TRM Reference Manual

This document is applicable to the TRIM Version 7.6.1 software package.

Comments pertaining to this document and TRIM are encouraged. Please direct all comments to:

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

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

 Installation and Operations Manual
 Reference Manual
 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

The purpose of this section is to inform current TRIM users about the enhancements and changes in TRIM Versions. This version is TRIM V7.6.1, which contains ADABAS 7.4 and NATURAL 4 support, as well as all TRIM V7.4.0 maintenance.

Installation and Operation

Any Zaps or fixed modules that were created after the initial release of TRIM V7.6.1 are located on the release tape. During installation, you will be instructed to review the README file for last minute updates and fixes. Refer to the Installation section of the Installation and Operation Manual for more information.

TRIM V7.6.1 can be used with ADABAS 7.4.2. At the time of TRIM V7.6.1 release, ADABAS 7.4.2 was the latest available release. The TRIM V7.6.1 Real-time Monitor operates under NATURAL 3.1.6 and above.

TRIM ZAPS

All official Zaps have been incorporated into TRIM V7.6.1 code.

Any Zaps or fixed modules that were created after the initial release of TRIM V7.6.1 are located on the release tape. During installation, you will be instructed to review the README file for last minute updates and fixes. Refer to the Installation section of the Installation and Operation Manual for detailed information.

Batch CLOG Processing

TRIM supports ADABAS CLOGFORMAT=4 and 5. The following is an explanation of these confusing-sounding formats:

When ADABAS 5 was released, there was the option within ADABAS to generate a new format CLOG, which contains additional information beyond what had previously been available. With numerous user sites processing CLOGs using TRIM, or other performance monitors and statistics gathering tools, support for the "old" format of CLOG data from the ADABAS 4 era had to be maintained. This was named CLOGFORMAT=4 in ADABAS 5 startup parameters. The new format was named CLOGFORMAT=5. At the time of release of this TRIM version, there have been no changes to the CLOG data formats (i.e., there is no new data available beyond what has been available with CLOGFORMAT=5). In other words, there is no CLOGFORMAT=6.

The ISN, ISN Quantity, and ISN Lower Limit fields have always been 4 bytes in the ADABAS Control Block, but they were limited to three bytes of value (i.e., maximum value of 16.7 million). In ADABAS 6, these field values were increased, requiring TRIM to handle 10 displayable digits each. The DBID, FNR, and RSP fields are 2 bytes, 5 displayable digits each. The THD field is now 3 displayable digits, value 1-250. TRIM batch processing automatically handles these increased field sizes without any necessary changes or involvement by the user except that the new sizes make reports and outputs of larger sizes. This may impact the user as follows:

If a report had previously been 132 positions in width, with displays of FNR and RSP, the report will now be 136 positions. If only 132 positions can be accommodated by standard printer size, then a field or two must be removed from the report to reduce the width to 132 positions or less. If such wide report(s) are routinely held in datasets (not printed), then there is less affect. If post processing programs process TRIM REPORT (printer) datasets or TRIM OUTPUT datasets, care must be taken to account for new field lengths.

A change to the PRESUM data record length and format was necessary to provide compatibility with ADABAS V7.4.2. TRIM V7.6.1 can only process PRESUM data generated from ADABAS V7.4.2 with the TRIM V7.6.1 User-exit-4. PRESUM processing requires the use of CLOGLAYOUT=5.

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 V7.4.2 can only be processed by TRIM V740 and above. TRIM V740 and above can only process PLOGs created by ADABAS V7.4.2.

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-1 (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 (\mathbf{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.

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-1 action, 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 <u>Historical Facility</u>

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. User-Exit-Bs are provided for the various ADALINK modules. Also, User-Exit-1s and User-Exit-4s 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

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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 <u>Real-Time Monitor Environment</u>

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.

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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 User-Exit-4 (TRMUEX4x) may be run in Idle Mode to keep production overhead at its lowest. Whenever TRIM User-Exit-4 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 User-Exit-4 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 TRMUEX4 to know what statistics are available from each database.

TRMUEX4 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 User-Exit-4 (TRMUEX4S). Other functions may have reduced capabilities or table sizes. The regular User-Exit-4 (TRMUEX4R) has complete functionality, but smaller table sizes than the large User-Exit-4 (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.

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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 TRIM User-Exit-B(s), TRIM User-Exit-A(s), TRMUEX1, and the TRMUEX4 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 TRMV751 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 term of use for this copy of		
* *			
* *		*	*
* *	TRIM	*	*
* *		*	*
* *	has expired	*	*
* *		*	*
* *		*	*
* *		*	*
* *		*	*
* *		*	*
* *	Please contact your TREEHOUSE SOFTWARE	*	*
* *	representative for authorization	*	*
* *	*	*	*
* *		*	*
* ********	***************************************	*******	* * *
******	****	*******	* * * *

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.

*		*
*	*** TOTM INTTIALTOATION RODOR***	*
*	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).	*
*	5	*
*	UEX4 VERSION => V74 1 RTM VERSION => V75 0	*
*		*
*	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						
TTTTTTTTTTT	RRRRR					
TTTT	RR RR	II				
TTTT	RR RR	II	M M			
TTTT	RR RR	II	MM MM	>		
TTTT	RR RR	II	MMM MMM	>		
TTTT	RRRRR	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			Ve	ersion	7.5.0)
TRIM IS A TR	ADEMARK OF	TREE	EHOUSE SOF	TWARE,	INC.	
		SEWI	ICKLEY, PEI	NNSYLVA	ANIA,	
		UNIT	FED STATES	OF AM	ERICA	
			(C) COPYI	RIGHT	2004	
AUTHORIZED F	OR USE					
BY LICENSEE	ONLY					
			ENTER 7	TO CON	FINUE	

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

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

06-12-3	1 MENU TRIM REAL	VERS - TIME	ION MON	7.5.0 227 14 ITOR	1:22:27						
	TEST-DATABASE										
Code	Description		Code	Description							
A B C D	Control Options Minute Statistics Hourly Statistics Session Statistics	(CMEN) (MMEN) (HMEN) (SMEN)	н І Ј К	SECURITRE Interface Environment Information Warning Messages TRIM Natural Monitor	(VMEN) n (EMEN) (WARN)						
(NTNM) E F G	Queues and Tables Dynamic Trace Facility Database Information	(QUES) (TRAC) (INFO)	?	RTM Help Facility Exit Real-Time Monitor	(HELP) (STOP)						
		Code :									
Enter-P	F1 PF2 PF3 PF4 F	F5PF6-	PF7	PF8 PF9 PF10 DF11	-PF12						
H	ELP END	15 110	/	EXI	T						

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.

