Starting Date/Time: 06-12-21  00:00:00.0
   Ending Date/Time:   06-12-31  00:00:00.0
                                                                  Total ADABAS   Avg ADABAS                        Total       Average
Library  Program   Pgm Exec Total Runtime   Avg Runtime   ADA Calls  Elapsed Time  Elapsed Time Terminal I/Os Response Time Response Time
-------- -------- --------- ------------- ------------- ----------- ------------- ------------- ------------- ------------- -------------
PAYTEST  MENU             4 00:00:17.8273 00:00:04.4568           8 00:00:00.4335 00:00:00.0541             0
PAYTEST  MENU1            4 00:00:05.1288 00:00:01.2822           0                                         3 00:00:00.6867 00:00:00.1144
PAYTEST  PAYERR1          3 00:00:12.2704 00:00:09.0901           4 00:00:00.2287 00:00:00.0571             0
PAYTEST  PAYMAP2          3 00:00:11.4251 00:00:08.8083           0                                         6 00:00:07.8139 00:00:01.3023
PAYTEST  PRODA         3901 00:05:48.0678 00:02:45.5026          34 00:00:09.3544 00:00:04.5738             0
PAYTEST  PROHELP          2 00:00:09.8273 00:00:04.9136           2 00:00:00.1250 00:00:00.0625             0
PAYTEST  PROHELP1         5 00:00:07.1735 00:00:01.4347           0                                        14 00:00:01.8463 00:00:00.6154
PAYTEST  PROHEVNT         2 00:00:00.6071 00:00:00.3035           4 00:00:00.4036 00:00:00.1009             0
PAYTEST  TEST3            4 00:00:00.8398 00:00:00.2099           0                                         3 00:00:00.9287 00:00:00.2391
PAYTEST  TEST45           2 00:00:00.3017 00:00:00.1508           0                                         6 00:00:01.2398 00:00:00.4928
PAYTEST  TESTR4           5 00:00:36.5989 00:00:07.3197           6 00:00:00.3706 00:00:00.0617             0
PAYTEST  TESTRUN         19 00:00:56.2235 00:00:15.5907           0                                         2 00:00:03.2351 00:00:01.2856
 ---------------------------------------------------------------------------------
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12-----
      HELP  PARM  END                     UP    DOWN        LEFT  RIGHT EXIT
```

Field	Description
Starting Date/Time	The starting date and time specified on the input window.
Ending Date/Time	The ending date and time specified on the input window.
Library	The library in which the program is stored.
Program	The program for which statistics are returned.
Pgm Exec	The number of times the program executed during the specified time period.
Total Runtime	The total elapsed time for all executions of the program.
Avg Runtime	The average elapsed time for all executions of the program.
ADA Calls	The number of ADABAS calls issued by the program.
Total ADABAS Elapsed Time	The total elapsed time of a call being issued and returned from ADABAS.
Avg ADABAS Elapsed Time	The average elapsed time of a call being issued and returned from ADABAS.
Terminal I/Os	The number of times a terminating key (e.g., PF3 or Enter) is pressed by the user.
Total Response Time	The time between the user pressing Enter and the start of map execution.
Average Response Time	The average time between the user pressing Enter and the start of map execution.

The following PF-keys are provided for the Program Statistics Report:

PF-key	Function	Description
PF1	HELP	Provides information about the Program Statistics Report.
PF2	PARM	Returns to the input window.
PF3	END	Returns to the Detail Reporting Menu.
PF7	UP	Scrolls up.
PF8	DOWN	Scrolls down.
PF10	LEFT	Scrolls left.
PF11	RIGHT	Scrolls right.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

Information returned by this section of the report indicates high statistics for program PRODA:

- Program PRODA had 3,901 program executions, a total runtime of over five minutes, and an average runtime of over two minutes
- Therefore, program PRODA is the source of USER17's long response times. This report also returns statistics on ADABAS elapsed time, as displayed on the following page
- PRODA made 34 ADABAS calls, with a total elapsed time of nearly ten seconds
- PRODA's ADABAS elapsed time is excessive in comparison to that of other programs

The TNM Administrator instructs the application developers to tune program PRODA for better performance.

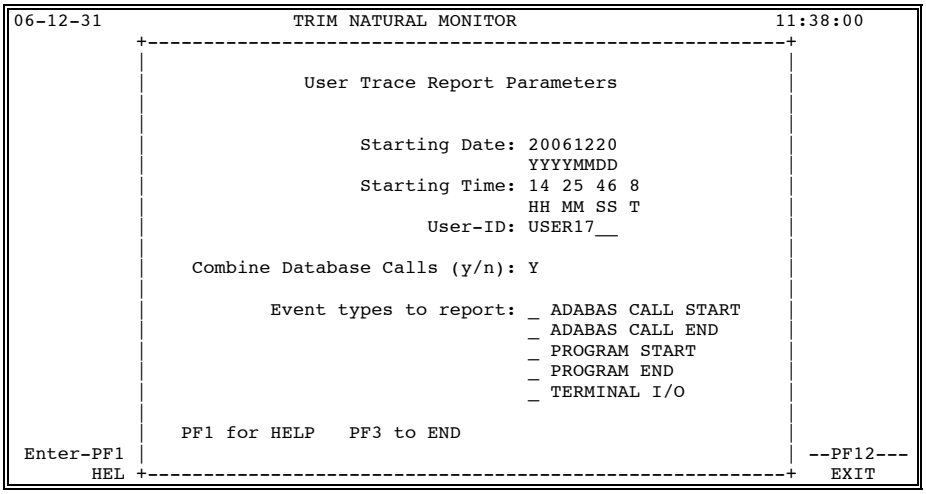
II.16.3.3.3 User Trace Report

The User Trace Report input window may be displayed by entering "C" on the Detail Reporting Menu or the direct command NUTR on any menu.

The User Trace Report provides statistics on the activity of a particular user. The User Trace Report has many uses, including the following:

- Displaying program execution flow and allowing five event types to be selected for reporting
- Pinpointing problems with response time
- Inspecting a user's activities for performance problems
- Displaying the order of each program called, ADABAS call made, and terminal I/O made by a user

For example, one of the users (USER17) of the Payroll application complains of erratic performance. At times, the application appears to be responding well and at other times very poorly. Other users of the application are not reporting problems. The TNM Administrator notices nothing unusual in the TNM Summary Reports. The Administrator asks what application functions the user is executing. The functions the user mentions are some of the most commonly used functions of the application. After collecting detail data on USER17, the Administrator uses the User Trace Report to check for problems.



The TNM Administrator specifies the following parameters for the report:

- "20061220" in the Starting Date field, which is the date the administrator began capturing data on USER17
- "14 25 46 8" in the Starting Time field, which is the time when data collection began
- "USER17" in the User-ID field
- "Y" in the Combine Database Calls field in order to display all calls with the same ADABAS command, database and file number together

Field	Description
Starting Date (required)	Limits statistics to dates including and/or alphabetically following this value (defaults to the current date).
Starting Time (required)	Limits statistics to times including and/or alphabetically following this value.
User-ID (required)	Limits statistics to the specified user (defaults to the current User-ID).
Combine Database Calls (Y/N) (required)	"Y" indicates all calls with the same ADABAS command, database, and file number will be displayed together (defaults to "Y"). "N" indicates all calls will be displayed separately.
Event Types To Report (optional)	Limits statistics to specific event types. Enter "X" next to the event types for reporting (if all types are left blank, all will be included in the report). The following event types can be chosen for reporting: ADABAS CALL START ADABAS CALL END PROGRAM START PROGRAM END TERMINAL I/O

The following PF-keys are provided for the input window:

PF-key	Function	Description
PF1	HELP	Provides information about the input window.
PF3	END	Returns to the Detail Reporting Menu.

The following screen displays the User Trace Report based on the parameters specified by the TNM Administrator.

```
 06-12-31                      TRIM NATURAL MONITOR                    11:38:00
                                USER TRACE REPORT
                                                                        Page 1
 User-ID: USER17         Starting Date: 06-12-20      Starting Time: 14:25:46.8
 Combine Database Calls: Y

                                                                        ADABAS
 Event           Time         Elapsed Time    Response Time   Library   Program   Line   CMD/DB/File    Date
 ------------------------------------------------------------------------------------------------------------
 TERMINAL I/O    14:25:46.8                                   PAYTEST   MAP1      0012                  06-12-20
 PROGRAM END     14:25:47.2   00:00:01.4963                   PAYTEST   MAP1                            06-12-20
 << 1 ADABAS CALL >>          00:00:00.0283                PAYTEST      PGMRUN1   0150   RC 2    0      06-12-20
 PROGRAM START   14:25:47.2                                   PAYTEST   PGMST5                          06-12-20
 <<493 ADABAS CALLS >>        00:00:07.0573                   PAYTEST   PGMST5    0140   L3 1    52     06-12-20
 << 1 ADABAS CALL >>          00:00:00.0000                   PAYTEST   PGMST5    0240   L3 2    231    06-12-20
 << 1 ADABAS CALL >>          00:00:00.0000                   PAYTEST   PGMST5    031    RC 2    231    06-12-20
 PROGRAM START   14:25:54.5                    00:00:07.7330   PAYTEST   MAPR7                           06-12-20
 TERMINAL I/O    14:26:00.5                                   PAYTEST   MAPR7     0220                  06-12-20
 PROGRAM END     14:26:06.5   00:00:12.0688                   PAYTEST   MAPR7                           06-12-20
 PROGRAM END     14:26:07.1   00:00:19.9461                   PAYTEST   PGMST5                          06-12-20
 ------------------------------------------------------------------------------
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP   PARM  END                     UP     DOWN         LEFT  RIGHT EXIT
```

Field	Description
User-ID	The User-ID for which statistics are returned.
Starting Date	The starting date specified on the input window.
Starting Time	The starting time specified on the input window.
Combine Database Calls	"Y" indicates all calls with the same ADABAS command, database and file number are displayed together. "N" indicates all calls are displayed separately.
Event	The event type. << >> indicates combined database calls.
Time	The time the event occurred.
Elapsed Time	The elapsed time of the event.
Response Time	The response time between the user pressing Enter and the start of map execution, in microseconds.
Library	The library in which the program is stored. <NATNUC> indicates ADABAS commands issued by the NATURAL nucleus.
Program	The program for which statistics are returned.
Line	The program line for which statistics are returned. Only displays for ADABAS calls and terminal I/Os.
ADA Cmd	The 2-character ADABAS command code. Only displays for ADABAS calls.

(continued from previous page)

Field	Description
ADABAS DB/File	The ADABAS database and file number. Only displays for ADABAS calls.
Date	The program execution date.

The following PF-keys are provided for the User Trace Report:

PF-key	Function	Description
PF1	HELP	Provides information about the User Trace Report.
PF2	PARM	Returns to the input window.
PF3	END	Returns to the Detail Reporting Menu.
PF7	UP	Scrolls up.
PF8	DOWN	Scrolls down.
PF10	LEFT	Scrolls left.
PF11	RIGHT	Scrolls right.
PF12	EXIT	Exits TNM and returns to the NATURAL Main Menu.

Information returned by the report indicates potential problems with program PGMST5.

- Program PGMST5 started at 14:25:47.2 and made 493 ADABAS calls

The report also helps the TNM Administrator to pinpoint the location of problems with program PGMST5.

- The line number in PGMST5 where the 493 ADABAS calls were made is 0140, and the ADABAS command is L3
- The ADABAS database on which those excessive calls occurred is database "1" and the file is "52"

The TNM Administrator learns that while the user is executing a commonly-used part of the application, the data the user is working with is causing the application to execute a section of the code that is not normally executed. This section of code contains a design flaw, which is causing it to re-read each record that it processes. This problem was not detected in the test environment because the test database contained very few records and the application's activity did not seem unusually high. When placed in the production environment, with large volumes of data, the problem became apparent.

RTM Programs or Screens are executable by entering the name of the program in the Screen-ID field at the top of the screen. While 100+ NATURAL modules make up the RTM, **only the following modules are directly executable** by entering the name in the Screen-ID field. Valid names are:

NAME	MEANING		PAGE
MENU	Main Menu		II-15
STOP	Terminate the RTM		II-15
CONTROLS			
CMEN	Control Options Main Menu		II-17
	CTRL	RTM Control	II-18
	CTAP	Time Adjustable Parameter (TRMTAP) Settings	II-23
	CTRE	tRelational Control	II-26
MINUTE COUNTS			
MMEN	Minute Statistics Main Menu		II-27
	MTHD	By Thread	II-28
	MFNR	By File Number	II-30
	MCMD	By Command Code	II-31
	MRSP	By Response Code	II-32
	MPGM	By Program Name	II-33
	MJOB	By Job Name	II-34
	MUID	By ADABAS User-ID	II-34
	MSID	By Security-ID	II-35
	MNSA	By Application Library	II-35
	MNSU	By NSS User-ID	II-36
	MCTI	By CICS Transaction-ID	II-36
	MUSA	By User Area	II-37
HOURLY COUNTS			
HMEN	Hourly Statistics Main Menu		II-39
	HCMD	By Command Code	II-39
	HFNR	By File Number	II-40
	HPGM	By Program Name	II-40
	HJOB	By Job Name	II-41
	HUID	By ADABAS User-ID	II-42
	HSID	By Security-ID	II-43
	HRSP	By Response Code	II-44
	HTHD	By Thread	II-44
	HNSA	By Application Library	II-45
	HNSU	By NSS User-ID	II-45
	HCTI	By CICS Transaction-ID	II-46
	HUSA	By User Area	II-46

Figure 1 - Real-Time Monitor Screen Names

NAME	MEANING		PAGE
SESSION STATISTICS			
SMEN	Session Statistics Main Menu		II-47
	SPRM	ADABAS Nucleus Parameters	II-48
	SNUC	ADABAS Nucleus Statistics	II-49
	SFNR	By File Number	II-50
	SCMD	By Command Code	II-51
	SCWF	By Command Within File	II-51
	SPGM	By Program Name	II-52
	SJOB	By Job Name	II-52
	SUID	By ADABAS User-ID	II-53
	SSID	By Security-ID	II-54
	SRSP	By Response Code	II-54
	STHD	By Thread	II-55
	SDUR	Commands Of Long Duration	II-55
	SNSA	By Application Library	II-59
	SNSU	By NSS User-ID	II-59
	SCTI	By CICS Transaction-ID	II-60
	SUSA	By User Area	II-60
QUEUES & TABLES			
QUES	Queues and Tables Main Menu		II-61
	QUQE	User Queue Element	II-62
	QHQ	Hold Queue	II-64
	QHHQ	Highest Users Of Hold Queue	II-65
	QUQF	Active Users Of A File	II-66
	QUQN	Active Users Of A Program	II-67
	QUQA	Active Users Of An Application Library	II-68
	QUQU	Active Users Of An NSS User-ID	II-68
	QCQ	Command Queue	II-69
	QSC	Table Of Sequential Commands	II-70
	QHSC	Highest Users Of Table Of Sequential Commands	II-71
	QSR	Table Of Search Results	II-72
	QHSR	Highest Users Of Table Of Search Results	II-73
	QIF	Internal Format Buffer	II-74
	QHIF	Highest Users In IFB	II-75

Figure 1 - Real-Time Monitor Screen Names (continued)

NAME	MEANING		PAGE
TRACE			
TRAC	Dynamic Trace Facility		II-77
	TLIB	Trace By Application Library	II-78
	TDSP	Trace Display	II-80
	TCMD	Trace By ADABAS Command	II-83
	TFNR	Trace By File Number	II-84
	TPGM	Trace By Program Name	II-85
	TSID	Trace By Security-ID	II-86
	TI/O	Trace By ADABAS I/O	II-87
	TDUR	Trace By Command Duration	
	TACT	Display Of Active Traces	II-88
	TALL	Trace All ADABAS Activity	
	TJOB	Trace By Job Name	
	TNSU	Trace By NSS User-ID	
	TRSP	Trace By Response Code	
	TUID	Trace By ADABAS Internal User-ID	
DATABASE INFORMATION			
INFO	Database Information Main Menu		II-90
	IGCB	General Database Information	II-92
IFCB	File Control Block		II-93
	IFDT	Field Definition Table	II-95
	IDEV	Device Type Database Information	II-98
SECURITRE INFORMATION			
VMEN	SECURITRE Interface Main Menu		II-99
	VUID	Violations By ADABAS User-ID	II-100
	VJOB	Violations By Job Name	II-100
	VFNR	Violations By File Number	II-101
	VPGM	Violations By Program Name	II-101
	VNSA	Violations By Application Library	II-102
	VSID	Violations By Security-ID	II-102
	VPUR	SECURITRE Table Purge Information	II-103
	VACT	SECURITRE Table Activity Information	II-103

Figure 1 - Real-Time Monitor Screen Names (continued)

NAME	MEANING		PAGE
ENVIRONMENT INFORMATION			
EMEN	Environment Information Main Menu		II-104
	EAIN	ADABAS Information	II-106
	EAAM	ADABAS Addresses of Modules	II-106
	EAAT	ADABAS Addresses of Tables	II-107
	ENIN	NATURAL Information	II-107
	ENBP	NATURAL Buffer Pool Objects	II-108
	EUX1	TRIM Link-Exit-1 Information	II-112
	EUX2	TRIM Link-Exit-2 Information	II-113
	E1IN	TRIM User-Exit-11 Information	II-113
	E1PA	TRIM User-Exit-11 Communication Run Parms	II-114
	E4IN	TRIM User-Exit-4 Information	II-114
	E4AM	TRIM User-Exit-4 Addresses of Modules	II-115
	E4AT	TRIM User-Exit-4 Addresses of Tables	II-115
	E4LO	TRIM User-Exit-4 Logging Parameters	II-116
	E4RS	TRIM User-Exit-4 Exceptional RSP Codes	II-118
WARNING			
WARN	Exceptional Response Code Warnings		II-119
TRIM NATURAL Monitor (TNM)			
NTNM	TRIM NATURAL Monitor Main Menu		II-123
NADM	TRIM NATURAL Monitor Administration Menu		II-125
	NPRM	Define Data Collection Parameters	II-128
	NCON	Convert Detail Data	II-131
	NPRS	Purge Summary Data Menu	II-133
	NPDT	Purge Program Summary Data By Date	II-135
	NPDY	Purge Program Summary Data By Days	II-137
	NPLI	Purge Program Summary Data By Library	II-139
	NUDT	Purge User Summary Data By Date	II-141
	NUDY	Purge User Summary Data By Days	II-143
	NUUS	Purge User Summary Data By User-ID	II-145
	NPRD	Purge Detail Data Menu	II-147
	NDHR	Purge Detail Data By Hour	II-148
	NDLI	Purge Detail Data By Library	II-150
	NNDT	Purge Non-converted Data By Date	II-152
	NNDY	Purge Non-converted Data by Days	II-154
	NNUS	Purge Non-converted Data by User-ID	II-156

Figure 1 - Real-Time Monitor Screen Names (continued)

NAME	MEANING		PAGE
NREP	Reporting Menu		II-158
	NRPS	Summary Reporting Menu	II-160
	NPGM	Program Activity Summary Report	II-162
	NPGH	Program Activity History Report	II-165
	NPPC	Program Percentage Summary Report	II-169
	NUSR	User Activity Summary Report	II-173
	NUSH	User Activity History Report	II-177
	NUPC	User Percentage Summary Report	II-181
	NRPD	Detail Reporting Menu	II-185
	NPGN	Program Nest Report	II-187
	NPGS	Program Statistics Report	II-190
	NUTR	User Trace Report	II-194

Figure 1 - Real-Time Monitor Screen Names (continued)

II.16.3.4 TNM Batch Reporting

The following section describes the use of TNM Summary and Detail Batch reporting. Sample JCL has been provided for MVS, DOS, and VM operating systems. For each report, information, such as the parameter name, the format of the parameter (if necessary), whether the parameter is required or optional, and a description of the parameter, is provided. An example of the parameter specification is also included.

II.16.3.4.1 Summary Reporting in Batch

Summary Reports may be run in batch. Batch reporting is recommended when reports will access large amounts of data.

The following sample JCL may be used to support the batch reporting process for MVS. The JCL must be tailored to accommodate site-specific needs.

When submitting a TNM report in batch, it is necessary to replace the #PROGRAM card in the sample JCL/EXECs with the report program to be executed and to replace the #CONTROL card with the report parameters in the exact order described, separated by the delimiter character (the default is comma). Optional parameters may be omitted, but they must be designated with the delimiter character if other parameters follow.

For descriptions of #CONTROL fields, refer to field descriptions in corresponding sections of Summary Reporting.

Multiple reports may be run in the same job stream.

Sample MVS JCL:

```
//TNMBATCH     JOB(20000),'TNM BATCH REPORT'
//*
//REPORT       EXEC    NATURAL
//CMPRINT      DD      SYSOUT=*
//CMPRT01      DD      SYSOUT=A
//CMSYNIN      DD      *
LOGON TRMV811
#PROGRAM
#CONTROL
FIN
/*
//
```

The following JCL is an example used to support Batch Administration functions for VSE. This JCL must be tailored to accommodate site-specific needs.

Sample DOS JCL:

```
//JOB
//EXEC NATXXX,...
LOGON TRMV811
#PROGRAM
#CONTROL
FIN
/*
//
```

The following EXEC is a sample EXEC used to support the batch reporting process for VM. The EXEC must be tailored to accommodate site-specific needs.

Sample VM EXEC:

```
/* Execute a report */
address 'COMMAND'
'ERASE TNMREPT CMSYNIN A'

'EXECIO 1 DISKW TNMREPT CMSYNIN A 1 F 80(STRING LOGON TRMV811'
'EXECIO 1 DISKW TNMREPT CMSYNIN A 2 F 80(STRING #PROGRAM'
'EXECIO 1 DISKW TNMREPT CMSYNIN A 3 F 80(STRING #CONTROL'
'EXECIO 1 DISKW TNMREPT CMSYNIN A 4 F 80(STRING FIN'

'FILEDEF * CLEAR'
'FILEDEF CMSYNIN DISK TNMREPT CMSYNIN A'
'FILEDEF CMPRINT PRINTER'
'FILEDEF CMPRT01 PRINTER'
'EXEC NAT BATCH'

'ERASE TNMREPT CMSYNIN A'
exit
```

Program Activity Summary Report

#PROGRAM:	TNMBPSUM
#CONTROL:	Starting Library,Starting Program,Average Runtime,High Runtime,Last User-ID,High Run User-ID,Total Pgm Exec,Total ADA Calls

Report Example

```
LOGON TRMV811

TNMBPSUM                                    (#PROGRAM)

,,09:22:00:3,11:32:00:0,,USER24,10,         (#CONTROL)
```

#CONTROL	FORMAT	DESCRIPTION
Starting Library (optional)		Limits statistics to libraries including and/or alphabetically following this value.
Starting Program (optional)		Limits statistics to programs including and/or alphabetically following this value.
Average Runtime (optional)	HH:MM:SS:T	Limits statistics to programs with an average elapsed time equal to and/or exceeding this value.
High Runtime (optional)	HH:MM:SS:T	Limits statistics to programs with lapsed times equal to and/or exceeding this value.
Last User-ID (optional)		Limits statistics to programs last executed by the user.
High Run User-ID (optional)		Limits statistics to programs that had the longest elapsed time for this user.
Total Pgm Exec (optional)		Limits statistics to programs which were executed a number of times equal to and/or exceeding this value.
Total ADA Calls (optional)		Limits statistics to programs that issued a total number of ADABAS calls equal to and/or exceeding this value.

Program Activity History Report

#PROGRAM: TNMBPHIS

#CONTROL: Starting Date,Ending Date,Starting Library,Starting Program,Average Runtime,High Runtime, Last User-ID,High Run User-ID,Total Pgm Exec,Total ADA Calls

Report Example

```
LOGON TRMV811

TNMBPHIS                                        (#PROGRAM)

20041221,20041231,,,08:22:10:0,,USER24,,14,     (#CONTROL)
```

#CONTROL	FORMAT	DESCRIPTION
Starting Date (optional)	YYYYMMDD	Limits statistics to dates including and/or following this date.
Ending Date (optional)	YYYYMMDD	Limits statistics to dates including and/or preceding this date.
Starting Library (optional)		Limits statistics to libraries including and/or alphabetically following this value.
Starting Program (optional)		Limits statistics to programs including and/or alphabetically following this value.
Average Runtime (optional)	HH:MM:SS:T	Limits statistics to programs with an average elapsed time equal to and/or exceeding this value.
High Runtime (optional)	HH:MM:SS:T	Limits statistics to programs with lapsed times equal to and/or exceeding this value.
Last User-ID (optional)		Limits statistics to programs last executed by the user.
High Run User-ID (optional)		Limits statistics to programs that had the longest elapsed time for this user.
Total Pgm Exec (optional)		Limits statistics to programs which were executed a number of times equal to and/or exceeding this value.
Total ADA Calls (optional)		Limits statistics to programs that issued a total number of ADABAS calls equal to and/or exceeding this value.

Program Percentage Summary Report

#PROGRAM:	TNMBPPC
#CONTROL:	Date,Starting Library,Starting Program,Percentage Runtime,Percentage Pgm Exec,Percentage ADA Calls,Total Runtime,High Runtime,Total Pgm Exec,Total ADA Calls,High Run User-ID

Report Example

```
LOGON TRMV811

TNMBPPC                                  (#PROGRAM)

20040622,,,43,,,00:05:00:0,,,,           (#CONTROL)
```

#CONTROL	FORMAT	DESCRIPTION
Date (required)	YYYYMMDD	Limits statistics to dates including and/or following this value (defaults to the current date).
Starting Library (optional)		Limits statistics to libraries including and/or alphabetically following this value.
Starting Program (optional)		Limits statistics to programs including and/or alphabetically following this value.
Percentage Runtime (optional)		Limits statistics to programs with a percentage elapsed time equal to and/or exceeding this value.
Percentage Pgm Exec (optional)		Limits statistics to programs with a percentage of executions equal to and/or exceeding this value.
Percentage ADA Calls (optional)		Limits statistics to programs with a percentage of ADABAS calls equal to and/or exceeding this value.
Total Runtime (optional)	HH:MM:SS:T	Limits statistics to programs with a total elapsed time equal to and/or exceeding this value.
High Runtime (optional)	HH:MM:SS:T	Limits statistics to programs with lapsed times equal to and/or exceeding this value.
Total Pgm Exec (optional)		Limits statistics to programs which were executed a number of times equal to and/or exceeding this value.

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#CONTROL	FORMAT	DESCRIPTION
Total ADA Calls (optional)		Limits statistics to programs that issued a total number of ADABAS calls equal to and/or exceeding this value.
High Run User-ID (optional)		Limits statistics to programs that had the longest elapsed time for this user.

User Activity Summary Report

#PROGRAM: TNMBUSR

#CONTROL: Active User-IDs Only,Starting User-ID,Ending User-ID,Avg Rsp,Total Pgm Exec,Total ADA Calls,Last Transmission Pgm Exec,Last Transmission ADA Calls

Report Example

```
LOGON TRMV811

TNMBUSR                    (#PROGRAM)

Y,USER24,,00:12:0,,,,      (#CONTROL)
```

#CONTROL	FORMAT	DESCRIPTION
Active User-IDs Only (required)	Y or N	"Y" limits statistics to users who are currently logged on to NATURAL (defaults to "Y"). "N" returns statistics on active and inactive User-Ids.
Starting User-ID (optional)		Limits statistics to User-Ids including and/or alphabetically (or numerically) following this value.
Ending User-ID (optional)		Limits statistics to User-Ids including and/or alphabetically (or numerically) preceding this value.
Avg Rsp (optional)	MM:SS:T	Limits statistics to users with average response times equal to and/or exceeding this value.
Total Pgm Exec (optional)		Limits statistics to programs which were executed a number of times equal to and/or exceeding this value.
Total ADA Calls (optional)		Limits statistics to programs that issued a total number of ADABAS calls equal to and/or exceeding this value.

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#CONTROL	FORMAT	DESCRIPTION
Last Transmission Pgm Exec (optional)		Limits statistics to users for whom the number of program executions included in the last transmission were equal to and/or exceeded this value.
Last Transmission ADA Calls (optional)		Limits statistics to users for whom the number of ADABAS calls included in the last transmission were equal to and/or exceeded this value.

User Activity History Report

#PROGRAM: TNMBUHIS

#CONTROL: Starting Date,Ending Date,Starting User-ID,Ending User-ID,Avg Rsp,Total Pgm Exec,Total ADA Calls,Last Transmission Pgm Exec,Last Transmission ADA Calls

Report Example

```
LOGON TRMV811

TNMBUHIS                                (#PROGRAM)

20041103,19950322,,,00:10:0,,,,         (#CONTROL)
```

#CONTROL	FORMAT	DESCRIPTION
Staring Date (optional)	YYYYMMDD	Limits statistics to dates including and/or following this date.
Ending Date (optional)	YYYYMMDD	Limits statistics to dates including and/or preceding this date.
Starting User-ID (optional)		Limits statistics to User-Ids including and/or alphabetically (or numerically) following this value.
Ending User-ID (optional)		Limits statistics to User-Ids including and/or alphabetically (or numerically) preceding this value.
Avg Rsp (optional)	MM:SS:T	Limits statistics to users with average response times equal to and/or exceeding this value.
Total Pgm Exec (optional)		Limits statistics to programs which were executed a number of times equal to and/or exceeding this value.

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#CONTROL	FORMAT	DESCRIPTION
Total ADA Calls (optional)		Limits statistics to programs that issued a total number of ADABAS calls equal to and/or exceeding this value.
Last Transmission Pgm Exec (optional)		Limits statistics to users for whom the number of program executions included in the last transmission were equal to and/or exceeded this value.
Last Transmission ADA Calls (optional)		Limits statistics to users for whom the number of ADABAS calls included in the last transmission were equal to and/or exceeded this value.

User Percentage Summary Report

#PROGRAM: TNMBUPC

#CONTROL: Date,Active User-IDs Only,Starting User-ID,Ending User-ID,Percentage Rsp Time,Percentage Pgm Exec,Percentage ADA Calls,Total Rsp Time,Total Pgm Exec,Total ADA Calls

Report Example

```
LOGON TRMV811

TNMBUPC                                  (#PROGRAM)

20041031,N,,USER24,50,25,80,,,           (#CONTROL)
```

#CONTROL	FORMAT	DESCRIPTION
Date (required)	YYYYMMDD	Limits statistics to dates including and/or following this value (defaults to the current date).
Active User-IDs Only (required)	Y or N	"Y" limits statistics to users who are currently logged on to NATURAL (defaults to "Y"). "N" returns statistics on active and inactive User-Ids.
Starting User-ID (optional)		Limits statistics to User-Ids including and/or alphabetically (or numerically) following this value.
Ending User-ID (optional)		Limits statistics to User-Ids including and/or alphabetically (or numerically) preceding this value.

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#CONTROL	FORMAT	DESCRIPTION
Percentage Rsp Time (optional)		Limits statistics to users with a percentage of response time equal to and/or exceeding this value.
Percentage Pgm Exec (optional)		Limits statistics to programs with a percentage of executions equal to and/or exceeding this value.
Percentage ADA Calls (optional)		Limits statistics to programs with a percentage of ADABAS calls equal to and/or exceeding this value.
Total Rsp Time (optional)	HH:MM:SS:T	Limits statistics to users with a total response time equal to and/or exceeding this value.
Total Pgm Exec (Optional)		Limits statistics to programs which were executed a number of times equal to and/or exceeding this value.
Total ADA Calls (optional)		Limits statistics to programs that issued a total number of ADABAS calls equal to and/or exceeding this value.

II.17 Detail Reporting in Batch

Detail Reports may be run in batch. Batch reporting is recommended when reports access large amounts of data.

The following sample JCL may be used to support the batch reporting process for MVS. The JCL must be tailored to accommodate site-specific needs.

When submitting a TNM report in batch, it is necessary to replace the #PROGRAM card in the sample JCL/EXECs with the report program to be executed and to replace the #CONTROL card with the report parameters in the exact order described, separated by the delimiter character (the default is comma). Optional parameters may be omitted but must be designated with the delimiter character if other parameters follow.

For descriptions of #CONTROL fields, refer to field descriptions in corresponding sections of Detail Reporting.

Multiple reports may be run in the same job stream.

Sample MVS JCL:

```
//TNMBATCH     JOB(20000),'TNM BATCH REPORT'
//*
//REPORT       EXEC    NATURAL
//CMSYNIN      DD      *
//CMPRINT      DD      SYSOUT=*
//CMPRT01      DD      SYSOUT=*
LOGON TRMV811
#PROGRAM
#CONTROL
FIN
/*
//
```

The following JCL is an example used to support Batch Administration functions for VSE. This JCL must be tailored to accommodate site-specific needs.

Sample VSE JCL:

```
//JOB
//EXEC NATXXX,...
LOGON TRMV811
#PROGRAM
#CONTROL
FIN
/*
//
```

The following EXEC is a sample EXEC used to support the batch reporting process for VM. The EXEC must be tailored to accommodate site-specific needs.

Sample VM EXEC:

```
/* Execute a report */
address 'COMMAND'
'ERASE TNMREPT CMSYNIN A'

'EXECIO 1 DISKW TNMREPT CMSYNIN A 1 F 80(STRING LOGON TRMV811'
'EXECIO 1 DISKW TNMREPT CMSYNIN A 2 F 80(STRING #PROGRAM'
'EXECIO 1 DISKW TNMREPT CMSYNIN A 3 F 80(STRING #CONTROL'
'EXECIO 1 DISKW TNMREPT CMSYNIN A 4 F 80(STRING FIN'

'FILEDEF * CLEAR'
'FILEDEF CMSYNIN DISK TNMREPT CMSYNIN A'
'FILEDEF CMPRINT PRINTER'
'FILEDEF CMPRT01 PRINTER'
'EXEC NAT BATCH'

'ERASE TNMREPT CMSYNIN A'
exit
```

Program Nest Report

#PROGRAM: TNMBPGN

#CONTROL: Starting Date,Starting Time,User-ID

Report Example

```
LOGON TRMV811
TNMBPGN                                  (#PROGRAM)
20040401,09:00:00:0,USER24               (#CONTROL)
```

#CONTROL	FORMAT	DESCRIPTION
Starting Date (required)	YYYYMMDD	Report on programs beginning with the specified starting date or later.
Starting Time (required)	HH:MM:SS:T	Report on programs executed at the specified starting time or later.
User-ID (required)		Report on programs that have been executed by the specified user-ID.

Program Statistics Report

#PROGRAM: TNMBPGS

#CONTROL: Starting Date,Starting Time,Ending Date,Ending Time,User-ID,Library,Starting Program,Ending Program

Report Example

```
LOGON TRMV811
TNMBPGS                                                    (#PROGRAM)
20040401,09:00:00:0,20040402,09:00:00:0,,,,                (#CONTROL)
```

#CONTROL	FORMAT	DESCRIPTION
Starting Date (required)	YYYYMMDD	Report on programs beginning with the specified starting date or later.
Starting Time (required)	HH:MM:SS:T	Report on programs executed at the specified starting time or later.
Ending Date (required)	YYYYMMDD	Report on programs ending up to the specified date.
Ending Time (required)	HH:MM:SS:T	Report on programs ending up to the specified ending time.
User-ID (optional)		Report on programs executed by the specified user-ID.
Library (optional)		Report on programs executed out of the specified library.
Starting Program (optional)		Report on programs beginning with the specified program name or later.
Ending Program (optional)		Report on programs ending with the specified program name or prior.

User Trace Report

#PROGRAM:	TNMBUTR
#CONTROL:	Starting Date,Starting Time,User-ID,Combine Database Calls,Event Types to Report

Report Example

```
LOGON TRMV811
TNMBUTR                                  (#PROGRAM)
20040401,09:00:00:0,USER24,Y,X X X       (#CONTROL)
```

> **Note:** In this example, the event types to report will be ADABAS Call Start, Program Start, and Terminal I/O

#CONTROL	FORMAT	DESCRIPTION
Starting Date (required)	YYYYMMDD	Report on programs with the specified starting date or later.
Starting Time (required)	HH:MM:SS:T	Report on programs with the specified starting time or later.
User-ID (required)		Report on programs executed by the specified user-ID.
Combine Database Calls (required)	Y or N	"Y" indicates all calls with the same ADABAS command , database, and file number will be displayed together (defaults to "Y"). "N" indicates all calls will be displayed separately.
Event Types To Report (optional)	X	Limits statistics to specific events. Enter "X" next to the event types for reporting (if all types are left blank, all will be included in the report). The following event types can be chosen for reporting: ADABAS CALL START ADABAS CALL END PROGRAM START PROGRAM END TERMINAL I/O

SECTION III

DYNAMIC CONTROL AND SECURITY FACILITY

III.1 Introduction

It is possible for programmers, even experienced ones, to invoke inefficient ADABAS commands or command options. With NATURAL, it is easy to create programs and, consequently, easy to accidentally cause performance degradation. File design and program logic should be checked very carefully before putting a system into production. TRIM's Dynamic Control and Security Facility makes this job easier.

The purpose of the Dynamic Control and Security Facility is to:

- Screen out inefficient commands
- Lock out file access
- Change ADABAS passwords
- TRIM Security Checking

SCREEN OUT INEFFICIENT COMMANDS

This Dynamic Control and Security Facility provides for the screening out of inefficient commands through DBA coded parameter statements and a supplied UEX11. The DBA may disallow S2 and S9 (FIND SORTED) commands except for approved jobs or files or disallow data modification to particular files except by approved jobs, etc.

Note: Treehouse Software's SECURITRE product provides a User-ID-based security interface between ADABAS/NATURAL and RACF, ACF2, or TOP-SECRET.

LOCK OUT FILE ACCESS

Often the DBA attempts to run an ADABAS utility, only to find that one or more users are accessing the file. The DBA may "stop" that user, only to find that another user is accessing the file. TRIM's Dynamic Control and Security Facility provides for locking out file(s) to all users except a particular job (e.g., the DBA's job). Other file(s) may be locked for security reasons, to back out or otherwise repair the file(s), to report on the data before it is accessed, etc.

First, the Real-Time Monitor's QUQF screen should be used to view users of the file to be locked. Possibly no locking should be done if users are marked as having anything other than "access" to the file. It is possible through this QUQF screen to remove a user's accessibility to the indicated file. This may be necessary for a user who has been active for a long time, accessed the file long ago, and does not intend to access it again. A STOPU operator command may be appropriate only if the user appears totally inactive.

CHANGE ADABAS PASSWORDS

All commands to ADABAS are funneled through User-Exit-11, making it the logical place to handle simple security situations. For example, sometimes passwords must be changed in ADABAS, but all of the programs (NATURAL, COBOL, etc.) and parameter cards cannot be quickly changed, nor may all of the data entry personnel be informed about the new password. With the Dynamic Control and Security Facility, the DBA may code simple parameters to cause User-Exit-11to change the password in each applicable ADABAS call Control Block before ADABAS processes the command.

TRIM SECURITY CHECK

The Dynamic Control and Security Facility may also be used to do the password check directly in User-Exit-11. For example, the DBA may code simple parameters to fail any DELETE Command to file 88 in which the password is not "ABCDEFGH". ADABAS gives the user (DBA) no similar command-level options.

ADABAS Security based upon password is not intended to be replaced with this Dynamic Security feature. Instead, TRIM Dynamic Security should be considered a complement to ADABAS Security.

III.2 Using Dynamic Control and Security

The Dynamic Control and Security Facility has been designed so that there is no adverse impact upon ADABAS operation. In other words, there is no code to modify, nothing to assemble, no need to bring ADABAS down and up, etc.

To execute the Dynamic Control and Security Facility, the user only needs to:

- Include the supplied TRIM user exits for use with ADABAS
- Be sure the ADARUN parameters are specified as:

```
LOGGING=YES,
UEX1=TRMUEX11,
UEX4=TRMUEX4x          x = Large/Regular/Small
UEX8=TRMUEX8
```

- Code a few TRIM parameters and execute the TRIM UEX11 Communication Run

TRIM User-Exit-11 is "dormant", permitting all commands to go through to ADABAS until the first User-Exit-11 Communication Run is executed. For example, this TRIM run may direct TRMUEX11 to do the following:

- Disallow S2 and S9 (FIND SORTED) commands except for certain JOBs or FNRs
- Disallow any data modification commands to certain "read-only" files, except by approved JOBs
- Lock out certain files from access except by certain JOBs
- Pass or fail certain calls to certain files based upon password value
- Set a new password value into the ADABAS Call's Control Block based upon JOB, FNR, and an old password value

Immediately upon successful communication to TRMUEX11, all commands from any user program that are disallowed, locked out, or failed will receive response codes 22 (Invalid Command), 17 (Invalid File Number), or 200 (Security Violation). These response code values are modifiable by Zap. Close (CL) commands will always be permitted to go to ADABAS.

The user may continuously adjust the commands being allowed, files being locked, and security checks being made by running TRIM to communicate with TRMUEX11 with different parameters. TRMUEX11 Communication is not "incremental". In other words, each Communication Run completely replaces any previous Communication Run to the same TRMUEX11 on the same database. To negate the effect of User-Exit-11, the user may run TRIM with only a UEX11 statement.

ADABAS must be up and ADABAS Logging turned on when executing this TRIM Dynamic Control and Security Facility. However, it is not necessary to actually log records. TRMUEX4x may be instructed not to log.

The RTM screen E1PA may be used to view the TRMUEX11 Communication Run in effect.

Refer to ***Section V.7 Dynamic Control and TRMUEX11*** of the ***TRIM Installation and Operations Manual*** for operational details.

Figure 2 shows sample parameters to be communicated to User-Exit-11.