06-12-31 Treehouse Software Inc.	15:12:20
Real-Time Monitor - General Help Facility	
For detailed Help on an aspect of the TRIM Real-Time Mor	nitor,
enter the code to the left of the description, or a '.'	to exit.
 A - What is the TRIM RTM D - RTM Direct Commands C - Control Options M - Minute Statistics H - Hourly Statistics S - Session Statistics Q - Queues and Tables T - Dynamic Trace Facility I Database Information V - SECURITRE Interface E - Environment Information W - Exceptional Response Codes (War R - tRelational Logging N - TRIM NATURAL Monitor Exit Help 	mings)
Code : .	
Enter-PF1PF2PF3PF4PF5PF6PF7PF8PF9PF HELP END	10PF11PF12 EXIT

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.

06-12-31	CMEN		Control Options TEST-DATABASE	227	15:14:14
		Code	Description		
	Code	A B C ?	RTM Control Options Time Adjustable Parameter tRelational Parameters RTM Help Facility Return to RTM Main Menu	(CTRL) (CTRE) (CTRE) (HELP) (MENU)	
Enter-PF1-	PF2	PF3P	F4PF5PF6PF7PF8	8PF9PF10P	F11PF12
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.

06-12-31	CTRL	Real-Time Monitor Co TEST-DATABASE	ontrol 227 15:14:39
	User Sea	ssion Controls: Command Count Display Sequence User-ID Display Format	<pre>c (C=CATEGORY, F=FREQ) ===> C (C=CHARACTER, H=HEX) ===> H</pre>
	Addition	nal Options: Time Display Adjustment Time Adjustable Parameters Current Logging Status Exceptional RSP Codes Job Name In Use Clear Sesn Stats At Print NATPROG Fill When Null NSA-NSU-SID TO ADD-3/ADD-4 External UID TO ADD-4	- WEST 5 HOURS - NOT AVAILABLE - NOLOG - DEFAULTS ONLY - COMMAND QUEUE JOB NAME - YES - NO - NO - NO
	Enter pa	assword to View/Update following To change password, enter	g controls ===> new value ===>
ENTER-PF HE	1PF2- LP	PF3PF4PF5PF6PF7 END	-PF8PF9PF10PF11PF12 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 User-Exit-4 and Section VII TRMTAP, TRMLOG, TRMRSP, TRELOG, TRMSP, 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.

06-12-31	CPWD	Real-Time Monitor Passwor	rd Modification	227 14:22:35								
	TEST-DATABASE											
		Please Confirm Password	Change									
		Current Password ===>	xxxxxxx									
		New Password =====>	XXXXXXXX									
		(Passwords Will Not	Display)									
Enter-PF1-	PF2PF3	PF4PF5PF6PF7	PF8PF9PF1	0PF11PF12								
HELF	P 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.

06-12-3	1 0	TRM		Rea	l-Tim T	e Mc EST-D	nitor ATABA	Con SE	trol		227	1	4:22:	39
P	Password Retention (Y=YES, N=NO, V=Violators) ===> N													
J	Job Name in Use (C=CQE, U=Uinfo, J=Command Log) ===> C													
A	Add-3/Add-4 Data (N=None, S=NSA-SID, U=NSA-NSU) ===> N													
C	Crunch Command Log Records (Y=YES, N=NO) ===> N													
Z	ero F	'NR in	Comman	ds					(Y=YE	S, N=	NO) =	==> N	ſ	
S	et TF	IM Idl	e				(Y	=YES,	N=NC	U=Ue	xb) =	==> N	ſ	
ACCUMS.	TH	ID FNR	CMD	CWF	RSP	PGM	JOB	UID	CTI	NSA	NSU	USA	SPE	SID
5 MINUT	Е У	У У	Y	-	Y	Y	Y	Y	N	N	N	N	-	N
5 HOUR	Y	Y Y	Y	-	Y	Y	Y	Y	Y	Y	N	N	-	Y
SESSION	I Y	У	Y	Y	Y	Y	Y	Y	N	N	N	N	-	N
PRESUM	Y	У	Y	-	Y	Y	Y	Y	N	N	N	N	N	N
VIOLATI	ONS -	Y	-	-	-	Y	Y	Y	-	Ν	-	-	-	Ν
Enter-P	Enter-PF1PF2PF3PF4PF5PF6PF7PF8PF9PF10PF11PF12													
H	ELP	E	ND]	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 User-Exit-B 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 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:

<u>Column</u>	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
СТІ	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 User-Exit-4.

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.

06-12-31	CTRM	Real-Time TES	Monitor ST-DATABAS	Control SE	227	14:22:39			
	High Duration C	MDS / High (Jse Stats		(Y=YES, N=NO) ===> Y			
	Trace Facility .	Available Fo	or Use		(Y=YES, N=NO) ===> Y			
	Session Stats P	rint Sequend	ce (C=CAT, F	FREQ, B=BOTH) ===> B			
	Session Stats Print Frequency (00, 01, 02, 03, 04, 06, 08, 12, 24 Times each 24 hours 99 = Session end only)								
	Alternate Inter	nal UID			(Y=YES, N=NO) ===> Y			
	Inactive User O	ueue Entries	Display		(Y=YES, N=NO) ===> Y			
	STCK Error Disp	lays			(Y=YES, N=NO) ===> Y			
	SECURITRE Secur	ity Active H	or TRIM F	RTM	(Y=YES, N=NO) ===> N			
	TRIM logging	-			(Y=YES, N=NO) ===> Y			
	Clear Session S	tatistics at	Print		(Y=YES, N=NO) ===> Y			
	NATPROG Fill wh	en Null			(Y=YES, N=NO) ===> N			
	External UID to	Additions-4	l in Log		(Y=YES, N=NO) ===> N			
Enter-PF	1PF2PF3	PF4PF5	PF6PF7	7PF8	-PF9PF10	PF11PF12			
HE	LP 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 <u>Time Adjustable Parameter (TRMTAP) Settings (CTAP)</u>

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.

06-12-31	CTAP	Time Ad	justable TEST-DAT	Parameter ABASE	Controls	227	14:22:41
	Time . O	Adjustabl 5 09	e Paramet 17	ers Availa	able For Hour	(s):	
	Enter	Password	and Sele	ct Hour:			
		Password	===>				
		Hour	===> 5				
Enter-PF1.	PF2P	F3PF4-	PF5P	F6PF7	PF8PF9	-PF10PF	11PF12
HELI	P EN	D					EXIT

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.