```
************************************************************
**  SAMPLE TRIM PARAMETER CARDS FOR COMMUNICATION TO UEX11   **
************************************************************
UEX11
ALLOW       S2,FNR=(43,47)                  FIND SORTED OK FOR THESE FILES
DISALLOW    S2                              OTHERWISE, DISALLOW FIND SORTED
ALLOW       S9,FNR=(43,47)                  FIND SORTED OK FOR THESE FILES
DISALLOW    S9                              OTHERWISE, DISALLOW FIND SORTED
UNLOCK      11,JOB=DBAFIMOD                 ALLOW ONLY DBA ACCESS TO FILE 11
LOCK        11                              OTHERWISE, NOBODY CAN ACCESS IT
PASS        FNR=89,ADD3=SECRET03
PASS        FNR=89,ADD3=SECRET04
FAIL        FNR=89                          NO OTHER PASSWORDS PERMITTED
SETPW       NEWBASIC,FNR=(41,36447-36481)   ASSIGN NEW PASSWORD
```

Figure 2 - Sample Parameters For Dynamic Control And Security Facility

III.3 Parameter Statements and Types

Parameter statements that may be used with the Dynamic Control and Security Facility include:

Dynamic Control and Security Initiation

op-codes:	UEX11	Informs TRIM that the subsequent statements are for communication to TRMUEX11.

Command Screening

op-codes:	ALLOW DISALLOW	Specifies criteria for allowing or disallowing certain ADABAS commands to be processed by ADABAS.

File Lockout

op-codes:	LOCK UNLOCK	Specifies criteria for locking access to certain ADABAS files, possibly to allow certain jobs to process the file interrupted.

Password Checking

op-codes:	PASS FAIL	Specifies criteria for passing or failing a security check, usually based upon an ADABAS password.

Password Assignment

op-codes:	SETPW	Specifies criteria for setting a new password in the ADABAS Control Block.

III.4 Parameter Statement Syntax and Descriptions

For general parameter syntax rules, refer to **Appendix A: General Parameter Rules**.

III.4.1 UEX11

This parameter informs TRIM that communication is to be made to TRMUEX11.

SYNTAX:

```
UEX11    ID=character-string
```

III.4.2 ALLOW/DISALLOW

The ALLOW and DISALLOW statements specify the criteria for allowing certain commands (ALLOW) or disallowing certain commands (DISALLOW) to be processed further by ADABAS. This permits the screening of inefficient commands except for pre-approved cases. Commands that are disallowed will receive ADABAS response code 22 (Invalid Command) or another value that is modifiable by Zap.

SYNTAX

```
{  ALLOW
   DISALLOW }   command,relation-expression[,relation-expression]
```

The command specifies one ADABAS command code.

Each relation-expression specifies:

- field:

  a field in the ADABAS Control Block (refer to Figure 3), such as FNR, ISN, etc. or the JOB NAME, USER-ID, or NATPROG

- relation-operator:

  = (equal)
  > (greater than)
  < (less than)
  ¬ (not equal)

- value-list:

  a list containing one or more values. If more than one, the values must be enclosed in parentheses and separated by commas. Value ranges are stated as value-value. The value format should agree with the input field format (e.g., JOB is alphanumeric, FNR is numeric).

Multiple values following an equal operator imply logical OR relationships. Multiple values following a not equal operator imply logical AND relationships.

Multiple relation-expressions imply logical AND relationships.

When the Control Block or JOB fields match the ALLOW/DISALLOW selection criteria, the decision for further ADABAS processing has been made and subsequent ALLOW/DISALLOW statements have no effect on that decision.

The default is to ALLOW any command.

EXAMPLES

```
ALLOW          S2,FNR=(17,29708),JOB=(PAAAAAAA-P9999999)
DISALLOW       S2
```

ADABAS will be allowed to process any S2 commands where the FNR=17 or 29708 and the JOB is in the indicated range. Other S2 commands will not be allowed to continue being processed by ADABAS and will receive Response Code 22 (Invalid Command).

```
DISALLOW       S9,FNR=(25-35),JOB=TEST1234
```

S9 commands for FNR 25 through 35 for JOB=TEST1234 will not be processed by ADABAS. Any other S9 commands are acceptable for processing.

III.4.3 LOCK/UNLOCK

The LOCK and UNLOCK statements specify the criteria for permitting access to certain files (UNLOCK) or preventing access to certain files (LOCK). This provides a file lockout capability so the DBA may run Utilities, back up or restore files without interruption, report on data before accessing/updating it, etc. Commands that are locked out will receive ADABAS response code 17 (Invalid File Number) or another value that is modifiable by Zap.

SYNTAX

```
{   LOCK
    UNLOCK    }  file-number, relation-expression[,relation-expression]
```

The file-number specifies one ADABAS file-number.

Each relation-expression specifies:

- field:

  a field in the ADABAS Control Block (refer to Figure 3) such as FNR, ISN, etc. or the JOB-NAME, USER-ID, or NATPROG.

- relation-operator:

  = (equal)
  > (greater than)
  < (less than)
  ¬ (not equal)

- value-list:

  a list containing one or more values. If more than one, the values must be enclosed in parentheses and separated by commas. Value ranges are stated as value-value. The value format should agree with the input field format (e.g., JOB is alphanumeric, FNR is numeric).

Multiple values following an equal operator imply logical OR relationships. Multiple values following a not equal operator imply logical AND relationships.

Multiple relation-expressions imply logical AND relationships.

When the Control Block or JOB fields match the LOCK/UNLOCK selection criteria, the decision for further ADABAS processing has been made and subsequent LOCK/UNLOCK statements have no effect on that decision.

The default is UNLOCK.

EXAMPLES

```
UNLOCK      117,JOB=DBAFIMOD
LOCK        117
```

ADABAS will be allowed to process any file 117 commands issued by JOB=DBAFIMOD. Other access to file 117 will be prevented with Response Code 17 (Invalid File Number) resulting.

```
LOCK        23,CMD=(E1,E4),JOB¬TABLUPDT
```

File 23 cannot have records deleted (E1, E4 commands), unless the JOB is TABLUPDT. Other jobs may access the file to add and update records, but they may not delete records.

III.4.4 PASS/FAIL

The PASS and FAIL statements specify the criteria for permitting certain commands (PASS) or prohibiting certain commands (FAIL) from being processed further by ADABAS. This provides a measure of quick security or password protection prior to ADABAS seeing the call. Commands that are failed will receive ADABAS response code 200 (Security Violation) or another value that is modifiable by Zap.

SYNTAX

```
{  PASS
   FAIL  }   relation-expression[,relation-expression]...
```

Each relation-expression specifies:

- field:

  a field in the ADABAS Control Block (refer to Figure 3) such as FNR, ADD3 (password), etc. or JOB-NAME, USER-ID, or NATPROG.

- relation-operator:

=	(equal)
>	(greater than)
<	(less than)
¬	(not equal)

- value-list:

  a list containing one or more values. If more than one, the values must be enclosed in parentheses and separated by commas. Value ranges are stated as value-value. The value format should agree with the input field format (e.g., JOB is alphanumeric, FNR is numeric).

Multiple values following an equal operator imply logical OR relationships. Multiple values following a not equal operator imply logical AND relationships.

Multiple relation-expressions imply logical AND relationships.

When the Control Block or JOB fields match the PASS/FAIL selection criteria, the decision for further ADABAS processing has been made and subsequent PASS/FAIL statements have no effect on that decision.

The default is to PASS all commands.

EXAMPLES

```
PASS       FNR=(17,24),ADD3=SECRET03
FAIL       FNR=(17,24)
```

ADABAS will be permitted to process any commands where the FNR=17 or 24 and the Password is SECRET03. Other commands to file 17 or 24 will not be processed by ADABAS and will result in Response Code 200 (Security Violation).

```
FAIL       FNR=27109,CMD=(S2,S9),ADD3¬SECRETS9
```

FIND-SORTED (S2, S9) commands will not be allowed against file 27109 unless the password=SECRETS9.

III.4.5 SETPW

The SETPW statement specifies the criteria for assigning a new password in the Control Block ADDITIONS-3 field for use by ADABAS.

SYNTAX

SETPWpassword, relation-expression[,relation-expression]...

The password specifies one ADABAS password.

Each relation-expression specifies:

- field:

  a field in the ADABAS Control Block (refer to Figure 3), such as FNR, CMD, etc. or the JOB-NAME, or SECURITY-ID.

- relation-operator:

  = (equal)
  > (greater than)
  < (less than)
  ¬ (not equal)

- value-list:

  a list containing one or more values. If more than one, the values must be enclosed in parentheses and separated by commas. Value ranges are stated as value-value. The value format should agree with the input field format (e.g., JOB is alphanumeric, FNR is numeric).

Multiple values following an equal operator imply logical OR relationships. Multiple values following a not equal operator imply logical AND relationships.

Multiple relation-expressions imply logical AND relationships.

When the Control Block fields match the SETPW selection criteria, the ADDITIONS-3 field value is set and subsequent SETPW statements have no effect on the ADDITIONS-3 field.

EXAMPLES

```
SETPW   SECRETXX,FNR=(17,12706),JOB=(PAAAAAAA-P9999999)
SETPW   HOLLY,ADD3=EASTERN
```

If the Command is against files 17 or 12706 and the JOB is in the indicated range, the new password SECRETXX will be placed into the ADDITIONS-3 field of the ADABAS Control Block before returning to ADABAS to process the command.

Otherwise, if the command has an old password = EASTERN, change it to HOLLY before returning to ADABAS to process the command.

FIELD NAME	NAME & ALIAS	DEFINITION	FMT	LEN
COMMAND	CMD	COMMAND CODE	C	2
COMMAND-ID	CID, CIDX	COMMAND-ID	C	4
FNR	FILE	FILE NUMBER	B	2
RESPONSE-CODE	RSP RESPONSE RESPCODE RC RESP-CODE RESP	ADABAS Response Code	B	2
ISN		Internal Sequence Number of ADABAS Record	B	4
ISNLL		ISN Lower Limit	B	4
ISNQ		ISN Quantity	B	4
CB-FBL		Format Buffer Length	B	2
CB-RBL		Record Buffer Length	B	2
CB-SBL		Search Buffer Length	B	2
CB-VBL		Value Buffer Length	B	2
CB-IBL		ISN Buffer Length	B	2
COP1	OP1	Command Option 1	C	1
COP2	OP2	Command Option 2	C	1
ADD1	ADDIT1	Additions Field 1	C	8
*UIDALT		Terminal ID	C	4
*USERID	UID, USER-ID, VMID USERIDX, USER-IDX UIDX, VMIDX	Internal User-ID	C	8
ADD3	ADDIT3	Additions Field-3 (Password, printed in character format)	C	8
ADD3X	ADDIT3X	Additions Field-3X (Password, printed in hex format)	C	8

* Valid for TRMUEX4x only - use SID for TRMUEX11

Figure 3 - Dynamic Control Fields

(continued on next page)

FIELD NAME	NAME & ALIAS	DEFINITION	FMT	LEN
ADD4	ADDIT4	Additions Field-4 (Cipher, in character format)	C	8
ADD4X	ADDIT4X	Additions Field-4X (Cipher, in hex format)	C	8
NATPROG		Reserved field (Formerly Reserved)	C	8
USER-AREA	UA USA UAX USAX	User-Area of Control Block (in character format)	C	4
USER-AREAN	UAN USAN	User-Area of Control Block (in numeric format)	B	4
JOB	JOB-NAME JOBNAME	Job Name	C	8
SID	SEC-ID SECURITY-ID	Security-ID	C	8

FIGURE 3 - DYNAMIC CONTROL FIELDS (continued)

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SECTION IV

DYNAMIC LOGGING FACILITY

IV.1 Introduction to ADABAS Logging

ADABAS gives the user the option of starting an ADABAS session with or without detail command logging and with or without logging each of the Buffers (via ADARUN Parameters). It also allows the user to change which Buffers are being logged (via Operator Commands).

Prior to TRIM, most users logged only the Basic Part and the "Rest of the Control Block", but they did not log the buffers because they required excessive logging space. For example, to capture the Record Buffer for occasional non-zero response codes, the typically large Record Buffer had to have been logged for all response codes, most of which were zero.

Some users, however, did log the Format, Record, Search, and Value Buffers to obtain valuable information within them. These users were logging all records and all potentially useful buffers even though only a fraction of the data was wanted for subsequent processing. This caused the disk log areas to fill up fast, which, in turn, caused the job that copies the disk log to tape to be invoked much more often and more tape(s) to be used. ADABAS does not provide the option of logging specific buffers for specific jobs, Files, or Response Codes, etc. TRIM's Dynamic Logging Facility gives the user this capability.

When a job is initiated that reads 100,000 records from a file, all with Response Code zero, it may be desirable to know about 100,000 calls by this user, for this job, and against this file. A few summarization records about these calls are more efficient than 100,000 detail log records. ADABAS provides detail log records, but does not provide summarization records. TRIM provides summarization records known as PRESUM. PRESUM records are described in ADABAS Command and Protection Log Processing section.

IV.2 Introduction to TRIM Dynamic Logging

The ADABAS Command Log has been "redefined" by TRIM to contain selected:

- Summary data (PRESUM) (refer to **Section V ADABAS Command and Protection Log Processing**)
- Detail Command or Call data (standard in ADABAS), optionally "crunched" to much a smaller size, minus any undesired buffers
- tRelational data (TRELOG) (refer to **Section V ADABAS Command and Protection Log Processing**)

The TRIM Dynamic Logging Facility activates TRMUEX4x to dynamically pick and choose which exceptional log records and ADABAS Buffers to output on the Command Log.

Dynamic Logging, along with PRESUM, has considerable impact upon the large amount of data typically logged. In most users' cases, it reduces the amount of data logged to a small fraction of what was previously logged.

Command Log Detail Call Records

The ADABAS Command Log detail records contain valuable information. This information is not easy to obtain without TRIM. This includes items such as the NATURAL Program and Line Number responsible for certain errors or inefficiencies, the NATURAL Application Library and User-IDs, identification of the most commonly used fields and least used descriptors, etc.

ADABAS provides an option of logging or not and of logging any or all of the buffers. TRIM provides a Dynamic Logging Facility to control logging of each detail log record and of each buffer in each log record via TRIM parameter statements and a supplied UEX4. This facility significantly reduces the large amount of detail data typically logged.

Log Cruncher (CLOGLAYOUT=5 only)

TRIM also has a "Log Crunching" mechanism employed by the User-Exit-4. The term "crunch" is used to distinguish this data compression technique from other more standard techniques, which would be ineffective in significantly reducing the log size.

This Log Cruncher reduces the Command Log Detail Record's Basic and Control Block parts from a fixed 172 bytes to an average of 70 bytes for CLOGLAYOUT=5, without any loss of data.

The input to a TRIM batch run may contain intermixed crunched or uncrunched log data. The output from a TRIM batch run may optionally remain in its input format (crunched or uncrunched) or may be built in uncrunched format always, so that this output log may then be input to other standard log processing packages.

IV.3 Dynamic Logging Operation

This Dynamic Logging Facility has been designed so that there is no adverse impact upon ADABAS operations. In other words, there is no code to modify, nothing to assemble, no need to bring ADABAS down and up, etc.

To execute the TRIM Dynamic Logging Facility, the user only needs to:

- Include one of the supplied User-Exit-4 Load modules for use with ADABAS
- Have the start-up detail logging requirements preset and linked to the User-Exit-4
- Be sure the ADARUN parameters are specified as

UEX4=TRMUEX4x,	(required)
LOGGING=YES,	(required)
LOGCB=YES,	(optional)
LOGFB=YES,	(optional)
LOGRB=YES,	(optional)
LOGSB=YES,	(optional)
LOGVB=YES,	(optional)
LOGUB=YES,	(optional)

- Whenever necessary, code a few TRIM parameters and execute the TRIM User-Exit-4 Communication Run

The Command Log records, which ADABAS thinks are being logged, are built and maintained by ADABAS all the way through to TRMUEX4x. The Time Adjustable Parameters, TRIM Dynamic Logging UEX4 Communication Runs, and Control Screen adjustments may then direct TRMUEX4x to do the following:

- Generate PRESUM statistics
- Generate TRELOG records
- Discard the entire Command Log Detail Record for most cases in which the record is of no importance
- Keep the Basic Part and the "rest of the Control Block" all of the time for those Detail Records being kept
- Crunch all Detail Records that are being logged (CLOGLAYOUT=5 only)
- Keep the Format, Record, Search, Value, and User Buffers for only certain Response Codes
- Keep the Record Buffers on certain Commands (e.g., OPEN -- to see which files the user intends to use)
- Keep the Format Buffer for files undergoing scrutiny of Field Usage, Field Order, etc.
- Turn off the Buffers for certain jobs (DBA Running Utilities, for instance)

The user may continuously adjust what detail records are being logged by TRMUEX4x by constantly running TRIM Communication Runs with adjusted LOG parameters. To negate the effect of User-Exit-4 for previously communicated detail logging, the user may run TRIM with only a UEX4 statement and no other statements.

ADABAS must be up and Logging turned on when executing this TRIM Dynamic Logging Facility.

Until the user runs a UEX4 Communication Run, TRMUEX4x inhibits writing of all Detail Records and buffers specified in the ADARUN parameters. Optionally, TRMUEX4x Zaps may be applied to cause TRMUEX4x to start off in detail logging mode, logging all detail records until instructed otherwise.

UEX4 communicated parameters are "incremental". The default is to not log. Default logging parameters may be macro generated through the TRMLOG macro and linked with TRMUEX4x.. Any further communicated parameters about logging are in addition to TRMLOG defaults.

Macro generated PRESUM requirements may be preset and linked with TRMUEX4x through TRMTAP.

Refer to the ***TRIM Installation and Operations Manual***, especially ***Section V.8 Dynamic Logging*** and ***Section VII TRMTAP, TRMLOG, TRMRSP, TRELOG, TRMSLO***.

```
************************************************************
** SAMPLE TRIM PARAMETER CARDS FOR COMMUNICATION TO UEX4  **
************************************************************
*
    UEX4        ID=RUTHTEST
    LOG         FNR=(250-255),JOB=(C1091AAA-C1091999) LOG THESE
    LOG         FNR=(3-7,16-19,35,93)                    LOG THESE
    LOG         RSP¬(0,3,9)                           BAD RESPONSE CODES
*
    LOGCB       RSP¬(0,3,9)               BAD RESPONSE CODES

*
    LOGFB       FNR=(7,93)                    WE ARE STUDYING FIELD ORDER FOR THESE
    LOGRB       FNR=(3,4,16-19,23140)         THE FILES WE ARE AUDITING
```

Figure 4 - Sample Parameters For Dynamic Logging Facility

IV.4 Parameter Statements and Types

The parameter statements used with the Dynamic Logging Facility are:

Dynamic Logging Initiation

op-codes:	UEX4	Informs TRIM that the subsequent LOG statements are for communication to User-Exit-4, and specifies an "ID" for this set of statements.

Detail Command Selection

op-codes:	LOG	Specifies which Detail Call Records to include (LOG) on the ADABAS Command Log. By default, all other records are excluded.

Command Buffer Selection

op-codes:	LOGCB LOGFB LOGRB LOGSB LOGVB LOGIB LOGIO LOGUB	Specifies which Detail Records' buffers to include (LOG) on the ADABAS Command Log. By default, all buffers are excluded.

IV.5 Parameter Statement Syntax and Descriptions

For general parameter syntax rules, refer to **Appendix A: General Parameter Rules**.

IV.5.1 UEX4

SYNTAX

The UEX4 statement specifies that this is a UEX4 Communication Run.

```
UEX4    ID=character-string
```

This identifies the owner of subsequent parameter statements. All adjustments to these statements must have this same ID.

IV.5.2 LOG

The LOG statement specifies the criteria for including each Detail Command Record onto the ADABAS Command Log. Any records not satisfying the selection criteria are excluded from the Command Log. If no LOG statement is specified, no Command Records are output (assuming the ADARUN parameter was LOGGING=YES).

Note:
The contents of the record on the ADABAS command log will be defined by the setting of LOG=YES in the ADARUN parameters and the actual buffer provided on the ADABAS call.**

SYNTAX

LOG relation-expression[,relation-expression]...

Each relation-expression specifies:

- field:

  a field in the Detail Basic Part or "rest of Control Block" (refer to Figure 5), such as JOB, FNR, COMMAND, etc. and DURATION and HOUR

- relation-operator:

  = (equal)
  > (greater than)
  < (less than)
  ¬ (not equal)

- value-list:

  a list containing one or more values. If more than one, the values must be enclosed in parentheses and separated by commas. Value ranges are stated as value-value. The value format should agree with the input field format (e.g., JOB is alphanumeric, FNR is numeric).

Multiple values following an equal operator imply logical OR relationships. Multiple values after a not equal operator imply logical AND relationships.

Multiple relation-expressions imply logical AND relationships.

When the Detail Command Record matches a LOG statement selection criteria, the decision has been made to log and subsequent LOG statements have no effect. Any records not satisfying the criteria are excluded from logging.

EXAMPLES:

```
LOG     FNR=(10-20),JOB=(PAAAAAAA-P9999999)
LOG     RESPONSE=(10-379)
```

Detail Records will be produced for each record having FNR=10 through 20 and a JOB in the indicated range. The Detail Records will be logged when the Response Code is in the range 10 through 379. Otherwise, the records are not logged.

```
LOG     FNR¬(25-35),JOB=TEST1234
```

Detail Records will be produced for records having a FNR other than 25 through 35 as long as the JOB=TEST1234. Otherwise, the records are not logged.

IV.5.3 LOGxx

The LOGxx statement specifies the criteria for including certain portions (xx) of the Detail Records onto the ADABAS Command Log only. If no LOGxx statements are specified, all portions of the Detail Records that were turned on via ADABAS LOGxx=YES parameters are removed. The allowable xx values are:

FB	Format Buffer
RB	Record Buffer
SB	Search Buffer
VB	Value Buffer
IB	ISN Buffer
IO	I/O List
UB	User Buffer

The IB and IO portions are of limited value and should not be turned on in ADABAS.

Note:
The LOGxx statement has no effect if the appropriate buffer segment has not been activated via LOG=YES in the ADARUN parameters.**

SYNTAX

LOGxx relation-expression[,relation-expression]...

Each relation-expression specifies:

- field:

  a field in the Detail Basic Part of the CLOG record. For details refer to section VII.2.1 TRMLOG Macro parameters of the TRIM Installation and Operations Manual.

- relation-operator:

  = (equal)
  > (greater than)
  < (less than)
  ¬ (not equal)

- value-list:

  a list containing one or more values. If more than one, the values must be enclosed in parentheses and separated by commas. Value ranges are stated as value-value. The value format should agree with the input field format; for example, JOB is alphanumeric, FNR is numeric.

Multiple values following an equal operator imply logical OR relationships. Multiple values after a not equal operator imply logical AND relationships.

Multiple relation-expressions imply logical AND relationships.

When the Detail Record matches a LOGxx statement's selection criteria, the decision to log has been made about that particular buffer (xx) and subsequent LOGxx statements for the same buffer have no effect on the decision about the buffer.

The only possible overriding effect on the decision to log or not log this buffer (xx) is a record not matching the LOG statement criteria. If the record is not logged, the buffers for the record are also not logged. The ADARUN parameters must state logging for the buffers for TRIM to include them.

EXAMPLES:

```
LOGFB       JOB=(C4103X27,C402AAAA-C4029999),FNR=8
```

The Format Buffer will be logged only if the value of the (JOB field is C4103X27, OR starts with C402), AND the file-number is 8. Otherwise, the Format Buffer is not logged.

```
LOGRB       RSP¬(9,144,145,148-150)
LOGRB       FNR=(1-50,101-150)
LOGRB       JOB¬ENGTEST1,FNR¬18396
```

The Record Buffer is logged if the response-code is not 9, not 144, not 145, AND not 148 through 150. Further, if no decision has been made about the Record Buffer by the previous statement, the Record Buffer is logged if the file number is in the range 1-50 OR the range 101-150. In addition, if no decision has been made about the Record Buffer by the previous statements, the Record Buffer is logged if the JOB is not ENGTEST1 AND the file-number is not 18396. Otherwise, the Record Buffer is not logged.

These examples assume ADARUN parameters LOGGING=YES, LOGFB=YES, and LOGRB=YES.

Note:
A LOG definition without any relation-expression, will force that all records are written to CLOG.

A LOGxx definition without any relation-expression, will force that the buffer type specified via xx will be written to CLOG for every command if present in the ADABAS call.

SECTION V

ADABAS COMMAND AND PROTECTION LOG PROCESSING

V.1 ADABAS Command Log

TRIM may use the ADABAS Command Log to produce reports. This log would normally contain detailed information about each program call issued to ADABAS. With the PRESUM and TRELOG features, periodic summarization records may be placed on the log rather than each individual program call log record. Individual program call records (detail records) may be selectively logged to further reduce command logging to a reasonable size.

The Command Log must be active (LOGGING=YES) for any ADABAS session desired to be processed by TRIM. Furthermore, the log should contain all necessary information (control-block, format-buffer, record-buffer, etc.) for any detail records desired to be processed with TRIM's batch reporting capabilities. ADABAS would require logging of all buffers for all calls for all users, in order to view any of the buffers, but the TRIM Dynamic Logging Facility assists in limiting these log records and buffers to a reasonable amount. The logging parameters for an ADABAS session are described under ADARUN parameters in the *Software AG ADABAS Operations Manual*.

In an SMP/PLEX environment, CLOGs for all nuclei that were active must be included to provide the complete set of CLOG records for the database. If the STOPDATE and STOPTIME options are to be used, the CLOG datasets will need to be merged and pre-sorted on the STCK field of the CLOG record.

Multiple ADABAS sessions' Command Logs (on disk or tape) may be processed in one TRIM execution. Multiple reports may be generated with one pass of these logs. The reports may show detailed log information and summarization statistics, such as:

- Performance data for the DBA
- Resources used for the data center manager
- Charge-back reports for internal or external billing
- Record update information for the DP auditors
- Security violations for the Security Officer
- Exceptional cases for program debugging and file design enhancement

The execution of TRIM batch runs against the detail and summary data Command Log is controlled by parameters with simple statements (DISPLAY, AVERAGE, etc.) that reference the fields on the Command Log (JOB, FNR, ISN, COMMAND, DATAIO, etc.), fields that TRIM creates for each Command Log record (CPU-TIME, DATE, TIME, NATPROG, etc.), and fields defined by the user (DEPT, DIVISION, DBID, WARNING, etc.).

Command log records may be selected for particular jobs, times, departments, etc. Statistics may be generated showing totals, averages, etc., of I/Os, CPU time, Duration (response time), etc. The totals and averages may be broken down by various designations (e.g., by hour, job, or file).

The ADABAS Command Log detail records may be interspersed with PRESUM and/or TRELOG records through the actions of TRIM User-Exit-4. These records are designed so that TRIM may distinguish the record types.

V.1.1 ADABAS Command Log Detail Record

The ADABAS Command Log Detail Record contains the following parts:

- Basic Part (always logged when LOGGING=YES)
- Control Block (always logged for CLOGLAYOUT=5 and 8);
- Format Buffer (optional)
- Record Buffer (optional)
- Search Buffer (optional)
- Value Buffer (optional)
- ISN Buffer (optional)
- IO-List (optional)
- User Buffer (optional)

The database administrator arranges with operations to have ADABAS output the log and its various parts. This is done at ADABAS start-up via ADARUN parameters or by operator commands.

The Control Block is necessary because it contains information about the command and file number being accessed, the NATURAL program, and other useful information for calculating the CPU time of ADABAS commands etc.

It is recommended that the standard logging procedure also include the Format Buffer, Record Buffer, Search Buffer, Value Buffer, and User Buffer. These buffers are necessary for reports showing field frequency of use, descriptor usage, and for debugging, etc.

The TRIM Dynamic Logging Facility (refer to **Section IV Dynamic Logging**) may be used to keep these log records and buffers to a reasonable level.

V.1.2 ADABAS Command Log Detail Fields

ADABAS V8 supports 2 different formats of command log records defined in the ADARUN statements as CLOGLAYOUT=5 or (new) CLOGLAYOUT=8.

The ADABAS Command Log Detail Records contain many fields that are documented in detail in the *ADABAS Reference Manuals* in the *Command Log Section* as well as by the copy books supplied from Software AG in ADAvrs.SRCE (LOREC and LORECX).

Some of the fields are binary numeric values and some are alphanumeric. The optional parts (Format Buffer, Record Buffer, etc.) have their presence indicated by bit settings in the Basic Part. The date and time of the command are "hidden" in the STCK field. The Duration is in an unusable form twice, in the duration and command-time fields. Other information not currently on the log would be desirable, including record sequence number and details about the requesting application, Beside the fact that the record format is different for OS (or VM) and DOS versions of ADABAS there are also differences between CLOGLAYOUT 5 and 8 in respect to the names and sizes of the base fields containing the information..

Because of the problems above, each Command Log Detail Record that is input to TRIM is expanded into a record that has a predictable, easy-to-use format.

The expanded Detail Record fields are referenced in the TRIM parameter statements. Figure 6 on the following pages lists every expanded Detail Record field, its alias names and the definition. Some of the fields originate directly from the ADABAS Command Log Detail Records, others are TRIM-derived fields.

The user further "expands" the Detail Records with FIELD and VALUE statements to define derived fields, such as DBID, DEPT, PROJECT, etc.

FIELD NAME	ALIAS NAMES	DEFINITION
FNR	FILE	ADABAS File Number
COMMAND	CMD	ADABAS Command Code
JOBNAME	JOB, JOB-NAME	Job Name
ASSOIO	ASSO, ASSO-IO	Physical I/Os to Associator for the Command
DATAIO	DATA, DATA-IO	Physical I/Os to the DATA for the Command
WORKIO	WORK, WORK-IO	Physical I/Os to the WORK for the Command
CID	COMMAND-ID	Command-ID (Printed in character format)
CIDX	COMMAND-IDX	Command-IDX (Printed in hex format)
RSP	RESPONSE, RESPCODE, RC, RESP-CODE, RESP	ADABAS Response Code
ISN		Internal Sequence Number of ADABAS Record (Displayed as 7 digits)
ISN8		Internal Sequence Number of ADABAS Record (Displayed as 8 digits)
ISN10		Internal Sequence Number of ADABAS Record (Displayed as 10 digits)
ISNQ		ISN Quantity
USERID	USER-ID, UID	User-ID (printed in character format) Refer to Note 5
UIDALT		User-ID (Alternative User-ID) Refer to Note 5
USERIDX	USER-IDX, UIDX	User-ID (printed in hex format) Refer to Note 5

Figure 6 - Expanded Command Log Detail Record Fields

(continued on next page)

FIELD NAME	ALIAS NAMES	DEFINITION
THREAD	THD	ADABAS Thread Number
ECBS		Event Control Blocks Posted
CMDTYPE		ADABAS Command Type (Simple, Complex, Update)
DESUPD		Number of Descriptors Updated
ISNLL		Lower Limit
ADD1	ADDIT1	Additions Field-1
ADD2	ADDIT2	Additions Field-2
ADD2X	ADDIT2X	Additions Field-2X Printed in hex format
ADD3	ADDIT3	Additions Field-3(Password)
ADD3X	ADDIT3X	Additions Field-3X(Password, printed in hex format)
ADD4	ADDIT4	Additions Field-4 (Cipher)
ADD4X	ADDIT4X	Additions Field-4X (Cipher, printed in hex format)
ADD5	ADDIT5	Additions Field-5
ADD5X	ADDIT5X	Additions Field-5X(printed in hex format)
ADD6	ADDIT6	Additions Field-6
ADD6X	ADDIT6X	Additions Field-6X (printed in hex format)
COP1	OP1	Command Option-1
COP2	OP2	Command Option-2
COP1	OP1	Command Option-3
COP4	OP4	Command Option-4
COP5	OP5	Command Option-5
COP6	OP6	Command Option-6
COP7	OP7	Command Option-7
COP8	OP8	Command Option-8
CB-FBL		Format Buffer Length in Control Block
CB-RBL		Record Buffer Length in Control Block
CB-SBL		Search Buffer Length in Control Block
CB-VBL		Value Buffer Length in Control Block
CB-IBL		ISN Buffer Length in Control Block
CTIME	CMD-TIME	CPU time required for this command
USER-AREA	UA, USA	User-Area of Control Block
USER-AREAX	UAX, USAX	User-Area of Control Block (printed in hex format)
USER-AREAN	UAN, USAN	User-Area of Control Block (printed in numeric format)
RES	RESERVED	Reserved Field in Control Block
RESX	RESERVEDX	Reserved Field in Control Block (printed in hex format)
USERIO	USER-IOS, U-IOS	User Session Total Ios
USERCNT	USER-CNT, U_CNT USER-CMDS, U-CMDS	User Session Total Commands
USERCPU	USER-CPU, U-CPU	User Session Total CPU Time
CPUID	COMCPUID	CPU ID Communications ID (printed in hex)
CPUIDC		CPU ID (printed in character)
OPSYSID	COMOPSYS	Operating System ID (printed in hex)
OPSYSIDC		Operating System

Figure 6 - Expanded Command Log Detail Record Fields

(continued on next page)

FIELD NAME	ALIAS NAMES	DEFINITION
UBUID	COMUBUID	User Buffer Communications ID
UACSN		Unique Command Sequence Number
DBID	DB	Database ID
PHYS	PHYSICAL, PHYS-ID	Physical Call Count (ADNET Log Types Only)
REC5TYPE	REC5T	Log Record Type
SEQUENCE	SEQ	Sequence number of input record (max 6 digits printed)
SEQ7		Sequence number of input record (max 7 digits printed)
SEQ8		Sequence number of input record (max 8 digits printed)
DURATION	DUR	Wall-clock time spent to complete command in tenths of milliseconds
IO	IOS	Combined total of Associator, Data and Work I/Os
CPUTIME	CPU, CPU-TIME, CPUMS	Approximate ADABAS CPU Time spent to complete the command in tenths of milliseconds (Refer to Appendix B)
TID	TERMINAL-ID	Terminal-ID (for COM-PLETE users)
NATLOGON		NATURAL LOGON or Application Library
NATPROG		NATURAL Program
NATLINE		NATURAL Line or Statement Number
NSSUID	NATUID, NSSUSER, NATUSER, NSU	NATURAL Security User-ID
NSSAPPL	NATAPPL, APPL, APPLIC, NSA	NATURAL Application Library
FBL	CALC-FBL	Format Buffer Length on Command Log
RBL	CALC-RBL	Record Buffer Length on Command Log
SBL	CALC-SBL	Search Buffer Length on Command Log
VBL	CALC-VBL	Value Buffer Length on Command Log
IBL	CALC-IBL	ISN Buffer Length on Command Log
SB-16		First 16 (maximum) bytes of Search Buffer
DATE	YYDDD, YY-DDD	Julian Date (Year/Day)
DATE4	YYYYDDD, YYYY-DDD	Julian Date (Year as 4 Digits/Day)
YYMMDD	YY-MM-DD	Date in Year, Month, Day Format
YYYYMMDD		Date in Year as 4 Digits, Month, Day Format
TIME		Time of Day Command entered ADABAS in hours, mins, secs
DATETIME	DATE-TIME	Refer to Note 1
DATE4TIME	DATE4-TIME	Refer to Note 1
HOUR	HR	Hour of the Day (0-23)
MINUTE	MIN, MI	Minute of the Hour (0-59)
DAY	DA	Day of Month (1-31)

Figure 6 - Expanded Command Log Detail Record Fields

(continued on next page)

FIELD NAME	ALIAS NAMES	DEFINITION
WEEK	WK	Week of Year (1-53)
MONTH	MO	Month of Year (1-12)
WEEKDAY	WEEK-DAY	Day of Week expressed as SUN, MON, etc.
MONTH-NAME	MONAME	Month of Year expressed as 3 JAN, FEB, etc.
QUARTER	QU	Quarter of Year (1-4) determined by week (13 weeks per quarter, except last quarter-- possible 14 weeks)
YEAR	YR	Two-digit Year
YEAR4	YR4	Four-digit Year
FB-FIELD		part of
SB-FIELD		Refer to Note 3

Figure 6 - Expanded Command Log Detail Record Fields (continued)

The underlying source, the format, the length and the heading for the fields are documented in **Appendix I: Command Log Fields**.

The heading, format and length of the TRIM derived fields are documented in **Appendix J: TRIM derived Command Log Fields**.

Any of the fields may be used in INCLUDE, EXCLUDE, VALUE, and Detail Report DISPLAY statements, except FB-FIELD and SB-FIELD. The format and length of values stated on INCLUDE, EXCLUDE, and VALUE statements should agree with the format and length of the stated field. For example, "FNR=12" and "CMD=A4". DATE should be stated as numeric characters without editing symbols (e.g., DATE=04365). YYMMDD should be stated as numeric characters without editing symbols (e.g., YYMMDD=041231). TIME should be stated as numeric characters without editing symbols (e.g., TIME=(180500-180600)). DATETIME should be stated as numeric characters with editing symbols (e.g., DATETIME=041231**18:05:00). DATE4 should be stated as numeric characters without editing symbols (e.g., DATE=2004365). YYYYMMDD should be stated as numeric characters without editing symbols (e.g., YYYYMMDD=20041231). DATE4TIME should be stated as numeric characters without editing symbols (e.g., DATE4TIME=20041231**180500).

Seven additional "fields" are available for printing via the Detail Report DISPLAY statement, including:

- FORMAT-BUFFER or FB, which prints in character format
- RECORD-BUFFER or RB, which prints in character and hex formats
- SEARCH-BUFFER or SB, which prints in character format
- VALUE-BUFFER or VB, which prints in character and hex formats
- ISN-BUFFER or IB, which prints in hex format
- IO-LIST or IL, which prints in hex format
- User Buffer or UB, which prints in character and hex format

NOTE 1:

The DATETIME field represents a combination of the date and time-of-day into one field. Although separate expressions of date and time-of-day are meaningful in a non-data processing sense, efficiency in data processing requires a point in time to be represented as year/month/day/hour/minute/second. This allows for sorting and identifying specific points in time, such as earliest and latest points in time.

DATETIME is a combination of the YYMMDD field and the TIME field, which are both normally printed as 8 characters. In order to fit these two fields into the TRIM internal limit of

16 characters per field, the YYMMDD portion is represented without editing symbols, while the TIME portion is represented with colons as editing symbols. Separating the two portions are two asterisks. Therefore, a DATETIME example is "041231**12:59:59".

DATE4TIME is a combination of the YYYYMMDD field and the TIME field, which are both normally printed as 8 characters. In order to fit these two fields into the TRIM internal limit of 16 characters per field, the TIME portion is represented without editing symbols. Separating the two portions are two asterisks. Therefore, a DATE4TIME example is "20041231**125959".

In TRIM, the earliest point in time for input log records can be identified on a Summary Report by stating MINIMUM DATETIME (and the latest point in time by stating MAXIMUM DATETIME).

NOTE 2:

There is a way to reference the NATURAL program, NATURAL Application Library, and NATURAL Security User without incurring additional overhead by substituting the following fields:

To Report On	Reference
NATPROG	RESERVED
NSSAPPL	ADD3
NSSUID	ADD4

User-Exit-4 location X'3C' must be set to X'FF', which passes the NATURAL Application Library and the NATURAL Security User-ID in the Command Log in the Additions-3 (Password) and Additions-4 (Cipher) fields, respectively.

User-Exit-4 location X'3E' must be set to X'E8' (Y), which passes the NATURAL Program Name in the Reserved field in the Command Log.

(For more information, refer to ***Section VI Tailoring with Zaps*** of the ***TRIM Installation and Operations Manual***).

NOTE 3:

The fields FB-FIELD and SB-FIELD refer to the Format Buffer and Search Buffer ADABAS field names. These field names are extracted from the Format and Search Buffers and are capable of being used to produce summary reports on file/field usage only. These fields may only be used as the single CONTROL field with no summarization statements (SUM, AVERAGE, etc.). These fields are available ONLY if the SB and/or FB is logged.

NOTE 4:

The fields USERIO, USERCNT, and USERCPU are only valid for CLOSE commands (commands with CMD=CL). These fields come directly from the ISN, ISN Lower Limit, and ISN Quantity, respectively.

NOTE 5:

If the alternate User-ID Zap switch (X'32') is set to "Y" (the default), this field will contain the 4-byte Terminal-ID. UIDALT should be used to refer to the alternate User-ID.

V.1.3 Sample Command Log Detail Report

```
EXCESSIVE DURATION           TRIM 8.1         I 04-12-31 19:23:51   PAGE 1
HH-MM-SS   JOB-NAME   DUR(MS)      TID    USER-IDX  CMD    FNR   ASSO   DATA   WORK
15:47:56   C5827STM   1356.5       822    08495736   S1     81      0      0      6
15:48:13   COMPLETE   1152.0       805    00F40325   N1     81     29     10      2
15:48:14   C5827STM   1035.0       822    08495736   S1     81     16      0      0
15:49:23   C5827STM   1229.4       822    08495736   S1     81     27      0      0
15:49:29   C5827STM   5123.6       822    08495736   S1     81      8      0      0
15:49:29   COMPLETE   5277.3       862    00F4035E   N1    156     11      1      0
15:49:52   C5827STM   1377.9       822    08495736   S1     81     30      0      8
15:50:09   COMPLETE   2023.2       170     00F40AA   S1     30     39      0      1
15:50:17   C5827STM   1132.0       822    08495736   S1     81      0      0      6
15:50:21   C5827STM   1275.8       822    08495736   S1     81      0      0      6
15:50:52   C5827STM   1056.8       822    08495736   S1     81     30      0      8
15:50:56   COMPLETE  10213.5       805    00F40325   S9    156    229      0      3
15:51:22   C5827STM   1009.3       822    08495736   S1     81     33      0      4
15:51:53   C5827STM   1093.2       822    08495736   S1     81     24      0      0
15:51:58   C5827STM   1375.4       822    08495736   S1     81     30      0      0
15:52:04   COMPLETE   1335.7       646    00F40286   N1  12488     11      1      0
15:52:02   C5827STM   1974.5       822    08495736   S1     81     29      0      4
```

Either a full Command Log or one where particular high duration commands were logged would be input to produce this report.

V.1.4 PRESUM Records

TRIM User-Exit-4 may optionally tally certain selected summarization statistics, periodically outputting these statistics directly onto the Command Log, SMF Log, or both. These statistics records are known as PRESUM records. PRESUM summary statistics should suffice in most cases for calculating resource utilization, peak period, and charge-back figures. It should no longer be necessary to output large numbers of ADABAS Command Log Detail Records, unless a user so desires. Instead, Detail Records of security violations, excessive duration or I/Os, certain jobs being tracked, file field usage, etc. are the only Detail Records that should be logged.

With User-Exit-4 summarizing certain statistics, the log will typically be smaller, and the log tape copies will be significantly reduced. Subsequent TRIM batch reporting runs may input and process these PRESUM statistics, producing reports and outputs generally equivalent to what may be generated in summary reports from thousands or millions of detail records. This will make TRIM batch runs significantly faster.

The PRESUM capability is invoked via a start-up Zap, start-up Time Adjustable Parameters (TRMTAP), or Real-Time Monitor Control Screen manipulation. These specify which types of PRESUM Records to calculate and output onto the Command or SMF Log. The selection of CLOG, SMF, or BOTH logging options for PRESUM is only invoked via start-up Zap. The absence of a PRESUM setting means no PRESUM records will be output.

Note: PRESUM processing can be achieved independent of CLOGLAYOUT=5 and 8.

There are several types of PRESUM records, including:

		Type
THD	(Thread)	T
CMD	(Command)	C
FNR	(File Number)	F
NAT	(NATURAL program)	P
JOB	(Job Name)	J
UID	(User-ID)	U
SID	(Security-ID)	S
RSP	(Response Code)	R
NSA	(NATURAL Application Library)	A
NSU	(NATURAL Security User-ID)	B
USA	(User-Area of the Control Block)	W
CTI	CICS Transaction ID	X
SPE	(SPECIAL) refer to note below	Y

Note: The PRESUM category SPECIAL, or SPE, permits customized accumulations for charge-back or other purposes. The SPE field is 16 bytes in length and may be set by a user-supplied Link-Exit-1 to include any desired information from the calling region. For example, the Link-Exit-1 may set the SPE field to contain:

- JOBNAME - 8 bytes
- JES NUMBER - 5 bytes
- FILE NUMBER - 2 bytes

If PRESUM Records are specified to be output, then approximately every hour a maximum of 250 THD records, 39 CMD records, 256 FNR records, 256 RSP records, and a variable (depending upon User-Exit-4 size) number of NAT, JOB, etc. records will be output to the Command or SMF Log, where they will reside along with any Detail Records (Detail Records are only logged to CLOG), which pass the LOG selection criteria. PRESUM Records are also output at the end of the ADABAS session for the last partial hour.

Each PRESUM Record contains ONE of the fields listed above (Thread, Command, File Number, etc.) along with:

- A record-type indicator ("T", "C", "F", etc. - refer to the list above)
- The time (STCK) that this record is written
- Count of ADABAS commands for this Thread, Command, File Number, etc.
- Duration total for this Thread, Command, File Number, etc.
- I/O total (ASSO, DATA, WORK) for this Thread, Command, File Number, etc.
- Data for calculating the CPU time for this Thread, Command, File Number, etc.

Refer to **Appendix K: PRESUM Record Format** for the physical layout of PRESUM records.

On the TRMTAP macro statement (refer to ***Section VII.1 Time Adjustable Parameters (TRMTAP)*** of the ***TRIM Installation and Operations Manual***), the DBA may state, for example:

```
PRESUM=(CMD,FNR,NAT,UID)
```

In this example, only four PRESUM Record types will be output to the Command or SMF Log.

PRESUM records may be processed in a later TRIM batch PRESUM run. The PRESUM SPE record is included in Batch PRESUM runs as a TYPE=Y record.

The TRIM Batch Facility will distinguish PRESUM records from other record types.

Each PRESUM Record that is input to TRIM is expanded into a record that has a predictable, easy-to-use format.

Starting with TRIM V7.6.1, the PRESUM record was extended to 172 bytes to accommodate the needs deriving from CLOGLAYOUT=5. The PRESUM record length with CLOGLAYOUT=8 has been reduced to 68 bytes, the minimum accepted by ADABAS.

TRIM v8 will process PRESUM data from Trim v7.6.1 created using the CLOGLAYOUT=5 format. Attempting to input data from previous versions into TRIM V7.6.1 will produce unpredictable results. Also, attempting to input Trim v8 PRESUM data into earlier TRIM versions will produce unpredictable results.

TRIM v8 batch can by used to process PRESUM records created via TRIM V7.6.1 (CLOGLAYOUT=5) and TRIM v8 (CLOGLAYOUT=5 or 8).

If the SMF logging is selected for PRESUM, a user-provided program will be required to extract the PRESUM data from the SMF log. Existing SMF log processing programs, such as SAS programs, could be used with possibly only minor alterations. If the records are extracted from the SMF log and the SMF header is removed, the remaining PRESUM record could be used as input to existing TRIM batch reporting runs. Refer to *Appendix L* for the PRESUM record format, including the SMF header and Section *XII.6* of the TRIM *Installation and Operations Manual* for an exact program example.

Note:	The PRESUM records created with CLOGLAYOUT=8 can only be analyzed by TRIM v8batch. In the case of the PRESUM SMF option, user programs to extract PRESUM records from the SMF log should not be affected. The SMF prefix to the PRESUM data has not changed. User programs that process the PRESUM data after the extraction process will need to adjust to the new PRESUM format.

V.1.5 ADABAS Command Log PRESUM Fields

Figure 7 lists every expanded PRESUM Record field, its alias names, definition, format, and length. The fields contained in the record are listed first, followed by the TRIM-derived fields.

The user further "expands" the PRESUM Record with FIELD statements to define derived fields such as DBID, DEPT, PROJECT, etc.

FIELD NAME	ALIAS NAME	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
TYPE	RECORD-TYPE	Indicates record for THD (T),Command (C), FNR (F), NATPROG (P), JOB (J), UID (U), RSP (R), NSU (B), NSA (A), USA (W), SPE (Y), SID (S), CTI (X)	C	1
DBID	DB	Database-ID	B	2
THREAD	THD	Thread Number	B	2
FNR	FILE	ADABAS File Number	B	2
COMMAND	CMD	ADABAS Command Code	C	2
NATPROG	NAT	NATURAL Program	C	8
JOB	JOB-NAME, JOBNAME	Job Name	C	8
USERID	USER-ID, UID	User-ID (printed in character format)	C	4
USERIDX	USER-IDX, UIDX	User-ID (printed in hex format)	C	4
SID	SECURITY-ID, SEC-ID	Security-ID	C	8
RSP	RESPONSE, RESPCODE, RC, RESP-CODE, RESP	ADABAS Response Code	B	2
NSSUID	NATUID, NSSUSER, NATUSER, NSU	NATURAL Security User-ID	C	8
USER-AREA	UA, USA	User-Area of Control Block (printed in character format)	C	4
USER-AREAX	UAX, USAX	User-Area of Control Block (printed in hex format)	C	4
USER-AREAN	UAN, USAN	User-Area of Control Block (printed in numeric format)	B	4
NSSAPPL	NATAPPL, APPL, APPLIC, NSA	NATURAL Application Library	C	8
CTI	TRANSID	CICS Transaction-IDs	C	8
SPECIAL	SPE	Special User-Defined PRESUM Category	C	16

Figure 7 - Expanded Presum Record Fields

(continued on next page)

FIELD NAME	ALIAS NAMES	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
COUNT		Number of commands for this entry	B	4
DURATION	DUR	Wall-clock time spent to complete command in tenths of milliseconds	B	4
IO	IOS	Combined Total of Associator, Data, and Work I/Os	B	4
SEQUENCE	SEQ	Sequence number of input record	B	4
SEQ7		Sequence number of input records (max 7 digits printed)	B	4
SEQ8		Sequence number of input records (max 8 digits printed)	B	4
CPUTIME	CPU, CPU-TIME, CPUMS	Approximate ADABAS CPU Time spent to complete the command in tenths of milliseconds (Refer to Appendix B)	B	4
DATE	YYDDD, YY-DDD	Julian Date (Year/Day)	C	5
DATE4	YYYYDDD, YYYY-DDD	Julian Date (Year as 4 Digits/Day)	C	7
YYMMDDYY-MM-D		Date in Year, Month, Day Format	C	6
YYYYMMDD		Date in Year as 4 Digits, Month, Day Format	C	8
TIME		Time of Day Command entered ADABAS in hours, mins, secs	C	6
DATETIME	DATE-TIME	Refer to Note 1	C	16
DATE4TIME	DATE4-TIME	Refer to Note 1	C	16
HOUR	HR	Hour of the Day (0-23)	B	1
MINUTE	MIN, MI	Minute of the Hour (0-59)	B	1

Figure 7 - Expanded Presum Record Fields

(continued on next page)

FIELD NAME	ALIAS NAMES	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
DAY	DA	Day of Month (1-31)	B	1
WEEK	WK	Week of Year (1-53)	B	1
MONTH	MO	Month of Year (1-12)	B	1
WEEKDAY	WEEK-DAY	Day of Week expressed as 3 characters (SUN, MON, etc.)	C	3
MONTH-NAME	MONAME	Month of Year expressed as 3 characters (JAN, FEB, etc.)	C	3
QUARTER	QU	Quarter of Year (1-4) determined by week (13 weeks per quarter, except last quarter-- possible 14 weeks)	B	1
YEAR	YR	Two-digit Year	B	1
YEAR4	YR4	Four-digit Year	B	2

Figure 7 - Expanded Presum Record Fields (continued)

All of the fields in Figure 7 that are character format will be printed in character format on all reports with the exception of DATE, YYMMDD, TIME, and DATE-TIME, which are printed in edited form as YY-DDD, YY-MM-DD, HH:MM:SS, and YYMMDD**HH:MM:SS, respectively; and the four-digit date related fields DATE4, YYYYMMDD, and DATE4-TIME, which are printed in edited form as YYYY-DDD, YYYY-MM-DD, and YYYYMMDD**HHMMSS, respectively.

All of the fields in Figure 7 that are numeric format will be printed as numeric edited values. Leading zeros are suppressed. DURATION and CPUTIME are printed with one decimal position. Charges will contain a leading dollar sign ($).

Any of the fields may be used in INCLUDE, EXCLUDE, VALUE, and Detail Report DISPLAY statements. The format and length of values stated on INCLUDE, EXCLUDE, and VALUE statements should agree with the format and length of the stated field. DATE should be stated as numeric characters without editing symbols (e.g., DATE=04365). YYMMDD should be stated as numeric characters without editing symbols (e.g., YYMMDD=041231). TIME should be stated as numeric characters without editing symbols (e.g., TIME=(180500-180600)). DATETIME should be stated as numeric characters with editing symbols (e.g., DATETIME=041231**18:05:00). DATE4 should be stated as numeric characters without editing symbols (e.g., DATE=2004365). YYYYMMDD should be stated as numeric characters without editing symbols (e.g., YYYYMMDD=20041231). DATE4TIME should be stated as numeric characters without editing symbols (e.g., DATE4TIME=20041231**180500).

NOTE 1:

The DATETIME field represents a combination of the date and time-of-day into one field. Although separate expressions of date and time-of-day are meaningful in a non-data processing sense, efficiency in data processing requires a point in time to be represented as year/month/day/hour/minute/second. This allows for sorting and identifying specific points in time, such as earliest and latest points in time.

DATETIME is a combination of the YYMMDD field and the TIME field, which are both normally printed as 8 characters. In order to fit these two fields into the TRIM internal limit of 16 characters per field, the YYMMDD portion is represented without editing symbols, while the TIME portion is represented with colons as editing symbols. Separating the two portions are two asterisks. Therefore, a DATETIME example is "041231**12:59:59".

DATE4TIME is a combination of the YYYYMMDD field and the TIME field, which are both normally printed as 8 characters. In order to fit these two fields into the TRIM internal limit of 16 characters per field, the TIME portion is represented without editing symbols. Separating the two portions are two asterisks. Therefore, a DATE4TIME example is "20041231**125959".

In TRIM, the earliest point in time for input log records can be identified on a Summary Report by stating MINIMUM DATETIME (and the latest point in time by stating MAXIMUM DATETIME).

V.1.6 Sample PRESUM Reports

```
PERFORMANCE SUMMARY        TRIM v.r.s     FRI 07-02-22 11:23:51  PAGE 1
    BY COMMAND            LOG FROM 08-02-11 15:47:56 TO 04-12-31 15:54:21
```

CMD	COUNT	%	AVER IO	AVER CPU(MS)	AVER DUR(MS)
A1	652	6.5	.1	.57	12.37
A4	45	.5	.6	.76	57.95
BT	8	.1	.4	.33	30.44
CL	28	.3	11.5	4.59	344.69
C5	2	.0	1.0	.10	52.45
ET	146	1.5	.7	.41	65.64
E1	1	.0	17.0	14.10	956.80
H1	1	.0	1.0	.10	71.20
L1	475	4.8	.6	.69	31.94
L2	92	.9	.0	.41	2.70
L3	3,254	32.5	.2	.52	6.77
L4	1,357	13.6	.8	.61	29.77
N1	70	.7	8.8	4.58	549.83
OP	24	.2	8.7	4.00	257.98
RC	1,413	14.1	.0	.10	.18
S1	2,417	24.2	3.8	2.98	145.94
S2	1	.0	152.0	363.60	7,707.90
S9	14	.1 2	6.0	62.45	1,305.68

```
    **  10,000  100.0   1.3 1.25    53.28
```

This report may be produced from a lengthy Command Log containing many records or records resulting from User-Exit-4. The lengthy logs are no longer necessary.

```
REPORT BY FILE                    TRIM v.r.s     FRI 07-02-22 11:23:51  PAGE 1
    WITHIN DEPT               LOG FROM 08-02-11 15:47:56 TO 04-12-31 15:54:21
```

DEPT	FNR	COUNT	%	SUM I/O	AVER I/O	AVER DUR(MS)	CHRG CPU(MS)
Accounting	160	1,481	14.8	3,004	2.0	108.37	$13.20
Accounting	169	2	.0	154	77.0	3,897.25	$15.77
Accounting	***	1,483	14.8	3,158	2.1	113.48	$28.97
Consulting	80	1,852	18.5	1,303	.7	25.68	$2.33
Consulting	81	3,097	31.0	7,803	2.5	95.31	$.77
Consulting	213	1,640	16.4	167	.1	4.05	$.09
Consulting	***	6,589	65.9	9,273	1.4	53.02	$3.19
•							
•							
•							
MISC 0	4	.0	64	16.0	417.53	$2.16	
MISC 63	72	.7	8	.1	4.47	$.07	
MISC 206	2	.0	5	2.5	192.95	$1.01	
MISC ***	78	.8	77	1.0	30.48	$3.24	
**********	***	10,000	100.0	12,894	1.3	53.28	$39.41

This type of report may be generated from PRESUM records resulting from User-Exit-4.

V.1.7 TRELOG Records

TRIM User-Exit-4 may optionally log information to be input to TSI's tRelational product. For selected FNR(s) or all FNRs and the update and retrieval commands (A1, A4, E1, E4, L1, L2, L3, L4, L5, L6, L9, N1, N2, S1, S4, S8, S9), the following data is logged:

File Number
Command Code
Response Code
Additions-1 (for L3, L6, L9, S8 and S9 commands)
Database ID
Search Buffer contents up to 40 bytes (for L3,S1, S2 and S4 commands)

The data above is written to the Command Log in a TRELOG record that can be processed later by TRIM batch processing.

The information is kept in an internal table created via a TRELOG macro that specifies the table size (number of entries) and the number of entries to write to the Command Log whenever the table is full.

To activate tRelational Logging, the TRELOG macro-generated assembly module must be linked with TRIM User-Exit-4 and the UEX4 Zap switch at location X'45' must be set to X'E3' (Y). The Zap switch at location X'45' has a default setting of X'D5' (N) and can be modified via Zap switch, TRMTAP macro, communication run, and dynamically via the CTRE screen of the Real-Time Monitor. Using the same methods, tRelational Logging can be deactivated.

The Search Buffer contents logged consist of the data up to the first period (.) or the first 40 bytes, whichever is less.

The TRELOG records are written to the Command Log whenever the TRELOG table fills up. The number of entries to be written is specified in the TRELOG macro. If tRelational Logging is turned off, or at session end, the entire table is written to the Command Log.

The TRELOG records can be extracted from the Command Log by TRIM batch processing. Reports can be produced or an output dataset can be created for user written evaluation programs. tRelational inputs the TRELOG records directly from the CLOG.

V.1.8 ADABAS Command Log TRELOG Fields

Figure 8 on the following page lists every expanded TRELOG Record field, its alias names, definition, format and length. The fields contained in the record are listed first, followed by the TRIM-derived fields.

The user further "expands" the TRELOG Record with FIELD statements to define derived fields such as DBID, DEPT, PROJECT, etc.

FIELD NAME	ALIAS NAMES	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
RECID		Record Identifier (FFFt where t=TRELOG record type)	B	2
STCK	STCK5	ADABAS STCK Time (CLOG5)	B	8
VERSION		TRELOG ID and Version Number	C	6
COUNT		Count of SB Occurrences	B	4
DBID	DB	Data Base ID	B	2
RECTYPE		TRELOG Record Type (1,2,3,or4)	B	1
FNR	FILE	ADABAS File Number	B	2
COMMAND	CMD	ADABAS Command Code	C	2
RSP	RESPONSE, RSPCODE, RC, RESP-CODE, RESP	ADABAS Response Code	B	2
ADD1	ADDIT1	Additions-1 Field	C	8
SBL	CALC-SBL	Search Buffer Field Length	B	1
SB-40		Search Buffer (up to 40 bytes)	C	40
SEQUENCE	SEQ	Sequence number of input record	B	4
SEQ7		Sequence number of input records (max 7 digits printed)	B	4
SEQ8		Sequence Number of input records (max 8 digits printed)	B	4

This marks the end of the fields on the TRELOG Record. The fields automatically "derived" by TRIM from information contained on the record are listed next.

Figure 8 - Expanded TRELOG Record Fields

(continued on next page)

FIELD NAME	ALIAS NAMES	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
DATE	YYDDD, YY-DDD	Julian Date (Year/Day)	C	5
DATE4	YYYYDDD, YYYY-DDD	Julian Date (Year as 4 Digits/Day)	C	7
YYMMDD	YY-MM-DD	Date in Year, Month, Day Format	C	6
YYYYMMDD		Date in Year as 4 Digits, Month, Day Format	C	8
TIME		Time of Day Command entered ADABAS in hours, mins, secs.	C	6
DATETIME	DATE-TIME	Refer to Note 1	C	16
DATE4TIME	DATE4-TIME	Refer to Note 1	C	16
HOUR	HR	Hour of the Day (0-23)	B	1
MINUTE	MIN, MI	Minute of the Hour (0-59)	B	1
DAY	DA	Day of Month (1-31)	B	1
WEEK	WK	Week of Year (1-53)	B	1
MONTH	MO	Month of Year (1-12)	B	1
WEEKDAY	WEEK-DAY	Day of Week expressed as 3 characters (SUN, MON, etc.)	C	3
MONTH-NAME	MONAME	Month of Year expressed as 3 characters (JAN, FEB, etc.)	C	3
QUARTER	QU	Quarter of year (1-4) determined by week (13 weeks per quarter, except last quarter - possible 14 weeks)	B	1
YEAR	YR	Two-digit Year	B	1
YEAR4	YR4	Four-digit Year	B	2

Figure 8 - Expanded TRELOG Record Fields (continued)

All of the fields in Figure 8 that are character format will be printed in character form on all reports with the exception of CIDX, USERIDX, CMDTYPE, RESERVEDX, USER-AREAX, and the ADDITIONS Fields, which are printed in hex; DATE, YYMMDD, TIME, and DATE-TIME, which are printed in edited form as YY-DDD, YY-MM-DD, HH:MM:SS, and YYMMDD**HH:MM:SS, respectively; and the four-digit date related fields DATE4, YYYYMMDD, and DATE4-TIME, which are printed in edited form as YYYY-DDD, YYYY-MM-DD, and YYYYMMDD**HHMMSS, respectively.

All of the fields in Figure 8 that are numeric format will be printed as numeric edited values. Leading zeros are suppressed. DURATION and CPUTIME are printed with one decimal position. CHARGE values will contain a leading dollar sign ($).

Any of the fields may be used in INCLUDE, EXCLUDE, VALUE, and Detail Report DISPLAY statements, except FB-FIELD and SB-FIELD. The format and length of values stated on INCLUDE, EXCLUDE, and VALUE statements should agree with the format and length of the stated field. For example, "FNR=12" and "CMD=A4". DATE should be stated as numeric characters without editing symbols (e.g., DATE=04365). YYMMDD should be stated as numeric characters without editing symbols (e.g., YYMMDD=041231). TIME should be stated as numeric characters without editing symbols (e.g., TIME=(180500-180600)). DATETIME should be stated as numeric characters with editing symbols (e.g., DATETIME=041231**18:05:00). DATE4 should be stated as numeric characters without editing symbols (e.g., DATE=2004365). YYYYMMDD should be stated as numeric characters without editing symbols (e.g., YYYYMMDD=20041231). DATE4TIME should be stated as numeric characters without editing symbols (e.g., DATE4TIME=20041231**180500).

NOTE 1:

The DATETIME field represents a combination of the date and time-of-day into one field. Although separate expressions of date and time-of-day are meaningful in a non-data processing sense, efficiency in data processing requires a point in time to be represented as year/month/day/hour/minute/second. This allows for sorting and identifying specific points in time, such as earliest and latest points in time.

DATETIME is a combination of the YYMMDD field and the TIME field, which are both normally printed as 8 characters. In order to fit these two fields into the TRIM internal limit of 16 characters per field, the YYMMDD portion is represented without editing symbols, while the TIME portion is represented with colons as editing symbols. Separating the two portions are two asterisks. Therefore, a DATETIME example is "041231**12:59:59".

DATE4TIME is a combination of the YYYYMMDD field and the TIME field, which are both normally printed as 8 characters. In order to fit these two fields into the TRIM internal limit of 16 characters per field, the TIME portion is represented without editing symbols. Separating the two portions are two asterisks. Therefore, a DATE4TIME example is "20041231**125959".

In TRIM, the earliest point in time for input log records can be identified on a Summary Report by stating MINIMUM DATETIME (and the latest point in time by stating MAXIMUM DATETIME).

V.1.9 Sample TRELOG Reports

```
TRELOG SUMMARY DESCR         TRIM v.r.s    FRI 07-02-22 11:32:51  PAGE 1
   BY FILE & CMD        LOG FROM 08-02-11 15:47:56 TO 04-12-31 15:54:21


   FNR                SB-40                          CMD   COUNT       %
     1    - - - - - - - - - - - - - - - - - - -        A1       2      .0
     1    - - - - - - - - - - - - - - - - - - -        L2     554    16.4
     1    - - - - - - - - - - - - - - - - - - -        L5     112     2.1

     1    - - - - - - - - - - - - - - - - - - -        **     668    19.7

     1    AA  ,008,A,.- - - - - - - - - - - -         L3   2,353    69.5
     1    AA  ,008,A,.- - - - - - - - - - - -         L6     303     8.9

     1    AA  ,008,A,.- - - - - - - - - - - -         **   2,656    78.4

     1    AE  ,020,A,.- - - - - - - - - - - -         L6       1      .0

     1    AE  ,020,A,.- - - - - - - - - - - -         **       1      .0


     1    ***********************************         **   3,325    98.1

   240    - - - - - - - - - - - - - - - - - - -        A1       4      .1
   240    - - - - - - - - - - - - - - - - - - -        E1       1      .0
   240    - - - - - - - - - - - - - - - - - - -        E4       2      .0
   240    - - - - - - - - - - - - - - - - - - -        L1       1      .0
   240    - - - - - - - - - - - - - - - - - - -        N1       4      .1

   240    - - - - - - - - - - - - - - - - - - -        **      12      .4

   240    LE  ,004,Y,.- - - - - - - - - -             S1       6      .2

   240    L3  ,004,U,.- - - - - - - - - -             **       6      .2

   240    LL  ,018,A,S,LL  ,018,A,. - - -             S1       1      .0

   240    LL  ,018,A,S,LL  ,018,A,. - - -             **       1      .0

   240    LO  ,008,A,.- - - - - - - - - -             S1       1      .0

   240    LO  ,008,A,.- - - - - - - - - -             **       1      .0

   240    LO  ,009,A,.- - - - - - - - - -             S1      19      .6
   240    LO  ,009,A,.- - - - - - - - - -              4       7      .2

   240    LO  ,009,A,.- - - - - - - - - -             **      24      .8

   240    LO  ,014,A,.- - - - - - - - - -             S1       9      .3

   240    LO  ,014,A,.- - - - - - - - - -             **       9      .3

   240    LE  ,4,U,.- - - - - - - - - - - - - -       S1       9      .3

   240    LE  ,4,U,.- - - - - - - - - - - - - -       **       9      .3

   240    LJ  ,018,A,.- - - - - - - - - - - -         L9       1      .0

   240    LJ  ,018,A,.- - - - - - - - - - - -         **       1      .0

   240    ***********************************         **      63     1.9

  ****    ***********************************         **   3,388   100.0

DESCRIPTORS BY FNR & CMD

 NUMBER OF INPUT RECORDS:   83
 INPUT RECORDS INCLUDED:    19
```

This report is produced from the TRELOG records written to the Command Log. It can be useful to analyze the use of descriptors in a database.

```
TRELOG DETAIL REPORT         TRIM v.r.s    FRI 07-02-22 11:35:21  PAGE


 SEQ  CMD   FNR   DBID         ADD1                SB-40              COUNT
   1   N1   242      3   0000000000000000   ----------------------------    44
   2   L4   242      3   0000000000000000   ----------------------------     7
   3   L1   242      3   0000000000000000   ----------------------------    23
   4   E1   242      3   0000000000000000   ----------------------------     6
   5   A1   242      3   0000000000000000   ----------------------------    37
   6   N1   241      3   0000000000000000   ----------------------------    39
   7   E4   241      3   0000000000000000   ----------------------------    22
   8   E1   241      3   0000000000000000   ----------------------------     8
   9   A1   241      3   0000000000000000   ----------------------------    53
  10   N1   240      3   0000000000000000   ----------------------------     4
  11   L1   240      3   0000000000000000   ----------------------------     1
  12   E4   240      3   0000000000000000   ----------------------------     2
  13   E1   240      3   0000000000000000   ----------------------------     1
  14   A1   240      3   0000000000000000   ----------------------------     4
  15   L5     1      3   0000000000000000   ----------------------------     1
  16   L5     1      3   0000000000000000   ----------------------------   111
  17   L2     1      3   0000000000000000   ----------------------------   554
  18   A1     1      3   0000000000000000   ----------------------------     2
  19   S9   242      3   E2F6404040404040   ----------------------------     1
  20   S8   242      3   CF000000CF000000   ----------------------------     1
  21   L9   242      3   4040404040404040   S3  ,037,.------------------     2
  22   L9   242      3   4040404040404040   SB  ,064,.------------------    13
  23   L6   242      3   D2C7BBCA40404040   KG  ,20,A.--------------------   10
  24   L6   242      3   C1C4BBCA40404040   AD  ,067,A,.----------------     22
  25   L6   242      3   C1C3BBCA40404040   AC  ,035,A,.----------------      2
  26   L3   242      3   E4D1BBCA40404040   UJ  ,002,1,.----------------      1
  27   L3   242      3   E4D1BBCA40404040   UJ  ,002,A,.----------------      7
  28   L3   242      3   E2F3BBCA40404040   S3  ,037,.------------------     63
  29   L3   242      3   D3C1BBCA40404040   LA  ,033,1,.----------------     13
  30   L3   242      3   C1C4BBCA40404040   AD  ,067,A,.----------------     28
  31   L3   242      3   CAC3BBCA40404040   AC  ,035,A,.----------------      6
  32   L9   241      3   4040404040404040   LL  ,018,A,.----------------      6
  33   L9   241      3   4040404040404040   LJ  ,018,1,.----------------     19
  34   L6   241      3   D3D3BBCA40404040   LL  ,18,A.--------------------   28
  35   L6   241      3   D3DABBCA40404040   LJ  ,018,A,.----------------     35
```

This is a report of the detailed data logged by tRelational Logging.

V.2 ADABAS Protection Log

V.2.1 ADABAS Protection Log Records

TRIM may use the ADABAS Protection Log to produce reports. This log contains detailed information about each database modification (Record Update, Add, Delete). There is no ADABAS user-exit provided for intercepting and manipulating Protection Log records. If Protection Logging is requested, every Update, Delete, or Add will result in an entire before and/or after image of the modified records. The log must be active for any ADABAS session desired to be processed by TRIM. There are no optional records, fields, or buffers on the Protection Log.

Multiple ADABAS sessions' Protection Logs (on disk or tape) may be processed in one TRIM execution. Multiple reports may be generated with one pass of these logs. The reports may show detailed log information, identifying ADABAS fields from the Before and/or After Compressed Record Images.

Execution of TRIM against the Protection Log is controlled by parameters with simple statements that reference the log's "fixed fields" (DISPLAY FNR, ISN, etc.), "derived fields" (DISPLAY HOUR, DEPT), and the log's "image fields" (SHOW BA, BB, BC, FB, CA, etc.).

Protection Log records may be selected for particular times, file numbers, ISNs, etc. It is possible to generate summarization statistics, but they are limited to the "fixed fields."

The ADABAS Protection Log contains several record types. These records and fields are described in the appropriate ADABAS Manual. The only record type processed by TRIM is the Data Record Type. The header or "fixed" part of the Data Record contains several useful fields such as File Number, User-ID, etc. The image-type (Before or After) is indicated by a bit setting. The image portion is a compressed record preceded by a length and ISN.

Each Protection Log Data Record that is input to TRIM is expanded into a record that has a predictable, easy-to-use format.

V.2.2 ADABAS Protection Log Record Fields

The expanded log fields are referenced in the TRIM parameter statements. Figure 9 lists every expanded log field, its alias names, definition, format, and length.

The user further "expands" the log record with FIELD statements to define derived fields, such as DEPT, PROJECT, etc.

The Before and After Image compressed fields are referenced only in the SHOW statement and only by their ADABAS 2-character field names.

The fields contained in the fixed part of the log are listed first, followed by the TRIM-derived fields.

FIELD NAME	ALIAS NAMES	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
FNR	FILE	ADABAS File Number	B	2
ISN		Internal Sequence Number of ADABAS Record	B	4
USERID8	USER-ID8, UID8	8-character User-ID (printed in character format)	C	8
USERID	USER-ID, UID	User-ID (rightmost 4 characters of USERID8) (printed in character format)	C	4
USERIDX	USER-IDX, UIDX	User-ID (printed in hex format)	C	4
RUI	RESTART-USERID	Restart User-ID	C	8
SESSION	SESSION-NUMBER	ADABAS Session Number	B	2
BLOCK-COUNT	BLKCNT	Block Count for use with ADAREP checkpoint file list	B	4
RABN		Relative ADABAS Block Number	B	4
TSN		Transaction Sequence Number	B	4
DBID	DB	Database-ID	B	2
LEN	RECLEN	Image Record Length RECORD-LENGTH	B	2
SEQUENCE	SEQ	Sequence number of input record	B	4
SEQ7		Sequence number of input record (max 7 digits printed	B	4
SEQ8		Sequence number of input record (max 8 digits printed	B	4
IMAGTYP	IMAGE-TYPE	"BEFORE" or "AFTER"	C	6

Figure 9 - Expanded Protection Log Fields

This marks the end of the fields on the header or "fixed" part of the Protection Log. The fields automatically "derived" by TRIM from information contained on the log are listed next.

FIELD NAME	ALIAS NAMES	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
TID	TERMINAL-ID	Terminal-ID (for COM-PLETE users)	B	2
DATE	YYDDD, YY-DDD	Julian Date (Year/Day)	C	5
DATE4	YYYYDDD, YYYY-DDD	Julian Date (Year as 4 Digits/Day)	C	7
YYMMDD	YY-MM-DD	Date in Year, Month, Day Format	C	6
YYYYMMDD		Date in Year as 4 Digits, Month, Day Format	C	8
TIME		Time of Day Command entered ADABAS in hours, mins, secs	C	6
DATETIME	DATE-TIME	Refer to Note 1	C	16
DATE4TIME	DATE4-TIME	Refer to Note 1	C	16
HOUR	HR	Hour of the Day (0-23)	B	1
MINUTE	MIN, MI	Minute of the Hour (0-59)	B	1
DAY	DA	Day of Month (1-31)	B	1
WEEK	WK	Week of Year (1-53)	B	1
MONTH	MO	Month of Year (1-12)	B	1
WEEKDAY	WEEK-DAY	Day of Week expressed as 3 characters (SUN, MON, etc.)	C	3
MONTH-NAME	MONAME	Month of Year expressed as 3 characters (JAN, FEB, etc.)	C	3
FIELD NAME	**ALIAS NAMES**	**DEFINITION**	**FORMAT CHAR/ BINARY**	**LENGTH IN BYTES**
QUARTER	QU	Quarter of Year (1-4) determined by week (13 weeks per quarter except last quarter -- possible 14 weeks)	B	1
YEAR	YR	Two-digit Year	B	1
YEAR4	YR4	Four-digit Year	B	2

Figure 9 - Expanded Protection Log Fields

Note: The fields from the compressed records are referred to by their ADABAS names (AA, BB, etc.) only in SHOW statements.

All of the fields in Figure 9 that are character format will be printed in character form on all reports with the exception of CIDX, USERIDX, CMDTYPE, RESERVEDX, USER-AREAX, and the ADDITIONS Fields, which are printed in hex; DATE, YYMMDD, TIME, and DATE-TIME, which are printed in edited form as YY-DDD, YY-MM-DD, HH:MM:SS, and YYMMDD**HH:MM:SS, respectively; and the four-digit date related fields DATE4, YYYYMMDD, and DATE4-TIME, which are printed in edited form as YYYY-DDD, YYYY-MM-DD, and YYYYMMDD**HHMMSS, respectively.

All of the fields in Figure 9 that are numeric format will be printed as numeric edited values. Leading zeros are suppressed. DURATION and CPUTIME are printed with one decimal position. CHARGE values will contain a leading dollar sign ($).

Any of the fields may be used in INCLUDE, EXCLUDE, VALUE, and Detail Report DISPLAY statements, except FB-FIELD and SB-FIELD. The format and length of values stated on INCLUDE, EXCLUDE, and VALUE statements should agree with the format and length of the stated field. For example, "FNR=12" and "CMD=A4". DATE should be stated as numeric characters without editing symbols (e.g., DATE=04365). YYMMDD should be stated as numeric characters without editing symbols (e.g., YYMMDD=041231). TIME should be stated as numeric characters without editing symbols (e.g., TIME=(180500-180600)). DATETIME should be stated as numeric characters with editing symbols (e.g., DATETIME=041231**18:05:00). DATE4 should be stated as numeric characters without editing symbols (e.g., DATE=2004365). YYYYMMDD should be stated as numeric characters without editing symbols (e.g., YYYYMMDD=20041231). DATE4TIME should be stated as numeric characters without editing symbols (e.g., DATE4TIME=20041231**180500).

NOTE 1:

The DATETIME field represents a combination of the date and time-of-day into one field. Although separate expressions of date and time-of-day are meaningful in a non-data processing sense, efficiency in data processing requires a point in time to be represented as year/month/day/hour/minute/second. This allows for sorting and identifying specific points in time, such as earliest and latest points in time.

DATETIME is a combination of the YYMMDD field and the TIME field, which are both normally printed as 8 characters. In order to fit these two fields into the TRIM internal limit of 16 characters per field, the YYMMDD portion is represented without editing symbols, while the TIME portion is represented with colons as editing symbols. Separating the two portions are two asterisks. Therefore, a DATETIME example is "041231**12:59:59".

DATE4TIME is a combination of the YYYYMMDD field and the TIME field, which are both normally printed as 8 characters. In order to fit these two fields into the TRIM internal limit of 16 characters per field, the TIME portion is represented without editing symbols. Separating the two portions are two asterisks. Therefore, a DATE4TIME example is "20041231**125959".

In TRIM, the earliest point in time for input log records can be identified on a Summary Report by stating MINIMUM DATETIME (and the latest point in time by stating MAXIMUM DATETIME).

V.2.3 Sample Protection Log Report

```
AUDIT DATA - FILE 37   TRIM v.r.s    FRI 07-02-22 11:45:32 PAGE 1
FROM PROTECTION LOG

YY-MM-DDTIME   FNR        ISNUSERIDX    IMAGTYP

07-02-21 12:27:53          37   1847    00001417       AFTER

BA=DAVENPORT                                           LAST-NAME
BB=CHARLES                                             FIRST-NAME
BC=M                                                   INITIAL
FB=50000                                 SALARY

07-02-21 12:27:59          37   1893    00001417       AFTER

BA=SMITH                                 LAST-NAME
BB=MARTHA                                              FIRST-NAME
BC=C                                                   INITIAL
FB=45000                                 SALARY

07-02-21 12:28:14          37    989    00001417       AFTER

BA=COHEN                                 LAST-NAME
BB=MARK                                                FIRST-NAME
BC=                                                    INITIAL
FB=35000                                 SALARY
```

SECTION VI

LOG ANALYSIS PARAMETER STATEMENTS

VI.1 Parameter Statements and Types

For batch TRIM Command Detail, PRESUM, TRELOG, or Protection Log processing, there are several types of parameter statements with op-codes as shown below:

Input Definition

INPUT FIELD VALUE	Defines the input logtype, specifies any derived fields, and defines other "global" information, such as the NATURAL System File(s), etc.

Report Definition

REPORT	Defines the report type, heading lines, format, etc.

Record Selection

INCLUDE EXCLUDE	Specifies which input records should be included in or excluded from the report.

Detail Report Field Specification

DISPLAY	Specifies which fields from the input should be printed on the report.
SHOW	Specifies which fields from the Protection Log Before and/or After Images are to be decompressed and shown on the report. This statement is valid only for Protection Log processing.

Summary Report Specification

CONTROL SUM AVERAGE MINIMUM MAXIMUM PERCENT CHARGE	Specifies which field(s) to use for control breaks. Specifies fields for which sums, averages, minimums, maximums, percent, and charge-back figures are to be reported.

Sequential Dataset Output Definition

OUTPUT	Defines a Sequential Dataset to contain either output copies of Command Log detail records, decompressed data from the Protection Log, or all data shown on a summary format.

VI.2 Parameter Statement Syntax and Description

For general parameter syntax rules, refer to **Appendix A: General Parameter Rules**.

The following is the Parameter Statement Syntax and a detailed description of each parameter statement with examples.

VI.2.1 INPUT

SYNTAX

INPUT	LOGTYPE	=	CLOG5	(CLOGLAYOUT=5)
			{CLOG8	(CLOGLAYOUT=8)
			PRESUM	
			TRELOG	
			PROTECTION	
	LIMIT	=	numeric-value	
			99999999	
	CPU-FACTOR	=	{ numeric-value	
			920000 }	
	ENV-FACTOR	=	{ numeric-value	
			1.0000 }	
	CLOCK-FACTOR	=	{ numeric-value	
			0 }	
	TAPES	=	{ numeric-value	
			0 }	*(DOS and VM only)*
	VMBLK	=	{ YES	
			NO }	*(VM only)*
	SYSNO	=	{010	
			012 }	*(DOS only)*
	REWIND		{ YES	
			NO }	*(DOS only)*
	STOPDATE		{ yymmdd	
			999999 }	
	STOPDATE4		{ yyyymmdd	
			99999999 }	
	STOPTIME		{ hhmmss	
			999999 }	

LOGTYPE: Defines the input to be the CLOG5/CLOG8 (Command Log Detail records), PRESUM (Command Log PRESUM records), Protection Log, TRELOG (tRelational Records), or * (some other file). For the Command Log Detail, PRESUM, TRELOG (tRelational Records), and the Protection Log, TRIM is pre-coded to know the fields on the logs. For LOGTYPE=*, FIELD statements must be coded to describe the input.

LIMIT: Specifies the maximum number of input records to be processed. A value of zero indicates unlimited.

CPU-FACTOR: Specifies the number of instructions the CPU (which generated the Command Log) was capable of performing per second. This figure is used in CPU time calculations. The default of 920000 represents a 370/158. Refer to **Appendix B: CPU Time Calculations**.

ENV-FACTOR: Specifies an additional CPU time adjustment factor. Refer to **Appendix B: CPU Time Calculations**. TRIM multiplies its calculated CPU time by this ENV-FACTOR, resulting in a more correct CPU time. This variable may be up to six positions, including the decimal. The default is 1.0000.

CLOCK-FACTOR: Specifies the number of hours difference between the times contained in the log and the real time. For example, several installations for one company may IPL all systems with Greenwich Mean Time as the base clock for synchronization purposes. The log is from an ADABAS session run in Central Standard Time, 6 hours different from Greenwich Mean Time. The Clock-Factor is 6, which will cause log times to be reported based upon Central Standard Time. The Clock-Factor may be a positive or negative integer value.

TAPES: For DOS or VM, specifies the number of input tapes to be processed. If specified as 0, TRIM will assume some unknown multiple number of tapes (files) are to be processed. Upon end-of-file, TRIM will ask the operator if more tapes are to be processed. If specified as non-zero, TRIM will assume the specified number of tapes (files), stopping only when all are processed. (For VM, "TAPES=1" should be specified when processing logs from a disk file).

VMBLK: In certain installations, VM inserts an extra record length in front of the log record being input. "NO" (the default) makes no adjustment for these extra four bytes. "YES" makes a four byte adjustment to skip over this extra length.

SYSNO: For DOS, input may be from disk (SYSNO=012) rather than tape (SYSNO=010, the default). For OS and VM, this is accomplished through JCL.

Refer to ***Section V.9 Batch Execution Procedure*** of the ***TRIM Installation and Operations Manual***.

REWIND: For DOS, the input tape(s) may be rewound (REWIND=YES) upon end of file (for another tape to be mounted) or left in position on the tape drive (REWIND=NO) (for multiple files on one reel). This parameter is ignored for non-DOS and for DOS SYSNO=012.

STOPDATE: The sequence of records and the sequence of multiple tapes or volumes of records input to TRIM are normally of no concern. However, some installations may guarantee date/time ordered input through operations procedures, JCL, generation datasets, tape management systems, etc. For SMP/PLEX installations, the CLOG records will need to be merged and sorted on the STCK field. These installations may take advantage of this parameter, which, along with STOPTIME, specifies an ending date/time. When this date/time is exceeded, TRIM inputting will cease.

STOPDATE4: Refer to STOPDATE above. As an option, a four-digit ending date can be specified. This option is especially useful for year 2000 and beyond. It is possible to state STOPDATE4=20000102, for example. This is interpreted as stopping CLOG or PLOG processing on January 2 of 2000. A STOPDATE=000102 is interpreted today as January 2 of 1900 (i.e., with today being 1998, today's year (98) is greater than the STOPDATE year (00) and processing would stop and no records would be processed). As soon as it becomes year 2000, STOPDATE=000102 would be interpreted as January 2 of 2000 (i.e., with the current date being 2000, the year (00) is equal to the STOPDATE year (00) and further checks would be made based on month, day, and for STOPTIME if necessary).

STOPTIME: Refer to STOPDATE above.

EXAMPLES

```
INPUT      LOGTYPE=CLOG5,LIMIT=1000
```

The first 1000 Detail Records from an ADABAS Command Log are to be processed.

```
INPUT      LOGTYPE=CLOG5,CPU-FACTOR=2502000,
               CLOCK-FACTOR=6
```

All Command Log Detail Records are to be processed. CPU time calculations are for a 3033-S. The company has several CPUs, all IPLed at Greenwich Mean Time. The logs are from the Chicago installation, six hours different from Greenwich.

```
INPUT      LOGTYPE=PRESUM,CLOCK-FACTOR=6
```

All Command Log PRESUM records are to be processed, and log time will be adjusted by six hours.

```
INPUT      LOGTYPE=PROTECTION,TAPES=3,STOPDATE=041231,
               STOPTIME=092253
```

All Protection Log records are to be processed up to and including the stop date/time. This is a DOS or VM execution against exactly 3 tape files, but the processing may be terminated if a record has a date and time exceeding the indicated STOPDATE and STOPTIME.

```
INPUT      LOGTYPE=*
FIELD      ---
FIELD      ---
etc.
```

The input is another log file described to TRIM by FIELD statements.

VI.2.2 FIELD

When used with INPUT LOGTYPE other than "*", the FIELD statement defines fields in addition to those fields that TRIM assumes to be on the Command or Protection Log. The FIELD statement is used in conjunction with the VALUE statements to "derive" field values.

When used with INPUT LOGTYPE=*, the FIELD statement defines fields in the input file, then may define fields in addition to those in the input file (derived fields).

SYNTAX

```
FIELD     NAME      =  Character-string
          FORMAT    =  { C
                         B
                         H   }
          LENGTH    =  numeric-value
          DECIMALS  =  { numeric-value
                         0                    }
```

NAME: Up to 8 alphabetic, hyphen, and numeric characters to give the field a name that may be used in subsequent parameter statements. For example, different departments, divisions, sections, or projects may be defined; certain file-groups may be identified; commands may be grouped together for reporting purposes; etc.

FORMAT:
- C = Character format field
- B = Binary numeric field
- H= Character format field (prints in hex)

LENGTH: For "C" or "H" format, one to 16 bytes in length. For "B" format, one, two, or four bytes in length.

DECIMALS: For "B" format, one to five decimal positions for printing the field.

EXAMPLES

```
FIELD   NAME=DEPT,LENGTH=10,FORMAT=C
```

A field named "DEPT" is to be considered as a log field. DEPT is a 10-character field. The value of DEPT will be "derived" via subsequent VALUE statements.

```
FIELD   NAME=WARNING,LENGTH=8,FORMAT=C
```

A field named "WARNING" is to be considered a log field. WARNING is an 8-character field. The value of WARNING will be "derived" via subsequent VALUE statements.

```
FIELD   NAME=INTERVAL,LENGTH=2,FORMAT=B,DECIMALS=2
```

A field named "INTERVAL" is to be considered as a log field. INTERVAL is 2 bytes binary with 2 decimal positions. The value of INTERVAL will be "derived" via subsequent VALUE statements.

```
FIELD   NAME=DBID,LENGTH=8,FORMAT=C
```

A field named "DBID" is to be considered as a log field. DBID is an 8-character field. The value of DBID will be "derived" via subsequent VALUE statements.

VI.2.3 VALUE

The VALUE statement defines a value that the preceding field (FIELD statement) may have and the criteria for setting that value.

SYNTAX

```
VALUE        { character-string
               numeric-value     }   relation-expression[,relation-expression]...
```

If the preceding field is in the format "C" or "H", a character string of any length up to the length specified for the preceding field must be specified.

If the preceding field is in the format "B", a numeric value (decimal) capable of fitting into the byte length defined for the preceding field must be specified.

The relation-expressions state the criteria for setting the value of the preceding field to the character string or numeric value stated. Each relation-expression specifies:

- field:

  a field in the input record, such as JOB, FNR, COMMAND, HR, NATPROG, ASSOIO, etc., or a previously defined derived field, such as DEPT.

- relation-operator:

=	(equal)
>	(greater than)
<	(less than)
¬	(not equal)

- value-list:

  a list of one or more values. If more than one, the values must be enclosed in parentheses and separated by commas. Value ranges are stated as value-value. The value format should agree with the input field format (e.g., JOB is alphanumeric, FNR is numeric).

Multiple values following an equal operator imply logical OR relationships. Multiple values following a not equal operator imply logical AND relationships.

Multiple relation-expressions imply logical AND relationships.

DATETIME includes the editing symbols as part of the value. This field was created to allow a concatenation of date and time into one field that could be used as a control value when selecting CLOG records that were created over a multiple day span with times that repeat. As such, the DATETIME keyword cannot be used with the range or list options of values. The imbedded editing values will cause unpredictable results when included in a range or list of values.

EXAMPLES (Refer to the previous FIELD examples.)

```
FIELD   NAME=DEPT,LENGTH=10,FORMAT=C
VALUE   ENG,JOB=(A400AABA-A4999999)
VALUE   MARKETING,JOB=(M000AAAA-M9999999),
            FNR=(30-33,37,39)
VALUE   DBA,FNR=12713
VALUE   MISC
```

Set the value of the derived field "DEPT" to "ENG" if the JOB on the log is within the indicated range of values. If not, set the value to "MARKETING" if the JOB on the log is within the indicated range of values, AND the file-number on the log is 30-33, 37 or 39. If not, set the value to "DBA" if the file number is 12713. If not, set the value to "MISC".

```
FIELD   NAME=WARNING,LENGTH=8,FORMAT=C
VALUE   HIGH,DEPT=ENG,FNR=(148-151)
VALUE   MEDIUM,CMD=(S2,S9)
```

Set the value of the derived field "WARNING" to "HIGH" if the previously derived field "DEPT" is "ENG", AND the file number is 148-151. If not, set the value of "WARNING" to "MEDIUM" if the log indicates an S2 OR S9 command. If not, set "WARNING" to 8 blanks.

```
FIELD   NAME=INTERVAL,LENGTH=2,FORMAT=B,
            DECIMALS=2
VALUE   .00,MINUTE=(0-14)
VALUE   .25,MINUTE=(15-29)
VALUE   .50,MINUTE=(30-44)
VALUE   .75                 MINUTE MUST BE 45-59
```

Set the value of the derived field "INTERVAL" to a decimal value to indicate quarter hour intervals. This will be useful for breaking down statistics by hour and interval of hour.

```
FIELD   NAME=DBNAME,LENGTH=8,FORMAT=C
VALUE   PRODV811
```

Set the value of the derived field "DBNAME" to "PRODV811" to indicate that the statistics will be for the production database Version 8.1.1.

The selection criteria is processed in order from top to bottom, so when coding long lists of VALUE statements, the parameter statement order may affect TRIM performance.

VI.2.4 REPORT

The REPORT statement defines the type of report to be generated, along with heading line(s) and report format.

SYNTAX

```
REPORT          TYPE  =  {  DETAIL
                           SUMMARY      }

                HEADING  =  'up to 60 characters'

                HEADING2 =  'up to 60 characters'

                LIMIT  =  {  99999999
                             numeric-value  }

                LINE-SIZE =  {  133
                             numeric-value  }

                PAGE-SIZE =  {  55
                             numeric-value  }

                CSV    =  {  any character  }

                SEPDD  =  {  N
                             Y              }

                HEAD   =  {  N
                             Y              }

                CONB   =  {  N
                             Y              }

                STAT   =  {  N
                             Y              }

                MPCO   =  {  2
                             1, 4, 8        }

                MPCS   =  {  5
                             numeric value  - 9}
```

As many as 99 distinct detail reports may be specified (5 for DOS). An unlimited (within storage constraints) number of summary reports may be specified.

TYPE:	Defines whether the report is to be a detail report (one print line for each included input record) or a summary report.
HEADING and HEADING2:	HEADING specifies the first heading line, which will appear at the top of the report. HEADING2 specifies the optional second heading line.
LIMIT:	Specifies the maximum number of non-heading lines to be printed on the report. A value of zero indicates unlimited.
LINE-SIZE:	Defines the report width or line size, including the carriage control character.

PAGE-SIZE:	Defines the number of non-heading lines to print per page.
MPCO:	Defines the size of the MU/PE counter in the OUTPUT dataset TRMOUT**) for PROTECTION records. Valid numbers are 1, 2, 4 , 8 with 2 as default.
MPCS:	Defines the size of the MU/PE counter in the report dataset TRMPRT**) for PROTECTION records. Valid numbers are 1 – 9 with 5 as default.

CSV:	Any non-blank value defined will change the output of the report from fixed columns to character separated values. If the CSV character to be specified is a comma, it must be enclosed in single quotes.	
SEPDD:	N	(default) concatenate SUMMARY report to the last DETAIL report
	Y	write SUMMARY report to a separate DDNAME TRMPRTnn.
HEAD	Y	(default) heading(1/2) lines will be printed
	N	no heading lines printed
CONB	Y	(default) control break summary lines will be printed
	N	no control break summary lines
STAT	Y	(default) print statistics (number of records read/matched) at end of report
	N	no statistic information given

EXAMPLES:

```
REPORT  TYPE=DETAIL,HEADING='EXCEPTIONAL RESPONSE CODES',
        LIMIT=2000
```

A detail report with the indicated heading should be printed. The user only wants to view the first 2000 records that have exceptional response codes. The report will be the standard 133 characters by 55 lines per page.

```
REPORT  TYPE=SUMMARY,HEADING='MARKETING DIVISION BILLING',
        HEADING2='On-Line CPU and I/O Statistics'
```

A summary report with the indicated headings should be printed. The report will be the standard 133 characters by 55 lines per page.

VI.2.5 INCLUDE/EXCLUDE

The INCLUDE and EXCLUDE statements specify the selection criteria for input records to be processed in the preceding specified REPORT. If no INCLUDE or EXCLUDE statements are specified, all input records are processed in this report.

SYNTAX

```
{ INCLUDE
  EXCLUDE   }     relation-expression[,relation-expression]...
```

Each relation-expression specifies:

- field:

  a field in the input record (JOB, FNR, COMMAND), a TRIM-derived field (HR, NATPROG, etc.), or a previously defined derived field, such as DEPT.

- relation-operator:

  = (equal)
  > (greater than)
  < (less than)
  ¬ (not equal)

- value-list:

  a list of one or more values. If more than one, the values must be enclosed in parentheses and separated by commas. Value ranges are stated as value-value. The value format should agree with the input field format (e.g., JOB is alphanumeric, FNR is numeric). If using FNRX for the field, it is necessary to precede the hex file number with a hex blank.

Multiple values following an equal operator imply logical OR relationships. Multiple values following a not equal operator imply logical AND relationships.

Multiple relation-expressions imply logical AND relationships.

DATETIME includes the editing symbols as part of the value. This field was created to allow a concatenation of date and time into one field that could be used as a control value when selecting CLOG records that were created over a multiple day span with times that repeat. As such, the DATETIME keyword cannot be used with the range or list options of values. The imbedded editing symbols will cause unpredictable results when included in a range or list of values.

If there is only a single INCLUDE statement for the report, any records not matching the INCLUDE criteria are excluded. Similarly, if there is only a single EXCLUDE statement for the report, any records not matching the EXCLUDE criteria are included.

Multiple INCLUDE/EXCLUDE statements are processed sequentially from top to bottom for each input record. If the input record matches the selection criteria for the first statement, it is immediately included (INCLUDE statement) or excluded (EXCLUDE statement) in the report. If the input record does not match the selection criteria for the first statement, it is evaluated using the second statement. If the input record does not match the selection criteria for the second statement, it is evaluated using the third statement. This continues through all INCLUDE/EXCLUDE statements until there is a match on the selection criteria or the end of the INCLUDE/EXCLUDE statements is reached. When the end is reached, TRIM does the "opposite" of the last statement. That is, if the last statement is an INCLUDE, TRIM will exclude the record, or if the last statement is an EXCLUDE, TRIM will include the record.

EXAMPLES

Single INCLUDE statement:

```
INCLUDE     JOB=(C4103X27,C402AAAA-C4029999),FNR=1603
```

In this example, the INCLUDE statement is the sole INCLUDE/EXCLUDE statement for this report. Input records will be included (because the statement is an INCLUDE statement) in the report only if (the value of the JOB field is C4103X27 OR starts with C402), AND the file-number is 1603. Input records for the JOB or file number fields that do not match the criteria stated above are subject to further evaluation with subsequent INCLUDE/EXCLUDE statements. However, because there are no subsequent INCLUDE/EXCLUDE statements, TRIM does the "opposite" of the last statement. In this case, the last statement is the INCLUDE. Therefore, all records not meeting the INCLUDE criteria are excluded.

Single EXCLUDE statement:

```
EXCLUDE     RSP=(0,3,9)
```

In this example, the EXCLUDE statement is the sole INCLUDE/EXCLUDE statement for this report. Input records will be excluded (because the statement is an EXCLUDE statement) in the report only if the response code is 0, 3, OR 9. Input records for the response codes that do not match the criteria stated above are subject to further evaluation with subsequent INCLUDE/EXCLUDE statements. However, because there are no subsequent INCLUDE/EXCLUDE statements, TRIM does the "opposite" of the last statement. In this case, the last statement is the EXCLUDE. Therefore, all records not meeting the EXCLUDE criteria are included.

Multiple INCLUDE/EXCLUDE statements:

```
EXCLUDE     RSP=(9,144,145,148-150)
INCLUDE     FNR=(1-50,101-150)
EXCLUDE     JOB=ENGTEST1,FNR=1837
```

In this example, there are three INCLUDE/EXCLUDE statements for this report. The statements are evaluated sequentially from top to bottom for each input record. Based upon the first statement, input records are excluded from the report if the response-code is 9, 144, 145, OR 148-150. Any input records that are excluded are not evaluated further. Input records that have not been excluded as a result of evaluation with this EXCLUDE statement are evaluated against the second statement. Based upon the second statement, input records are included in the report if the file number is in the range 1-50 OR the range 101-150. Any input records that are included as a result of evaluation with this INCLUDE statement are not evaluated further. Input records that have not been excluded as a result of evaluation with the first statement and that have not been included as a result of evaluation with the second statement are evaluated against the third statement. Based upon the third statement, input records are excluded from the report if the JOB is ENGTEST1 AND the file-number is 1837. Any input records that are excluded as a result of evaluation with this EXCLUDE statement are not evaluated further. Input records that have not matched any of the criteria in the three statements are subject to further evaluation with subsequent INCLUDE/EXCLUDE statements. However, because there are no subsequent INCLUDE/EXCLUDE statements, TRIM will make the decision based upon the last INCLUDE/EXCLUDE statement in this list (i.e., TRIM does the "opposite" of the last statement). In this case, the last statement is the EXCLUDE. Therefore, all records not meeting the INCLUDE/EXCLUDE criteria are included.

COMMON PROBLEM/SOLUTIONS:

Problem: A report showing information about commands issued for JOB=ABCDEFGH, for which "bad" response codes were received is desired. Response codes 0, 3, and 9 are considered "good" response codes.

Solution #1: (Invalid)

```
INCLUDE JOB=ABCDEFGH
EXCLUDE RSP=(0,3,9)
```

This will not give the desired results! Based upon the first statement, all records for JOB=ABCDEFGH will be included. There will be no further evaluation. So presumably many "good" response codes will be seen for this job. Furthermore, many other jobs' records will be seen. These records "fall through" the above statements. They are not included via the first statement. The second statement excludes all the good response codes - for any job other than ABCDEFGH. But, all "bad" response codes for any other job will be included because of a failure to match on the last statement, an EXCLUDE.

Solution #2: (Valid)

```
EXCLUDE RSP=(0,3,9)
INCLUDE JOB=ABCDEFGH
```

This will give the desired results! Based upon the first statement, all good response codes will be excluded, regardless of which job they are from. There will be no further evaluation. All bad response codes for all jobs are evaluated against the second statement. Only JOB=ABCDEFGH will be included. All other jobs "fall through" the second statement. They are not included via the second statement. So, they are all excluded because TRIM will do the "opposite" of the last statement.

Solution #3: (Invalid)

```
EXCLUDE RSP=(0,3,9)
INCLUDE JOB=ABCDEFGH
EXCLUDE FNR=8
```

This will not give the desired results! While this solution's first two statements are identical to the previous solution, the addition of the third statement alters the results. Any records not excluded by the first statement (bad response codes) from jobs other than ABCDEFGH will be excluded if the record is for FNR=8. By having an EXCLUDE statement at the end of the list, all records not matching any of the three statements will be included (the opposite of the last statement). This may result in many bad response code records for jobs other than ABCDEFGH.

Solution #4: (Valid)

```
INCLUDE JOB=ABCDEFGH,RSP=(1,2,4-8,10-255)
```

This will give the desired results! Based upon this single statement, the only records that will be included must be JOB=ABCDEFGH and have a bad response code. TRIM will do the "opposite" with all other records (i.e., they will be excluded).

Solution #5: (Valid)

```
INCLUDE JOB=ABCDEFGH,RSP¬(0,3,9)
```

This will also give the desired results! TRIM will treat this solution the same as the previous solution.

Boolean arithmetic would treat the second part of the criteria as "RSP not equal 0 or 3 or 9". This would always evaluate to a "true" condition. That is, if the RSP is equal 0, it is obviously not equal to 3. And, if it is equal 3, it is not equal to zero. It is always not equal to something in the list, meaning the second part of the criteria is always true and therefore the second part is useless.

However, TRIM does not follow Boolean arithmetic rules exactly. For an EQUAL relation-operator, TRIM treats the items in parentheses with logical OR logic. For a NOT EQUAL relation-operator, TRIM treats the items in parentheses with logical AND logic. Therefore, in the example above, TRIM evaluates the second part of the statement as "RSP not equal 0, and not equal 3, and not equal 9". This is more like what the user is probably thinking (i.e., "Responses not equal to the good one").

VI.2.6 DISPLAY

The DISPLAY statement states the input fields to be printed on the detail report defined by the preceding REPORT statement.

SYNTAX

DISPLAY FIELD [,FIELD]...

The fields will be displayed in the order they are stated. The format, length, and heading are pre-defined within TRIM.

EXAMPLES

```
DISPLAY     SEQUENCE,DATE,TIME,JOB,CMD,FNR,
                RSP,ASSOIO,DATAIO,WORKIO,CID,TID,
                NATLOGON,NATPROG,DEPT
```

The listed fields from the Detail Record (JOB, CMD, FNR, etc.), TRIM-derived fields (SEQUENCE, DATE, TIME, NATPROG, etc.), and the user-derived field (DEPT) will be printed on the detail report, one line per record.

```
DISPLAY     SEQUENCE,DATE,TIME,FNR,ISN,
                USERID,RUI,IMAGTYP,PROJECT
```

The listed fields from the Protection Log (USERID, FNR, ISN, etc.), TRIM-derived fields (SEQUENCE, DATE, TIME, IMAGTYP), and the user-derived field (PROJECT) will be printed on the detail report, one line per record.

VI.2.7 SHOW

The SHOW statement lists the Protection Log Compressed Data Record Fields to be printed on the preceding detail report. If an OUTPUT statement is also specified for this report, the SHOW statement causes each shown field to be placed in order on the output sequential dataset. Refer to **Appendix C: Output Dataset Formats** for the exact OUTPUT format.

Because the data records in the Before and After Images on the Protection Log are compressed ADABAS records, the fields to be shown must be decompressed to be printed and/or output. In order to decompress the data, TRIM needs to know the file description. This is supplied to TRIM via Loader (ADAWAN or ADACMP) definition card images for each file having fields to be shown.

SYNTAX

```
SHOW    ADABAS-FIELD[,ADABAS-FIELD]...,FNR=file number
SHOW    ALL,FNR=file number
```

SHOW ALL will print all fields in the FDT. The fields will be printed and/or output in the order they are stated. The printed fields will be identified by their ADABAS field name and column 46-72 data from the ADAWAN or ADACMP card images (usually long names). The print length and format will be determined by TRIM. Alphanumeric fields will print in character format, maximum 85 characters per line. Up to three lines may be used to print the largest alphanumeric field. Unpacked, packed, and binary fields (up to eight bytes) will be printed as whole decimal numbers with a possible minus sign. Binary fields will also have their first eight bytes printed in hex.

EXAMPLES

```
SHOW    BA,BB,BC,AA,CA,CB,FB,DA,DB,DC,DD,DE,FNR=1
```

The Loader (ADAWAN or ADACMP) file definition card images for file 1 (Personnel File in this example) are supplied in the JCL (refer to ***Section V Batch Operations*** of the ***TRIM Installation and Operations Manual***).

The listed fields from file 1 will be printed in the order shown below, one line per field.

```
BA=DAVENPORT                              LAST-NAME
BB=ANN                                    FIRST-NAME
BC=P                                      INITIAL
AA=  HEX 00001C4B  DEC 7243               PERSONNEL-NUMBER
CA=F                                      SEX
CB=38                                     AGE
FB=048000                                 SALARY
DA=00126                                  STREET-NUMBER
DB=DRURY LANE                             STREET
DC=CANOGA PARK                            CITY
DD=CA                                     STATE
DE=91304                                  ZIP

SHOW       ALL,FNR=1

AA=HEX 00001C4B    DEC 7243               PERSONNEL-NUMBER
BA=DAVENPORT                              LAST-NAME
BB=ANN                                    FIRST-NAME
BC=P                                      INITIAL
CA=F                                      SEX
CB=38                                     AGE
CD=
•
•
•
FB=048000                                 SALARY
DA=00126                                  STREET-NUMBER
DB=DRURY LANE                             STREET
DC=CANOGA PARK                            CITY
DD=CA                                     STATE
DE=91304                                  ZIP
```

ALL of the fields in the FDT of file 1 will be printed in the order of the ADAWAN or ADACMP field definitions as follows:

MU and PE fields must be specified as occurrence numbers or ranges directly after the field name. For example: XY7-13,PQ12.

MU within PE fields must be specified by using a # character. For example: ST3-15#4-7 means ST3, MU occurrence number 4, 5, 6, and 7, followed by ST4, MU occurrences number 4, 5, 6, and 7, etc.

Each included record's Before and/or After image will be printed as demonstrated above. If the data is also to be OUTPUT, each field is output according to its Loader definition's length and format. The exact format of the output record is defined in **Appendix C: Output Dataset Formats**.

VI.2.8 CONTROL

The CONTROL statement defines the fields that control the sequence and control-break(s) for the summary report.

SYNTAX

CONTROL FIELD[,FIELD]...

The fields specify the major-to-minor sequence and control break fields for the report. Up to 10 control fields may be stated.

EXAMPLES

```
CONTROL         CMD
```

The summary report from a detail Command Log or PRESUM data will be in ascending order of CMD. Summarizations will be shown for each CMD value, and a grand total will also be shown.

```
CONTROL         JOB,FNR,HOUR
```

The summary report from a detail Command Log will be in ascending order of HOUR within FNR within JOB. Summarizations will be shown for each hour within each FNR within each JOB, and a grand total will also be shown.

```
CONTROL         DEPT,FNR
```

The summary report will be in ascending order of FNR within DEPT (a derived field). Summarization will be shown for each FNR used by each department, and a grand total will also be shown.

VI.2.9 AVERAGE

The AVERAGE parameter specifies which input fields are to be averaged and shown on the summary report.

SYNTAX

AVERAGE FIELD[,FIELD]...

The fields stated will be averaged and shown for each control field stated on the CONTROL statement of this summary report.

Averages are always shown rounded to one decimal position more than the input field. For example, if the sum of CPUTIME for eleven records is 1234.5, the average is shown as 112.23.

EXAMPLE

```
AVERAGE         IO,DURATION
```

The averages of each of the two stated fields will be shown on the summary report.

VI.2.10 SUM

The SUM parameter specifies which input fields are summed and shown on the summary report.

SYNTAX

```
SUM          FIELD[,FIELD]...
```

The fields stated will be summed and shown for each control field stated on the CONTROL statement of this summary report.

EXAMPLE

```
SUM          ASSOIO,DATAIO,CPU
```

The sums of each of the three stated fields will be shown on the summary report.

VI.2.11 MINIMUM

The MINIMUM parameter specifies which input fields are to have their minimum values shown on the summary report.

SYNTAX

```
MINIMUM      FIELD[,FIELD]...
```

The fields stated will have their minimum values shown for each control field stated on the CONTROL statement of this summary report.

EXAMPLE

```
MINIMUM      IO,DURATION
```

The minimum values of each of the two stated fields will be shown on the summary report.

Normally, numeric fields containing counts or time are used in MINIMUM and MAXIMUM calculations (e.g., MINIMUM DUR and MAXIMUM IO, but not MINIMUM FNR or MAXIMUM JOBNAME). Note that MINIMUM (and MAXIMUM) DATETIME will show the earliest (and latest) occurrence of the data for the summary report control field(s).

VI.2.12 MAXIMUM

The MAXIMUM parameter specifies which input fields are to have their maximum values shown on the summary report.

SYNTAX

```
MAXIMUM      FIELD[,FIELD]...
```

The fields stated will have their maximum values shown for each control field stated on the CONTROL statement of this summary report.

EXAMPLE

```
MAXIMUM      ECBS,DATAIO,DURATION
```

The maximum values of each of the three stated fields will be shown on the summary report.

Normally, numeric fields containing counts or time are used in MINIMUM and MAXIMUM calculations (e.g., MINIMUM DUR and MAXIMUM IO, but not MINIMUM FNR or MAXIMUM JOBNAME). Note that MINIMUM (and MAXIMUM) DATETIME will show the earliest (and latest) occurrence of the data for the summary report control field(s).

VI.2.13 PERCENT

The PERCENT parameter specifies which input fields are to have their percent values shown on the summary report.

PERCENTs are always shown as percent of the total, rounded to one decimal position. For example, if the total DATAIOs for all included records is 1234 and the sum of DATAIOs for the L1 command is 187, the percent for the L1 is shown as 15.2.

SYNTAX

PERCENT FIELD[,FIELD]...

The fields stated will have their percent values shown for each control field stated on the CONTROL statement of this summary report.

EXAMPLE

```
PERCENT         DURATION,CPU
```

The percent of the total of each of the two stated fields will be shown on the summary report.

VI.2.14 CHARGE

The CHARGE parameter specifies charge-back figures to be shown on the summary report.

SYNTAX

CHARGE charge-expression[,charge-expression]...

Each charge-expression specifies:

- field:

  one of the valid numeric log fields that may have calculations performed on it, such as CPUTIME, ASSOIO, etc., or one of the user-stated derived fields that is in numeric format.

- operator:

  + plus
  - minus
  * times

  Typically, "*" (times) is used, such as "CPUTIME*.001".

- value:

  a numeric value with up to 5 decimal positions. For the operator "*", the value may be unsigned or negative.

The fields stated will have charges shown for each control field stated on the CONTROL statement on this summary report.

If more than one charge field is specified, a "total across" is generated automatically and shown on the right-hand side of the summary report.

All charges are calculated to an appropriate number of decimal positions, but they are printed with, at most, 2 decimal positions. For example: A CPU time of 39.8 times a charge factor of .0012 will get accumulated into the charge totals as .04776, but when printed, will be rounded to 2 decimal positions as $.05.

EXAMPLES

```
CHARGE          CPUTIME*.001,IO*.02
```

Charge each CPU millisecond at one-tenth of one cent and each I/O at 2 cents.

```
CHARGE          IO*.03,CPUTIME*.0014,DELETE-REC*-.01
```

Charge each I/O at 3 cents, each CPU millisecond at .0014 cents, and give a one cent credit for deleting a record, where DELETE-REC is a derived field having a value of 1 when the command is E1 or E4 (delete) and a value of 0 when the command is not a delete.

VI.2.15 OUTPUT

The OUTPUT statement specifies non-report output onto a sequential dataset.

For the Command Log's Detail Records, certain records may be selected (INCLUDE/EXCLUDE) for detail reports and output to a sequential dataset. This dataset may subsequently be used as input to later TRIM executions, specified as INPUT LOGTYPE=COMMAND.

For the Command Log's PRESUM and TRELOG records, certain records may be selected for detail reports and output to a sequential dataset. If PRESUM has been logged to the SMF log, the PRESUM records may be extracted, the header deleted, and the remaining PRESUM record written to a sequential dataset. This dataset may subsequently be used as input to later TRIM executions, specified as INPUT LOGTYPE=PRESUM or TRELOG.

For the Protection Log, certain input records may be selected (INCLUDE/EXCLUDE) for detail reports and output to a sequential dataset. If the output data is decompressed (COMPRESS=NO), it does not resemble the original input, and, therefore, cannot be re-input to TRIM as INPUT LOGTYPE=PROTECTION. Refer to **Appendix C: Output Dataset Formats** for this output format. If the output data remains compressed, it may subsequently be used as input to later TRIM executions specified as INPUT LOGTYPE=PROTECTION.

If the OUTPUT statement is specified for a summary report, the data fields shown for each lowest control field on the print line on the summary report will be placed in a record on a sequential dataset. Refer to **Appendix C: Output Dataset Formats** for this output format.

"Flat-file" output sequential datasets may be re-input to TRIM for further processing or may be input to user-written COBOL, NATURAL, SAS, etc. programs for processing; or the data may be placed into an ADABAS file by ADALOD or a user program, if desired. The data may also be processed by other performance, accounting, charge-back, or statistical analysis systems.

SYNTAX

```
OUTPUT          LIMIT  =  {  99999999
                             numeric-value      }

                  ID   =  {  character-string
                             USER               }

            UNCRUNCH   =  {  NO
                             YES   }            (CLOG only)

             DERIVED   =  {  NO
                             YES   }            (CLOG only)

            COMPRESS   =  {  NO
                             YES   }            (PLOG only)

             SPANNED   =  {  NO
                             YES   }            (PLOG only)

             YEARFMT   =  {  2
                             4     }

               SYSNO   =  {  011                (DOS only)
                             013
                             021
                             023
                             031
                             033
                             041
                             043
                             051
                             053                }

              UNLOAD   =  {  YES                (DOS and
                             NO    }            VM only)
```

LIMIT: Specifies a limit to the number of output records.
A value of zero indicates unlimited.

ID: Identifies up to 8 characters that may be used to identify the summary output file records. This is especially important for DOS, as all summary records are output onto one sequential dataset.

UNCRUNCH: A "YES" specification will cause output to be "uncrunched" into original ADABAS Command Log detail record form for use in TRIM or non-TRIM processing.

A "NO" specification will cause output to remain in the same form as it was input, crunched, or uncrunched.

DERIVED: A "YES" specification will cause the inclusion of all TRIM-derived and User-derived fields at the end of the 124 byte standard Command Log record on output. No buffers will be included. The "YES" specification is only valid for uncrunched log data.

A "NO" specification will cause standard Command Log records to be output without any derived fields.

COMPRESS: A "YES" specification will cause output records in the same Protection Log compressed form as input.

A "NO" specification will cause output records in decompressed flat file form.

Refer to **Appendix C: Output Dataset Formats**.

SPANNED: A "YES" specification will enable that records are split up if the LRECL of the output file is not large enough to hold the whole record.

SPANNED=YES and COMPRESS=YES will cause output with the same format and segment length as in input.

SPANNED=YES and COMPRESS=NO will split the output record in up to 256 segments each starting with the 84 bytes header.

A "NO" specification will TRIM to fail if the length of the output records exceeds the LRECL of the output file

Refer to **Appendix C: Output Dataset Formats**.

YEARFMT: The year format in a PLOG Output Dataset of decompressed form (COMPRESS=NO) can be two digits (YEARFMT=2) or four digits (YEARFMT=4).

The year format in a CLOG Output Dataset for Summary Reports can be two digits (YEARFMT=2) or four digits (YEARFMT=4).

Refer to **Appendix C: Output Dataset Formats**.

SYSNO: For DOS, SYSNO=011, 021, 031, 041, and 051, refer to Tape output; SYSNO=013, 023, 033, 043, and 053, refer to Disk output. For OS and CMS, this is accomplished through JCL. Refer to ***Section V.9 Batch Execution Procedure*** of the ***TRIM Installation and Operations Manual***.

UNLOAD: For DOS and VM, specifies whether or not to unload the output tape. The tape should be rewound, but not unloaded, when the TRIM run is followed by another job that is to process the TRIM output tape.

EXAMPLES

```
INPUT      LOGTYPE=COMMAND
REPORT     TYPE=DETAIL
INCLUDE ...
DISPLAY ...
OUTPUT
```

This example will cause all included input Command Log Detail Records to be output to a sequential dataset.

The format of the Command Log Detail Records output to a sequential dataset are identical to the input, unless UNCRUNCH=YES is specified.

```
INPUT      LOGTYPE=PROTECTION
REPORT     TYPE=DETAIL
INCLUDE    FNR=1
DISPLAY ...
SHOW       AA,BB,CC,DD,FNR=1
OUTPUT
```

This example will cause all included Protection Log detail input records to be output in a different (decompressed) form to a sequential dataset. Refer to **Appendix C: Output Dataset Formats** for exact format.

```
INPUT       LOGTYPE=COMMAND
REPORT      TYPE=SUMMARY
CONTROL FNR,CMD
AVERAGE ...
OUTPUT      ID=FNRCMD
```

This example will cause a summary report. For each report line showing data for the lowest control field (CMD), a record will be output to a sequential dataset. Each record on the output dataset will contain "FNRCMD" in the "ID" field.

The format of the summary records output to a sequential dataset depends upon the CONTROL, AVERAGE, SUM, MINIMUM, MAXIMUM, PERCENT, and CHARGE statements and fields. Refer to **Appendix C: Output Dataset Formats** for exact format.

VI.3 Parameter Statement Order

Parameter statements for log processing should be stated in the following order:

First: INPUT

Then: Derived Fields. For each derived field:

- FIELD Statement
- VALUE Statement(s)

Then: As many reports as desired

For each DETAIL report:

- REPORT statement
- INCLUDE/EXCLUDE statement(s), if desired
- DISPLAY statement(s)
- SHOW statements, if desired for Protection Log analysis ONLY
- OUTPUT statement, if desired

For each SUMMARY report:

- REPORT statement
- INCLUDE/EXCLUDE statement(s), if desired
- CONTROL statement, if desired
- AVERAGE, SUM, MINIMUM, MAXIMUM, PERCENT, and CHARGE statements, if desired
- OUTPUT statement, if desired

For each statement having multiple fields, the fields will be shown on the report in the order stated in the parameter statements.

VI.4 TRIM Reports and Outputs

VI.4.1 Report Headings

Parameters on the Report statement state the one or two heading lines of up to 60 characters each, which TRIM will place at the top of every report page. The TRIM version number, the day of the TRIM run (SUN, MON, etc.), the date (YY-MM-DD), the time (HH:MM:SS), and page number will also be displayed at the top of each page.

VI.4.2 Report Dimensions

Default LINE-SIZE and PAGE-SIZE settings of 133 and 55 may be overridden to form reports more suitable for CRT screen viewing (e.g., 24 x 80) or "spread-sheet" manipulation (more than 55 x more than 133).

VI.4.3 Report Destinations

TRIM reports are not output directly to a printer, but to datasets that may or may not be printed or viewed. In OS or VM, reports are output to datasets TRMPRT00, TRMPRT01, etc. up to TRMPRT99. In DOS, reports are output to SYS005, 015, 025, 035, and 045.

TRMPRT00 will always receive a report showing the parameters input to TRIM, any error messages (refer to ***Section IX Error Detection, Problem Diagnosis*** of the ***TRIM Installation and Operations Manual***), and a few useful statistics, such as the number of records input, the number of reports, and the execution time (wall-clock time).

TRMPRT01 will receive the first DETAIL Report. Each subsequent DETAIL Report will cause the dataset number to increase by one.

SUMMARY Reports are output to the same dataset as the preceding DETAIL Report.

All reports are output in fixed length record format with the first character of each record being the standard ASCII printer carriage control character for top-of-page, single, double, and triple spacing. No "overprinting" is used in TRIM.

VI.4.4 Column Headings, Spacing, Skipping

TRIM places headings on top of each page above the field that is being printed. The headings are descriptive without being excessive.

All report heading lines are printed at the top of the page. Field heading lines are double spaced. Report detail lines are single spaced. Summary report lines are single spaced except for control break lines (double spaced) and the grand total line (triple spaced).

One space will separate each field or its header (whichever is larger) on the report.

VI.4.5 Detail Reports - Contents

The log records printed on a Detail Report are determined by the INCLUDE and EXCLUDE parameters, if stated. If none are stated, all records will be printed. Records are always printed in the order in which they are input.

The fields that will be printed are determined by the DISPLAY statement field list. The fields are displayed in the order stated in the DISPLAY statement. No totals or summarization of any fields are shown.

For Protection Log processing, decompressed ADABAS fields are displayed one per line in the order stated on the SHOW statement.

The report ends with a display of the total number of input records, records included, and records output to a sequential dataset, if any.

When an OUTPUT statement is included for a detail Command Log report, the output format is identical to the input unless UNCRUNCH=YES or DERIVED=YES is specified. The OUTPUT data is stored in TRMOUT01. Refer to ***Section IX.9*** of the ***TRIM Installation and Operations Manual***. For a Protection Log report, if the output is decompressed, it is preceded by "heading" data. Refer to **Appendix C: Output Dataset Formats** for more information.

VI.4.6 Summary Report - Contents

The input records processed may be limited by the INCLUDE and EXCLUDE parameters, if stated. If none are stated, all records are processed.

Summary Reports are not printed until all input records are processed.

The second Summary Report heading line contains the earliest and latest log dates and times.

The order of the report lines is determined by the CONTROL parameter field(s) in ascending order of Field-1, then ascending order of Field-2 within Field-1, etc.

The fields that are printed are determined by the order of the SUM, AVERAGE, MAXIMUM, MINIMUM, PERCENT, and CHARGE parameter statements and the fields stated in these statements.

Control totals are printed at each break in value of each CONTROL parameter field. A grand total line is printed after the last control break line.

The report ends with a display of the total number of input records, records included, and records output to a sequential dataset, if any.

When an OUTPUT statement is included for a Summary Report, the output format is as defined in **Appendix C: Output Dataset Formats**.

SECTION VII

TRIM NUCLEUS SESSION STATISTICS

VII.1 Introduction

At certain hourly intervals, or upon termination of the ADABAS Nucleus Session (ADAEND), TRIM automatically prints selected information and statistics directly onto the ADABAS Nucleus DDPRINT dataset (SYSLST for DOS). The data printed resembles the Real-Time Monitor's Nucleus Session Statistics. For more information, refer to **Section II Real-Time Monitor**. This formatted information should be very helpful to the DBA.

THIS FEATURE REQUIRES NO LOG RECORDS TO BE WRITTEN AND NO DBA INTERVENTION.

TRIM reprints certain ADABAS information, including:

- Nucleus start (first command) and termination dates and times
- Nucleus parameters
- Figures for Format Buffer Translations, Overwrites, Commands Processed, Read and Write I/Os to ASSO, DATA, WORK, Buffer Efficiency, etc.

TRIM produces selected additional helpful information, including the count of commands for each category below:

- Thread
- Response Code
- Command Code
- File Number
- Command Code Within Each File Number
- NATURAL Program
- Job Name
- User-ID
- Security-ID
- NATURAL Application Library
- NATURAL Security User-ID
- CICS Transaction-ID
- User Area of the Control Block

TRIM also automatically prints:

- Highest duration calls (worst performing calls)
- Certain ADABAS buffers' high-water marks (percent, day, and time of occurrence)
- Totals for ASSO, DATA, and WORK I/Os, and for Reads and Writes
- Counts of commands inhibited by TRIM User-Exit-1 action
- Command counts for Simple, Complex, and Update types

Some of the above may be printed in ascending order of "category" (alphabetically by job, for example), descending order of "frequency" (jobs with most calls listed first), or in both orders.

TRMUEX4x may be further tailored to print these statistics every hour (or multiple of hours divisible into 24) and/or at ADAEND.

Using TRIM's Real-Time Monitor, the frequency of the Nucleus Session Statistics printout may be altered. Furthermore, the Longest Duration Screen may be printed whenever desired, so there may be many of these printed throughout the Nucleus Session Statistics printout.

For these alterations or "tailoring," refer to **Section VI Tailoring with Zaps** and ***Section VII.1 Time Adjustable Parameters (TRMTAP)*** of the ***TRIM Installation and Operations Manual***.

Note: A "correction" is made in TRMUEX4 for on-line functions (minute, hour, session statistics, and Nucleus Session statistics). The FNR is changed (to zero) for commands that should have specified FNR=0. (Refer to **"Option for Zeroing FNR"** in **Section II Real-Time Monitor Operation** and ***"Zero FNR"*** in ***Section VI.1 Tailoring UEX4*** of the ***TRIM Installation and Operations Manual***.)

VII.2 Sample Statistics

```
TRIMX4 00227 TRIMV vrs STARTUP IS IN PROGRESS
TRIMX4 00227 TRIMV vrs TRIM IS ACTIVE
TRIMX4 00227 TRIMV vrs TRIM WILL USE TRMTAP PARMS
TRIMX4 00227 TRIMV vrs TRIM WILL USE TRMLOG PARMS
TRIMX4 00227 TRIMV vrs TRIM WILL USE TRMRSP PARMS

       T  R  I  M         VERSION v.r.s          SESSION STATISTICS

MODULE AND TABLE ADDRESSES

MOD/TBL   ADDRESS     MOD/TBL  ADDRESS     MOD/TBL    ADDRESS     MOD/TBL  ADDRESS

ADALNK    nnnnnnnn    ADAIOR   nnnnnnnn    ADAMPM     nnnnnnnn    ADALOG   nnnnnnnn
ADANC0    nnnnnnnn    ADANC1   nnnnnnnn    ADANC2     nnnnnnnn    ADANC3   nnnnnnnn
ADANC4    nnnnnnnn    ADANC5   nnnnnnnn    ADANC6     nnnnnnnn    ADANC7   nnnnnnnn
ADANC8    nnnnnnnn    ADANC9   nnnnnnnn    ADANCA     nnnnnnnn    ADANCB   nnnnnnnn
ADANCC    nnnnnnnn    ADAEX1   nnnnnnnn    ADAEX2     nnnnnnnn    ADAEX4   nnnnnnnn
CQ        nnnnnnnn    HQ       nnnnnnnn    THDTABLE   nnnnnnnn    UQ       nnnnnnnn
BUFPOOL   nnnnnnnn    IFB      nnnnnnnn    TSR        nnnnnnnn    TSC      nnnnnnnn
```

Note that the ADABAS module and table address are displayed at the start of the session. In case of an ADABAS ABEND, these addresses may be useful to determine the ABEND cause, users active at the time, etc. The TRIM module and table addresses are also displayed below.

```
TRMX4     nnnnnnnn   TRMX4SU1  nnnnnnnn   TRMX4SU2  nnnnnnnn   TRMX4SU3  nnnnnnnn
DATACS    nnnnnnnn   TRELOG    nnnnnnnn   TRELGHDR  nnnnnnnn   TREBUF    nnnnnnnn
TRMUSYS   nnnnnnnn   MUID      nnnnnnnn   MJOB      nnnnnnnn   MNAT      nnnnnnnn
MRSP      nnnnnnnn   MCMD      nnnnnnnn   MFNR      nnnnnnnn   MTHD      nnnnnnnn
MUSA      nnnnnnnn   MNSU      nnnnnnnn   MNSA      nnnnnnnn   MCTI      nnnnnnnn
MSID      nnnnnnnn   HUID      nnnnnnnn   HJOB      nnnnnnnn   HNAT      nnnnnnnn
HRSP      nnnnnnnn   HCMD      nnnnnnnn   HFNR      nnnnnnnn   HTHD      nnnnnnnn
HSPE      nnnnnnnn   HUSA      nnnnnnnn   HNSU      nnnnnnnn   HNSA      nnnnnnnn
HCTI      nnnnnnnn   HSID      nnnnnnnn   SCWF      nnnnnnnn   SUID      nnnnnnnn
SJOB      nnnnnnnn   SNAT      nnnnnnnn   SRSP      nnnnnnnn   SCMD      nnnnnnnn
SFNR      nnnnnnnn   STHD      nnnnnnnn   SUSA      nnnnnnnn   SNSU      nnnnnnnn
SNSA      nnnnnnnn   SCTI      nnnnnnnn   SSID      nnnnnnnn   VUID      nnnnnnnn
VJOB      nnnnnnnn   VNAT      nnnnnnnn   VFNR      nnnnnnnn   VNSA      nnnnnnnn
VSID      nnnnnnnn   XUQ       nnnnnnnn   XUQOLDST  nnnnnnnn   HIDURTBL  nnnnnnnn
TRACETBL  nnnnnnnn   EUXB      nnnnnnnn   FNRNAME   nnnnnnnn
```

```
       T  R  I  M         VERSION v.r.s          SESSION STATISTICS

FROM       04-365     06:11:25       TO      04-365     20:20:22
-----------------------------------------------------------------
 SESSION START             04-365     06:11:25

DBID          227          TEST-DATABASE
LFP        12,000            7 %  USED     365/09:38:37
LI         10,000            0 %  USED     365/09:38:37
LQ         10,000            1 %  USED     365/09:38:37
NU             20           30 %  USED     365/09:38:09
LWP       150,000           51 %  USED     365/09:38:37
LCP        10,000            0 %  USED     365/09:38:37
NH            500            7 %  USED     365/09:38:09
NC             20            0 %  USED     365/09:38:37
NAB            49            5 %  USED     365/09:38:37
CT             57
DUALCLD     9,332
DUALCLS       108
DUALPLD     9,332
DUALPLS       216
LP          1,000
MODE        M
RDONLY      NO
TT            858
TNAA          858
TNAE          858
TNAX          858
LOGGING     YES
LOGCB       NO
LOGFB       NO
LOGRB       NO
LOGSB       NO
LOGVB       NO
LOGIB       NO
LOGIO       NO
```

Note that the high-water % usage of NH, NU, LFP, LI, and LQ above. The day of the year and time of high usage are indicated.