06-12-	31	CTA	Q	Т	ime A	djust	able	Param	eter	Contr	ols	2	27	14:2	2:45
	TEST-DATABASE														
	HOUR 5														
	Con	mand	Coun	t Dis	play	Seque	nce	(C	=CATH	EGORY,	F=FR	EQ) =	==> F		
	User-ID Display Format (C=CHARACTER, H=HEX) ===> *														
	Pas	sswor	d Ret	entio	n		(Y=	YES,	N=NO	, V=Vi	olato	rs) =	==> *		
	Job) Nam	e in	Use		(C	=CQE,	U=Ui	nfo,	J=Com	mand	Log =	==> *		
	Add	1-3/A	dd-4	Data		(N	=None	, S=N	SA-SI	ED, U=	NSA-N	SU) =	==> N		
Crunch Command Log Records (Y=YES, N=NO) ===> *															
	Zero FNR In Commands Not Using FNR (Y=YES, N=NO) ===> *														
	Set	TRI	M Idl	e				(Y=	YES,	N=NO,	U=Ue	xb) =	==> *		
ACCUMS		THD	FNR	CMD	CWF	RSP	PGM	JOB	UID	CTI	NSA	NSU	USA	SPE	SID
5 MINU	ΓE	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
SESSIO	N	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
VIOLAT	IONS	5 -	Y	-	-	-	Y	N	Y	-	N	-	-	-	N
Enter-1	PF1-	PF	2P	F3	PF4	-PF5-	PF6	PF	71	PF8	PF9	-PF10	PF1	1PF	12
1	HELE	2	EN	D						NEΣ	T]	TIXE	

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.

06-12-31 CTAR Time Adjustable Paramete:	r Controls 227 14:22:55 HOUR 10
IESI DAIADASE	HOOK 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 (00, 01, 02, 03, 04, 06, 08, 12, 24 TIMES 99 = SESSION END ONLY)	===> 12 EACH 24 HOURS
Alternate Internal UID	(Y=YES, N=NO) ===> Y
Inactive User Oueue 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-PF1PF2PF3PF4PF5PF6PF7	-PF8PF9PF10PF11PF12
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.

06-12-31	CTRE	Real-Time tRelational Control TEST-DATABASE	227	14:22:55
		tRelational Buffer Information		
	tRelatio	onal Active	====> Ү	
	Number o	of Entries:		
	Maxir	num	====>500	
	In Us	3e	====>190	
	Entry s	ize (in bytes)	====> 60	
	Number o	of entries to write	====> 50	
	Number o	of TRELOG records written	====> 0	
Ente	r Password	to View/Update following control:	s ====>	
Enter-PF1	PF2PH	73PF4PF5PF6PF7PF8-	PF9PF10	PF11PF12
HEL	P ENI	D		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.

	TRF	Real-Time tRelational TEST-DATABASE tRelational Buffer In	Control formation	227	14:22:55
	tRelational Number of e	Active entries to write	(Y=YES, N-NO)	====> N ====> 10	
Enter-PF1	·PF2PF3	PF4PF5PF6PF	7PF8PF9-	PF10PF	11PF12

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

7641
6095
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.

06-12-31	MMEN		Commands per Minute TEST-DATABASE	227	14:23:45
		Code	Description		
		 A	File Number	(MFNR)	
		В	ADABAS Command Code	(MCMD)	
		С	Program Name	(MPGM)	
		D	Job Name	(MJOB)	
		Е	ADABAS User ID	(MUID)	
		F	Security ID	(MSID)	
		G	Response Code	(MRSP)	
		Н	Thread	(MTHD)	
		I	Application Library	(MNSA)	
		J	NSS User ID	(MINSU)	
		K	CICS Transaction ID	(MCTI)	
		L	User Area	(MUSA)	
			Return to RTM Main Menu	(MENU)	
	Cod	le : .			
Enter-PF1	PF2-	PF3	-PF4PF5PF6PF7PF8	PF9PF10-	PF11PF12
HELI	2	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.

06-12-31	l MTHD	Con	mands	Per Minut	e By AD	ABAS Thre	ad	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
		522	DE 4		2017			10 5511	DE1 2
Encer-Ph	" T – – – h.F. 7.	PF3	PF 4	-FF2FF.0	PF/-	FF 8F	г 9PF	TOPEIT	₽₽⊥2
HI	STR	END						52	(11

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.

06-12-31	MTHD	Comm	ands Pe	r Minute	By ADAE	AS Thread	d	227 14	1:23:59
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-PF	LPF2-	PF.3P	PF 4 PF	'5PF6	PF./	FF.8BE	9PF1	10PF11	-PF12
пы	ur	DIN D						PV1	1

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.

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 ************************************	06-12-31	MTHD	Con	mands	Per Minute	BY ADA	ABAS Threa	ad	227 1	4:24:02
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	THREAD	14:24	THREAD	14:23	THREAD	14:22	THREAD	14:21	THREAD	14:20
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	1	1	1	57	1	152	1	348	1	195
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	2	291	2	3278	2	1777	2	678	2	535
4 44 4 734 4 229 4 198 4 7 5 3 5 606 5 201 5 8 6 6 199 6 111 ******** 1710 ******** 868 ******* 460 ******** 7423 ******** 3473 ********* 1710 ******** 868	3	121	3	2549	3	1003	3	478	3	131
5 3 5 606 5 201 5 8 6 199 6 111 ******** 460 ******* 7423 ******* 3473 ******* 1710 ******* 868	4	44	4	734	4	229	4	198	4	7
6 199 6 111 ******** 460 ******* 7423 ******** 3473 ******* 1710 ******* 868	5	3	5	606	5	201	5	8		
******** 460 ******** 7423 ******** 3473 ******* 1710 ******** 868			6	199	6	111				
	* * * * * * * *	460	* * * * * * * *	7423	*******	* 3473	* * * * * * * *	* 1710) *****	** 868

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

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.

06-12-	-31 MFN	IR Comma	nds Per	Minute	By ADABA	S 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-	-PF1PF	2PF3	-PF41	PF5PH	76PF7-	PF8-	PF9PF	10PF1	1PF12
	HELP	END						E	SXIT

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 User-Exit-4 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 User-Exit-4 of the TRIM Installation and Operations Manual.)