```
FB TRANSLATIONS            191
FB OVERWRITES                0
USER COMMANDS      236,350,119
INTERNAL CMDS           19,632
THROWBACKS                   0
INTERRUPTS               1,080
BUFFER CALLS             2,488

BUFFER EFFICIENCY         2.87


ASSO RD                    636
ASSO WR                     65
ASSO TOT 701

DATA RD                    229
DATA WR                     56
DATA TOT                   285

WORK RD                      3
WORK WR                     50
WORK TOT                    53

READS                      868

WRITES                     171

TOT IOS                  1,039


UEX11 DISALLOWED             0

UEX11 LOCKED OUT             0

UEX11 FAILED PWD             0
```

Note that the Buffer Efficiency is calculated as the number of Buffer Calls divided by the total of the ASSO RD and DATA RD counts.

```
COMMAND COUNTS BY:   T H R E A D
-------------------------------------------------

THD   1  =     17,043     COMMANDS  /    4.66  %
THD   2  =    289,089     COMMANDS  /   79.12  %
THD   3  =     38,437     COMMANDS  /   10.52  %
THD   4  =     16,189     COMMANDS  /    4.43  %
THD   5  =      4,304     COMMANDS  /    1.18  %
THD   6  =        289     COMMANDS  /     .08  %
THD   7  =         16     COMMANDS  /     .01  %

-------------------------------------------------

TOTAL    =    365,367     COMMANDS  / 100.00  %
```

```
COMMAND COUNTS BY:    R E S P O N S E  C O D E
-----------------------------------------------------------
RESPONSE   0         =     363,497      COMMANDS  /    99.49  %
RESPONSE   3         =       1,013      COMMANDS  /     0.28  %
RESPONSE   9         =         712      COMMANDS  /     0.19  %
RESPONSE   40        =          13      COMMANDS  /     0.00  %
RESPONSE   41        =           3      COMMANDS  /     0.00  %
RESPONSE   52        =          27      COMMANDS  /     0.01  %
RESPONSE   67        =         101      COMMANDS  /     0.03  %
RESPONSE   17403     =           1      COMMANDS  /     0.00  %
-----------------------------------------------------------
TOTAL                =     365,367      COMMANDS  /   100.00  %

*** TOTAL RESPONSES    =   8 ***
```

```
COMMAND COUNTS BY:    C O M M A N D    C O D E
-------------------------------------------------

  A1    COMMANDS      =        177    /       .05  %
  BT    COMMANDS      =         43    /       .01  %
  CL    COMMANDS      =         27    /       .00  %
  C1    COMMANDS      =          3    /       .00  %
  ET    COMMANDS      =      1,090    /        .3  %
  E1    COMMANDS      =        226    /       .06  %
  L1    COMMANDS      =      7,884    /      2.16  %
  L2    COMMANDS      =    114,092    /     31.23  %
  L3    COMMANDS      =     27,767    /       7.6  %
  L6    COMMANDS      =     98,276    /     26.90  %
  L9    COMMANDS      =     30,504    /      8.35  %
  OP    COMMANDS      =         83    /       .02  %
  RC    COMMANDS      =     70,040    /     19.17  %
  S1    COMMANDS      =     12,746    /      3.49  %
  S8    COMMANDS      =      2,409    /       .66  %
-------------------------------------------------

TOTAL   COMMANDS      =    365,367    /    100.00  %

-------------------------------------------------

UPDATE                       1,649    /      0.45  %

SIMPLE NON-FINDS           349,153    /     95.56  %

SIMPLE FINDS                12,016    /      3.29  %

COMPLEX FINDS                2,549    /      0.70  %
```

```
51 COMMANDS WITH HIGHEST  D U R A T I O N    04-365  20:21:06
-------------------------------------------------------------------------------

DAY   TIME    JOB NAME PGM NAME APPL LIB CMD  CIDX     FNR  T  RSP  TD NUP  USER ID  ADABAS ID TERM ASSO  DATA  WORK  DUR(MS)
365/14:32:01  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    3  0    00184733 00000002       291   0     2     12,747
365/15:50:28  M39XTP4  FINDER   PAYLIB   S2   00321796 64   C  0    3  0    00184733 00000002       283   0     2     12,569
365/15:51:45  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    1  0    00184733 00000002       243   0     4     12,387
365/16:02:04  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    3  0    00184733 00000002       227   0     2     12,123
365/15:50:13  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    1  0    00184733 00000002       227   0     2     11,994
365/14:32:00  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    3  0    00184733 00000002       227   0     3     11,547
365/14:48:49  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    3  0    00184733 00000002       223   0     2     11,321
365/14:32:01  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    4  0    00184733 00000002       214   0     2     11,263
365/14:48:22  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    3  0    00184733 00000002       210   0     4     11,038
365/15:57:44  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    3  0    00184733 00000002       210   0     2     10,888
365/15:50:26  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    4  0    00184733 00000002       209   0     2     10,635
365/14:32:01  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    3  0    00184733 00000002       208   0     2     10,495
365/15:57:15  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    3  0    00184733 00000002       208   0     5     10,164
365/14:48:17  M39XTP4  FINDER   PAYLIB   S4   00321796 27   C  0    4  0    00184733 00000002       207   0     2     9,967
365/15:50:35  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    3  0    00184733 00000002       200   0     2     9,862
365/15:57:22  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    3  0    00184733 00000002       198   0     4     9,666
365/15:50:26  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    3  0    00184733 00000002       198   0     3     9,325
365/14:48:21  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    3  0    00184733 00000002       197   0     2     9,095
365/15:57:29  M39XTP4  FINDER   PAYLIB   S2   00321796 27   C  0    1  0    00184733 00000002       196   0     2     8,897
o
o
o
```

Note that the highest duration list may be caused to print onto DDPRINT or SYSLST at any time by DBA action using the Real-Time Monitor SDUR screen.

Term	Definition
DAY	Julian day.
TIME	Time of day.
JOB NAME	The name of the job that issued the command.
PGM NAME	The name of the program that issued the command.
APPL LIB	The application library that the program was executed from.
CMD	The COMMAND.
CIDX	The Command ID in hex.
FNR	The file number that the command was issued against.

Term	Definition
T	The command type (S-simple; U-update; C-complex) as flagged in the CLOG record.
RSP	The ADABAS response code for the command.
TD	The thread that was used.
NUP	The number of update descriptors.
USERID	The Security (RACF) ID.
ADABAS ID	The internal ADABAS user ID.
TERM	The communications subsystem terminal ID.
ASSO	The associator I/Os.
DATA	The data I/Os.
WORK	The work I/Os.
DUR	The duration of the command in ms.

```
COMMAND COUNTS BY:  F I L E   N U M B E R
-----------------------------------------------------
FILE   0        =     81,047    COMMANDS    /   22.18  %
FILE   1        =        489    COMMANDS    /     .13  %
FILE   7        =     17,896    COMMANDS    /    4.90  %
FILE   8        =     29,834    COMMANDS    /    8.17  %
FILE   9        =      9,819    COMMANDS    /    2.69  %
FILE   10       =      9,795    COMMANDS    /    2.68  %
FILE   13       =     23,876    COMMANDS    /    6.53  %
FILE   17       =      6,309    COMMANDS    /    1.73  %
FILE   18       =         12    COMMANDS    /     .00  %
FILE   31       =          2    COMMANDS    /     .00  %
FILE   32       =     41,673    COMMANDS    /   11.41  %
FILE   33       =      5,094    COMMANDS    /    1.39  %
FILE   38       =          1    COMMANDS    /     .00  %
FILE   49       =     87,040    COMMANDS    /   23.82  %
FILE   52       =         12    COMMANDS    /     .00  %
FILE   71       =     16,150    COMMANDS    /    4.42  %
FILE   72       =        188    COMMANDS    /     .05  %
FILE   107      =         10    COMMANDS    /     .00  %
FILE   119      =     27,926    COMMANDS    /    7.64  %
FILE   12703    =      8,194    COMMANDS    /    2.24  %
-----------------------------------------------------
TOTAL           =    365,367    COMMANDS      100.00  %

*** TOTAL FILES =   20 ***


COMMAND COUNTS BY:      COMMAND CODE WITHIN FILE
-------------------------------------------------------------

FILE       10             CMD COUNT    % OF FILE    % OF TOTAL
----       --             ---------    ---------    ----------
A1/4       COMMANDS   =          30         .31  %         .01  %
ET         COMMANDS   =         150        1.53  %         .04  %
E1/4       COMMANDS   =         120        1.23  %         .03  %
L3/6       COMMANDS   =       7,409       75.64  %        2.03  %
L9         COMMANDS   =       2,086       21.30  %         .57  %
-------------------------------------------------------------
TOTAL COMMANDS        =       9,795      100.00  %        2.68 %


FILE       13             CMD COUNT     % OF FILE    % OF TOTAL
----       --             ---------     ---------    ----------
A1/4       COMMANDS   =         101         .42  %         .03  %
CL         COMMANDS   =          21         .09  %         .00  %
E1/4       COMMANDS   =          84         .35  %         .02  %
ET         COMMANDS   =         195         .82  %         .05  %
L3/6       COMMANDS   =      23,654       99.07  %        6.47  %
OP         COMMANDS   =          21         .09  %         .00  %
-----------------------------------------------------------------
TOTAL COMMANDS        =      23,876      100.00  %        6.53  %


FILE       13             CMD COUNT     % OF FILE    % OF TOTAL
----       --             ---------     ---------    ----------
CL         COMMANDS   =          33         .52  %         .01  %
L1/4       COMMANDS   =       3,122       49.42  %         .85  %
OP         COMMANDS   =          33         .52  %         .01  %
S1/4       COMMANDS   =       3,121       49.47  %         .85  %
-----------------------------------------------------------------
TOTAL COMMANDS        =       6,309      100.00  %        1.73  %
•
•
•
```

```
COMMAND COUNTS BY:   N A T   P R O G R A M      SORTED BY CATEGORY
-------------------------------------------------------------------

PROGRAM   BATTLE     =       1,489     COMMANDS   /       .41  %
PROGRAM   FINDER     =         409     COMMANDS   /       .11  %
PROGRAM   FINDX      =      12,896     COMMANDS   /      3.53  %
PROGRAM   JUNE       =       2,711     COMMANDS   /       .74  %
PROGRAM   LOOKUP     =     111,008     COMMANDS   /     30.38  %
PROGRAM   MENU       =          49     COMMANDS   /       .01  %
PROGRAM   MENU2      =         140     COMMANDS   /       .04  %
PROGRAM   REVENUE    =         364     COMMANDS   /       .10  %
PROGRAM   RIP        =      69,892     COMMANDS   /     19.13  %
PROGRAM   STATS      =      66,409     COMMANDS   /     18.18  %
•
•
•
-------------------------------------------------------------------
TOTAL***                  365,367     COMMANDS   /    100.00  %

*** TOTAL PROGRAMS = 79 ***
```

Note that the NAT, JOB, UID, NSA, NSU, and USA statistics are each presented alphabetically, then repeated in descending order by frequency of use.

```
COMMAND COUNTS BY:   N A T   P R O G R A M      SORTED BY FREQUENCY
-------------------------------------------------------------------

PROGRAM   LOOKUP     =    111,008     COMMANDS   /     30.38  %
PROGRAM   RIP        =     69,892     COMMANDS   /     19.13  %
PROGRAM   STATS      =     66,409     COMMANDS   /     18.18  %
PROGRAM   CARNEGIE   =     16,622     COMMANDS   /      4.55  %
PROGRAM   FINDX      =     12,896     COMMANDS   /      3.53  %
PROGRAM   JOHNS2     =      6,342     COMMANDS   /      1.74  %
PROGRAM   KILLZAT    =      5,007     COMMANDS   /      1.37  %
PROGRAM   JUNE       =      2,711     COMMANDS   /       .74  %
PROGRAM   BATTLE     =      1,489     COMMANDS   /       .41  %
•
•
•
-------------------------------------------------------------------
TOTAL***                  365,367     COMMANDS   /    100.00  %

*** TOTAL PROGRAMS = 79 ***


COMMAND COUNTS BY:     J O B   N A M E     SORTED BY CATEGORY
-----------------------------------------------------------

JOB ARMOR12      =      2,296     COMMANDS   /       .63  %
JOB BUILDER      =        602     COMMANDS   /       .16  %
JOB BUSTER       =     87,951     COMMANDS   /     24.07  %
JOB CM3A42       =         26     COMMANDS   /       .01  %
JOB DELTA7       =     66,205     COMMANDS   /     18.12  %
JOB ECCENT3      =      4,344     COMMANDS   /      1.19  %
JOB FINDIT8      =      1,055     COMMANDS   /       .29  %
JOB GREEN4       =     99,669     COMMANDS   /     27.28  %
JOB HA3159       =     30,544     COMMANDS   /      8.36  %
JOB JOYS93       =     27,695     COMMANDS   /      7.58  %
•
•
•
-----------------------------------------------------------

TOTAL*** =       365,367         COMMANDS   /    100.00  %

*** TOTAL JOBS =    47 ***
```

```
COMMAND COUNTS BY:     J O B   N A M E     SORTED BY FREQUENCY
-------------------------------------------------------------

JOB GREEN4     =     99,669    COMMANDS   /    27.28  %
JOB BUSTER     =     87,951    COMMANDS   /    24.07  %
JOB DELTA7     =     66,205    COMMANDS   /    18.12  %
JOB HA3159     =     30,544    COMMANDS   /     8.36  %
JOB JOYS93     =     27,695    COMMANDS   /     7.58  %
JOB TAFTER5    =     19,342    COMMANDS   /     5.29  %
JOB ECCENT3    =      4,344    COMMANDS   /     1.19  %
JOB ARMOR12    =      2,296    COMMANDS   /      .63  %
JOB MISSILE    =      2,093    COMMANDS   /      .57  %
JOB ZEPLIN1    =      1,938    COMMANDS   /      .53  %
•
•
•
-------------------------------------------------------------

TOTAL***       =    365,367    COMMANDS   /   100.00  %

*** TOTAL JOBS =     47 ***


COMMAND COUNTS BY:    U S E R I D   SORTED BY CATEGORY
-----------------------------------------------------

USER ID AEB34211    =  62,821    COMMANDS  /   17.19  %
USER ID AFB5C229    =     309    COMMANDS  /     .08  %
USER ID B1C2C3C6    =  30,242    COMMANDS  /    8.28  %
USER ID B1C2C3DD    =   1,188    COMMANDS  /     .33  %
USER ID B5DCA347    =      97    COMMANDS  /     .03  %
USER ID BA887264    =  86,555    COMMANDS  /   23.69  %
USER ID CACEC513    =   3,106    COMMANDS  /     .85  %
USER ID CD119765    =   8,463    COMMANDS  /    2.32  %
USER ID CD123455    =     804    COMMANDS  /     .22  %
USER ID CDAB206E    =  10,020    COMMANDS  /    2.74  %
•
•
•
-----------------------------------------------------
TOTAL***            = 365,367    COMMANDS  /  100.00  %

*** TOTAL USERS =     96 ***


COMMAND COUNTS BY:    U S E R I D   SORTED BY FREQUENCY
-----------------------------------------------------

USER ID BA887264    =  86,555   COMMANDS  /    23.69 %
USER ID AEB34211    =  62,821   COMMANDS  /    17.19 %
USER ID B1C2C3C6    =  30,242   COMMANDS  /     8.28 %
USER ID FFE4339A    =  29,666   COMMANDS  /     8.12 %
USER ID D3D5C6A7    =  18,778   COMMANDS  /     5.14 %
USER ID CDAB206E    =  10,020   COMMANDS  /     2.74 %
USER ID EEEEAB03    =  10,001   COMMANDS  /     2.74 %
USER ID EFAA9560    =   9,242   COMMANDS  /     2.53 %
USER ID CD119765    =   8,463   COMMANDS  /     2.32 %
USER ID DE00008D    =   5,552   COMMANDS  /     1.52 %
•
•
•
-----------------------------------------------------
TOTAL***       =      365,367   COMMANDS  /   100.00 %

*** TOTAL USERS =      96 ***
```

```
COMMAND COUNTS BY:  S E C U R I T Y  I D  SORTED BY CATEGORY
------------------------------------------------------------

SEC ID TREE01  =     62,821   COMMANDS  /    17.19   %
SEC ID TREE02  =        309   COMMANDS  /      .08   %
SEC ID TREE03  =     30,242   COMMANDS  /     8.28   %
SEC ID TREE04  =      1,188   COMMANDS  /      .33   %
SEC ID TREE05  =         97   COMMANDS  /      .03   %
SEC ID TREE06  =     86,555   COMMANDS  /    23.69   %
SEC ID TREE07  =      3,106   COMMANDS  /      .85   %
SEC ID TREE08  =      8,463   COMMANDS  /     2.32   %
SEC ID TREE09  =        804   COMMANDS  /      .22   %
SEC ID TREE10  =     10,020   COMMANDS  /     2.74   %
•
•
•
------------------------------------------------------------
TOTAL***       =    365,367   COMMANDS  /   100.00   %

*** TOTAL SEC IDS =    96 ***


COMMAND COUNTS BY:  S E C U R I T Y  I D SORTED BY FREQUENCY
------------------------------------------------------------

SEC ID TREE06  =     86,555   COMMANDS  /     23.69  %
SEC ID TREE01  =     62,821   COMMANDS  /     17.19  %
SEC ID TREE03  =     30,242   COMMANDS  /      8.28  %
SEC ID TREE17  =     29,666   COMMANDS  /      8.12  %
SEC ID TREE18  =     18,778   COMMANDS  /      5.14  %
SEC ID TREE10  =     10,020   COMMANDS  /      2.74  %
SEC ID TREE23  =     10,001   COMMANDS  /      2.74  %
SEC ID TREE21  =      9,242   COMMANDS  /      2.53  %
SEC ID TREE08  =      8,463   COMMANDS  /      2.32  %
SEC ID TREE20  =      5,552   COMMANDS  /      1.52  %
•
•
•
------------------------------------------------------------
TOTAL***       =    365,367   COMMANDS  /    100.00  %

*** TOTAL SEC IDs =    96 ***



COMMAND COUNTS BY:  NATURAL SECURITY APPLID   SORTED BY CATEGORY
-----------------------------------------------------------------
NSSAPPL  A9SMITH   =       877  COMMANDS   /       .24  %
NSSAPPL  AXAA45T3  =    22,154  COMMANDS   /      6.06  %
NSSAPPL  BOARD807  =     1,209  COMMANDS   /       .33  %
NSSAPPL  BRYAN12   =     3,549  COMMANDS   /       .97  %
NSSAPPL  BSKEEPR   =     1,388  COMMANDS   /       .38  %
NSSAPPL  CAPTAIN8  =    77,685  COMMANDS   /     21.26  %
NSSAPPL  CEC6D7BA  =     5,690  COMMANDS   /      1.56  %
NSSAPPL  DELTAPI9  =    66,819  COMMANDS   /     18.29  %
NSSAPPL  N2OLIB    =     7,424  COMMANDS   /      2.03  %
•
•
•
-----------------------------------------------------------------
TOTAL*** =          365,367ZCOMMANDS        /   100.00%

*** TOTAL NSSAPPLS =   73 ***
```

Note that Application "N2OLIB" has been used. This indicates that this site is using the Treehouse Software product, N_2O.

```
COMMAND COUNTS BY:  NATURAL SECURITY APPLID   SORTED BY FREQUENCY
-------------------------------------------------------------------
NSSAPPL  TREED882  =    147,315  COMMANDS   /    40.32  %
NSSAPPL  CAPTAIN8  =     77,685  COMMANDS   /    21.26  %
NSSAPPL  DELTAPI9  =     66,819  COMMANDS   /    18.29  %
NSSAPPL  AXAA45T3  =     22,154  COMMANDS   /     6.06  %
NSSAPPL  LAMBDAXA  =     18,008  COMMANDS   /     4.93  %
NSSAPPL  N2OLIB    =      7,424  COMMANDS   /     2.03  %
NSSAPPL  PRXT3AB9  =      6,026  COMMANDS   /     1.65  %
NSSAPPL  C3C6D7BA  =      5,690  COMMANDS   /     1.56  %
NSSAPPL  BRYAN12   =      3,549  COMMANDS   /      .97  %
•
•
•
-------------------------------------------------------------------
TOTAL*** =          365,367COMMANDS          /   100.00  %

*** TOTAL NSSAPPLS =    73 ***


COMMAND COUNTS BY:  NATURAL SECURITY USERID    SORTED BY CATEGORY
-------------------------------------------------------------------
NSSUID   A9909765  =     4,800   COMMANDS   /    1.31  %
NSSUID   CM3RTA51  =    30,019   COMMANDS   /    8.22  %
NSSUID   CLTN8709  =    12,355   COMMANDS   /    3.38  %
NSSUID   GROUCHO5  =    36,242   COMMANDS   /    9.92  %
NSSUID   HMH37521  =     5,287   COMMANDS   /    1.45  %
NSSUID   INTRBANK  =     9,888   COMMANDS   /    2.71  %
NSSUID   LOGPER1A  =    27,855   COMMANDS   /    7.62  %
NSSUID   MASTER54  =    25,058   COMMANDS   /    6.86  %
•
•
•
-------------------------------------------------------------------
TOTAL*** =          365,367COMMANDS          /  100.00  %

*** TOTAL NSSUIDS  =    26 ***


COMMAND COUNTS BY:  NATURAL SECURITY USERID    SORTED BY FREQUENCY
-------------------------------------------------------------------
NSSUID   TABL42    =    70,845   COMMANDS   /    19.39 %
NSSUID   USER0987  =    58,919   COMMANDS   /    16.13 %
NSSUID   LOGPER1A  =    49,885   COMMANDS   /    13.65 %
NSSUID   GROUCHO5  =    36,242   COMMANDS   /     9.92 %
NSSUID   CM3RTA51  =    30,019   COMMANDS   /     8.22 %
NSSUID   KERRAVON  =    29,857   COMMANDS   /     8.17 %
NSSUID   LOGPER1A  =    27,855   COMMANDS   /     7.62 %
NSSUID   MASTER54  =    25,058   COMMANDS   /     6.86 %
•
•
•
-------------------------------------------------------------------
TOTAL*** =          365,367COMMANDS          /   100.00 %

*** TOTAL NSSUIDS  =    26 ***
```

```
COMMAND COUNTS BY:  TRANSID           SORTED BY CATEGORY
-------------------------------------------------------
TRANSID    BATC      =     4,800   COMMANDS   /    1.31  %
TRANSID    CICSA413  =    30,019   COMMANDS   /    8.22  %
TRANSID    CICSB4Z1  =    12,355   COMMANDS   /    3.38  %
TRANSID    CICSDD0D  =    36,242   COMMANDS   /    9.92  %
TRANSID    CICSDE01  =     5,287   COMMANDS   /    1.45  %
TRANSID    CICSDE02  =     9,888   COMMANDS   /    2.71  %
TRANSID    CICSYN23  =    27,855   COMMANDS   /    7.62  %
TRANSID    TSO       =    25,058   COMMANDS   /    6.86  %
•
•
•
-------------------------------------------------------
TOTAL***             =   365,367   COMMANDS   /  100.00  %

***TOTAL TRANSIDS    =    26 ***


COMMAND COUNTS BY:  TRANSID          SORTED BY FREQUENCY
-------------------------------------------------------
TRANSID    BATC      =    70,845   COMMANDS   /   19.39 %
TRANSID    CICSA413  =    58,919   COMMANDS   /   16.13 %
TRANSID    CICSB4Z1  =    49,885   COMMANDS   /   13.65 %
TRANSID    CICSDD0D  =    36,242   COMMANDS   /    9.92 %
TRANSID    CICSDE01  =    30,019   COMMANDS   /    8.22 %
TRANSID    CICSDE02  =    29,857   COMMANDS   /    8.17 %
TRANSID    CICSYN23  =    27,855   COMMANDS   /    7.62 %
TRANSID    TSO       =    25,058   COMMANDS   /    6.86 %
•
•
•
-------------------------------------------------------
TOTAL***             =   365,367   COMMANDS   /  100.00 %

***TOTAL TRANSIDS    =    26 ***


COMMAND COUNTS BY:  L O G  U S E R  A R E A    SORTED BY CATEGORY
-----------------------------------------------------------------
USER AREA            =    81,519   COMMANDS   /   22.31  %
USER AREA  A1C4      =     1,902   COMMANDS   /     .52  %
USER AREA  C5D4      =    19,584   COMMANDS   /    5.36  %
USER AREA  C6D4      =     2,012   COMMANDS   /     .55  %
USER AREA  C6D5      =       997   COMMANDS   /     .27  %
USER AREA  DOG1      =       381   COMMANDS   /     .10  %
USER AREA  E2F6      =    24,662   COMMANDS   /    6.75  %
USER AREA  G3R?      =     8,212   COMMANDS   /    2.25  %
•
•
•
-----------------------------------------------------------------
TOTAL***   =             365,367   COMMANDS   /  100.00  %

*** TOTAL USER AREAS  =    22 ***
```

```
COMMAND COUNTS BY:  L O G  U S E R  A R E A    SORTED BY FREQUENCY
-------------------------------------------------------------------
USER AREA           =    81,519   COMMANDS   /    22.31  %
USER AREA   TVC1    =    59,080   COMMANDS   /    16.17  %
USER AREA   RRB3    =    29,266   COMMANDS   /     8.01  %
USER AREA   ZZTP    =    22,503   COMMANDS   /     6.98  %
USER AREA   E2F6    =    24,662   COMMANDS   /     6.75  %
USER AREA   MRY8    =    19,876   COMMANDS   /     5.44  %
USER AREA   C5D4    =    19,584   COMMANDS   /     5.36  %
USER AREA   TAR2    =    17,282   COMMANDS   /     4.73  %
•
•
•
-------------------------------------------------------------------
TOTAL***            =   365,367   COMMANDS   /   100.00  %

*** TOTAL USER AREAS =    22 ***


-------------------------------------------------------------------

   E N D   S T A T I S T I C S   S E G M E N T

   FROM 99-365  06:11:25   TO 99-365  20:20:22

-------------------------------------------------------------------
```

Note that after the break the printout would continue for the next hour(s) interval, similar to the pages above, finally ending with:

```
-------------------------------------------------------------------

   E N D   S E S S I O N   S T A T I S T I C S
```

SECTION VIII

HISTORICAL FACILITY

VIII.1 Introduction

The TRIM Historical Facility is the ability to use TRIM in conjunction with other software products, such as SAS, ADABAS, NATURAL, etc. to assist in trend analysis, capacity planning, and maintenance of long-term statistics and information.

The basis for this Historical Facility is TRIM's ability to "duplicate" any report data onto sequential datasets for later processing with TRIM or other statistical analysis systems, job accounting systems, or the user's own COBOL or NATURAL programs.

The sequential datasets may optionally be written to an ADABAS File via ADALOD (an ADABAS Utility) or the user's own COBOL or NATURAL Programs and later queried via the user's own on-line programs.

This Historical Facility, operating on long periods of summarized data, may assist in:

- Measuring the impact of DBA performance tuning changes to ADABAS run parameters, reorganizing files, applying different padding factors, adding threads, redistributing the ADABAS datasets across disk packs, etc.
- Listing seldom used descriptors and showing their effect on performance
- Illustrating the effect of adding terminals, upgrading disks, and changing the CPU or other hardware
- Listing which fields in certain critical files are used most often
- Illustrating the effect of new applications on other ADABAS users
- Showing the relationship of file size and physical order of its records to response time
- Producing Audit Trail details of all changes to particular files, records (ISNs), and fields
- Producing charge-back reports for monthly billing

VIII.2 Data Gathering, Summarization, Reduction

The function of the TRIM Historical Facility is to gather data from the ADABAS Command and Protection Logs and to summarize and reduce the data to a manageable amount. Any detailed or summarized data from TRIM may be output to a sequential dataset by supplying one additional parameter statement:

```
OUTPUT
```

For example, consider this set of parameters:

```
INPUT          LOGTYPE=PRESUM
REPORT         TYPE=SUMMARY
INCLUDE TYPE=F
CONTROL FNR
SUM            IO,CPU,DUR
OUTPUT         ID=FNRSTATS
```

This will cause output records (one per file number) to a sequential dataset. **Appendix C: Output Dataset Formats** describes the exact format of this dataset. For simplicity in this explanation, consider this data to have the following COBOL definition:

```
01  TRIM-FNR-SUMMARY-RECORD.
       05  FILLER             PIC X(80).     (Header Info)
       05  FNR                PIC S99999 COMP.
       05  FILLER             PIC XX.        (Alignment)
       05  FNR-COUNT          PIC S9(5) COMP.
       05  FNR-SUM-IO         PIC S9(10) COMP.
       05  FNR-SUM-CPU        PIC S9(9)V9  COMP.
       05  FNR-SUM-DUR        PIC S9(9)V9  COMP.
```

TRIM may be used to do Command Log data gathering, summarization, and reduction for other CONTROL fields (DEPT, NATPROG, CMD, HOUR, etc.). TRIM may do other arithmetic functions (AVERAGE, CHARGE, etc.). These summarizations may be for other fields (ECBS, FBL, USER-AREAN, etc). The combinations are unlimited and are entirely up to the user. Again, a simple OUTPUT statement will cause the summarized data to be placed onto a sequential dataset in an easily definable form, as shown in the previous COBOL example.

TRIM data gathered from PRESUM records is limited to data by Thread, Command, File Number, NATURAL Program, Job, User-ID, Security-ID, Response Code, NATURAL Application Library, NATURAL Security User-ID, User-Area of the Control Block, or the new SPECIAL user-defined category (refer to the note on the next page), and it contains Counts, Duration, I/O, and CPU totals.

TRIM may be used to gather detail data from the Protection Log and output this data to sequential datasets. The "fixed fields" in the beginning of each Protection Log Data Record are output along with all SHOWn (SHOW statement) fields from the compressed Before and/or After Images. These fields are decompressed for output. Refer to **Appendix C: Output Dataset Formats** for the exact format for Protection Log Detail data.

TRIM may also be used to gather and summarize data from other files (logs or any other fixed-form sequential dataset having variable blocked records) definable to TRIM with LOGTYPE=* and FIELD statements. This data may then be output to sequential datasets.

TRIM may also be used to gather and summarize data from other sources (SMF, ADAREP Reports, ADABAS start-up parameters, shut down statistics, Utility run reports, etc.), but in this version, TRIM requires the user to have previously modified this data into a form definable to and readable by TRIM (i.e., with LOGTYPE=* and FIELD statements).

PRESUM runs cannot be executed against PRESUM data stored in the SMF log. To execute a PRESUM run against PRESUM data that has been placed in the SMF log, it is first necessary to extract the PRESUM data from the SMF log and write it to a dataset in the format expected by the TRIM batch facility. An example of a NATURAL program that performs this extraction and reformatting appears in **Appendix E: PRESUM Data Extraction From SMF**.

Note: The PRESUM category SPECIAL, or SPE, permits customized accumulations for charge-back for other purposes. The SPE field is 16 bytes in length and may be set by a user-supplied Link-Exit-1 to include any desired information from the calling region. For example, the User-Exit-B may set the SPE field to contain:

- JOBNAME - 8 bytes
- JES NUMBER - 5 bytes
- FILE NUMBER - 2 bytes

PRESUM records may be processed in a later TRIM batch PRESUM run. The PRESUM SPE record is included in Batch PRESUM runs as a TYPE=Y record.

The TRIM Batch Facility may distinguish PRESUM records from other record types.

Each PRESUM Record that is input to TRIM is expanded into a record that has a predictable easy-to-use format.

TRIM V*vrs* can process PRESUM data from Trim V8 in CLOGLAYOUT=5 or 8 format as well as PRESUM records created by TRIM v7.6.1 (CLOGLAYOUT=5).

VIII.3 Processing Summarized Data

Once data is summarized onto sequential datasets, all datasets for one particular type of summarization may be processed together simply by logically concatenating the datasets (OS) or specifying multiple input tapes (DOS). For example, a user's weekly FNR summarizations may be processed with the following OS JCL:

```
//FNRSUM   DD   DSN=TRIM.FNR.SUMS.MON
//         DD   DSN=TRIM.FNR.SUMS.TUE
//         DD   DSN=TRIM.FNR.SUMS.WED
//         DD   DSN=TRIM.FNR.SUMS.THU
//         DD   DSN=TRIM.FNR.SUMS.FRI
```

Several different methods of processing this data are described in the following section.

VIII.3.1 TRIM Processing of Previously Summarized Data

TRIM may be used to produce reports on previously summarized data, as the following examples show. First, to collect PRESUM data from the Command Log:

```
INPUT     LOGTYPE=PRESUM,CLOCK-FACTOR=6,LIMIT=10000
REPORT    TYPE=SUMMARY,HEADING='SUMMARY -- BY FNR'
INCLUDE   TYPE=F
CONTROL   FNR
SUM       IO,CPU,DUR
OUTPUT    ID=FNRSTATS
```

TRIM-PRODUCED STATISTICS FOR SESSION 1

```
SUMMARY -- BY FNR        TRIM v.r.s    FRI 07-12-31 15:42:05    PAGE 1
                       LOG FROM 07-01-31 06:53:08 TO 07-01-31 08:09:02

                                    SUM       SUM          SUM
  FNR       COUNT    /      %      IO        CPU(MS)      DUR(MS)

    0       1,741        17.4       1,316      8,589.2     52,430.4
    8       2,050        20.5       1,091     13,410.6     25,952.8
    9         121         1.2          27        326.4        979.5
   21          46          .5          28        411.8        888.0
   99           2          .8           7         53.5        233.8
  249       4,592        45.9       6,575     65,475.6    139,213.4
  250           1          .0           7         57.6        190.1
  251         685         6.9       1,593     10,608.9     31,919.5
  252         762         7.6       5,084     38,649.1    104,388.1

*****    10,000       100.0      15,728    137,582.7    356,195.6
```

```
        INPUT    LOGTYPE=PRESUM,CLOCK-FACTOR=6,LIMIT=10000
        REPORT   TYPE=SUMMARY,HEADING='SUMMARY -- BY FNR'
        INCLUDE  TYPE=F
        CONTROL  FNR
        SUM      IO,CPU,DUR
        OUTPUT   ID=FNRSTATS
```

TRIM-PRODUCED STATISTICS FOR SESSION 2

```
SUMMARY -- BY FNR                TRIM 8.1.1     FRI 07-01-31 22:43:37   PAGE 1
                              LOG FROM 07-01-31 20:52:28 TO 07-01-31 21:34:07

                                          SUM      SUM        SUM
FNR       COUNT    /     %               IO       CPU(MS)    DUR(MS)

0           214          40.0            13        346.2       365.9
249          29           5.4            12        163.8       294.6
250          10           1.9            19        176.8       324.0
252         282           527           361      3,896.4     5,086.8


*****       535        100.0            405      4,583.3     6,070.4
```

PARAMETERS FOR PROCESSING TRIM-PRODUCED SEQUENTIAL DATASETS

OUTPUT IN SESSION 1 AND SESSION 2

```
INPUT   LOGTYPE=*
        FIELD      NAME=TRIMID,FORMAT=C,LENGTH=8
        FIELD      NAME=TRIMDATE,FORMAT=C,LENGTH=8
        FIELD      NAME=TRIMTIME,FORMAT=C,LENGTH=8
        FIELD      NAME=LOGSTDT,FORMAT=C,LENGTH=8
        FIELD      NAME=LOGSTTI,FORMAT=C,LENGTH=8
        FIELD      NAME=LOGENDT,FORMAT=C,LENGTH=8
        FIELD      NAME=LOGENTI,FORMAT=C,LENGTH=8
        FIELD      NAME=OUTPUTID,FORMAT=C,LENGTH=8
        FIELD      NAME=FILL2,FORMAT=C,LENGTH=8
        FIELD      NAME=FILL3,FORMAT=C,LENGTH=8
        FIELD      NAME=FNR,FORMAT=B,LENGTH=2
        FIELD      NAME=FILL4,FORMAT=C,LENGTH=2
        FIELD      NAME=COUNT,FORMAT=B,LENGTH=4
        FIELD      NAME=FILL5,FORMAT=C,LENGTH=4
        FIELD      NAME=SUM-IO,FORMAT=B,LENGTH=4
        FIELD      NAME=FILL8,FORMAT=C,LENGTH=4
        FIELD      NAME=SUM-CPU,FORMAT=B,LENGTH=4,DECIMALS=1
        FIELD      NAME=FILL9,FORMAT=C,LENGTH=4
        FIELD      NAME=SUM-DUR,FORMAT=B,LENGTH=4,DECIMALS=1
REPORT             TYPE=DETAIL,HEADING='LIST PREVIOUS SUMMARY DATA'
        INCLUDE    OUTPUTID=FNRSTATS
        DISPLAY    LOGSTDT,LOGSTTI,LOGENDT,LOGENTI,
                   FNR,COUNT,SUM-IO,SUM-DUR
REPORT             TYPE=SUMMARY,HEADING='SUM FNR SEVERAL DAYS'
        INCLUDE    OUTPUTID=FNRSTATS
        CONTROL    FNR
        SUM        COUNT,SUM-IO,SUM-DUR
```

TRIM-PRODUCED DETAIL REPORT FROM PROCESSING SESSIONS 1 AND 2 DATA

```
LIST PREVIOUS SUMMARY DATA  TRIM 8.1.1  FRI 07-01-31 15:44:06 PAGE 1

LOGSTDT    LOGSTTI     LOGENDT       LOGENTI        FNR      COUNT    SUM-IO    SUM-DUR

04-12-29   06:53:08    07-01-31      08:09:02         0      1741        29     52430.4
04-12-29   06:53:08    07-01-31      08:09:02         8      2050       700     25952.8
04-12-29   06:53:08    07-01-31      08:09:02         9       121        25       979.5
04-12-29   06:53:08    07-01-31      08:09:02        21        46        20       888.0
04-12-29   06:53:08    07-01-31      08:09:02        99         2         7       233.8
04-12-29   06:53:08    07-01-31      08:09:02       249      4592      6431    139213.4
04-12-29   06:53:08    07-01-31      08:09:02       250         1         7       190.1
04-12-29   06:53:08    07-01-31      08:09:02       251       685      1499     31919.5
04-12-29   06:53:08    07-01-31      08:09:02       252       762      4717    104388.1
04-12-30   20:52:28    07-01-31      21:34:07         0       214        10       365.0
04-12-30   20:52:28    07-01-31      21:34:07       249        29        12       294.6
04-12-30   20:52:28    07-01-31      21:34:07       250        10        19       324.0
04-12-30   20:52:28    07-01-31      21:34:07       252       282        11      5086.8
```

TRIM-PRODUCED SUMMARY REPORT FROM PROCESSING SESSIONS 1 AND 2

```
SUM FNR SEVERAL DAYS   TRIM 8.1.1  FRI 07-01-31 15:44:06 PAGE 1

                                SUM       SUM          SUM
  FNR   COUNT   /       %       COUNT     SUM-IO       SUM-DUR

    0       2       15.4        1,955         39      52,795.4
    8       1        7.7        2,050        700      25,952.8
    9       1        7.7          121         25         979.5
   21       1        7.7           46         20         888.0
   99       1        7.7            2          7         233.8
  249       2       15.4        4,621      6,443     139,508.0
  250       2       15.4           11         26         514.1
  251       1        7.7          685      1,499      31,919.5
  252       2       15.4        1,044     4,7281     109,474.9

*****      13      100.0       10,535     13,487     362,266.0
```

VIII.3.2 COBOL or NATURAL Processing of Previously Summarized Data

The following COBOL Program example merely reads and prints the summary data. It could be easily extended to:

- Sort the data into FNR order
- Accumulate statistics for each FNR and print them (this accumulation could also be done via TRIM)
- Sort the data in descending order of the FNR-SUM-DUR field, so that files with the poorest performance history may be easily detected
- Divide the Duration figures by the total I/Os to get a ratio for each FNR
- Output the data to an ADABAS file

A similar program could be written in NATURAL.

```
 IDENTIFICATION DIVISION.
 PROGRAM-ID.   READOP.
 REMARKS.              READ TRIM SUMMARY FILE OUTPUT WHICH HAD
                       FOLLOWING TRIM PARAMETERS:
                              INPUT LOGTYPE=PRESUM
                              REPORT TYPE=SUMMARY,HEADING='FNR STATS'
                              INCLUDE TYPE=F
                              CONTROL FNR
                              SUM IO,CPU,DUR
                              OUTPUT ID=FNRSTATS
 ENVIRONMENT DIVISION.
 CONFIGURATION SECTION.
 SOURCE-COMPUTER.
 OBJECT-COMPUTER.
 SPECIAL-NAMES.        C01 IS TOP-PAGE.
 INPUT-OUTPUT SECTION.
 FILE-CONTROL.
       SELECT INPUT-FILE ASSIGN TO UT-S-OSFILE.
       SELECT PRINT-FILE ASSIGN TO UT-S-PRFILE.
 DATA DIVISION.
 FILE SECTION.
 FD     INPUT-FILE
       BLOCK CONTAINS 0 RECORDS
       RECORDING MODE V
       LABEL RECORDS STANDARD.
 01     INPUT-REC.
*      AFTER THE REC LEN COMES THESE 80 BYTES:
       03 TRIM-ID PIC X(8).
       03 TRIM-DATE PIC X(8).
       03 TRIM-TIME PIC X(8).
       03 BEGINNING-LOG-DATE PIC X(8).
       03 BEGINNING-LOG-TIME PIC X(8).
       03 ENDING-LOG-DATE PIC X(8).
       03 ENDING-LOG-TIME PIC X(8).
       03 OUTPUTID PIC X(8).
       03 FILLER PIC X(16).
*      THEN THE FNR FIELD.
       03 FNR PIC S99999 COMP.
*      ROUND TO NEXT WORD.
       03 FILLER PIC XX.
*      THEN THE COUNT OF LOG RECORDS FOR THIS FNR
*              4-BYTES BINARY.
       03 FNR-COUNT PIC S99999 COMP.
*      THEN THE FIVE SUM FIELDS, EACH 8 BYTES BINARY.
       03 SUM-IO PIC S9(10) COMP.
       03 SUM-CPU    PIC S9(9)V9 COMP.
       03 SUM-DUR    PIC S9(9)V9 COMP.
 FD     PRINT-FILE LABEL RECORDS STANDARD.
 01     PRINT-REC.
       03 FILLER PIC X.
       03 PRINT-LINE PIC X(132).
 WORKING-STORAGE SECTION.
 01     HEADING-LINE-1.
       03 FILLER PIC X(30) VALUE ' T R I M ADABAS COMMAND LOG'.
       03 FILLER PIC X(30) VALUE 'SUMMARY STATISTICS BY FNR '.
 01     HEADING-LINE-2.
       03 FILLER PIC X(16) VALUE ' TRIM RUN DATE: '.
       03 H-TRIM-DATEPIC X(8).
       03 FILLER PIC X(08) VALUE ' TIME: '.
       03 H-TRIM-TIMEPIC X(8).
       03 FILLER PIC X(21) VALUE ' BEGINNING LOG DATE: '.
       03 H-BEGINNING-LOG-DATEPIC X(8).
       03 FILLER PIC X(08) VALUE ' TIME: '.
       03 H-BEGINNING-LOG-TIMEPIC X(8).
       03 FILLER PIC X(18) VALUE ' ENDING  LOG DATE: '.
       03 H-ENDING-LOG-DATEPIC X(8).
       03 FILLER PIC X(08) VALUE ' TIME: '.
       03 H-ENDING-LOG-TIMEPIC X(8).
 01     COLUMN-HEADING-1.
       03 FILLER PIC X(05) VALUE '     '.
       03 FILLER PIC X(07) VALUE '     '.
```

(continued on next page)

(continued from previous page)

```
       03 FILLER PIC X(12) VALUE '     SUM     '.
       03 FILLER PIC X(14) VALUE '     SUM      '.
       03 FILLER PIC X(14) VALUE '     SUM      '.
01     COLUMN-HEADING-2.
       03 FILLER PIC X(07) VALUE '  FNR  '.
       03 FILLER PIC X(07) VALUE ' COUNT '.
       03 FILLER PIC X(12) VALUE '   IO   '.
 03 FILLER PIC X(14) VALUE '   CPU(MS)    '.
       03 FILLER PIC X(14) VALUE '   DUR(MS)    '.
 01    FNR-LINE.
       03  FNR-PR  PIC 99999.
       03  FNR-COUNT-PR PIC ZZZZZ9-.
       03  SUM-IO-PR PIC Z(10)9-.
       03  SUM-CPU-PR PIC Z(9)9.9-.
       03  SUM-DUR-PR PIC Z(9)9.9-.
```

PROCEDURE DIVISION

```
 BEGIN.
       OPEN INPUT INPUT-FILE.
       OPEN OUTPUT PRINT-FILE.
*      NEED TO READ THE FIRST RECORD TO GET DATE, TIME, ETC.
 READ-FIRST.
       READ INPUT-FILE AT END GO TO EOJ.
       IF OUTPUTID NOT = 'FNRSTATS' GO TO READ-FIRST.
       MOVE TRIM-DATE TO H-TRIM-DATE.
       MOVE TRIM-TIME TO H-TRIM-TIME.
       MOVE BEGINNING-LOG-DATE TO H-BEGINNING-LOG-DATE.
       MOVE BEGINNING-LOG-TIME TO H-BEGINNING-LOG-TIME.
       MOVE ENDING-LOG-DATE TO H-ENDING-LOG-DATE.
       MOVE ENDING-LOG-TIME TO H-ENDING-LOG-TIME.
       MOVE HEADING-LINE-1 TO PRINT-LINE.
       WRITE PRINT-REC AFTER ADVANCING TOP-PAGE.
       MOVE HEADING-LINE-2 TO PRINT-LINE.
       WRITE PRINT-REC AFTER ADVANCING 1 LINES.
       MOVE COLUMN-HEADING-1 TO PRINT-LINE.
       WRITE PRINT-REC AFTER ADVANCING 2 LINES.
       MOVE COLUMN-HEADING-2 TO PRINT-LINE.
       WRITE PRINT-REC AFTER ADVANCING 1 LINES.
       MOVE SPACES TO PRINT-LINE.
       WRITE PRINT-REC AFTER ADVANCING 2 LINES.
 PROCESS-LOOP.
       MOVE FNR TO FNR-PR.
       MOVE FNR-COUNT TO FNR-COUNT-PR.
       MOVE SUM-IO TO SUM-IO-PR.
       MOVE SUM-CPU TO SUM-CPU-PR.
       MOVE SUM-DUR TO SUM-DUR-PR.
       WRITE PRINT-REC AFTER ADVANCING 1 LINES.
 READ-AGAIN.
       READ INPUT-FILE AT END GO TO EOJ.
       IF OUTPUTID NOT = 'FRNSTATS' GO TO READ-AGAIN.
       GO TO PROCESS-LOOP.
 EOJ.
       CLOSE INPUT-FILE.
       CLOSE PRINT-FILE.
       STOP RUN.
```

VIII.3.3 SAS Processing of Previously Summarized Data

SAS is available in a large number of ADABAS installations. Installations not having SAS usually have a statistical analysis package of some type.

With SAS, TRIM summarized data may be easily processed to produce reports, charts, and graphs. The following simple SAS program will produce:

- a report of each "observation" or record
- a report sorted by FNR with sub-totals and a grand-total line
- a vertical bar chart
- a pie chart
- a block chart

```
DATA NORM;
INFILE INPUT;
INPUT          @ 81    FNR IB2.
               @ 85    CNT IB4.
               @ 93    IO IB4.
               @ 101   CPU IB4.1
               @ 109   DUR IB4.1;
PROC PRINT;
               VAR FNR CNT IO CPU DUR;
PROC SORT;             BY FNR;
PROC PRINT;            BY FNR;
               SUM CNT IO CPU DUR;
PROC CHART;
               VBAR FNR  / SUMVAR=IO;
               HBAR FNR  / SUMVAR=IO;
               PIE  FNR  / SUMVAR=IO;
               BLOCK FNR / SUMVAR=IO;
```

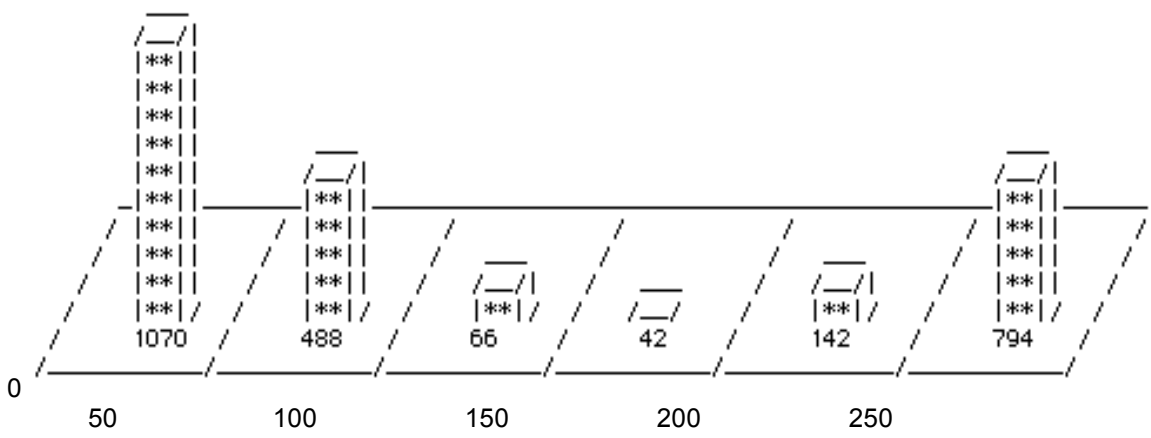
Following are samples of the bar chart and block chart produced by the preceding SAS program.

BAR CHART OF SUMS

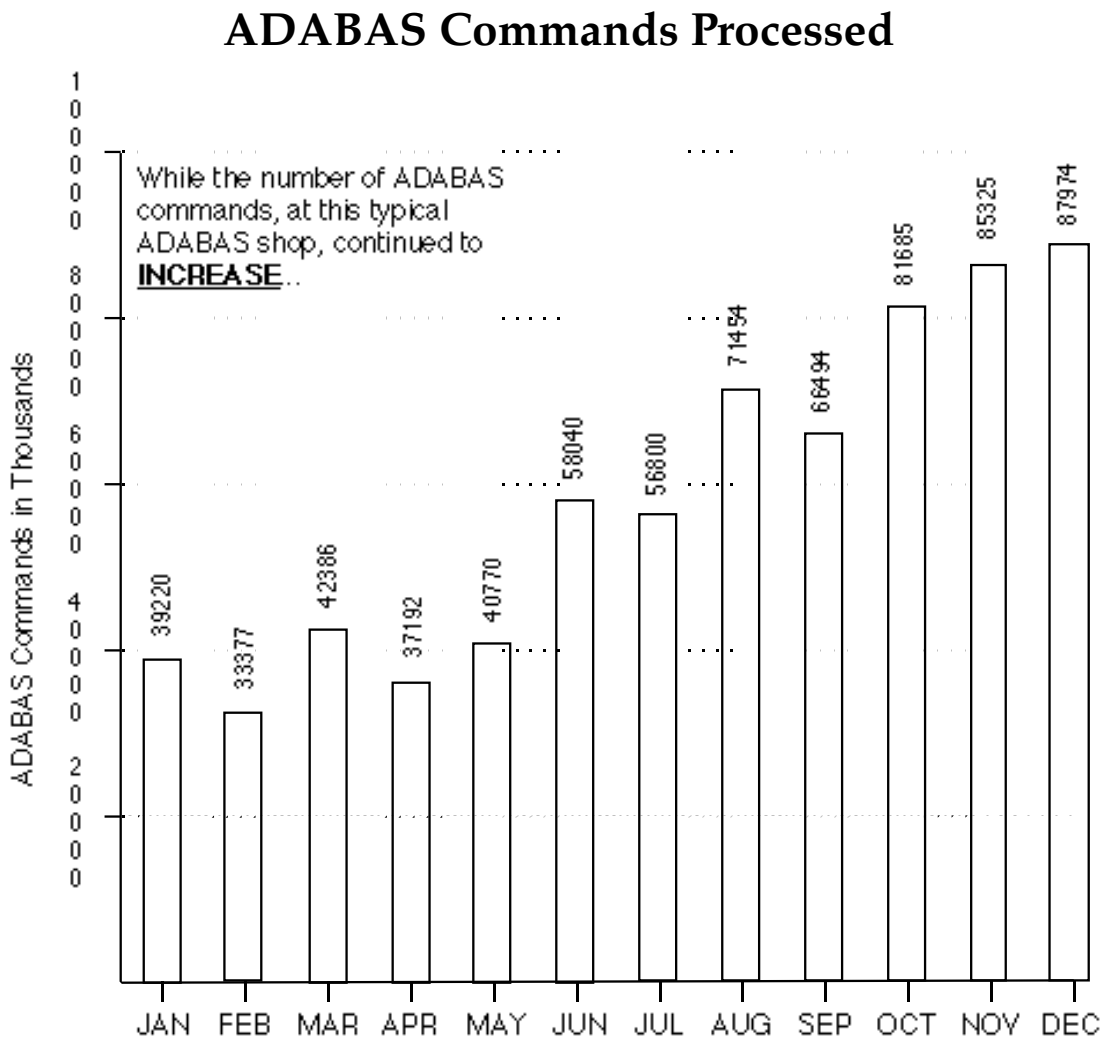
```
MIDPOINT                                                                  FREQ        IO SUM
FNR
        |
   0    |*************************************************                  13      1070.000
        |
  50    |***********************                                             7       488.000
        |
 100    |***                                                                 5        66.000
        |
 150    |**                                                                  2        42.000
        |
 200    |*******                                                             2       142.000
        |
 250    |***************************************                             5       794.000
           -----+----+----+----+----+----+----+----+----+----+----
                100  200 300 400 500 600 700 800 900 1000

                                IO SUM
```

BLOCK CHART OF IO SUMS

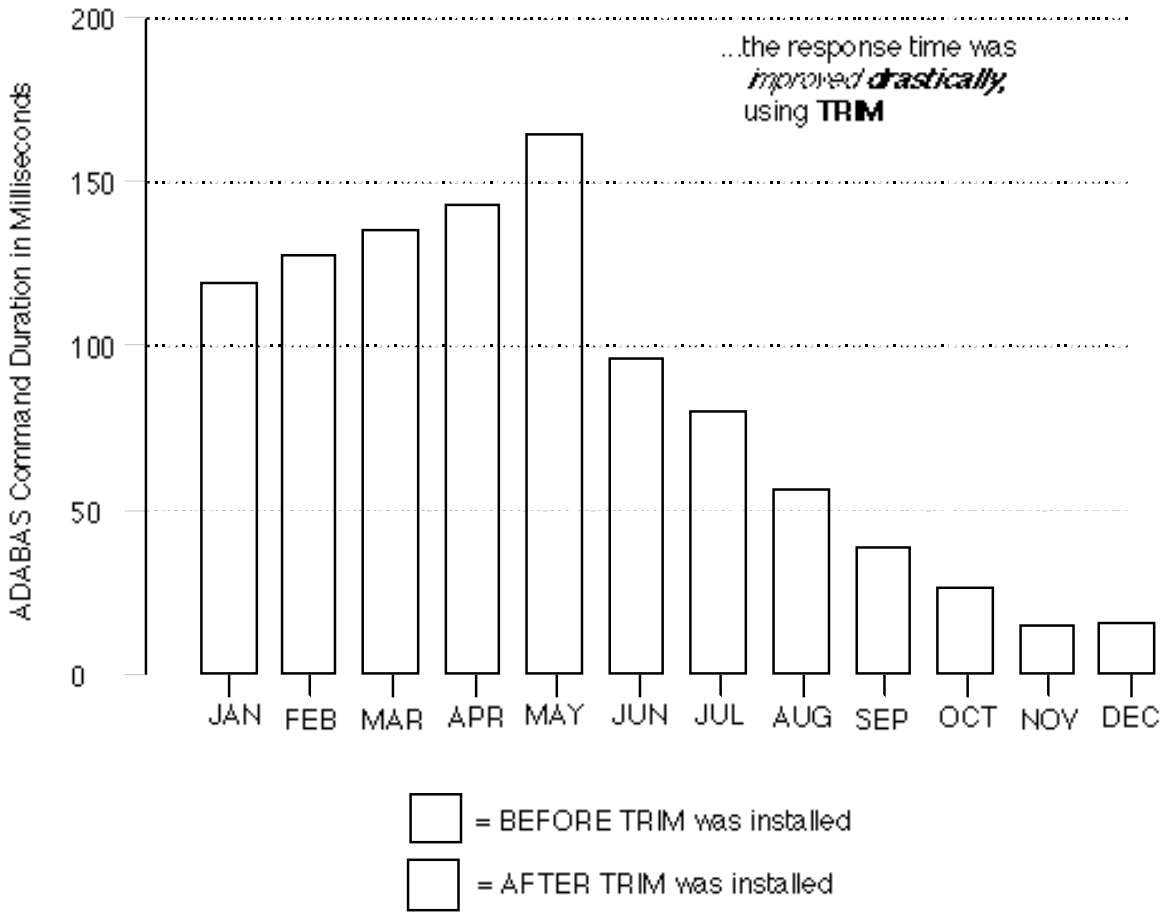
```
          ___
         /__/|
         |**||
         |**||
         |**||
         |**||          ___                                                ___
         |**||         /__/|                                              /__/|
        _|**||_______|**||_____________________________________________|**||_____
       / |**||      / |**||      /           /           /           / |**||     /
      /  |**||     /  |**||     /   ___     /           /   ___     /  |**||    /
     /   |**||    /   |**||    /   /__/|    /   ___     /   /__/|    /   |**||   /
    /    |**|/   /    |**|/   /    |**|/   /   /__/    /    |**|/   /    |**|/  /
   /     1070   /     488    /     66     /     42     /     142    /     794   /
  /___________/___________/___________/___________/___________/___________/
0
      50          100          150          200          250

                                FNR MIDPOINT
```



Using SAS and similar products, it is possible to graphically represent ADABAS usage statistics as shown below and on the next page.



ADABAS Average Command Duration



VIII.3.4 Placing Summarized Data onto ADABAS

Because of the variable nature of what each user would want to summarize, it is not possible to define one standard ADABAS file to contain historical performance data, charge data, audit data, etc.

To allow users to summarize data via TRIM in any way and to allow the data to be automatically output to the user's own defined ADABAS file(s) could result in a prohibitive number of ADABAS ADDs. Missing or duplicated data could possibly occur, causing erroneous historical data to go undetected. The file would grow larger and larger, making TRIM run slower.

Additionally, writing data directly onto ADABAS from TRIM is not supported because TRIM may run for a long time processing log data, then need ADABAS for only a few seconds to issue a few commands. If ADABAS is not up, if the file is locked out, if the file is not properly defined, etc., the long TRIM run would be wasted.

Instead, TRIM outputs the data to a sequential dataset. The unavailability of this dataset would be detected at the beginning of the TRIM run. The user may place the output sequential dataset onto ADABAS via:

- ADABAS utilities, including ADALOD
- a COBOL/direct-call or NATURAL program to perform simple read/write logic

From the previous discussion of FNR summarized statistics and the COBOL program example, an ADABAS file could be defined to contain the following fields:

```
01,AA              ENTIRE-RECORD
01,AB              RECORD-TYPE
02,BA              HEADER-INFO
03,BB,8,A,DE       LOG-START-DATE
03,BC,8,A DE       LOG-START-TIME
03,BD,8,A,DE       LOG-END-DATE
03,BE,8,A,DE       LOG-END-TIME
02,CA              FNR-SUMMARY-GROUP
03,CB,2,B,DE,NU    FNR
03,CC,4,B,NU       FNR-COUNT
03,CD,8,B,NU       FNR-SUM-IO
03,CE,8,B,NU       FNR-SUM-CPU
03,CF,8,B,NU       FNR-SUM-DUR
02,DA              NEXT GROUP OF STATISTICS
03,DB
Etc.
•
•
•
```

The DBA may desire to use the "record-type" field, AB, to indicate the type of summary data (FNR, CMD, etc.). The DBA may also want to store FNR onto ADABAS as a five-character alphanumeric field, so that FNR 00000 is maintained in the ADABAS Associator.

VIII.3.5 Processing the ADABAS Resident Summary Data

COBOL or NATURAL programs could be written to query the ADABAS historical file(s). Programs may be written to:

- Produce periodic batch reports at the end of each week, month, etc.
- Remove old data
- Merge daily statistics into weeks, weeks into months, etc.
- Allow for on-line query of statistics, possibly including on-line graphics capabilities

SECTION IX

IDLE MODE

IX.1 Introduction

A major advantage of TRIM over other ADABAS monitors is that once ADABAS is brought up with the TRIM exits, TRIM is already working to prepare for DBA/user requests for performance information. Whether or not anyone is viewing TRIM statistics via the TRIM Real-Time Monitor (RTM), the exits are performing the tasks of identifying users, jobs, programs, etc., collecting and calculating statistics, and storing this information in the various TRIM tables. Another advantage is that there are no programs or parameters to code for the TRIM RTM. The RTM is prepared at all times to display a variety of informative screens that can help to focus in on the current ADABAS session's performance problems (for the time past, present, and future) and identify the abusing user, job, and/or program.

With other monitors, when a suspected performance problem is reported, the DBA must then prepare parameters for reports that collect statistics to (hopefully) focus on the suspected problem. Often, the problem is already gone (the program is finished or the user has timed out or logged off) or other unreported problems surface by the time the DBA gets the parameters and reports defined.

Although TRIM is always ready with useful statistics, users may not want or need them at all times. In this case, TRIM is unnecessarily going through many CPU cycles. This is why TRIM Idle Mode was created. Idle Mode keeps the preliminary investigative work of TRIM to a minimum, while still having TRIM primed and ready for action.

Idle Mode should not be confused with the long-available options in TRIM that allow certain accumulators to be turned on or off at different times or dynamically throughout the day. These options remain available. Idle Mode adds to this flexibility. For example, the hourly statistics by NATURAL Program Name can still be turned on and off (to save processing time). With Idle Mode, there are additional overhead savings because the cycles to recognize the NATURAL Program Name, NATURAL Application, and NATURAL User-ID are not executed, resulting in savings in Extended User Queue maintenance and searching.

The ZAP-ID list in this section shows which TRIM RTM functions are turned off by Idle Mode and which functions remain unaffected. The easiest way to remember which functions remain unaffected is to keep in mind that TRMUEX4x has two primary functions: statistics gathering for the RTM and for Nucleus Sessions Statistics printout and logging determination (to log or not and which buffers). Idle Mode turns off the statistics gathering and leaves the logging determination unaffected (per log Zap switch, TRMTAP, TRMLOG, and dynamic logging through User-Exit-4 communication runs).

TRIM can be placed in Idle Mode in three ways:

- Setting Zap location X'2E' to X'FF' (placing TRIM totally in Idle) or X'FE' (placing TRIM in Idle, but allowing for NATPROG and other information to be obtained from the User Information Block data).
- Specifying IDLE=YES (placing TRIM totally in Idle) or IDLE=UEXB (placing TRIM in Idle but allowing for NATPROG and other information to be obtained from the User Information Block data) on the TRMTAP macro, and including it as part of TRMUEX4x at link-edit time. For more information, refer to ***Section VII.1 Time Adjustable Parameters (TRMTAP)*** of the ***TRIM Installation and Operations Manual***. By using TRMTAP, Idle Mode can be pre-defined to be on or off during any hourly period.
- Using the RTM, accessing the CTRM screen through the CTRL screen with password verification, and changing the value of the "Set TRIM Idle" field to "Y" (placing TRIM totally in Idle) or "U" (placing TRIM in Idle, but allowing for NATPROG and other information to be obtained from the User Information Block data).

TRIM Idle Mode offers an option to include processing in TRIM User-Exit-4 of the data in the user information area built by TRIM Link-Exit-1. This option may be selected by Zap switch, TRMTAP, or the CTRL screens of the RTM. With this option, data from the user information area will be processed and/or placed in the Command Log record according to Zap switch settings. Also, dynamic logging that is dependent on user information can be done even when TRIM is in Idle Mode.

Idle Mode also checks the CRUNCH Zap switch. Regardless of whether or not TRIM is in Idle Mode, Command Log records will or will not be crunched based on the Zap switch setting.

TRIM can be returned to non-Idle (Active Mode) by doing one of the following:

- Setting Zap location X'2E' to X'00'
- Specifying IDLE=NO on the TRMTAP macro
- Setting the "Set TRIM Idle" field to "N" on the CTRM screen in the RTM

Whenever the RTM is used to modify the value of Idle Mode, the modification will be confirmed when exiting the RTM by presenting a window confirming that the current setting of Idle is the desired one.

Whenever Idle Mode is changed, a message is written to the ADABAS DDPRINT dataset (SYSLST for DOS), indicating the current mode of operation for TRIM: "TRIM is in IDLE MODE" or "TRIM is now in ACTIVE MODE". If TRIM is functioning in Idle Mode, a message appears on the TRIM Main Menu and all detail screens, indicating that TRIM is Idle for the associated database.

When TRIM is placed in Idle Mode, the Zap switches are set to the following:

(The default settings appear in the table for comparison purposes only.)

ZAP-ID	Location	Default	Idle Setting
Detail Logging	X'1C'	X'00'	*N/C
PRESUM	X'1D'	X'00'	X'00'
	X'1E'	X'00'	X'00'
Minute Accumulators	X'1F'X'FF'	X'00'	
	X'20'X'00'	X'00'	
Hourly Accumulators	X'21'X'FF'	X'00'	
	X'22'X'00'	X'00'	
Session Accumulators	X'23'X'FF'	X'00'	
	X'24'X'00'	X'00'	
Print Session Statistics	X'25'X'FF'	X'00'	
Print Sequence	X'26'X'C3' (C)	*N/C	
CRUNCH	X'27'X'40'	*N/C	
(Unused)	X'28'----	----	
Zero FNR	X'29'X'00'	*N/C	
User-ID in Char or Hex	X'2A'	X'C8' (H)	*N/C
Sort Sequence	X'2B'	X'C3' (C)	*N/C
Stop/Terminate	X'2C'	X'E2' (S)	*N/C
Password Retention	X'2D'	X'D5' (N)	*N/C
Idle Mode	X'2E'	X'00'	X'FF' or X'FE'
(Unused)	X'2F'----	----	
TRACE**	X'30'X'E8' (Y)	X'D5' (N)	
High Use and Duration ***	X'31'X'E8' (Y)	X'D5' (N)	
Alternate User-ID	X'32'X'E8' (Y)	*N/C	
Display All XUQ Entries	X'33'X'D5' (N)	*N/C	
Display STCK Seq. Error	X'34'X'E8' (Y)	*N/C	
SECURITRE Violator	X'35'X'72'	X'00'	
Accumulators	X'36'X'14'	X'00'	
TRIM Control w/ SECURITRE	X'37'X'D5' (N)	*N/C	
(Unused)	X'38'----	----	
Use Command Queue Job	X'39'	X'C3' (C)	*N/C
Clear Session Statistics	X'3A'	X'FF'	X'00'
Alternate for Null NATPROG	X'3B'	X'00'	X'00'
NAT Appl Lib and User-ID in Log	X'3C'	X'00'	X'00'
External User-ID in Log	X'3D'	X'00'	X'00'
NATURAL Program Name in Log	X'3E'	X'E8' (Y)	X'D5' (N)
CTI in Log	X'3F'X'D5' (N)	X'D5' (N)	
tRelational Logging	X'46'X'D5' (N)	*N/C	

* The values of these fields will not be changed (N/C) from their current settings by modifying the Idle Mode setting.

** If in Idle Mode:

- New tracing cannot be started (new tracing criteria cannot be established)
- All current tracing is suspended (i.e., the collection of trace data is discontinued)
- Trace criteria is retained and can be viewed, but trace data is not collected
- Trace data for previously active traces (prior to going to Idle Mode) is available from the TDSP screen
- Trace criteria can be removed (i.e., traces can be deactivated)

*** High duration data collected while TRIM was active (prior to going to Idle Mode) can be displayed, printed, or purged even while TRIM is Idle. However, if TRIM is idle, no new high duration data is collected.

IX.2 Sample Screens for Idle Mode

The following two screens illustrate a case where Idle Mode has been modified during the session. The first screen indicates TRIM has been set to Idle and requests verification of the mode TRIM should be in when exiting the session.

```
07-01-31          T R I M   R E A L - T I M E   M O N I T O R       14:29:50
                        DBID  227      TEST-DATABASE


                    ***  TRIM IDLE HAS BEEN MODIFIED.  ***


            To leave TRIM Idle            PF1   or enter OK
            To restore original setting   PF12  or enter desired setting

                                                ===>
```

The second screen indicates TRIM has been returned to non-Idle mode during the session and requests verification of the status when exiting the session.

```
07-01-31          T R I M   R E A L - T I M E   M O N I T O R       14:29:50
                        DBID  227      TEST_DATABASE


                    ***  TRIM IDLE HAS BEEN MODIFIED.  ***


            To leave TRIM active          PF1   or enter OK
            To restore original setting   PF12  or enter desired setting

                                                ===>
```

The following two screens are examples of the CTRM screen with the Set TRIM Idle field set to "Y" and the Set TRIM Idle field set to "N", respectively. This is a new option on the CTRM screen allowing dynamic control of Idle Mode.

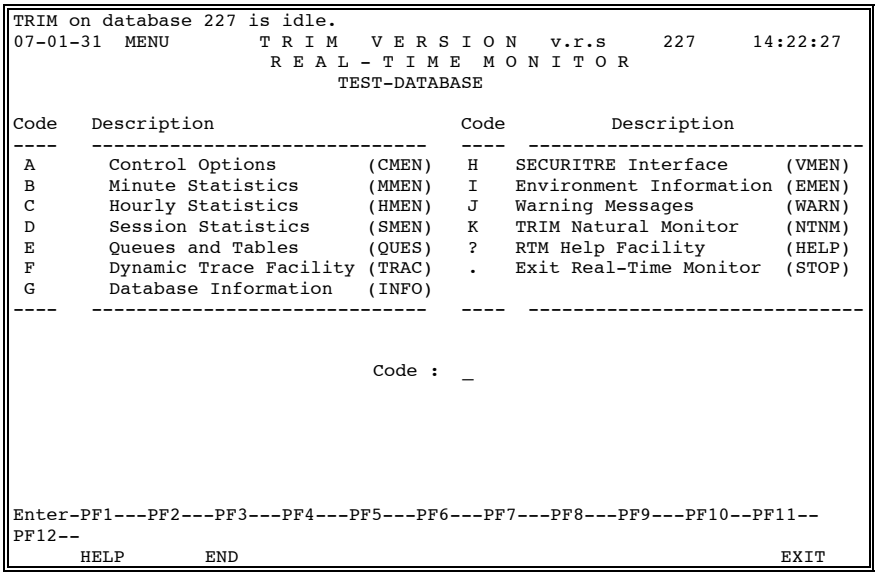
The first screen illustrates that accumulation is not in effect while TRIM is Idle (the Set TRIM Idle field is set to "Y"). Whenever TRIM is set to Idle, the ACCUMS portion of the screen changes to all Ns, indicating that accumulation is not in effect.

```
07-01-31   CTRM           Real-Time Monitor Control          227
14:29:50

      Password Retention            (Y=YES, N=NO, V=Violators) ===> Y

      Job Name in Use          (C=CQE, U=Uinfo, J=Command Log) ===> C

      Add-3/Add-4 data          (N=None, S=NSA-SID, U=NSA-NSU) ===> N

      Crunch Command Log Records                 (Y=YES, N=NO) ===> N

      Zero FNR in Commands                       (Y=YES, N=NO) ===> N

      Set TRIM Idle                       (Y=YES, N=NO, U=Uexb) ===> Y

ACCUMS... THD  FNR  CMD  CWF  RSP  PGM  JOB  UID  CTI  NSA  NSU  USA  SPE
SID
5 MINUTE   N    N    N    -    N    N    N    N    N    N    N    N    -    N
5 HOUR     N    N    N    -    N    N    N    N    N    N    N    N    -    N
SESSION    N    N    N    N    N    N    N    N    N    N    N    N    -    N
PRESUM     N    N    N    -    N    N    N    N    N    N    N    N    N    N
VIOLATIONS -    N    -    -    -    N    N    N    -    N    -    -    -    N

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

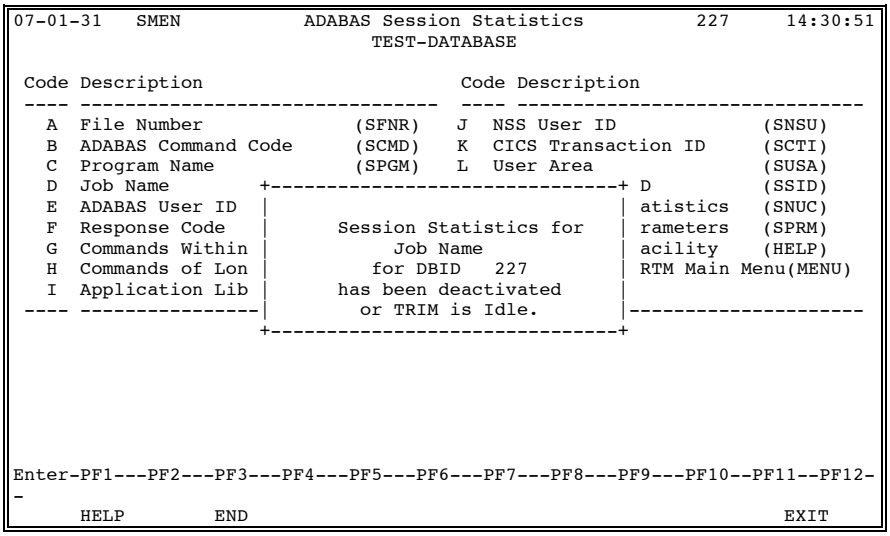
The second screen illustrates active accumulation of selected fields while TRIM is active (the Set TRIM Idle field is set to "N"). Whenever TRIM is returned to non-Idle, the accumulators that were active (Y) prior to TRIM being set to Idle are reactivated.

```
07-01-31   CTRM           Real-Time Monitor Control          227
14:29:50

      Password Retention            (Y=YES, N=NO, V=Violators) ===> N

      Job Name in Use          (C=CQE, U=Uinfo, J=Command Log) ===> C

      Add-3/Add-4 data          (N=None, S=NSA-SID, U=NSA-NSU) ===> N

      Crunch Command Log Records                 (Y=YES, N=NO) ===> N

      Zero FNR in Commands                       (Y=YES, N=NO) ===> N

      Set TRIM Idle                       (Y=YES, N=NO, U=Uexb) ===> Y

ACCUMS... THD  FNR  CMD  CWF  RSP  PGM  JOB  UID  CTI  NSA  NSU  USA  SPE
SID
5 MINUTE   Y    Y    Y    -    Y    Y    Y    Y    N    N    N    N    -    N
5 HOUR     Y    Y    Y    -    Y    Y    Y    Y    N    N    N    N    -    N
SESSION    Y    Y    Y    Y    Y    Y    Y    Y    N    N    N    N    -    N
PRESUM     N    N    N    -    N    N    N    N    N    N    N    N    N    N
VIOLATIONS -    Y    -    -    -    Y    Y    Y    -    Y    -    -    -    Y

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

A typical TRIM menu screen will display the "TRIM is Idle" message as shown below.



A typical attempt to display statistics (e.g., Session Statistics for Job Name) will display the "TRIM is Idle" pop-up window as shown below.



The IGCB screen illustrates a case where TRIM is Idle, as shown by the message on the first line, but the information about the database remains available.

```
TRIM on database 227 is idle.
07-01-31   IGCB        General  Database  Information        227     14:32:17
                                   TEST-DATABASE

                 DEVICE    FIRST RABN     LAST RABN    TOTAL RABNS
         ASSO-1   3380              1        42,731         42,731

         DATA-1   3380              1        20,241         20,241

         WORK-1   3380              1         4,792          4,792









MAXIMUM FILES  379   FILES LOADED  35    ORIGINAL LOAD  01/01/01  14:55:41


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

The MMEN screen illustrates a case where TRIM is Idle, as shown in the pop-up window, and the function "Minute Statistics by Program" has been requested. Minute, hourly, and session statistics are not available when TRIM is Idle.

```
07-01-31   MMEN             Commands per Minute           227        14:34:45
                                TEST-DATABASE

                Code   Description
                ----    -----------------------------------
                  A     File Number                    (MFNR)
                  B     ADABAS Command Code            (MCMD)
                  C     Program Name                   (MPGM)
                 +-----------------------------------+ (MJOB)
                 |                                   | (MUID)
                 |    The Minute Accumulator for     | (MSID)
                 |             Programs              | (MRSP)
                 |          for DBID   227           | (MTHD)
                 |      has been deactivated         | (MNSA)
                 |        or TRIM is Idle.           | (MNSU)
                 +-----------------------------------+ (MCTI)
                  L     User Area                      (MUSA)
                  .     Return to RTM Main Menu        (MENU)
                ----    -----------------------------------
           Code :  c


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

The examples of the following TRAC and TDSP screens illustrate the effect on TRACE when TRIM is Idle. New TRACES cannot be started, but existing TRACE data can be viewed. An existing TRACE will not continue to TRACE while TRIM is Idle. However, if TRIM is set to Active (Idle=N), the TRACE will resume. There will be no trace data for the time that TRIM was Idle.

```
To perform a 'TRACE ALL' leave screen blank & hit ENTER
07-01-31   TRAC           Dynamic Trace Facility          227        14:35:42
                             TEST-DATABASE

 (TALL) Trace Everything
 (TFNR) File Number        : ___        ___        ___        ___        ___
 (TRSP) Response Code      : ___        ___        ___        ___        ___

 (TJOB) Job Name           : ________   ________   ________   ________   ________
 (TPGM) Program Name +-------------------------------+__   ________   ________
 (TLIB) Application  |                               |__   ________   ________
                     |     The TRACE facility        |
 (TSID) Security ID  |       for DBID   227          |__   ________   ________
 (TUID) Internal Use |    has been deactivated       |__   ________   ________
 (TNSU) NSS User ID  |      or TRIM is Idle          |__   ________   ________
                     +-------------------------------+
 (TCMD) ADABAS Command     : __         __         __         __         __
                           :
 (TDUR) Command Duration  >= ______  milliseconds

 (TI/O) ADABAS I/O's:  Assoc >= ______  Data >= ______  Work >= ______

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

The last entry displayed on the TDSP screen below was at 14:29:50. If, since that time, TRIM was set to Idle, then at 17:30:42 with TRIM Idle, the previous entries are available but there are no current entries.

```
07-01-31   TDSP           Dynamic Trace Facility          227        14:36:42
Trace is not active
  TIME    TD   RSP CM   FNR    ISN    SEC ID  PROGRAM  JOB NAME DUR-MS AIO DIO
14:29:49   1     0 S1   200       217 TREE11  N2OEDIT  TREE11      137       1
14:29:49   1     0 L3   202     12474 TREE12  N2O4330S TREE12       48       1
14:29:49   1     0 S1   202       112 TREE11  N2OEDIT  TREE11      114       1
14:29:49   2     0 L3   202     12491 TREE12  N2O4330S TREE12      120       1
14:29:49   1     0 L3   202     12525 TREE12  N2O4330S TREE12       43       1
14:29:49   1     0 L3   202     21788 TREE12  N2O4330S TREE12       67   1   1
14:29:49   1     0 L3   202     33620 TREE12  N2O4330S TREE12       64   1   1
14:29:49   1     0 L3   202     33659 TREE12  N2O4330S TREE12       43       1
14:29:49   1     0 L3   202     33673 TREE12  N2O4330S TREE12        6
14:29:50   1     0 L3   202     33814 TREE12  N2O4330S TREE12       39       1
14:29:50   1     0 S1   202     33845 TREE12  N2O4330S TREE12       38       1
14:29:50   2     0 S1   202       112 TREE11  N2OEDIT  TREE11      121       1
14:29:50   1     0 L3   202     33872 TREE12  N2O4330S TREE12       47       1
14:29:50   2     0 S1   200         8 TREE11  N2OEDIT  TREE11       81       1
14:29:50   1     0 L3   202     33879 TREE12  N2O4330S TREE12       70       1
14:29:50   1     0 L3   202     33884 TREE12  N2O4330S TREE12        6
14:29:50   1     0 L3   202     33894 TREE12  N2O4330S TREE12        6
                          LINE 69 THRU 85 OF 85

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--
      HELP        END   UID   LIB   TACT  UP    DOWN  INFO        RIGHT EXIT
```

APPENDIX A

GENERAL PARAMETER RULES

All batch TRIM runs are controlled by parameter statements. This includes the Dynamic Control and Security UEX11 Communication Run, Dynamic Logging Facility UEX4 Communication Run, Command Log Detail, PRESUM Processing, TRELOG Processing, and Protection Log Analysis.

Each parameter statement consists of an op-code and one or more operands. The parameters follow the general rules for assembler coding:

- Op-code starting after column 1, followed by at least one blank
- Operands are positional or keyword, follow the op-code, are separated by commas, may be coded up to column 71, and must be followed by at least one blank
- Multiple operands may be spread over multiple lines
- Comments may follow operands or may be indicated by an asterisk in column 1
- No imbedded blanks are allowed within the op-code and operands except within apostrophes

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APPENDIX B

CPU TIME CALCULATIONS

This appendix summarizes the steps used to estimate CPU utilization for ADABAS Command Log Analysis and PRESUM runs.

TRIM computes the total number of machine instructions for each ADABAS command based on the formulas shown on the following page.

TRIM computes the CPU time for each ADABAS command by dividing the total number of machine instructions by the CPU-FACTOR stated in the INPUT statement. A list of suggested CPU-FACTORs appears later in this Appendix.

TRIM further adjusts the CPU time calculation by applying the user-supplied "environment correction factor", which is input to TRIM as the keyword parameter ENV-FACTOR in the INPUT statement. This correction factor has a default of l.0000, implying no correction.

The adjusted CPU time is stored as the TRIM derived field CPUTIME expressed in rounded tenths of milliseconds.

In order to determine the appropriate ENV-FACTOR, the user should run TRIM to sum the CPU times for all ADABAS commands for a typical ADABAS session. Meanwhile, the actual ADABAS CPU time for the same session should be obtained from the System Management Facility or other accurate CPU time monitor.

The actual CPU time divided by the TRIM calculated CPU time should be used as the ENV-FACTOR for subsequent TRIM executions. TRIM multiplies its calculated CPU time by this ENV-FACTOR, resulting in a more correct CPU time.

After several TRIM executions, it should be possible to determine an ENV-FACTOR resulting in a reasonably accurate CPU time.

COMMAND	MACHINE INSTRUCTIONS
A1/A4	3600 + (3900 * IO) + (70 * FBL) + (2000 * DESUPD)
BT/SP	1200 + (6000 * IO)
CL/LB	1200 + (3900 * IO)
C1/ET/LF	1600 + (3900 * IO)
C2/C3/C5	1000
E1/E4	2700 + (3900 * IO) + (3700 * DESUPD)
HI/RC/RI	1200
LC	1900 + (3900 * IO)
LD	3700 + (3900 * IO)
L1/L4	2500 + (3900 * IO) + (30 * FBL)
L2/L5	1800 + (3900 * IO) + (30 * FBL)
L3/L6	3100 + (3900 * IO) + (30 * FBL)
L7	3000 + (3900 * IO)
L8	4300 + (3900 * IO)
L9/RE	2000 + (3900 * IO)
N1/N2	3500 + (3900 * IO) + (50 * FBL) + (1600 * DESUPD)
OP	2400 + (3900 * IO)
S1/S4/S5	2600 + (7200 * IO)
S2/S9	3000 + (23900 * IO)
S8	1200 + (8900 * IO)

Figure 10 - ADABAS Commands, Machine Instructions

This figure shows the average number of instructions per ADABAS Command. LB, LC, LD, L7, L8, and SP are ADABAS internal privileged commands. IO is the sum of the Associator, Data, and Work I/Os. FBL is the length of the Format Buffer (a length of 0 is assumed if the Control Block has not been logged during the ADABAS session). DESUPD is the number of descriptors updated.

CPU MODEL	CPU FACTOR
4331-11	310,000
4331-2	410,000
4341-1	900,000
4341-2	1,400,000
9377-80	1,700,000
9377-90	2,300,000
4381-13	3,600,000
4381-3	4,600,000
3083-BX	6,800,000
3083-J	8,000,000
4381-24	9,000,000
3081-D	11,000,000
3081-KX	16,500,000
3090-180E	17,000,000
3090-180S	21,000,000
3090-180J	24,000,000
3090-200E	32,000,000
3090-280S	40,000,000
3090-400	51,000,000
3090-300S	60,000,000
3090-400S	77,000,000
9021-620	86,000,000
3090-600J	104,000,000
9021-720	121,000,000
9021-900	243,000,000

Figure 11 - Instructions Per Second For CPU Models

These CPU Factor values are approximations of the CPU processing power and have been collected from various trade publications.

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OUTPUT DATASET FORMATS

INPUT LOGTYPE=CLOG5/8 *, REPORT TYPE=DETAIL

The format of output Command Log datasets for Detail Reports is identical to the input Command Log format.