Note that file numbers can be as high as 65535.

06-12-	31 MFNR	Comma	nds Per	Minute	By ADABA	AS 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-	PF1PF2	PF3	PF4PI	F5PF6	5PF7	PF8	-PF9PF	10PF13	1PF12
	HELP	END						E	TIX

The DBA presses PA1 and the screen below is displayed.

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.

14:20 13
13
27
394
161
12
81
180
* 868
PF12
,
-1 T

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.

06-12-31	. MRSP	Comma	nds Per	Minute	By ADABA	AS Respo	nse 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-PH	1PF2-	PF3	PF4PI	F5PF	6PF7	PF8	PF9PF1	0PF1	1PF12
HE	LP	END						1	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.

06-12-21	MDCM	Co	mmanda	Dor Minut	O DI	Drogram Mar	20	227 14	· 21 · 12	
00-12-31	I MPGM	00	initianus	Per Millut	е ву	Program Na	14.01	22/ 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	
								-1011	10	
Enter-PF	.Tbb.S-	PF.3	PF41	2F.2DF.0-	PF.7	hf.8hf	"9PI	510PF11	5E.T7	
HE	ELP	END						EXIJ	2	

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.

06-12-	31 SFNR	Sess	ion Tot	als By ADA	BAS 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 Numb	ers: 41
Enter-PF1PF2PF3PF4PF5PF6PF7PF8PF9PF10PF11PF12								
LICCT	HFLD	FND		5 110		5 115	1110 11	FYTT
	1112115	עוום						T T 27 CT

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.

06-12-31	MJOB	Commands	Per Minute By Job N	lame 2	14:24:50
JOB NAME	14:24	JOB NAME 14:23	JOB NAME 14:22 JO	B NAME 14:21	JOB NAME 14:20
A4301PX2	495	A4301PX2 526	A1008XXX 397 A	3013PX4 111	A3013PX4 700
CICS	7001	CICS 6897	A4301PX2 309 A	4031PX2 93	A4031PX2 60
			CICS 2767 C	ICS 1506	CICS 108
******	7496	******* 7423	******* 3473 *	****** 1710	****** 868
Enter-PF	1PF2-	PF3PF4	PF5PF6PF7PF	8PF9PF3	L0PF11PF12
HEI	LP	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.

06-12-31 MUID	Commands Per	Minute By ADABAS User ID	227 14:24:52
UID 14:24	UID 14:23	UID 14:22 UID 14:23	1 UID 14:20
C4C1F4F3 7092	C4C1F4F3 6897	C4C1F4F3 2767 C4C1F4F3 150	5 D9D7F1F2 788
00000003 540	D9D7F1F2 6	D9D7F1F2 309 D9D7F1F2 9	3 0000004 80
	0000003 520	00000003 397 00000003 11	C
		0000004	1
****** 7632	****** 7423	******* 3473 ******* 171) ****** 868
Enter-PF1PF2-	PF3PF4P	F5PF6PF7PF8PF91	PF10PF11PF12
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.

I	06-12-32	1 MSID	Commands	Per Minute By Secu	rity ID 🛛	227 14:24:53
	SEC ID	14:24	SEC ID 14:23	SEC ID 14:22 S	EC ID 14:21	SEC ID 14:20
I	TREE05	7092	TREE05 6897	TREE05 2767 T	REE05 1506	TREBATCH 788
	TREE03	540	TREBATCH 6	TREBATCH 309 T	REBATCH 93	TREE11 80
I			TREE03 520	TREE03 397 T	REE03 110	
				T	REE11 1	
I	* * * * * * * *	* 7632	****** 7423	******* 3473 *	****** 1710	****** 868
I						
I						
l						
l	Entox D	21 122	אשת נשת		EQ DEQ DE.	10 DE11 DE12
l	Encer-Pi	гтБң 7- Птр		ProProPr/P	rorr9Pr.	IUPFIIPFIZ
1	HI	БГЬБ	END			EXTL

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.

06-12-31	MNSA	Comman	ds Per	Minute By	Appli	cation Lib	rary	227 14:	24:54
LIBRARY	14:24	LIBRARY	14:23	LIBRARY 3	14:22	LIBRARY 3	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-PF	1PF2·	PF3	PF4	PF5PF6-	PF7-	PF8PF9	9PF	10PF11P	F12
HE	LP	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.

06-12-31	MNSU	Cor	mmands	Per Minute	e By N	SS User ID		227 14:	24:55
NSS UID 3	L4:24	NSS UID 3	14:23	NSS UID 3	14:22	NSS UID 1	L4:21	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	LOGA03	17
MASTER	17	LOGAO3	16	LOGA03	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-PF	Enter-PF1PF2PF3PF4PF5PF6PF7PF8PF9PF10PF11PF12								
HEI	ЪР	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.

06-12-31	MCTI	Comma	ands Per	Minute	By CICS	Trans.	ID 2	27 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
Enter-PF	1PF2-	PF3I	PF4PI	75PF6-	PF7	-PF8	PF9PF1	0PF11F	PF12
HEI	LP	END						EXIT	

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.

06-12-31 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-PF1PF2-	PF3PF4PI	75PF6PF7PF8PF	79PF10PF11PF12
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

АААА	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).

06-12-31	HMEN	Commands per Hour TEST-DATABASE	227	14:23:45
	Code	Description		
	 А	File Number	(HFNR)	
	В	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)	
	Н	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	PF2PF3	PF4PF5PF6PF7PF	8PF9PF10-	PF11PF12
HEL	P 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.

06-12-31	HCMD		Commands Per	Hour	By .	ADABAS C	MD Code	22	7 1	4:26:16
CMD	14:26	CMD	13:00	CMD		12:00	CMD	11:00	CMD	10:00
Al	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	EΤ	9330	E1		1085	ET	2369	L1	5521
El	6096	E1	5265	L1		6560	E1	921	L2	9876
L1	24610	L1	20194	L2		12975	L1	7289	L3	3578
L2	167165	L2	124879	LЗ		92123	L2	11865	L4	2234
L3	239863	LЗ	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-PF	LPF2-	Pl	F3PF4PF	5P	F6	-PF7F	PF8PF	9PF10-	-PF11-	-PF12
HEI	ΓP	EN	D						EXI	ΓT

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.