INPUT LOGTYPE=CLOG5/8 *, REPORT TYPE=SUMMARY

The format of output Summary datasets is as follows:

- Record length, 2 bytes binary, followed by 2 bytes of X'0000'
- Record "header", 80 bytes
  - "TRIM*vr*", 6 bytes
  - ADABAS Command Log output "AC" or Protection Log output "AP", 2 bytes
  - date of TRIM run YY-MM-DD (YEARFMT=2) or YYYYMMDD (YEARFMT=4), 8 bytes
  - time of TRIM run HH:MM:SS, 8 bytes
  - earliest date YY-MM-DD (YEARFMT=2) or YYYYMMDD (YEARFMT=4) and time from input Command or Protection Log, 16 bytes
  - latest date YY-MM-DD (YEARFMT=2) or YYYYMMDD (YEARFMT=4) and time from input Command or Protection Log, 16 bytes
  - the "ID" of the record (value stated for the ID parameter on the OUTPUT statement), 8 bytes
  - unused, 16 bytes
- Control portion
  - first CONTROL field value; length and format depends upon field length and format (refer to **Section V ADABAS Command and Protection Log Processing**)
  - second CONTROL field value
  - etc., up to 10 CONTROL fields maximum
- Record count for CONTROL field(s), 4 bytes maximum and aligned on a full-word boundary
- Summary calculations portion (SUM, AVERAGE, etc.)
  - first summary calculation, 8 bytes binary
  - second summary calculation
  - etc.

INPUT LOGTYPE=PROTECTION *, REPORT TYPE=DETAIL

With "COMPRESS=YES" and “SPANNED=YES” the record format on the output datasets is identical to the input Protection Log format. The output dataset will contain “spanned PLOG records” if they exit is input. The minimum record length has to follow device type considerations according to the ADABAS documentation.

With "COMPRESS=YES" and “SPANNED=NO” the record format on the output datasets is a identical to the input Protection Log format. Multiple segments (spanned records) on input will combined into a single record. If the LRECL of the output dataset is exceeded TRIM will terminate with an error messages at the first occurrence of the problem.

The format of output "COMPRESS=NO" Protection Log datasets for Detail Reports is as follows:

- Record length, 2 bytes binary, followed by 2 bytes of X'0000'
- Record "header", 80 bytes
  - "TRIM*vr*", 6 bytes
  - "AP" meaning ADABAS Protection Log output, 2 bytes
  - date of TRIM run YY-MM-DD (YEARFMT=2) or YYYYMMDD (YEARFMT=4), 8 bytes
  - time of TRIM run HH:MM:SS, 8 bytes
  - date as YY-MM-DD (YEARFMT=2) or YYYYMMDD (YEARFMT=4) and time from input Protection Log, 16 bytes
  - the "ID" of the record (value stated for the ID parameter on the OUTPUT statement), 8 bytes
  - DBID, 2 bytes binary
  - File Number, 2 bytes binary
  - ISN, 4 bytes binary
  - Image-type ("BEFORE" or "AFTER"), 6 bytes
  - Restart User-ID, 8 bytes
  - User-ID, 8 bytes
  - Segment type (1 byte) (see below)
  - Segment count/number (see below)
- Data portion
  - first shown (SHOW statement) field value; length and format depends upon field length and format as stated in the Loader (ADAWAN) file description
  - second shown field value
  - etc.

    Note:
    MU/PE counter fields will be represented according to the MPCO= value for the report (default: MPCO=2).

APPENDIX D

SAMPLE COMMAND LOG DETAIL ANALYSIS INPUT PARAMETERS AND REPORTS

The following pages show sample input parameters for typical TRIM Command Log Detail Record Analysis runs and the reports generated. The reports include:

- Detail Report, including selected response codes, displaying certain log and derived fields
- Detail Report, same as the previous report, but also displaying the contents of the Format Buffer, Record Buffer, Search Buffer, and Value Buffer
- Detail Report to develop Audit Trail, showing data modification commands against selected files, and the log records are output to a sequential dataset for later processing or viewing
- Summary Report performance statistics by command within file
- Detail Report, including commands with excessive response times
- Detail Report, including commands with excessive I/Os
- Summary Report, showing which fields are referenced most often for certain files
- Summary Report by file number for certain Jobs showing Charge-Back figures
- Summary Report, showing which ISNs are used most often for certain files

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* *                                                                 * *
* *            SAMPLE TRIM INPUT PARAMETER CARDS                    * *
* *                                                                 * *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*
   INPUT  LOGTYPE=CLOG5,CPU-FACTOR=10000000,CLOCK-FACTOR=6,
          LIMIT=10000  LIMIT FOR SAMPLE PURPOSES
*
*            IN ADDITION TO THE COMMAND LOG FIELDS,
*            DERIVE THE DEPT FIELD AS FOLLOWS:
*
   FIELD     NAME=DEPT,FORMAT=C,LENGTH=10
      VALUE      DBA,JOB=(C8000AAA-C9999ZZZ)
      VALUE      END,JOB=(C6000AAA-C7999ZZZ)
      VALUE      PERSONNEL,JOB=(C2000AAA-C999ZZZ)
      VALUE      ACCOUNTING,JOB=(C4000AAA-C5999ZZZZ)
      VALUE      MKTG,JOB=(C0000AAA-C1999ZZZ)
      VALUE      MISC
*
*
   REPORT    TYPE=DETAIL,HEADING='NOTEWORTHY RESPONSE CODES'
      EXCLUDE   RESPONSE=(0,3,9,144,145)
      DISPLAY   YYMMDD,TIME,RESPONSE,JOBNAME,
             USERIDX,CMD,FNR,ASSOIO,DATAIO,WORKIO,
             NATFUNC,NATLOGON,NATPROG,DEPT
*
   REPORT    TYPE=DETAIL,HEADING='RESPONSES ABOUT INVALID BUFFERS',
             HEADING2='--SHOWING FB, RB, SB, VB'
      INCLUDE   RESPONSE=(40-62,201-203)
      DISPLAY   YYMMDD,TIME,RESPONSE,JOBNAME,
             USERIDX,CMD,FNR,ISN,FBL,RBL,SBL,
             NATLOGON,NATPROG
      DISPLAY   FB,RB,SB,VB
*
   REPORT    TYPE=DETAIL,HEADING='AUDIT TRAIL, SELECTED FILES'
      INCLUDE   FNR=(40-42,56,120),CMD=(A1,A4,E1,E4,N1,N2)
      DISPLAY   SEQ,YYMMDD,TIME,JOB,FNR,CMD,ISN
*            WILL PROCESS FOLLOWING OUTPUT AT END OF MONTH
      OUTPUT
*
   REPORT    TYPE=SUMMARY,HEADING='PERF STATS BY ADABAS CMD WITHIN FNR',
             HEADING2='  FOR FNR 7-22'
      INCLUDE   FNR=(7-22)
      CONTROL   FNR,CMD
      SUM       ASSO,DATA,WORK,CPU,DUR
      AVERAGE   ASSO,DATA,WORK,CPU,DUR
*
   REPORT    TYPE=DETAIL,HEADING='EXCESSIVE RESPONSE TIME (DURATION)'
      INCLUDE   DURATION>20000  THIS MEANS 2 SECONDS
      DISPLAY   TIME,JOB,DURATION,TID,
             USERIDX,CMD,FNR,ISN,ECBS,RESPONSE,
             ASSOIO,DATAOI,WORKIO,NATLOGON,NATPROG
*
   REPORT    TYPE=DETAIL,HEADING='EXCESSIVE I/O'
      INCLUDE   ASSOIO>70
      INCLUDE   DATAIO>10
      INCLUDE   WORKIO>15
      DISPLAY   SEQ,YYMMDD,TIME,ASSOIO,DATAIO,WORKIO,JOBNAME,
          USERIDX,CMD,CIDX,FNR,ISN,ECBS,DURATION,RESPONSE
*
   REPORT    TYPE=SUMMARY,HEADING='FIELD USAGE -- FOR FILES 39-41',
             HEADING2='ANALYZING FILE DESIGN, FIELD ORDER'
      INCLUDE   FNR=(39-41)
      CONTROL   FB-FIELD
*
*  NOTE THAT SB-FIELD COULD HAVE BEEN USED INSTEAD OF FB-FIELD TO
*  GIVE A BREAKDOWN OF THE SEARCH-BUFFER, I.E., DESCRIPTOR USAGE.
*
*
    REPORT  TYPE=SUMMARY,HEADING='REPORT BY FNR WITHIN JOBNAME',
    HEADING2='   SHOWING CHARGE-BACK FIGURES'
       INCLUDE   JOB=(C-C9999999,HCOMP)
       CONTROL   JOBNAME,FNR
       AVERAGE   CPU
       SUM       CPU
       CHARGE    CPU*.0001
       AVERAGE   IO
```

```
       SUM       IO
       CHARGE    IO*.005
*
    REPORT  TYPE=SUMMARY,
            HEADING='ISN USAGE FOR CERTAIN CRITICAL FILES'
    EXCLUDE   ISN=0
    INCLUDE   FNR=(29,42)
    CONTROL   FNR,ISN
```

```
NOTEWORTHY RESPONSE CODES           TRIM v.r.s                FRI 07-01-31  17:46:07   PAGE 1

YY-MM-DD HH:MM:SS   RSP JOB-NAME USER-IDX CMD   FNR ASSO DATA WORK NATFUNC NATLOGON NATPROG DEPT

07-01-31 07:28:23   201 HCOMP    001401A1 S1    124    2    0    0 ECUTE  C5653   FD2TEST MISC
07-01-31 07:30:00   201 HCOMP    001401A1 S1    124    1    0    0 ECUTE  C5653   FD2TEST MISC


-  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -


RESPONSES ABOUT INVALID BUFFERS           TRIM v.r.s               FRI 07-01-31  17:46:07 PAGE 1
-- SHOWING FB, RB, SB, VB

YY-MM-DD HH:MM:SS   RSP JOB-NAME USER-IDX CMD   FNR ISN CALC-FBL CALC-RBL CALC-SBL NATLOGON NATPROG

07-01-31 07:28:23   201 HCOMP    001401A1 S1    124   0        2        0       49 C5653    FD2TEST

FORMAT-BUFFER, LENGTH =   2

.

SEARCH-BUFFER, LENGTH =  49
/124/  AA  ,002,1,D,AB,003,A,D,AC  ,005,A,.L

VALUE-BUFFER, LENGTH =10  DISPLAYED IN ONE SEGMENT
4216910100       /HEX/F2F4F1F6F9F1F0F1F0F0

07-01-31 07:30:00   201 HCOMP    001401A1 S1    124   0        2        0       49 C5653   FD2TEST

FORMAT-BUFFER, LENGTH =   2


SEARCH-BUFFER, LENGTH =  49
/124/  AA  ,002,1,D,AB,003,A,D,AC  ,005,A,.L

VALUE-BUFFER, LENGTH =10  DISPLAYED IN ONE SEGMENT
4216910100       /HEX/F2F4F1F6F9F1F0F1F0F0


-  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -


AUDIT TRAIL, SELECTED FILES  TRIM v.r.s   FRI 07-01-31 17:46:07   PAGE 1


 SEQ   YY-MM-DD  HH-MM-SS  JOB-NAME    FNR   CMD   ISN

 5192  07-01-31  07:49:30  HCOMP        42   A4    18142
 5746  07-01-31  07:55:36  HCOMP        42   A4    18257
 7652  07-01-31  07:59:45  C3931PC4     41   A4     1171
 7852  07-01-31  08:01:18  HCOMP        42   A4    18236
 8144  07-01-31  08:02:20  HCOMP        42   A4     2188
 9261  07-01-31  08:05:49  HCOMP        42   A4    18176
 9277  07-01-31  08:05:59  HCOMP        42   A4     2557
 9440  07-01-31  08:06:58  HCOMP        42   N1    21275
```

```
PERF STATS BY ADABAS CMD WITHIN FNR   TRIM v.r.s    FRI 07-01-31 17:46:07  PAGE 1
  FOR FNR 7-22                LOG FROM 07-01-31 07:04:20 TO 07-01-31 08:10:43

                          SUM   SUM   SUM  SUM      SUM    AVER  AVER  AVER   AVER    AVER
FNR   CMD  COUNT    %   ASSO  DATA  WORK CPU(MS)  DUR(MS) ASSO  DATA  WORK  CPU(MS) DUR(MS)

  8    RT     22  7.9     0     0     0     2.2      2.2   .0    .0    .0      .10     .10
  8    ET     14  5.0     0     0     3     3.7    197.6   .0    .0    .2      .26   14.11
  8    E1      2   .7     4     1     0    12.6    182.1  2.0    .5    .0     6.30   91.05
  8    L3    116 41.4    65    70     0    89.3  3,231.4   .6    .6    .0      .77   27.86
  8    N1      3  1.1     2     1     0     2.9     65.5   .7    .3    .0      .97   21.83
  8    NC     30 10.7     0     0     0     3.0      4.6   .0    .0    .0      .10     .15
  8    S1     33 11.8    66     6     0    60.7  2,171.4  2.0    .2    .0     1.84   65.80

  8    **    220 78.6   137    78     3   174.4  5,854.8   .6    .4    .0      .79   26.61

 19    ET      4  1.4     0     0     2     1.4     87.6   .0    .0    .5      .35   21.90
 19    E4      1   .4     7     0     0     4.8    108.7  7.0    .0    .0     4.80  108.70
 19    LF      1   .4     2     0     0      .9     50.2  2.0    .0    .0      .90   50.20
 19    L1      4  1.4     0     1     2     3.9     44.9   .0    .3    .5      .98   11.23
 19    L4      1   .4     0     0     0      .3      .9   .0    .0    .0      .30     .90
 19    N1      1   .4     2     1     0     2.4     71.8  2.0   1.0    .0     2.40   71.80
 19    S1      4  1.4     7     1     1     7.6    191.7  1.8    .3    .3     1.90   47.93

 19    **     16  5.7    18     3     5    21.3    555.8  1.1    .2    .3     1.33   34.74

 21    A4      1   .4     0     0     0      .5      1.0   .0    .0    .0      .50    1.00
 21    ET      1   .4     0     0     1      .5     75.2   .0    .0    .0      .50   75.20
 21    L1     20  7.1    15    15     0    17.0    899.2   .8    .8    .0      .85   44.96
 21    L4      1   .4     0     1     0      .7     13.8   .0   1.0    .0      .70   13.80
 21    S1     21  7.5    68     1     0    55.7  1,770.4  3.2    .0    .0     2.65   84.30

 21    **     44 15.7    83    17     1    74.4  2,759.6  1.9    .4    .0     1.69   62.72

*****  **    280100.0   238    98     9   270.1  9,170.2   .9    .4    .0      1.0    32.8


-  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -


EXCESSIVE RESPONSE TIME (DURATION)       TRIM v.r.s            FRI 07-01-31 17:46:07    PAGE  1

HH-MM-SS  JOB-NAME DUR(MS) TID  USER-IDX    CMD FNR    ISN ECBS RSP  ASSO  DATA  WORK NATLOGON NATPROG

07:25:08  HCOMP     3075.8 595  00140253    S2  184   9857   1   0     164   0     4
07:29:58  HCOMP    10412.9  35  00140023    S9  155   5249   1   0     445   0     3    RANDAM   CMTKRID
07:31:27  C5518AFE  2975.5  95  CF6D585F    S9  184   9857   1   0     159   0     3    CO371    AFEDETNO
07:35:01  HCOMP     2558.2 843  0014034B    S9  155  10337   1   0     123   0     3    RANDAM   CMTKRID
07:45:31  HCOMP     9963.2  35  00140023    S9  155   5249   1   0     445   0     3    RANDAM   CMTKRID
07:49:49  HCOMP     4261.7 863  0014035F    CL    0      0   1   0       1   1     1    RANDAM   CMTKRID
07:50:31  HCOMP     2447.7  28  0014001C    S1   38  15509   1   0       4   1     0
07:52:25  HCOMP     9862.5 919  00140397    S9  155   7236   1   0     429   0     3    RANDAM   LSETKRID
07:53:00  HCOMP     9105.0 919  00140397    S9  155   2156   1   0     394   0     3    RANDAM   LSETKRID


- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


EXCESSIVE I/O             TRIM v.r.s                  FRI 07-01-31 17:46:07  PAGE  1

 SEQ YY-MM-DD HH-MM-SS  ASSO DATA WORK JOB-NAME USER-IDX CMD  CIDX      FNR    ISN    ECBS DUR(MS)   RSP

2989 07-01-31 07:25:08  164    0    4  HCOMP    00140253  S2 OF21F3BO   180    9857   1     3075.8     0
3532 07-01-31 07:29:58  445    0    3  HCOMP    00140023  S9 00600201   155    5249   1    10412.9     0
3646 07-01-31 07:31:27  159    0    3  C5518AFE CF6D585F  S9 00700201   184    9857   1     2975.5     0
4533 07-01-31 07:35:01  123    0    3  HCOMP    0014034B  S9 00600201   155   10337   1     2558.2     0
5046 07-01-31 07:45:31  445    0    3  HCOMP    00140023  S9 00600201   155    5249   1     9963.2     0
5400 07-01-31 07:52:25  429    0    3  HCOMP    00140397  S9 00600201   155    7236   1     9862.5     0
5465 07-01-31 07:53:00  394    0    3  HCOMP    00140397  S9 00600201   155    2156   1     9105.0     0
```

```
FIELD USAGE--FOR FILES 39-41           TRIM v.r.s       FRI 07-01-31 17:46:07 PAGE 1
ANALYZING FILE DESIGN, FIELD ORDER   LOG FROM 07-01-31 07:04:20 TO 07-01-31 08:10:43


FB-FLD  COUNT       %

40-AA     15       .5
40-AF     15       .5
40-AU    135      3.5
40-AV    135      3.5
40-AW    135      3.5
40-AX    135      3.5
40-AY    135      3.5
40-AZ    135      3.5
40-BA    135      3.5
40-BB    135      3.5
40-BC    135      3.5
41-AF     18       .6
41-B3      2       .1
41-B4     34      1.1
41-EA      9       .3
41-GG    299     10.0
41-HA     76      2.5
41-HB     44      1.5
41-XL    241      8.0
41-ZA   1031     34.4

*****  2,999    100.0
```

```
REPORT BY FNR WITHIN JOBNAME          TRIM v.r.s        FRI 07-01-31 17:46:07   PAGE 1
SHOWING CHARGE-BACK FIGURES           LOG FROM 07-01-31 07:04:20 TO 07-01-31 08:10:43

                                 AVER      SUM      CHRG     AVER    SUM      CHRG
JOB-NAME    FNR   COUNT     %   CPU(MS)   CPU(MS)  CPU(MS)   I/O    I/O      I/O      $TOT

C0734TRL      0       2    .0      .35       .7    $.00       .5      1      $.01      $.01
CO734TRL    160       3    .0     1.77       5.3   $.00      2.3      7      $.04      $.04
CO734TRL    161       3    .0     1.77       5.3   $.00      2.3      7      $.04      $.04
CO734TRL    162       3    .0      .30       .9    $.00       .0      0      $.00      $.00
CO734TRL    163       3    .0     2.50       5.0   $.00      3.5      7      $.04      $.04
CO734TRL    164       3    .0     1.77       5.3   $.00      2.3      7      $.04      $.04
CO734TRL    165       3    .0     1.77       5.3   $.00      2.3      7      $.04      $.04

CO734TRL  *****      19    .2     1.46      27.8   $.00      1.9     36      $.21      $.21

CO891PC8      0       1    .0     1.00       1.0   $.00      2.0      2      $.01      $.01
CO891PC8     38       4    .0     1.00       4.0   $.00      1.0      4      $.02      $.02
CO891PC8     42       1    .0     1.70       1.7   $.00      2.0      2      $.01      $.01
CO891PC8     43       8    .1      .45       3.6   $.00       .1      1      $.01      $.01
CO891PC8     45      13    .1      .50       6.5   $.00       .4      5      $.03      $.03

CO891PC8  *****      27    .3      .62      16.8   $.00       .5     14      $.08      $.08

C1149FIN      0       2    .0     2.55       5.1   $.00      6.0     12      $.06      $.06
C1149FIN    247   1,031  10.3      .32     330.8   $.03       .1     55      $.28      $.31

C1149FIN  *****   1.033  10.3      .33     335.9   $.03       .1     67      $.34      $.37

C1719PC6      0      15    .2      .51       7.6   $.00      1.0     15      $.08      $.08
C1719PC6     38      84    .8      .78      65.8   $.01       .7     58      $.29      $.30
C1719PC6     42      14    .1     1.60      22.4   $.00      1.9     26      $.13      $.13
C1719PC6     43     116   1.2      .62      71.6   $.01       .4     45      $.23      $.24
C1719PC6     45     143   1.4      .50      72.1   $.01       .3     49      $.25      $.26

C1719PC6  *****     372   3.7      .64     239.5   $.03       .5    193      $.98     $1.01

C3931PC4      0       4    .0      .43       1.7   $.00       .8      3      $.02      $.02
C3931PC4     38       6    .1     1.93      11.6   $.00      2.3     14      $.07      $.07
C3931PC4     41       3    .0     1.73       5.2   $.00      2.3      7      $.04      $.05
C3931PC4     42       1    .0     3.10       3.1   $.00      4.0      4      $.02      $.02
C3931PC4     43       8    .1      .70       5.6   $.00       .5      4      $.02      $.02
C3931PC4     45      15    .2      .81      12.2   $.00      1.1     17      $.09      $.09

C3931PC4  *****      37    .4     1.06      39.4   $.00      1.3     49      $.26      $.26

C4075PCN      0       2    .0     1.60       3.2   $.00      3.5      7      $.05      $.04
C4075PCN     38       8    .1      .30       2.4   $.00       .0      0      $.00      $.00
C4075PCN     42       2    .0      .30       .6    $.00       .0      0      $.00      $.00
C4075PCN     43      16    .2      .36       5.8   $.00       .0      0      $.00      $.00
```

REPORT BY FNR WITHIN JOBNAME TRIM *v.r.s* FRI 07-01-31 17:46:07 PAGE 2
SHOWING CHARGE-BACK FIGURES LOG FROM 07-01-31 07:04:20 TO 07-01-31 08:10:43

JOB-NAME	FNR	COUNT	%	AVER CPU(MS)	SUM CPU(MS)	CHRG CPU(MS)	AVER I/O	SUM I/O	CHRG I/O	$TOT
C4075PCN	45	30	.3	.30	9.0	$.00	.0	0	$.00	$.00
C4075PCN	*****	58	.6	.36	21.0	$.00	.1	7	$.04	$.04
C5518AFE	0	8	.1	.99	7.9	$.00	2.4	19	$.10	$.10
C5518AFE	8	9	.1	1.18	10.6	$.00	1.6	15	$.08	$.08
C5518AFE	148	217	2.2	2.65	574.5	$.06	1.5	326	$1.63	$1.69
C5518AFE	*****	234	2.3	2.53	593.0	$.06	1.5	360	$1.81	$1.87
C5653A	0	5	.1	.42	2.1	$.00	.6	3	$.02	$.02
C5653A	120	18	.2	1.06	19.1	$.00	1.3	23	$.12	$.12
C5653A	121	7	.1	1.10	7.7	$.00	2.0	14	$.07	$.07
C5653A	124	7	.1	1.04	7.3	$.00	1.0	13	$.07	$.07
C5653A	132	7	.1	1.13	7.9	$.00	2.0	14	$.07	$.07
C5653A	*****	44	.4	1.00	44.1	$.00	1.5	67	$.35	$.35
C6019PC2	0	1	.0	.20	.2	$.00	.0	0	$.00	$.00
C6019PC2	38	4	.0	.30	1.2	$.00	.0	0	$.00	$.00
C6019PC2	42	1	.0	.30	.3	$.00	.0	0	$.00	$.00
C6019PC2	43	8	.1	.54	4.3	$.00	.3	2	$.01	$.01
C6019PC2	45	19	.2	.40	7.6	$.00	.2	4	$.02	$.02
C6019PC2	*****	33	.3	.41	13.6	$.00	.2	6	$.03	$.03
C6019PC6	0	1	.0	5.30	5.3	$.00	13.0	13	$.07	$.07
C6019PC6	38	8	.1	1.80	14.4	$.00	2.1	17	$.09	$.09
C6019PC6	42	2	.0	1.00	2.0	$.00	1.0	2	$.01	$.01
C6019PC6	43	16	.2	.72	11.5	$.00	.7	11	$.06	$.06
C6019PC6	45	37	.4	.68	25.1	$.00	.9	32	$.16	$.16
C6019PC6	*****	64	.6	.91	58.3	$.00	1.2	75	$.39	$.39
C6019PC9	0	1	.0	.20	.2	$.00	.0	0	$.00	$.00
C6019PC9	38	8	.1	1.63	13.0	$.00	1.9	15	$.08	$.08
C6019PC9	42	2	.0	2.10	4.2	$.00	2.5	5	$.03	$.03
C6019PC9	43	16	.2	.76	12.2	$.00	.6	9	$.05	$.05
C6019PC9	45	37	.4	.47	17.4	$.00	.3	11	$.06	$.06
C6019PC9	*****	64	.6	.78	47.0	$.00	.6	40	$.22	$.22
C7639JIN	0	2	.0	2.70	5.4	$.00	6.5	13	$.07	$.07
C7639JIN	80	1,279	12.8	.44	561.9	$.06	.3	380	$1.90	$1.96
C7639JIN	*****	1,281	12.8	.44	567.3	$.06	.3	393	$1.97	$2.03

REPORT BY FNR WITHIN JOBNAME TRIM *v.r.s* FRI 07-01-31 17:46:07 PAGE 3
SHOWING CHARGE-BACK FIGURES LOG FROM 07-01-31 07:04:20 TO 07-01-31 08:10:43

JOB-NAME	FNR	COUNT	%	AVER CPU(MS)	SUM CPU(MS)	CHRG CPU(MS)	AVER I/O	SUM I/O	CHRG I/O	$TOT
C7658PC5	0	1	.0	4.50	4.5	$.00	11.0	11	$.06	$.06
C7658PC5	38	48	.5	.56	27.0	$.00	.4	18	$.09	$.09
C7658PC5	42	12	.1	1.31	15.7	$.00	1.4	17	$.09	$.09
C7658PC5	43	96	1.0	.41	39.0	$.00	.1	6	$.03	$.03
C7658PC5	45	192	1.9	.49	94.9	$.01	.4	80	$.40	$.41
C7658PC5	*****	349	3.5	.52	181.1	$.01	.4	132	$.67	$.68
C8375OP	0	2	.0	8.80	17.6	$.00	22.0	44	$.22	$.22
C8375OP	247	12	.1	.37	4.4	$.00	.3	3	$.02	$.02
C8375OP	*****	14	.1	1.57	22.0	$.00	3.4	47	$.24	$.24
C8395OP	0	5	.1	.44	2.2	$.00	.6	3	$.02	$.02
C8395OP	247	2,575	25.8	.32	822.1	$.08	.0	127	$.64	$.72
C8395OP	*****	2,580	25.8	.32	824.3	$.08	.1	130	$.66	$.74
C8976PC1	0	1	.0	9.20	9.2	$.00	23.0	23	$.12	$.12
C8976PC1	38	4	.0	2.05	8.2	$.00	2.5	10	$.05	$.05
C8976PC1	42	1	.0	2.40	2.4	$.00	3.0	3	$.02	$.02
C8976PC1	43	8	.1	.71	5.7	$.00	.5	4	$.02	$.02
C8976PC1	45	13	.1	.94	12.2	$.00	1.3	17	$.09	$.09
C8976PC1	*****	27	.3	1.40	37.7	$.00	2.1	57	$.30	$.30
C8976PC9	0	1	.0	.20	.2	$.00	.0	0	$.00	$.00
C8976PC9	38	4	.0	2.23	8.9	$.00	2.8	11	$.06	$.06
C8976PC9	42	1	.0	3.10	3.1	$.00	4.0	4	$.02	$.02
C8976PC9	43	8	.1	.71	5.7	$.00	.5	4	$.02	$.02
C8976PC9	45	13	.1	.30	3.9	$.00	.0	0	$.00	$.00
C8976PC9	*****	27	.3	.81	21.8	$.00	.7	19	$.10	$.10
HCOMP	0	396	4.0	1.35	535.5	$.05	3.1	1,215	$6.08	$6.13
HCOMP	8	211	2.1	.78	163.8	$.02	1.0	203	$1.02	$1.04
HCOMP	19	16	.2	1.33	21.3	$.00	1.6	26	$.13	$.13
HCOMP	21	44	.4	1.69	74.4	$.01	2.3	101	$.51	$.52
HCOMP	33	20	.2	1.74	34.7	$.00	2.4	48	$.24	$.24
HCOMP	34	23	.2	5.31	122.2	$.01	4.3	100	$.50	$.51
HCOMP	38	129	1.3	1.72	122.4	$.02	2.0	261	$1.31	$1.33
HCOMP	40	165	1.7	.87	143.3	$.01	.6	95	$.48	$.49
HCOMP	41	1	.0	2.00	4.0	$.00	2.5	5	$.03	$.03
HCOMP	42	82	.8	1.67	137.0	$.01	2.0	166	$.83	$.84
HCOMP	43	297	3.0	.76	227.1	$.02	.8	224	$1.12	$1.14

REPORT BY FNR WITHIN JOBNAME TRIM *v.r.s* FRI 07-01-31 17:46:07 PAGE 4
SHOWING CHARGE-BACK FIGURES LOG FROM 07-01-31 0 7:04:20 TO 07-01-31 08:10:43

JOB-NAME	FNR	COUNT	%	AVER CPU(MS)	SUM CPU(MS)	CHRG CPU(MS)	AVER I/O	SUM I/O	CHRG I/O	$TOT
HCOMP	45	431	4.3	.73	314.9	$.03	.7	309	$1.55	$1.58
HCOMP	51	54	.5	1.84	99.4	$.01	2.2	119	$ .60	$ .61
HCOMP	52	96	1.0	1.68	161.0	$.02	2.8	268	$1.34	$1.36
HCOMP	62	81	.8	1.18	95.5	$.01	1.2	101	$ .51	$ .52
HCOMP	80	125	1.3	1.35	168.2	$.02	1.8	224	$1.12	$1.14
HCOMP	81	142	1.4	.81	115.6	$.01	1.3	190	$ .95	$ .96
HCOMP	85	18	.2	2.95	53.1	$.01	4.6	83	$ .42	$ .43
HCOMP	120	8	.1	3.51	28.1	$.00	4.5	36	$ .18	$ .18
HCOMP	124	14	.1	4.26	59.6	$.01	5.6	78	$ .39	$ .40
HCOMP	155	294	2.9	16.93	4,976.1	$.50	8.3	2,431	$12.16	$12.66
HCOMP	156	548	5.5	.74	406.1	$.04	.9	496	$2.48	$2.52
HCOMP	160	23	.2	1.31	30.2	$.00	1.7	39	$ .20	$ .20
HCOMP	161	19	.2	1.52	28.8	$.00	2.0	38	$ .19	$ .19
HCOMP	162	38	.4	1.26	48.0	$.00	1.7	67	$ .32	$ .32
HCOMP	163	18	.2	1.54	27.7	$.00	2.1	37	$ .19	$ .19
HCOMP	164	11	.1	1.88	20.7	$.00	2.5	28	$ .14	$ .14
HCOMP	165	11	.1	1.95	21.5	$.00	2.6	29	$ .15	$ .15
HCOMP	167	56	.6	1.33	74.2	$.01	1.6	89	$ .45	$ .46
HCOMP	172	108	1.1	2.41	260.6	$.03	4.0	434	$2.17	$2.20
HCOMP	182	1	.0	12.20	12.2	$.00	5.0	5	$ .03	$ .03
HCOMP	183	1	.0	12.20	12.2	$.00	5.0	5	$ .03	$ .03
HCOMP	184	216	2.2	2.64	570.1	$.06	2.0	422	$2.11	$2.17
HCOMP	207	7	.1	3.07	21.5	$.00	3.9	27	$ .14	$ .14
HCOMP	247	30	.3	1.06	31.9	$.00	1.4	43	$ .22	$ .22
HCOMP	248	2	.0	2.45	4.9	$.00	3.5	7	$ .04	$ .04
HCOMP	*****	3,737	37.4	2.50	9,327.8	$.91	2.2	8,045	$40.33	$41.24
********	*****	10,000	100.0	1.24	12,418.4	$1.18	1.0	9,737	$48.98	$50.16

```
ISN USAGE FOR CERTAIN CRITICAL FILES  TRIM v.r.s   FRI 07-01-31  17:46:07 PAGE 1
                      LOG FROM 07-01-31  07:04:20 TO 07-01-31  08:10:43

   FNR    ISN       COUNT          %

   42     2188          3         2.8
   42     2557          3         2.8
   42     6984         24        22.6
   42     7000          2         1.9
   42     7001          1          .9
   42     7002          1          .9
   42     7010          2         1.9
   42     7016          1          .9
   42     7054          1          .9
   42     7100          3         2.8
   42     7101          1          .9
   42     7103          1          .9
   42     7107          3         2.8
   42     7120          1          .9
   42     7121          1          .9
   42     8241          1          .9
   42    18142          3         2.8
   42    18176          4         3.8
   42    18225          1          .9
   42    18236          4         3.8
   42    18257          3         2.8
   42    18526          1          .9
   42    18527          1          .9
   42    18576          1          .9
   42    21222          1          .9
   42    21230          2         1.9
   42    21243          3         2.7
   42    21245          1          .9
   42    21247          4         3.8
   42    21249          1          .9
   42    21260          2         1.9
   42    21261          2         1.9
   42    21262          2         1.9
   42    21264          2         1.9
   42    21266          2         1.9
   42    21267          3         2.8
   42    21274         12        11.3
   42    21275          1          .9

*****    *****       106       100.0
```

APPENDIX E

PRESUM DATA EXTRACTION FROM SMF

PRESUM records written to SMF will vary depending on the value for CLOGLAYOUT= in DDPARM.
Trim v82 and above supply a new load module, TRMSMFEX, to extract PRESUM records from the SMF log and making them available for the batch processing functionality in TRIM.

```
//EXTRACT EXEC PGM=TRMSMFEX,PARM=nnn
//*            PARM=SMFID used for PRESUM
//*
//*  Note: The LRECL values given below are the minimal values
//*
//SYSUT1    DD DISP=OLD,DSN=<SMFDUMP dataset>
//*
//SYSUT2    DD DISP=(NEW,CATLG,DELETE),
//             DSN=<PRESUM records in CLOG COPY format>,
//             DCB=(RECFM=VB,LRECL=4096),
//             SPACE=.
//SYSUT3    DD DISP=(NEW,CATLG,DELETE),
//             DSN=<SMF records with matching SMFID but not identified as PRESUM
//             DCB=(RECFM=VB,LRECL=????),
//             SPACE=….
//*
//SYSPRINT  DD SYSOUT=A
//*            if directed to disc
//*            RECFM=FBA,LRECL=80
//*         or RCFM=VBA,LRECL=84
```

A sample of the JCL can be found in JOSSMFEX in TRM.Vxxx.SOURCE.

TRMSMFEX will extract all PRESUM SMF records created with any version of TRMv761 and above.

PARM= mandatory
defines the SMF record ID to be extracted
This value must match the customized setting in TRMTAP or via ZAP

SYSUT1 mandatory
specifies the input dataset, created as DDOUT from IFASMFDP

SYSUT2 mandatory
the output dataset, will contain the extracted PRESUM records
to be used by TRIM batch as INPUT LOGTYPE=PRESUM (TRMACLOG)

SYSUT3 optional
output dataset, will contain those SMF records, with matching SMFID (PARM=) but which could not be identified as PRESUM

SYSPRINT mandatory
output dataset will contain some statistics about the extraction.

Sample:

```
10000 SMF RECORDS READ
    2 SMF RECORDS IGNORED [1]
29192 PRESUM RECORDS WRITTEN [2]
  807 RECORDS NOT PRESUM DATA (COPIED TO SYSUT3) [3]
```

[1] records with non-matching SMF record id

[2] may be higher than numbers read, because of multiple segments within one record

[3] (COPIED TO SYSUT3) only shown if SYSUT3 is allocated

ReturnCode
00 all fine
04 non PRESUM records with matching SMFID
08 no records extracted/written to SYSUT2
12 PARM missing or invalid
16 one of the mandatory datasets is missing

Note: The Natural program TRMSMFEX as supplied does not support the new PRESUM record format. Sites that wish to continue using the Natural TRMSMFEX module to extract the information from SMF must modify it to reflect the current PRESUM record format.

The same applies for those sites reading PRESUM information from CLOG COPY or SMF data with their own grown application.

Appendix K of the TRIM Reference manual shows the updated layout of the PRESUM records written to CLOG or/AND SMF.

APPENDIX F

SAMPLE COMMAND LOG PRESUM ANALYSIS INPUT PARAMETERS AND REPORTS

The following pages show sample input parameters for typical TRIM PRESUM runs and the reports generated. The reports include:

- Summary Report, showing performance statistics broken down by ADABAS Command
- Summary Report file statistics with output to a sequential dataset for later processing
- Summary Report, showing statistics for each NATURAL Program
- Summary Report by file within Project, a derived field, with charge-back figures
- Summary Report of I/O and CPU utilization for each hour

PRESUM statistics may have been collected in TRMUEX4 and output onto the Command or SMF Log for THD, CMD, FNR, NAT, JOB, UID, RSP, NSA, NSU, USA, and/or SPE. When later processing these PRESUM statistics, it is necessary to specify which of these twelve types of PRESUM statistics are to be included in each report. The following parameters show this selection as "INCLUDE TYPE=C", "INCLUDE TYPE=F", and "INCLUDE TYPE=N". If this selection is not made, the statistics by CMD, for example, will mistakenly include figures from other records, which will show up as statistics for strange Command names.

PRESUM Record types are as follows:

THD	(Thread)	T
CMD	(Command)	C
FNR	(File Number)	F
NAT	(NATURAL Program)	P
JOB	(Job Name)	J
UID	(User-ID)	U
SID	(Security-ID)	S
RSP	(Response Code)	R
NSA	(NATURAL Application Library)	A
NSU	(NATURAL Security User-ID)	B
USA	(User-Area of the Control Block)	W
CTI	(CICS Transaction ID)	X
SPE	(Special)	Y

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* *           SAMPLE TRIM INPUT PARAMETER CARDS                   * *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
        INPUT   LOGTYPE=PRESUM,CPU-FACTOR=10000000,CLOCK-FACTOR=6
*       DERIVE THE PROJ FIELD AS FOLLOWS:
        FIELD   NAME=PROJ,FORMAT=C,LENGTH=10
                VALUE           REVENUE,FNR=(7-17,21)
                VALUE           FLIGHT,FNR=(18,14,22-21)
                VALUE           SURVEY,FNR=(20,33)
                VALUE           PACKING,FNR=39
                VALUE           HORSES,FNR=(73-104)
                VALUE           TAS,FNR=(71,72)

        REPORT  TYPE=SUMMARY,HEADING='PERFORMANCE SUMMARY -- BY CMD'
                INCLUDE TYPE=C
                CONTROL CMD
                AVERAGE IO,CPU,DUR
*
        REPORT  TYPE=SUMMARY,HEADING='ALL USERS',
                        HEADING2='FILE SUMMARY'
                INCLUDE TYPE=F
                CONTROL FNR
                SUM             IO,CPU,DUR
                OUTPUT          ID=FNRSUMS
*
        REPORT  TYPE=SUMMARY,HEADING='REPORT TO SHOW',
                        HEADING2='NATURAL UTILIZATION'
                EXCLUDE NATPROG='       '    NOTE:  EXCLUDE NON-NATURAL
                INCLUDE TYPE=P
                CONTROL NATPROG
                AVERAGE IO,CPU,DURATION
*
        REPORT  TYPE=SUMMARY,
                        HEADING='REPORT BY PROJECT'
                INCLUDE TYPE=F
                CONTROL PROJ
                CHARGE  CPU*.001
*
        REPORT  TYPE=SUMMARY,
                        HEADING='      REPORT OF IO AND CPU UTILIZATION',
                        HEADING2='     BY HOUR'
                INCLUDE TYPE=C
                CONTROL HOUR
                SUM             IO
                AVERAGE IO
                PERCENT IO
                SUM             CPU
                AVERAGE CPU
                PERCENT CPU
                AVERAGE DUR
*
*  SIMILAR REPORTS COULD BE PRINTED FOR THD, JOB, UID, ETC.
```

```
PERFORMANCE SUMMARY--BY CMD  TRIM v.r.s  FRI 07-01-31 17:46:07  PAGE 1
                     LOG FROM 07-01-31 03:04:20 TO 07-01-31 09:10:43

                                AVER     AVER        AVER
CMD     COUNT  /     %           IO     CPU(MS)     DUR(MS)

A1        250        .3          .1       .46        3.22
A4      2,080       2.1          .5       .75       26.89
BT        370        .4          .0       .20        9.22
CL      1,530       1.5         2.9      1.77      139.06
C5         20        .0          .0       .10       40.25
ET      3,330       3.3          .0       .45       55.05
E1        130        .1        15.2     10.02      363.30
E4         10        .0         7.0      4.80      108.70
H1      1,270       1.3          .0       .10        1.66
LF         10        .0         2.0       .90       50.20
L1     31,900      31.9          .1       .50       10.57
L3     37,250      37.3          .0       .33        2.89
L4        940        .9          .3       .51       16.51
L6      1,270       1.3          .9       .90       54.56
N1      1,250       1.3         6.4      4.03      221.35
OP      2,000       2.0         2.1      1.52       97.90
RC      2,580       2.6          .0       .10         .18
S1     13,130      13.1         1.7      1.71       66.55
S2        140        .1        14.1     37.69      334.40
S4        410        .4         1.1      1.34       49.24
S9        160        .2       128.9    313.54    2,917.87

**    100,000     100.0          .7      1.24       29.16
```

```
ALL USERS        TRIM v.r.s         FRI 07-01-31 17:46:07  PAGE 1
FILE SUMMARY    LOG FROM 07-01-31 03:04:20 TO 07-01-31 09:10:43

        SUM     SUM     SUM
        FNR     COUNT   %       IO      CPU(MS) DUR(MS)

        0       4,500   4.5     845     609.64  5,843.5
        8       2,200   2.2     137     174.4   5,854.8
        19      160     .2      18      21.3    555.8
        21      440     .4      83      74.4    2,759.6
        33      200     .2      39      34.7    2,927.9
        34      230     .2      79      122.2   3,486.0
        38      3,070   3.1     286     378.9   15,930.9
        40      1,650   1.7     75      143.3   2,291.1
        41      50      .1      11      9.2     289.2
        42      1,190   1.2     171     192.5   8,860.7
        43      5,970   6.0     238     392.1   11,881.7
        45      9,430   9.4     317     575.8   20,381.8
        51      540     .5      102     99.4    3,037.9
        52      960     1.0     202     161.0   9,571.0
        62      810     .8      101     95.5    2,397.7
        80      14,040  14.0    224     730.1   16,137.8
        81      1,420   1.4     114     115.6   6,931.5
        85      180     .2      68      53.1    1,854.1
        120     260     .3      44      47.2    1,295.0
        121     70      .1      77      .7      484.6
        124     210     .2      74      66.9    2,336.8
        132     70      .1      77      .9      583.2
        155     2,940   2.9     2,282   4,976.1 56,907.2
        156     5,480   5.5     373     406.1   18,198.3
        160     260     .3      38      35.5    1,730.7
        161     220     .2      37      34.1    1,261.3
        162     410     .4      50      48.9    2,356 8
        163     200     .2      36      32.7    1,786.9
        164     140     .1      30      26.0    1,760.5
        165     140     .1      31      26.8    1,980.5
        167     560     .6      87      74.2    2,223 6
        172     1,080   1.1     382     260.6   14,181.3
        182     10      .0      5       12.2    128 6
        183     10      .0      5       12.2    112.0
        184     4,330   4.3     487     1,144.6 13,398.0
        207     70      .1      27      21.5    753.5
        247     36,480  36.5    79      1,189.2 8,939.3
        248     20      .0      64      .9      210.9

        *****   100,000 100.0   7,197   12,418.4        291,622.0
```

```
REPORT TO SHOW        TRIM v.r.s          FRI 07-01-31 17:46:07 PAGE 1
NATURAL UTILIZATION   LOG FROM 07-01-31 03:04:20 TO 07-01-31 09:10:43

                                  AVER       AVER           AVER
NATPROG        COUNT       %       I/O       CPU(MS)        DUR(MS)

AFEDETNO          20       .1       .5          .55          17.05
AFEDTNO        2,280     16.6      1.6         2.59          29.02
ALLHOLEP          10       .1      3.0         1.50         103.20
ALLHOLES          10       .1      2.0         1.10          40.00
CLUNK             40       .3      2.0         1.10          47.25
CRCNT             10       .1      2.0         1.10          26.40
CMTKRID          160      1.2      1.3         1.08          38.50
CMTKRID        8,890     64.8      2.5         3.84          71.22
FD1CNT            10       .1      2.0         1.10          47.50
FD1D1S            40       .3      1.5         1.28          38.98
FD1D1S            40       .3       .3          .40           3.48
FD1D1S            70       .5       .7          .63          21.03
FD1FIND           10       .1      2.0         1.10          38.20
FD1FISN           20       .1      2.0         1.10          38.15
FD1FTEST          10       .1      2.0         1.10          27.10
FD1TEST           20       .1       .0          .20            .65
FD1TEST           40       .3       .5          .50           6.50
FD1TEST           70       .5       .3          .27          21.16
FD2CNT            10       .1      2.0         1.10          61.70
FD2FIND           10       .1      2.0         1.10          44.20
FD2FIND           20       .1       .0          .20            .70
FD2FIND          320      2.3      3.7         2.48          91.63
FD2FISN           20       .1      2.0         1.10          34.75
FD2TEST          290      2.1      1.3         1.10          49.01
FD2TEST          220      1.6      1.7          .95          50.50
FD2TEST           10       .1       .0          .30            .60
FLATLON           10       .1      2.0         1.10          31.40
GENCNT            10       .1      2.0         1.10          41.30
GENFIND           10       .1      1.0          .70          33.90
HOLEFIND          20       .1      1.0          .70          19.90
IPFIND            10       .1      1.0          .70          31.20
KEYCNT            10       .1      1.0          .70          21.90
KEYFIND           10       .1      1.0          .70          23.50
KEYFISN           20       .1      1.0          .70          15.10
KEYISN            40       .3       .3          .40           4.95
KEYTEST           50       .4       .4          .46           6.48
KEYTEST          260      1.9      2.5         1.97          62.49
KEYTEST           60       .4       .3          .33          10.00

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


REPORT TO SHOW        TRIM v.r.s          FRI 07-01-31 17:46:07  PAGE 2
NATURAL UTILIZATION   LOG FROM 07-01-31 03:04:20 TO 07-01-31 09:10:43

                                AVER    AVER       AVER
NATPROG      COUNT        %     I/O    CPU(MS)    DUR(MS)

LATLONS         10        .1    1.0      .70       30.10
LATLON2         10        .1    1.0      .70       18.20
LSETKRID        40        .3    1.3     1.08       32.35
LSETKRID       250       1.8   34.1    79.94      788.29
MASTTEST        70        .5     .1      .36        3.53
MISC2ISN        10        .1     .0      .30         .70
MISC2FIND       20        .1    1.0      .70       52.55
TEST            80        .6     .3      .30        4.59
TEST            10        .1    1.0      .70       48.00
TESTWT          10        .1    2.0     1.10       31.40
TEXCNT          10        .1     .0      .30         .60
UPDFLD          20        .1     .5      .50       10.30
WELNUMS         20        .1     .5      .40       13.60

********    13,720     100.0    2.8     4.57       72.46
```

```
REPORT   BY   PROJECT,   BY   FILE     TRIM   v.r.s     FRI   07-01-31   17:46:07   PAGE   1
                  LOG     FROM     07-01-31     03:04:20     TO     07-01-31     09:10:43


                                      CHRG
   PROJ          COUNT        %       CPU(MS)

FLIGHT          26,480      26.5          $.19
HORSES          14,510      14.5         $6.83
PACKING         37,370      37.4        $18.98
REVENUE          3,360       3.4        $12.36
SURVEY          17,910      17.9         $7.34
TAS                370        .4        $13.93

**********     100,000     100.0        $44.63


---------------------------------


REPORT OF IO AND CPU UTILIZATION   TRIM v.r.s          FRI 07-01-31 17:46:07  PAGE 1
  BY HOUR                           LOG FROM 07-01-31 03:04:20 TO 07-01-31 09:10:43

                          SUM    AVER   PCT       SUM      AVER      PCT     AVER
HR       COUNT      %     I/O    I/O    I/O     CPU(MS)   CPU(MS)   CPU(MS)  DUR(MS)

 3         350      .4      52    1.5     .5       48.9      1.40       .4    35.12
 4      12,260    12.3     200     .2    2.1      467.1       .38      3.8     5.01
 5      10,320    10.3       0     .0     .0      309.0       .30      2.5      .95
 6      12,290    12.3   1,458    1.2   15.0    2,304.2      1.87     18.6    29.13
 7      14,910    14.9   1,846    1.2   19.0    1,960.8      1.32     15.8    31.71
 8      26,600    26.6   3,745    1.4   38.5    5,259.0      1.98     42.3    42.49
 9      23,270    23.3   2,436    1.0   25.0    2,069.4       .89     16.7    37.46

**     100,000   100.0   9,737    1.0  100.0   12,418.4      1.24    100.0    29.16
```