06-12-31	HFNR	Comma	nds Per	Hour By	ADABAS Fi	le 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		1.0	0 41 0 5	1.0	20005		0504			
10	73042	10	24105	19	32905	17	2504	17		
1087	0111	1 1	2001		0	1.0	07065	0.0		
13	8111	1/	3201	22	8	19	2/865	22		
17	2457	10	120006	102	7145	2.2	7	102		
1021	5457	19	120000	103	/145	22	1	103		
20	84106	21	8192	117	13	103	6211	185		
2578	04100	21	0192	11/	15	105	0211	105		
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									
** * * * * * *	602251	*******	600105	******	** 116100	*******	125127	******		
37150	003231		000105		740400		133131			
Enter-PE1	טר גבוע (היי גבוע היי גבוע היי גבוע היי גבוע									
HEI	LP IIZ	END				5 115		EXIT		

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

A "correction" is made in TRIM User-Exit-4 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 User-Exit-4 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.

06-12-31	HPGM	Co	mmands	Per Hour	By Prog	ram Name	22	7 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-PF	1PF2	PF3	PF4F	F5PF6-	PF7	-PF8PF	9PF1	0PF11	PF12	
HE	LP	END						EXIT	2	

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.

06-12-31	HJOB	Co	mmands	Per Hour 1	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-PF	1PF2-	PF3	PF4P	F5PF6-	PF7	-PF8PF	9PF1	0PF111	PF12
HEI	LP	END						EXII	

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.

06-12-31	HUID	Cor	nmands I	Per Hour	By ADAB	AS User I	D 2	27 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-PF	1PF2-	PF31	PF4PH	F5PF6-	PF7	-PF8PF	9PF1	0PF111	PF12
HEI	LP	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.

06-12-31	HSID	Comr	nands Pe	er Hour By	y Secur	ity 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-PF	1PF2-	PF3PH	74PF	5PF6	-PF71	PF8PF9-	PF10	PF11PI	712
HEI	LP	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.

06-12-31	HRSP	Commands	Per Hour	By ADABA	S Respon	se 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-PF	1PF2	PF3I	PF4PF5	PF61	PF7PF	8PF9-	PF10	PF11PF12
HE	LP	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.

HTHD	Comma	ands Per	Hour By	ADABAS	Thread	227	14:25	:47
14:25	THREAD	14:00	THREAD	13:00) THREAD	12:00	THREAD	11:00
10495	1	13906	1	8040) 1	7896	1	1943
27196	2	463108	2	107369	2	99406	2	27609
74809	3	94165	3	27643	3	21806	3	6803
17392	4	23201	4	3189	4	5109	4	795
4173	5	5584	5	247	5	893		
199	6	301			6	27		
34264	******	600185	* * * * * * * *	146488	*******	135137	* * * * * * * *	37150
222				227				2
PFZ-		PF 4PF:	5PF6	-PF /	·PF8PF9-	PF10	PFIL-PFI.	2
	HTHD 14:25 10495 74809 17392 4173 199 34264	HTHD Comma 14:25 THREAD 10495 1 27196 2 74809 3 17392 4 4173 5 199 6 34264 ********	HTHD Commands Per 14:25 THREAD 14:00 10495 1 13906 27196 2 463108 74809 3 94165 17392 4 23201 4173 5 5584 199 6 301 34264 ******** 600185 PF2PF3PF4PF	HTHD Commands Per Hour By 14:25 THREAD 14:00 THREAD 10495 1 13906 1 27196 2 463108 2 74809 3 94165 3 17392 4 23201 4 4173 5 5584 5 199 6 301 34264 ******** 600185 ******** 600185 ********	HTHD Commands Per Hour By ADABAS 14:25 THREAD 14:00 THREAD 13:00 10495 1 13906 1 8040 27196 2 463108 2 107365 74809 3 94165 3 27643 17392 4 23201 4 3185 4173 5 5584 5 247 199 6 301 34264 ******* 600185 ******** -PF2PF3PF4PF5PF6PF7 FND FND FND	HTHD Commands Per Hour By ADABAS Thread 14:25 THREAD 14:00 THREAD 13:00 THREAD 10495 1 13906 1 8040 1 27196 2 463108 2 107369 2 74809 3 94165 3 27643 3 17392 4 23201 4 3189 4 4173 5 5584 5 247 5 199 6 301 6 34264 ******** 600185 ******** 146488 ********	HTHD Commands Per Hour By ADABAS Thread 227 14:25 THREAD 14:00 THREAD 13:00 THREAD 12:00 10495 1 13906 1 8040 1 7896 27196 2 463108 2 107369 2 99406 74809 3 94165 3 27643 3 21806 17392 4 23201 4 3189 4 5109 4173 5 5584 5 247 5 893 199 6 301 6 27 34264 ******* 600185 ******** 146488 ******** 135137	HTHD Commands Per Hour By ADABAS Thread 227 14:25 14:25 THREAD 14:00 THREAD 13:00 THREAD 12:00 THREAD 10495 1 13906 1 8040 1 7896 1 27196 2 463108 2 107369 2 99406 2 74809 3 94165 3 27643 3 21806 3 17392 4 23201 4 3189 4 5109 4 4173 5 5584 5 247 5 893 199 6 301 6 27 34264 ******* 600185 ******** 146488 ******** 135137 ********

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.

06-12-31	HNSA	Comma	nds Per	Hour By	Applicat	tion Libr	ary 2	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-PF	LPF2-	PF31	PF4PI	F5PF6-	PF7	-PF8PF	9PF1	0PF11	PF12
HEI	ĽΡ	END						EXI	Г

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.

06-12-31	HNSU	Cor	mmands 1	Per Hour 1	By NSS U	Jser 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	TREE 2	5956	VIC6543	507
TREE 2	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-PF	LPF2-	PF31	PF4PI	F5PF6-	PF7	-PF8PF	9PF10)PF111	PF12
HEI	ΓP	END						EXII	

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.

06-12-31	HCTI	Comma	ands Per	Hour By	CICS Tra	ns. 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-PF	1PF2-	PF3PH	74PF5	PF6	PF'/PF	8PF9	-PF101	PF11PF12
HEI	LP	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.

06-12-31	. HUSA	Co	ommands	Per Hour	By Use	r 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
II									
Enter-PF	1PF2-	PF3I	PF4PI		PF7	-PF8PF	9PF1()PF11H	PF12
HE	LP	END						EXIT	

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 Category order only, unlike the Minute or the Hourly screens, which display the totals in Category or in Frequency order. This enables the DBA or the NATURAL Administrator to quickly locate a File Number, Program Name, or User-ID. 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.

06-12-31	SMEN A	DABAS Session TEST-DATAE	Statist BASE	ics 227	14:28:51
Code	Description		Code	Description	
A	File Number	(SFNR)	J	Application Library	(SNSA)
B (SNSU)	ADABAS Command Cod	e (SCMD)	К	NSS User ID	
C	Program Name	(SPGM)	L	CICS Transaction ID	(SCTI)
D	Job Name	(SJOB)	М	User Area	(SUSA)
Е	ADABAS User ID	(SUID)	N	Security ID	(SSID)
F	Response Code	(SRSP)	0	Nucleus Statistics	(SNUC)
G	Thread	(STHD)	P	Nucleus Parameters	(SPRM)
Н	Commands Within Fi	le (SCWF)	?	RTM Help Facility	(HELP)
I	Commands of Long D	uration (SDUR)	•	Return to RTM Main	Menu (MENU)
		Code	: .		
Enter-PF	1PF2PF3PF4	PF5PF6	-PF7	-PF8PF9PF10PF	'11PF12
HE	LP END				EXIT

II.9.2 ADABAS Nucleus Parameters (SPRM)

The 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 valu	es a:	re	displaye	ed. P	ress the ENTE	CR key for Actual v	alues.
06-12-31 SPR	М		ADAE	BAS	Nucleus Para	ameters 227	14:29:02
					TEST-DATABASE]	
Mode = M							
ReadOnly = NO						Buffer Flushes	188
					MAX %		
	S	ET	FINGS	USE	D/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-PF1PF	21	PF	3PF4	-PF5	PF6PF7-	PF8PF9PF10	PF11PF12
HELP	E.	ND					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.



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.

06-12-31	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	0			0		
2	27	2.3	0			0		
7	1	0.1	0			0		
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
0								
0								
0								
Total (Commands:	1153				Total	File Nur	mbers: 42
Enter-PH	1PF2-	PF3PF4	PF5-	PF6PF'	7PF	'8PF9	-PF10PH	F11PF12
HE	ELP	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 User-Exit-4 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 User-Exit-4 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.

06-12	-31 SCMI) Ses	sion Comm	and Totals	By ADABAS	S CMD Co	de 227	14:29:29	
CMD	COUNT	PCT	CMD	COUNT	PCT	CMD	COUNT	PCT	
A1	1	5.40	L9	77	6.20				
A4	10	.81	N1	7	.56				
BT	30	2.42	OP	38	3.06				
CL	21	7 2.18	RC	122	9.83				
EΤ	61	L 4.92	S1	81	6.53				
E1		3.24	S2	3	.24				
E4		7.56	S4	18	1.45				
L1	78	6.29							
L2	293	L 23.45							
L3	343	3 27.64							
L4	40	3.22							
Tota	1 Commands	: 1241							
Enter	-DF1DF1)DF3-	DF4F	PF5PF6	-DF7DF8	8DF9_	PF10P	F11PF12	
DITCCT		END		15 110	11, FFC	5 115	1110 F	EVIT	
	HELP	END						EXT.I.	

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.

06-12-3	31 SCWF	Se	ssion Totals TEST-	BY CMD T DATABASE	within FNR	227	14:29:36
CMD	COUNT	PCT/FILE	PCT/TOTAL	CMD	COUNT	PCT/FILE	PCT/TOTAL
 т.1/4	12	4 18	0 9	<u>λ</u> 1/4	3	1 05	0.2
L2/5	23	8 01	1 7	N1/2	0	0.00	0.2
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-F	PF1PF2 HELP	-PF3PF4 END	PF5PF6	5PF7	-PF8PF9-	PF10PF	'11PF12 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.

06-12-31	SPGM	S	ession Tota	als By Pro	ogram	227	14	:29:39
Start At:								
PROGRAM	COUNT	PC.I.	PROGRAM	COUNT	PC.I.	PROGRAM	COUNT	PCT
AA	12	0.5	0			0		
AIX	б	.3	0			0		
A93BX	17	.7	0			0		
BUYER	1214	50.2						
BUYERA	3	.1						
BUYERB	13	.5						
0								
0								
0								
matal Gam		-				matal Deep		20
FNTER-DE1-	DE2DE	./ סרו2		7.906	DE0_	IOLAL Pro	gram Name	S· 30
ENIER-PFI-	PFZPF	3PF	4PF 51	ProPF/-	PF8-		UPFII	- PF 12
HELP	ENI)					EXI	Г

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.

06-12-3	31 SJOB		Session To	otals By Jo	ob Name	22	7	14:29:43
Start J JOB NAI	At: MECOUNT	PCT	JOB NAME	COUNT	PCT 3	JOB NAME	COUNT	PCT
\$J43X9	5 2	8 1.1	. 0			0		
\$J43X9	6 1	4.5	, o			0		
\$J43X9	7 5	6 2.1	. 0			0		
DBA403	8	5 3.2	2					
DBA407	7	3 2.8	3					
PR0921	18	7 7.1						
0								
0								
0								
Total (Commands: 2	643				Total J	ob Names	86
Enter-1	PF1PF2	PF3F	F4PF5-	PF6PF	7PF8	PF9F	F10PF11	LPF12
1	HELP E	IND					E	XIT

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.

06-12-3	1 SUID		Session	Totals	Ву Д	ADABAS	User	ID	227	14:29:50
UID	COUNT	I	PCT U	ID	COI	JNT	PCT	UID	COUNT	PCT
0014270	8 1	.25	4.3							
0014273	3 2	233	8.0							
C7C4D3E	6 4	97 1	7.2							
C7C4D5D	1 11	.26 3	38.9							
C7C4E3E	3	3	.1							
9B43ACE	31	13	. 4							
0										
0										
0										
Total	Commands:	2895						Total	Users: 12	
Enter-F	PF1PF2	-PF3-	PF4	-PF5I	PF6-	PF7	PF8-	PF9	PF10PF1	1PF12
H	IELP	END							I	TIXE

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.

06-12-31	SSID	Ses	sion Tota	ls By Secu	rity ID	227	7	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						
0								
0								
0								
Total Comm	nands: 2895					Total Se	ecurity	TDs: 12
Enter-PF1-	PF2PF	3PF	4PF5	-PF6PF7	PF8	PF9PH	F10PF1	1PF12
HELE	P END)					1	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.

06-12-3	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 Code	s: 1
ENTER-I	PF1PF2-· HELP	PF3PF4 END	PF5-	PF6PF'	7PF8	-PF91	PF10PF1	1PF12 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.