APPENDIX G

SAMPLE TRELOG ANALYSIS INPUT PARAMETERS AND REPORTS

The following pages show sample input parameters for TRIM TRELOG runs and sections of the reports generated. The samples include:

- Summary Report, showing Descriptors by file and command
- Detail Report, showing detail TRELOG Records
- Summary Report, showing a simple summary by Command
- Summary Report, showing the data summarized by CMD, FNR, RSP, DBID, ADD1, SBL, and SP-40 fields

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*  SAMPLE TRIM TRELOG INPUT PARAMETER CARDS  *
*
*
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*
000006       INPUT LOGTYPE=TRELOG
000007       REPORT     TYPE=SUMMARY,
000008                  HEADING='TRELOG SUMMARY OF DESCRIPTORS BY FILE & CMD'
000009       CONTROL    FNR,SB-40,CMD
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

TRELOG SUMMARY DESCRIPTORS BY FILE & CMD    TRIM V.R.S   FRI 07-01-31 08:34:23 PAGE 1
                                      LOG FROM 07-01-31 20:19:20 TO 07-01-31 20:39:36

  FNR   SB-40                                          CMD    COUNT        %
  240   LL   ,018,A,.- - - - - - - - - - - -           L3         2       .0
  240   LL   ,018,A,.- - - - - - - - - - - -           L9         2       .0

  240   LL   ,018,A,.- - - - - - - - - - - -           **         4       .1

  240   LL,018,A.- - - - - - - - - - - - - -           L3       957     18.3

  240   LL,018,A.- - - - - - - - - - - - - -           **       957     18.3

  240   L0  ,009,A,. - - - - - - - - - - - -           L9        11       .2

  240   L0  ,009,A,. - - - - - - - - - - - -           **        11       .2

  240   L0,14,A. - - - - - - - - - - - - - -           S1        20       .4

  240   L0,14,A. - - - - - - - - - - - - - -           **        20       .4

  240   L0,9,A.- - - - - - - - - - - - - - -           S1         2       .0
  240   L0,9,A.- - - - - - - - - - - - - - -           S4         2       .0

  240   L0,9,A.- - - - - - - - - - - - - - -           **         4       .1

  240   ************************************           **     1,061     20.3

  241   - - - - - - - - - - - - - - - - - -            A1        53      1.0
  241   - - - - - - - - - - - - - - - - - -            E1         8       .2
  241   - - - - - - - - - - - - - - - - - -            E4        22       .4
  241   - - - - - - - - - - - - - - - - - -            N1        39       .7

  241   - - - - - - - - - - - - - - - - - -            **       122      2.3

  241   LJ  ,018,A,S,LJ  ,018,A,. - - -               S1         4       .1

  241   LJ  ,018,A,S,LJ  ,018,A,. - - -               **         4       .1

  241   LL  ,018,A,.- - - - - - - - - -               S1         2       .0

  241   LL  ,018,A,.- - - - - - - - - -               **         2       .0

  241   LL  ,018,A,S,LL  ,018,A,. - - -               S1         8       .2

  241   LL  ,018,A,S,LL  ,018,A,. - - -               **         8       .2
```

This report is produced from the TRELOG records written to the Command Log. It can be useful to analyze the use of descriptors in a database.

```
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
000001       INPUT LOGTYPE=TRELOG
000002       REPORT     TYPE=DETAIL,
000003                  HEADING='TRELOG DETAIL REPORT'
000004       DISPLAY    SEQUENCE,CMD,FNR,DBID,ADD1,SB-40,COUNT
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

TRELOG DETAIL REPORT                TRIM V.R.S          FRI 07-01-31 08:53:32 PAGE 1

SEQ    CMD    FNR    DBID    ADD1               SB-40                                COUNT
 55    S4     242     3      0000000000000000   DD  ,032,A,.-----------------        1
 56    S4     242     3      0000000000000000   KG,20,A.-----------------------------          14
 57    S1     242     3      0000000000000000   S6  ,033,  S,S6  ,033,  .----                  1
 58    S1     242     3      0000000000000000   AP  ,042,  S,AP  ,042,  .----                  2
 59    S1     242     3      0000000000000000   S7  ,033,  .-----------------                  2
 60    S1     242     3      0000000000000000   S6  ,033,  .-----------------                  9
 61    S1     242     3      0000000000000000   S5  ,033,  .-----------------                  2
 62    S1     242     3      0000000000000000   S4  ,034,  .-----------------                 19
 63    S1     242     3      0000000000000000   L0  ,032,A,.-----------------                  1
 64    S1     242     3      0000000000000000   IL  ,032,A,.-----------------                  1
 65    S1     242     3      0000000000000000   IL  ,008,A,.-----------------                   2
 66    S1     242     3      0000000000000000   DU  ,035,A,.-----------------                   1
 67    S1     242     3      0000000000000000   DM  ,032,A,.-----------------                  13
 68    S1     242     3      0000000000000000   DI  ,006,U,.-----------------                   4
 69    S1     242     3      0000000000000000   DF  ,018,A,.-----------------                   4
 70    S4     241     3      0000000000000000   LL,18,A.-----------------------------          7
 71    S4     241     3      0000000000000000   LJ,18,A.-----------------------------         15
 72    S1     241     3      0000000000000000   LL  ,018,A,S,LL  ,018,A,.----                   8
 73    S1     241     3      0000000000000000   LJ  ,018,A,S,LJ  ,018,A,.----                   4
 74    S1     241     3      0000000000000000   LL  ,018,A,.-----------------                   2
 75    S1     241     3      0000000000000000   LL,18,A.-----------------------------          4
 76    S4     240     3      0000000000000000   LO  ,009,A,.-----------------                   7
 77    S4     240     3      0000000000000000   L0,9,A.------------------------------          2
 78    S1     240     3      0000000000000000   LL  ,018,1,2,LL  ,018,A,.----                   1
 79    S1     240     3      0000000000000000   L0  ,014,1,.-----------------                   9
 80    S1     240     3      0000000000000000   L0  ,009,A,.-----------------                  19
 81    S1     240     3      0000000000000000   L0  ,008---------------------                   1
 82    S1     240     3      0000000000000000   LE  ,004,Y,.-----------------          6
 83    S1     240     3      0000000000000000   L0,14,A.-----------------------------         20
 84    S1     240     3      0000000000000000   LE,4,U.------------------------------          9
 85    S1     240     3      0000000000000000                        L0,9,A.---------------------------
---    2
```

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
000001       INPUT LOGTYPE=TRELOG
000002       REPORT     TYPE=SUMMARY,
000003                  HEADING='TRELOG SUMMARY BY COMMAND'
000004       CONTROL    COMMAND
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

TRELOG SUMMARY BY COMMAND     TRIM V.R.S  FRI 07-01-31 08:35:09 PAGE 1
                    LOG FROM 07-01-31 20:19:20 TO 07-01-31 20:39:36

CMD     COUNT      %

A1          96    1.8
E1          15     .3
E4          24     .5
L1          24     .5
L2         554   10.6
L3       3,603   68.9
L4           7     .1
L5         112    2.1
L6         447    8.5
L9          54    1.0
N1          87    1.7
S1         146    2.8
S4          60    1.1
S8           1     .0
S9           1     .0


**       5,231  100.0
```

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
000001       INPUT LOGTYPE=TRELOG
000002       REPORT     TYPE=SUMMARY,
000003                  HEADING='TRELOG SUMMARY CMD,FNR,RSP,DBID,ADD1,SBL, & SB'
000004       CONTROL    COMMAND,FNR,RSP,DBID,ADD1,SBL,SB-40
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
```

TRELOG SUMMARY CMD,FNR,RSP,DBID,ADD1SBL, & SB TRIM *V.R.S* FRI 07-01-31 08:40:22 PAGE 5
LOG FROM 07-01-31 20:20:30 TO 07-01-31 20:39:36

CMD	FNR	RSP	DBID	ADD1	CALC-SBL	SB-40	COUNT	%
L3	1	3	3	C1C1BBCA40404040	**	**********	2	.0
L3	1	3	3	**********	**	**********	2	.0
L3	1	3	*****	**********	**	**********	2	.0
L3	1	*****	*****	**********	**	**********	2,353	45.0
L3	240	0	3	D3D3BBCA40404040	9	LL,18,A.- - - - - - - -	957	18.3
L3	240	0	3	D3D3BBCA40404040	9	**********	957	18.3
L3	240	0	3	D3D3BBCA40404040	13	LL ,018,A,.- - - - - -	2	.0
L3	240	0	3	D3D3BBCA40404040	13	**********	2	.0
L3	240	0	3	D3D3BBCA40404040	**	**********	959	18.3
L3	240	0	*****	**********	**	**********	959	18.3
L3	240	0	*****	**********	**	**********	959	18.3
L3	240	*****	*****	**********	**	**********	959	18.3
L3	241	0	3	D3D1BBCA40404040	9	LJ,18,A.- - - - - - - -	20	.4
L3	241	0	3	D3D1BBCA40404040	9	**********	20	.4
L3	241	0	3	D3D1BBCA40404040	13	LJ ,018,A,.- - - - - -	7	.1
L3	241	0	3	D3D1BBCA40404040	13	**********	7	.1
L3	241	0	3	D3D1BBCA40404040	**	**********	27	.5
L3	241	0	3	D3D3BBCA40404040	9	LL,18,A.- - - - - - - -	146	2.8
L3	241	0	3	D3D3BBCA40404040	9	**********	146	2.8

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APPENDIX H

SAMPLE PROTECTION LOG ANALYSIS INPUT PARAMETERS AND REPORTS

```
******     P R O T E C T I O N   L O G   A N A L Y S I S     ******
  INPUT     LOGTYPE=PROTECTION
  REPORT    TYPE=DETAIL,HEADING='AUDIT PERSONNEL FILE UPDATES'
  INCLUDE   FNR=1,IMAGTYP=AFTER
  DISPLAY   DATE,TIME,SEQUENCE,USERIDX,RUI,TID,FNR,ISN,IMAGTYP
  SHOW      AA,BA,BB,BC,LA,FB,DB,DC,BA,FNR=1
***
*** NOTE:  THE ABOVE SHOW STATEMENT LISTS ADABAS 2-CHARACTER
***        NAMES FROM THE PERSONNEL FILE.  THE FIELDS CAN BE
***        LISTED MORE THAN ONCE (BA), AND THE FIELDS DO NOT
***        NEED TO BE STATED IN ANY PARTICULAR ORDER.  THE PERSONNEL-
***        NUMBER (AA), BEING BINARY, IS PRINTED BOTH IN HEX AND
***        IN A READABLE DECIMAL FORM.  NUMERIC FIELDS (FB) ARE
***        UNPACKED INTO A READABLE DECIMAL FORM.
***
***        TO GET THIS SAME PRINTED DATA ONTO A SEQUENTIAL DATA SET
***        AS A FLAT FILE FOR SUBSEQUENT PROCESSING VIA OTHER PROGRAMS,
***        ONE ADDITIONAL STATEMENT IS REQUIRED: OUTPUT.
***
  REPORT    TYPE=DETAIL,HEADING='AUDIT OF FINANCE FILE CHANGES'
  INCLUDE   FNR=3
  DISPLAY   DATE,SEQUENCE,TIME,USERID,RUI,TID,FNR,ISN,IMAGTYP
**DISPLAY   IMAGE
  SHOW      CCC,CL1-3,CC1,NW,AA,CR,CB1,FNR=3
***
*** NOTE:  THE ABOVE SHOW STATEMENT ILLUSTRATES CCC = SHOW OCCURRENCE
***        COUNT FOR FIELD CC, CL1-3 = SHOW 3 OCCURRENCES OF FIELD CL,
***        CC1 = SHOW 1 OCCURRENCE OF FILED CC.
***
**OUTPUT   ID=AUDITFIN
***
*** NOTE:  IT IS POSSIBLE TO GENERATE MULTIPLE REPORTS, EACH ABOUT
***        DIFFERENT FILES OR ABOUT THE SAME FILES BUT DIFFERENT FIELDS.
***        THE ABOVE SHOW STATEMENT LISTS FIELDS TO BE AUDITED
***        FROM FINANCE FILE ACTIVITY.  BOTH BEFORE AND AFTER IMAGES
***        ARE USED.  FIELDS CAN BE STATED IN ANY ORDER, AND MORE
***        THAN ONCE, IF DESIRED.  THIS EXAMPLE ILLUSTRATES HOW TO
***        SHOW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES
***        OF OCCURRENCES (CL1-3).
***
***        THE FDT FOR FILE 3 IN OS IS SUPPLIED AS:
***           //TRMFD003 DD DSN=XXXXXXXXXXX(FDT003),DISP=SHR
***        WHERE FDT003 CONTAINS THE ADAWAN LOADER CARDS FOR FILE 3,
***
***        IF THE ** IS REMOVED FROM THE DISPLAY IMAGE STATEMENT,
***        ENTIRE BEFORE AND AFTER IMAGES ARE DISPLAYED BOTH IN
***        CHARACTER AND HEX FORMS.
***
***        IF THE ** IS REMOVED FROM THE OUTPUT STATEMENT, AN OUTPUT
***        SEQUENTIAL DATA SET IS PRODUCED, VARIABLE BLOCKED RECORDS,
***        WITH AN 80-BYTE HEADER CONTAINING DATE, TIME, FNR, ETC.,
***        THEN EACH FIELD LISTED IN THE SHOW STATEMENT ABOVE.  THE
***        FORMAT AND LENGTH OF THESE FIELDS IS EXACTLY PER THE
***        FILE 3 FDT (ADAWAN CARDS).
***
```

```
AUDIT PERSONNEL FILE UPDATES    TRIM v.r.s    FRI 07-01-31 19:07:35  PAGE 1

YY-DDD   HH-MM-SS   SEQ    USER-IDX  RES-UID   TID   FNR   ISN     IMAGTYP

04-365   15:59:06   10     00000027  C5MICK    39    1     9       AFTER

AA= HEX 00000000000186F2  DEC   100,082
BA=TESTESTEST
BB=CHARLES
BC=H
LA=SHAKESPEARE
FB=003700
DB=49TH STREET
DC=BEDFORD
BA=TESTESTEST

04-365   15:59:06   12     00000027  C5MICK    39    1     42      AFTER

AA= HEX 00000000000187F7  DEC   100,343
BA=TESTESTEST
BB=MARVIN
BC=L
LA=CROSSWORD PUZZLES
FB=005150
DB=SHARLEY AVENUE
DC=TUCSON
BA=TESTESTEST

04-365   15:59:06   14     00000027  C5MICK    39    1     88      AFTER

AA= HEX 00000000000188F5  DEC   100,597
BA=TESTESTEST
BB=ANN
BC=P
LA=FISHING
FB=048000
DB=DRURY LANE
DC=CANOGA PARK
BA=TESTESTEST

04-365   15:59:06   16     00000027  C5MICK    39    1     113     AFTER

AA= HEX 00000000000188FE  DEC   100,606
BA=TESTESTEST
BB=GRETA
BC=K
LA=TRANSLATING FAIRY TALES
FB=004100
DB=LUCINDA LANE
DC=MONTVALE
BA=TESTESTEST

etc.
```

```
AUDIT OF FINANCE FILE CHANGES   TRIM 8.1.1     FRI 07-01-31 23:08:38  PAGE 1

YY-DDD   SEQ    HH-MM-SS   USERID  RES-UID   TID  FNR       ISN  IMAGTYP

04-365   90     23:01:55   L01TSI  31        3    5         BEFORE

CCC=  2
CL  1=0099
CL  2=0600
CL  3=0000
OC  1=AMOCO
OC  2=
OC  3=
NW=00003333
AA= HEX 00000000000186F5  DEC   100,085
CC  1=DINERS CLUB
CR=05
CB  1=0060

04-365   91     23:01:55   L01TSI  31        3    5         AFTER

CCC=  2
CL  1=0099
CL  2=0060
CL  3=0000
OC  1=AMOCO
OC  2=
OC  3=
NW=00001111
AA= HEX 00000000000186F5  DEC   100,085
CC  1=DINERS CLUB
CR=05
CB  1=0060

04-365   92     23:01:56   L01TSI  31        3    6         BEFORE

CCC=  2
CL  1=0099
CL  2=1000
CL  3=0000
OC  1=TEXACO
OC  2=
OC  3=
NW=00003333
AA= HEX 00000000000186F6  DEC   100,086
CC  1=AVIS
CR=06
CB  1=0065

etc.
```

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APPENDIX I

COMMAND LOG FIELDS

The following table describes the field names uses in TRM and the corresponding fields from the Command Log Detail Record. The entries are sorted in alphabetical order by TRIM name.

TRM					CLOGLAYOUT 5			CLOGLAYOUT 8			
NAME	Heading	FMT	Len	Calc	LOREC	LEN	FMT	LORECX	LEN	FMT	NOTE
ADD1	ADD1	HEX	16		LORADD1	8	C	ACBXADD1	8	C	
ADD1C	ADD1C	C	8		LORADD1	8	C	ACBXADD1	8	C	
ADD2	ADD2	C	8		LORADD2	4	C	ACBXADD2	4	C	
ADD2X	ADD2X	HEX	8		LORADD2	4	C	ACBXADD2	4	C	
ADD3	ADD3	C	8		LORADD3	8	C	ACBXADD3	8	C	
ADD3X	ADD3X	HEX	16		LORADD3	8	C	ACBXADD3	8	C	
ADD4	ADD4	C	8		LORADD4	8	C	ACBXADD4	8	C	
ADD4X	ADD4X	HEX	16		LORADD4	8	C	ACBXADD4	8	C	
ADD6	ADD6	C	8		n/a			ACBXADD6	8	C	
ADD6X	ADD6X	HEX	16		n/a			ACBXADD6	8	C	
ARCH	ARCH	HEX	2		LORARCH	1	B	LOX1ARCH	1	B	
ASSOIO	ASSO	ZS	8	Y	LORASSOI	2	B	LOX1ASSO	4	B	
CB-FBL	CB-FBL	ZS	5	Y	LORFBL	2	B	TRIM supplied	2	B	
CB-IBL	CB-IBL	ZS	5	Y	LORIBL	2	B	TRIM supplied	2	B	
CB-RBL	CB-RBL	ZS	5	Y	LORRBL	2	B	TRIM supplied	2	B	
CB-SBL	CB-SBL	ZS	5	Y	LORSBL	2	B	TRIM supplied	2	B	

TRM NAME	Heading	FMT	Len	Calc	CLOGLAYOUT 5 LOREC	LEN	FMT	CLOGLAYOUT 8 LORECX	LEN	FMT	NOTE
CB-VBL	CB-VBL	ZS	5	Y	LORVBL	2	B	TRIM supplied	2	B	
CID	CID	C	4		LORCID	4	C	ACBXCID	4	C	
CIDX	CIDX	HEX	8		LORCID	4	C	ACBXCID	4	C	
CMDTIME	CMDTIME	C	12		n/a			LOX1CTME	8	B	5
CMDTYPE	TYP	C	1		LORCMDT	1	B	LOX1CTYP	1	B	2
COMMAND	CMD	C	2		LORCMD	2	C	ACBXCMD	2	C	
COP1	O1	C	1		LORCOP1	1	C	ACBXCOP1	1	C	
COP2	O2	C	1		LORCOP2	1	C	ACBXCOP2	1	C	
COP3	O3	C	1		n/a			ACBXCOP3	1	C	
COP4	O4	C	1		n/a			ACBXCOP4	1	C	
COP5	O5	C	1		n/a			ACBXCOP5	1	C	
COP6	O6	C	1		n/a			ACBXCOP6	1	C	
COP7	O7	C	1		n/a			ACBXCOP7	1	C	
COP8	O8	C	1		n/a			ACBXCOP8	1	C	
CPUID	CPUID	HEX	16		LORCOMID	8	C	LOX1CMID	8	C	P 01-08
CPUIDC	CPUIDC	C	8		LORCOMID	8	C	LOX1CMID	8	C	P 01-08
CTIME	CTIME	ZS	10	Y	LORCTM	4	B	ACBXCMDT	8	B	
DATAIO	DATA	ZS	8	Y	LORDATAI	2	B	LOX1DATA	4	B	
DBID	DBID	ZS	5		LORDBID	2	B	LOX1DB	2	B	
DESUPD	DES	ZS	5	Y	LORNUPDS	2	B	LOX1DUPD	2	B	
DUR	DUR(ms)	ZS	4	Y	LORDUR	4	B	LOX1DUR	8	B	
ECBS	ECBS	ZS	3		LORNECBS	1	B	n/a			
ETID	ETID	C	8		n/a			LOX1ETID	8	C	
FNR	FNR	ZS	5	Y	LORFNR	2	B	ACBXFNR	4	B	

TRM NAME	Heading	FMT	Len	Calc	CLOGLAYOUT 5 LOREC	LEN	FMT	CLOGLAYOUT 8 LORECX	LEN	FMT	NOTE
ISN	ISN	ZS	7	Y	LORISN	4	B	ACBXISN	4	B	
ISN10	ISN	ZS	10	Y	LORISN	4	B	ACBXISN	4	B	
ISN8	ISN	ZS	8	Y	LORISN	4	B	ACBXISN	4	B	
ISNLL	ISNLL	ZS	10		LORISL	4	B	ACBXISL	4	B	
ISNQ	ISNQ	ZS	10	Y	LORISQ	4	B	ACBXISQ	4	B	
JOBNAME	JOB-NAME	C	8		LORJNAME	8	C	LOX1JNAM	8	C	
NSELTIME	NUCSTIME	C	16		n/a			LOX1STME	8	B	6
NUCID	NUCID	ZS	5					LOX1NID	2	B	
OPSYSID	OPSYS-ID	HEX	8		LORCOMID	4	C	LOX1CMID	4	C	P 17-20
OPSYSIDC	OPSYS-IDC	C	4		LORCOMID	4	C	LOX1CMID	4	C	P 17-20
PHYS	PHYS	ZS	5		LORRNUC	2	B	LOX1RNUC	2	B	
PLOGIO	PLOG	ZS	8	Y	n/a			LOX1PLOG	4	B	
PLXR	PLXR	ZS	5		LORRNUC	2	B	LOX1RNUC	2	B	
PRIORITY	PRI	ZS	3		LORPRTY	1	B	LOX1PRTY	1	B	
RECTYPE	RR8T	HEX	4		LORTYPE	2	C	LOXTYPE	2	C	
RES	RES	C	8		LORADD5	8	C	ACBXADD5	8	C	
RESX	RESX	HEX	16		LORADD5	8	C	ACBXADD5	8	C	
RSELTIME	ROUSTIME	C	16		n/a			LOX1ITME	8	B	6
RSP	RSP	ZS	5		LORRSO	2	B	ACBXRSP	2	B	
SRCHTYP	STYP	HEX	2		LORSTYPE	1	B	LOX1STYP	1	B	
STCK	STCK	HEX	8		LORTIME	4	B	LOXBTIM	4	B	1
STCKGMTD	GMT_D	C	6		n/a			LOX1DTME	8	B	7
STCKMMY2	DATETIME	MMY2	16		LORTIME	4	B	LOXBTIM	4	B	
STCKMMY4	DATETIME	MMY4	16		LORTIME	4	B	LOXBTIM	4	B	1

TRM NAME	Heading	FMT	Len	Calc	CLOGLAYOUT 5 LOREC	LEN	FMT	CLOGLAYOUT 8 LORECX	LEN	FMT	NOTE
THREAD	THD	ZS	5	Y	LORTHDNR	1	B	LOX1THDN	2	B	
UACSN	UACSN	HEX	8		LORSEQNR	4	B	LOX1SEQN	4	B	
UA	UA	C	4		LORUSR	4	C	ACBXUSER	4	C	
UAN	UAN	ZS	8	Y	LORUSR	4	C	ACBXUSER	4	B	P 01-04
UAX	UAX	HEX	8		LORUSR	4	C	ACBXUSER	4	C	
UA8	UA8	C	16	Y	n/a		C	ACBXUSER	16	B	
UAX8	UA8X	HEX	32	Y	n/a		C	ACBXUSER	16	B	
UBUFFLG	UBUF	HEX	1		LORUBF	1	B	LOX1UBF	1	B	
UBUFFLGU	UBUF	HEX	1		n/a			LOX1UTYP	1	B	
UBUID	UB-UID	C	8		LORCOMID	8	C	LOX1CMID	8	C	P 21-28
UESA	UESA	ZS	0					LOX1ACOD	2	B	
UESW	UESW	ZS	0					LOX1WCOD	2	B	
UEXI	UEXI	HEX	0					LOX1UEX	1	B	
UIDALT	USER-ID	C	4		LORCOMID	4	C	LOX1CMID	4	C	P 09-12
USERCNT	USERCNT	ZS	7	Y	LORISL	4	B	ACBXISL	4	B	
USERCPU	USERCPU	ZS	7	Y	LORISQ	4	B	ACBXISQ	4	B	
USERID	USER-ID	C	8		LORCOMID	8	C	LOX1CMID	8	C	P 09-16
USERIDX	USER-IDX	HEX	16		LORCOMID	8	C	LOX1CMID	8	C	P 09-16
USERIO	USERIO	ZS	7	Y	LORISN	4	B	ACBXISN	4	B	
VERSION	VER	HEX	0		LORVERS	2	C	LOXVERS	2	C	
WORKIO	WORK	ZS	8	Y	LORWORKI	2	B	LOX1WORK	4	B	

XERRB	XERRB	C	2		n/a				ACBXERRB	2	C		
XERRC	XERRC	ZS	5		ACBADD+2				ACBXERRB	2	B		[9]
XERRD	XERRD	C	1		n/a				ACBXERRD	1	C		
XLCMP	L-CMP	ZS	5		ACBADD	2	B		ACBXLCMP+4	4	B		[9]
XLDEC	L-DEC	ZS	5		ACBADD+2	2	B		ACBXLDEC+4	4	B		[9]
XSUBR	XSUBR	ZS	5			2	B		ACBXSUBR	2	B		
XSUBS	XSUBS	ZS	5		n/a				ACBXSUBS	2	B		
XSUBT	XSUBT	C	4		n/a				ACBXSUBT	4	C		

NOTES

1. STCK time is expanded in TRIM batch processing to permit reference to DATE, YYDDD, YY-DDD, YYMMDD, YY-MM-DD, TIME, DATETIME, DATE-TIME, HOUR, HR, MINUTE, MIN, MI, DAY, DA, WEEK, WK, MONTH, MO, WEEKDAY, WEEK-DAY, MONTH-NAME, MONAME, QUARTER, QU, YEAR, or YR.
   All values represent local time (UCS +/- local difference)!

2. Command Type is a hex value on the Command Log, but is printed and is selectable as a character in batch TRIM processing (S=Simple, C=Complex, U=Update)

3. In ADABAS 6, Internal User-ID is a sequential number assigned in the ADABAS Nucleus. TRIM provides an option for the ADABAS 6 User-ID to be a Terminal-ID.

4. Documented in ADABAS manuals as the CPU time for the command.

5. CMDTIME is shown as HHMMSSthmiju
   (see note 8 for details)

6. NSELTIME and RSELTIME shown as YYYYMMDDHHMMSSTH
   (see note 8 for details)

7. STCKGMTD shows as +/-HH:MM
   (see note 8 for details)

8.

YYYY	year
MM	month
DD	Day
HH	hours (based on a 24-hour clock)
MM	minutes
SS	seconds
t	tenths of seconds
h	hundredths of seconds
m	milliseconds
l	ten-thousandths of seconds
j	hundred-thousandths of second
u	microseconds

9. The contents of the field with CLOGLAYOUT=5 may vary depending on the error code (ACBRSP). Compress/Decompressed record length are only meaningful in RSP=0
   XERRC is only meaningful with RSP<>0All of the fields in Figure 6 that are character format will be printed in character format on all reports with the exception of CIDX, USERIDX, CMDTYPE, RESERVEDX, USER-AREAX, and the ADDITIONS Fields, which are printed in hex; DATE, YYMMDD, TIME, and DATE-TIME, which are printed in edited form as YY-DDD, YY-MM-DD, HH:MM:SS, and YYMMDD**HH:MM:SS, respectively; and the four-digit date related fields DATE4, YYYYMMDD, and DATE4-TIME, which are printed in edited form as YYYY-DDD, YYYY-MM-DD, and YYYYMMDD**HHMMSS, respectively.

All of the fields in Figure 6 that are numeric format will be printed as numeric edited values. Leading zeros are suppressed.

DURATION and CPUTIME are printed with one decimal position.

CHARGE values will contain a leading dollar sign ($).

Note:	ADABAS 8 up to ADA831 supports CLOGLAYOUT=5 and CLOGLAYOUT=8. CLOGLAYOUT=8 is the only supported option starting with ADA832.

APPENDIX J

COMMAND LOG TRIM DERIVED FIELDS

Entries are sorted in alphabetical order by TRIM name.

TRM Name	Heading	FMT	Len	Calc	NOTE
CPUTIME	CPU(MS)	ZS	7	Y	
DATE	YY-DDD	C	6		
DATE4	YYYY-DDD	C	8		
DATETIME	DATETIME	C	16		
DAY	DA	ZS	2		
DURATION	DUR(MS)	ZS	9	Y	
FB-FIELD	FB-FIELD	C	8		
FBL	CALC-FBL	ZS	5	Y	
HOUR	HR	ZS	2		
IBL	CALC-IBL	ZS	5	Y	
IO	IO	ZS	4	Y	
MINUTE	MI	ZS	2		
MONTH	MONTH	ZS	2		
MONTH-NAME	MONTH	C	3		
NATLINE	NATLINE	ZS	5	Y	
NATLOGON	NATLOGON	C	8		
NATPROG	NATPROG	C	8		
NSSAPPL	NSSAPPL	C	8		
NSSUID	NSSUID	C	8		
QUARTER	QU	ZS	2		
RBL	CALC-RBL	ZS	5	Y	
SB-16	SB-16	C	16		
SB-FIELD	SB-FIELD	C	8		

(continued on next page)

TRM Name	Heading	FMT	Len	Calc	NOTE
SBL	CALC-SBL	ZS	5	Y	
SEQ7	SEQ	ZS	7	Y	
SEQ8	SEQ	ZS	8	Y	
SEQUENCE	SEQ	ZS	6	Y	
TID	TID	ZS	4	Y	
TIME	HH-MM-SS	C	8		
VBL	CALC-VBL	ZS	5	Y	
WEEK	WK	ZS	2		
WEEKDAY	DAY	C	3		
YEAR	YY	C	2		
YEAR4	YYYY	C	4		
YYMMDD	YY-MM-DD	C	8		
YYYYMMDD	YY-MM-DDDD	C	10		

NOTES

1. Command Type is a hex value on the Command Log, but is printed and is selectable as a character in batch TRIM processing (S=Simple, C=Complex, U=Update).

2. With ADABAS CLOGLAYOUT=5 Format, the User-ID field is 8 bytes and contains the VMID from the CQE CQEVMID field, which is 8 bytes. The TRIM option for replacing User-ID with a Terminal-ID exists. For more information about this option, refer to the Zap Switch LOC X'32' in ***Section VI Tailoring with Zaps*** of the ***TRIM Installation and Operations Manual***. If this option is used, the Terminal-ID will only be 4 bytes.

3. STCK time is expanded in TRIM batch processing to permit reference to various date and time related fields.

4. Documented in ADABAS manuals as the CPU time for the command.

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APPENDIX K

PRESUM RECORD FORMAT

CLOGLAYOUT=5 FORMAT OF THE PRESUM RECORD

The CLOG record for CLOGLAYOUT=5 is composed by a basic header followed by an User-Exit-B element. See copy member LOREC in ADAvrs.SRCE for details.
LORXBU has the following structure.

NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
see note 1	Record Length	B	2	0
	PRESUM Indicator x'CB'	X	1	2
TYPE,RECORD TYPE	PRESUM type See note 3	C	1	3
COUNT	Total Commands represented by this record	B	4	4
DURATION, DUR	Total Duration (in tenths of milliseconds)	B	4	8
IO, IOS	Total IOs (Asso, Data, & Work)	B	4	12
Refer to Note 2	Total CPU instructions	B	4	16
See note 3	Key Value	B/C	1 - 64	20

CLOGLAYOUT=8 FORMAT OF THE PRESUM RECORD

NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
see note 1	Record Length	B	2	0
	Null (x'0000')	B	2	2
	Record Type X'0001'	B	2	4
	CLOG VERSION LOXVERS of LORECX record	B	2	6
	STCK end of PRESUM interval (see note 4)	B	8	8
	STCK #2 Time record was created (see note 5)	B	8	16
DBID, DB	Database-ID	B	2	24
NUCID, NUC	Nucleus-ID	B	2	26
	PRESUM Indicator X'FFCB' = TRM832	B	2	28
	Reserved	B	4	30
	UTC difference (see LOX1DTME of LORECX)	B	8	34
TYPE, RECORD-TYPE	PRESUM Type See note 3	C	1	42
	Reserved	B	1	43
COUNT	Number of calls	B	4	44
DUR	Duration	B	4	48
IO, IOS	Total IOs (Asso, Data, & Work)	B	4	52
Refer to Note 2	Total CPU instructions	B	4	56
See note 3	Key Value	B/C	2-64	60

The two formats above match the records as written to CLOG as well as those being written to SYSUT2 by TRMSMFEX.

NOTES

1. Basic record length, including the CPU value is
   60 bytes (x'3C') for CLOGLAYOUT=8
   and
   20 bytes (x'14' for CLOGLAYOUT=5.
   The total length of a record is depending on the key value (see note 3 below).
   Length of key value can be retrieved via the type or by calculation
   Records length minus Basic record length.

2. CPU field actually contains 1/100 of the calculated number of instructions used to process the commands.
   CPU is converted to tenths of milliseconds by TRIM batch. The converted value may be referred to by CPUTIME, CPU, CPU-TIME or CPUMS.

3. PRESUM Types:'

			Format	Len
T	THD	Thread	B	2
C	CMD	Command	C	2
F	FNR	File Number	B	2
P	NAT	NATURAL Program	C	8
J	JOB	Job Name	C	8
U	UID	User-ID	C	8
S	SID	Security-ID	C	8
R	RSP	Response Code	B	2
A	NSA	NATURAL Application Library	C	8
B	NSU	NATURAL Security User-ID	C	8
W	USA	User-Area of the Control Block	X	4
X	CTI	CICS Transaction ID	C	8
Y	SPE,S32, S64	(Special)	X	16- 64

4. End of current PRESUM interval (STCK format).

5. Time record has been written to SMF (STCK format).
   This value will represent the actual time the record was written to SMF.
   In case of SMF writing during ADAEND processing the value can be less than the end of current PRESUM interval.

If the SMF logging option is selected for PRESUM, the raw-SMF records have the following structure:

1) standard SMF record header for records with subtypes
2) PRESUM skeleton
3) PRESUM table header
4) PRESUM table data

STANDARD SMF RECORD HEADER for records with subtypes

DEFINITION	FMT	LEN	OFFSET
Record length	B	2	0
Segment descriptor	B	2	2
System Indicator	B	1	4
Record Type (X'80 -'FF')	B	1	5
Time (since midnight in 1/100s secs)	B	4	6
Date	P	4	10
System ID	C	4	14
Subsystem ID	C	4	18
Subtype (x'0001')	B	2	22

PRESUM skeleton

The skeleton record is dependent on the CLOGLAYOUT in use and matches the descriptions for CLOGLAYOUT=5 or 8 above.
The length of the skeleton data is stored in the record length field (first two bytes of skeleton).

STCK #2 is part of the skeleton data, but has always value zero. The time and date of SMFWTM execution can be retrieved from the Time/Date fields of the standard SMF record header.

PRESUM table header

DEFINITION	FMT	LEN	OFFSET
Length of PRESUM table data entry	B	2	0
Length of key value	B	2	2
Reserved	B	2	4
Number of used entries	B	2	6

PRESUM table data

DEFINITION	FMT	LEN	OFFSET
Key value	C/B	2-n	0
COUNT [1]	B	4	keylen+0
DUR	B	4	keylen+4
IOS	B	4	keylen+8
CPU	B	4	keylen+12

[1] entries with COUNT = xl4'0' should be ignored.

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APPENDIX L

TRELOG RECORD FORMAT

NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
	Record Length (x'0056')	B	2	0
	Null (x'0000')	B	2	2
	Record Identifier (x'FFE3')	B	2	4
	Null (x'0000')	B	2	6
Refer to Note 1	STCK Time when record was written	B	8	8
	Version Identifier TREnnn where nnn=version	C	6	16
COUNT	The number of commands represented by this record	B	4	22
	Null (x'0000')	B	2	26
DBID. DB	Database ID	B	2	28
RECTYPE	TRELOG Record Type	B	1	30
FNR,FILE	ADABAS File Number	B	2	31

(continued on next page)

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NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
COMMAND,CMD	ADABAS Command Code	C	2	33
RSP,RESPONSE,RC, RESPCODE,RESP-CODE, RESP	ADABAS Response Code	B	2	35
ADD1,ADDIT1	ADDITIONS-1 Field	C	8	37
SBL,CALC-SBL	Length of the SB contained in this record	B	1	45
SB-40	Contents of the SB up to a maximum of 40 bytes	C	40	46
	Null	B	86	86

NOTES

1. STCK time is expanded in TRIM batch processing to permit reference to various date and time related fields.

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