06-12-	31 STHD	Session	Total	s By ADABA	S 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-	PF1PF2- HELP	PF3PF4 END	PF5	PF6PI	F'/PF8	-PF9	PF10PF	11PF12 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.

06-12-3	1 SDUR		Co	ommands	s 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	1274	47.0
_ 05-13	14:27:40	S1	27	0	2	T204	TREE05	FINDER	1250	59.3
_ 05-13	14:16:27	S1	27	0	3	T011	TREE05	FINDER	123	37.8
_ 05-13	14:21:45	S1	27	0	3	T731	TREE05	FINDER	121	23.5
_ 05-13	14:10:35	S1	27	0	3	T003	TREE05	FINDER	1199	94.6
_ 05-13	14:30:28	S1	27	0	2	T101	TREE05	FINDER	1154	47.0
_ 05-13	14:27:55	S1	27	0	3	Т568	TREE05	FINDER	113	21.1
_ 05-13	14:31:20	S1	27	0	2	T001	TREE05	FINDER	1120	53.5
_ 05-13	14:17:22	S1	27	0	3	T609	TREE05	FINDER	1103	38.9
_ 05-13	14:28:17	S1	27	0	2	т044	TREE05	FINDER	1088	38.8
_ 05-13	14:26:46	S1	27	0	3	T220	TREE05	FINDER	1063	35.7
_ 05-13	14:27:07	S1	27	0	3	T001	TREE05	FINDER	1049	95.0
_ 05-13	14:28:26	S1	27	0	3	T009	TREE05	FINDER	1010	54.4
_ 05-13	14:27:34	S1	27	0	3	Т877	TREE05	FINDER	990	57.8
_ 05-13	14:27:56	S1	27	0	3	Т947	TREE05	FINDER	980	52.2
05-13	14:07:44	S1	27	0	3	т333	TREE05	FINDER	966	56.2
_ 05-13	14:10:33	S1	27	0	3	т071	TREE05	FINDER	93	25.0
[LINE 1 THRU 17 OF 51									
Enter-P	F1PF2-	PF3	3PF	74PI	75	-PF6	-PF7PF8	PF91	PF10PI	F11PF12
H	HELP END UID LIB OPTNS DOWN INFO RIGHT EXIT									

06 10 21	apup			C	uda of Tom	Due			227	14.20.00	
06-12-31	SDUR			Comma	nas or Long	y Dui	acion		221	14.30.09	
TTME	CM	A TO	DTO	WTO	TSNO	COP	1חחג	(hev)	ממא	5(hev)	
14.07.0	7 01	201	DIO	W 10	100720244	COF	TTLOOOD 2	ADD2 (IICA)	40404	04040404040	
- 14·2/·3	/ SI	291	0	2	100/29344		1H99903	00000000	40404	04040404040	
_ 14:27:4) S1	283	0	2	100729344		TH99900	00000000	00000	000000000000	
_ 14:16:2	7 S1	243	0	4		F		00000002	40404	04040404040	
_ 14:21:4	5 S1	227	0	2		V		0000002	40404	04040404040	
_ 14:10:3	5 S1	227	0	2				00000002	00000	000000000000	
_ 14:30:2	3 S1	223	0	3		V		00000005	40404	04040404040	
_ 14:27:5	5 S1	214	0	2				00000002	00000	000000000000	
_ 14:31:2) S1	210	0	2		F		00000002	00000	00000000000	
_ 14:17:2	2 S1	210	0	4		V		00000002	40404	04040404040	
_ 14:28:1	7 S1	209	0	2				00000002	00000	00000000000	
_ 14:26:4	5 S1	208	0	2		V		00000002	40404	04040404040	
_ 14:27:0	7 S1	208	0	5		v		00000002	40404	04040404040	
14:28:2	5 S1	207	0	2		V		00000002	00000	00000000000	
_ 14:27:3	4 S1	200	0	2				00000005	00000	00000000000	
14:27:5	5 S1	198	0	4		v		00000002	40404	04040404040	
_ 14:07:4	4 S1	198	0	3		V		00000002	40404	04040404040	
_ 14:10:3	3 S1	197	0	2		F		00000002	00000	00000000000	
Entor-DE1		םי	E2	DE1			79	- 0 0 - 1 (11	112	
Encer-PF1	PF	2P	r 5	Pr 4	-PF5PF6	26	/Pf8	-Pr 9PF 10	JPFI	1PF12	
HEL	2	E	ND		OPTN:	3	DOWN	INFO LEF	Г	EXIT	

Enter PF11 to scroll right and view additional statistics.

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

06-12-31 D	etail Information	for Selected L:	ine	14:30:22
Date and Time Command Issued	Command Received Response Code of	a Command Wa E on Th	as Issued hread Co	ADABAS ommand ID
12/31/01 14:21:45	0		3 (0130101
ADABAS Issued Against Command File	ISN Accessed (Duration of Command (MSEC)	ADABAS I/O by Cor	Required nmand
S1 27 FIND STATEMENT	196	12123	Assoc => Data => Work =>	> 227 > 0 > 2
NATURAL Program Name	Line Number in Program	Application Library	Job Name	
FINDER	0130	PAYROLL	CICSPROD	
Security ID I	nternal Id H	External ID N	SS User ID	
	00000137		TREE05	

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

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.

06-12-31 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	4 3 0 S1 27 T333 TREE05 FINDER 9666.5	198	0 3
_ 05-13 14:10:33	3 3 0 S1 27 T071 TREE05 FINDER 9325.7	197	0 2
	LINE 1 THRU 17 OF 51		
Enter-PF1PF2-	PF3PF4PF5PF6PF7PF8PF9PF	10PF	11PF12
HELP	END UID JOB OPTNS UP DOWN INFO	RI	GHT 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.

06-12-	-31	SNSA		Sessi	on Totals	By Applica	tion Li	lbrary	227	14:30:23
Start LIBRAR	At: _	COUNT		PCT	LIBRARY	COUNT	PCT	LIBRARY	COUNT	PCT
TRMV71 N2OLIE PAYR31 TRIMRT o o	 0 3 -2 7M	8	139 320 800 321	4.37 10.06 25.16 10.09						
Total Enter-	Comma	ands: PF2	3181 PF3	PF	4PF5	-PF6PF7-	PF8	Total I	ibraries	: 10 1PF12
	HELP		END						E	XIT

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)

The 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.

06-12-3	1 SNSU	Se	ession Tot	als By NSS	User	ID	227	14:30:31
Start A NSS UI	t: D COUNT	PCT	NSS UID	COUNT	PCT	NSS UII	COUNT	PCT
TH99990 DBA TREE1 PAYUS1 O O	133 33 624 1232	4.09 1.01 19.18 37.86						
Total C ENTER-P H	ommands: 325 F1PF2P ELP EN	4 F3PI D	F4PF5	-PF6PF7	PF	Total 8PF9	NSS User PF10PF1 F	IDs: 12 1PF12 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.

06-12-31	SCTI	Ser	ssion To	otals By	CICS	Trans.	ID	227	7	14:30:37
Start At:										
TRANS ID	COUNT	PCT	TRANS 1	ID COUN	T	PCT	TRANS	ID (COUNT	PCT
 BATC	133	4 09								
DAIC GLOCDN71	122	1 01								
CICSBNZI GIGGUDIDD	55	10 10								
CICSINZ3	624	19.18								
COMP	273	8.39								
TSO	959	29.47								
0										
0										
0										
Total Comm	ands: 3254						Total	Trans	TDs:	12
Enter-PF1-		3PF	4PF5-	PF6	-PF7	PF8	-PF9	-PF10	-PF11-	-PF12
HELP	P END	5 11			/			1110	EX3	LT T

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.

06-12-31	SUSA	5	Session	Totals By	User Area		227	14:30:47
AREA	COUNT	PCT	AREA	COUNT	PCT	AREA	COUNT	PCT
40404040	3273	100.0						
Totals Co ENTER-PF1 HEL	mmands: 32 PF2P P EN	73 F3PF D	74PF5	5PF6)	PF7PF8	Total PF9	User Area PF10PF1	s: 1 1PF12 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 <u>User Queue</u> 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 <u>Extended User Queue (XUQ)</u> 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 <u>Hold Queue</u> shows the number of entries, the number of users represented in the Hold Queue, and the users with the most held records.

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

<u>Table of Sequential Commands</u>, <u>Table of Search Results</u>, and <u>Internal Format Buffer</u> 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.

06-12-	31 QUES ADABAS (TE	Queues ar ST-DATABA	nd Table ASE	es 227 15:31:34
Code	Description		Code	Description
A (QHIF)	User Queue Element	(QUQE)	I	High Int Format Buffer
В	Users of a File	(QUQF)	J	Table of Sequential Cmds (QSC)
С	Users by Program Name	(QUQN)	K	Table of Search Results (QSR)
D	Users by Nat Sec Appl	(QUQA)	L	High Hold Queue Users (QHHQ)
Е	Users by Nat Sec User ID	(QUQU)	М	High Sequential Cmds (QHSC)
F	Command Queue	(QCQ)	N	High Search Results (QHSR)
G	Hold Queue	(QHQ)	?	RTM Help Facility (HELP)
н	Int Format Buffer	(QIF)		Return to RTM Main Menu (MENU)
		Code	: .	
nter-P	F1PF2PF3PF4PF5-	PF6I	PF7PH	F8PF9PF10PF11PF12
]	HELP END		EX	IT

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.

06-12-	31	QUQE	Select U	ser ID for	User Q	ueu	e Displa	ау	2	27	14:3	1:47
							USERQ:	ACTV	M	AX	HI% U	SE
Ent	er ar	ı 'S' next	t to the o	desired en	try,			5	20	C	31	
or	enter	the Inte	ernal ID 1	nere:								
SEC	ID	INT ID	EXT ID	JOB NAME	SE	C II) INT	ID	EXT	ID	JOB 1	NAME
_ TREE	04	00000055	00000055	TREE04								
_ TREE	12	0000005C	0000005C	TREE12								
_ TREE	18	0000006B	0000006B	TREE18								
_ TREE	19	0000006E	0000006E	TREE19								
- TREE	13	0000006F	0000006F	TREE13								
Enter-	PF1	PF2PI	F3PF4-	PF5PF	6PF7	1	PF8P	F91	PF10	PF	11PF	12
11	HELP	EN	D								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.

06-12-31	QUQE	User Queue Element TEST DATABASE	227	14:31:56
Internal ID External ID Security ID NSS User ID	= 00000055 = TREE1 = TREE04 = TREEABCD	Applica Program Job Nam	tion Library Name e	= ZLIB = TREETEST = L01TSI
User In: Type/Status Last Activity Priority Records Held Files Being A ACC = 1,2,	formation = ET/NOT AT ET = 10:47:42 = 1 = 420/500 ccessed = 4 3,17	COUNTS C Commands I/Os Duration (MS)	URRENT 17 8 123	TOTAL 807 101 2433
UPD = 1,2 Enter-PF1PF HELP	2pf3pf4p END	F5PF6PF7PF8 QI	-PF9PF10 UQE	-PF11PF12 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.

06-12-	31 QH	łQ		Active	e Hold	Queu	le		227	14:31:21	
USERQ:	ACTV	MAX	HI% USE		HOLDQ:	ACTV	MAX	HI%	USE		
	5	20	31			15	1000		11		
	INTERN	JAL ID	EXTERN	AL ID	JOB	NAME	FNR		ISN		
	001400)23	GROSS		LOI	rsi	13		12345		
	001400)23	GROSS		LOI	ΓSI	13		12346		
	001400)23	GROSS		LOI	rsi	13		12347		
	001400)23	GROSS		LOI	rsi	13		12348		
	001400)23	GROSS		LOI	ΓSI	13		12349		
	001400)23	GROSS		LOI	rsi	13		12350		
	001400)23	GROSS		LOI	ΓSI	13		12351		
	001400)23	GROSS		LOI	rsi	13		12352		
	001400)23	GROSS		LOI	rsi	13		12353		
	001400)23	GROSS		LOI	ΓSI	13		12354		
	001400)23	GROSS		LOI	rsi	13		12355		
	001400)23	GROSS		LOI	ΓSI	13		12356		
	001400)23	GROSS		LOI	ΓSI	13		12357		
	001400)23	GROSS		LOI	rsi	13		12358		
	001400	023	GROSS		LOI	rsi	13		12359		
Enter-	PF1H	PF2P	F3PF4	-PF5	PF6	-PF7	-PF81	PF9	PF10	PF11PF12	
1	HELP	EN	D							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.

06-12-31 QHHQ	Hold Queue By Hi	gh 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-PF1PF2P	PF3PF4PF5PF6	-PF'/PF8	PF9PF10	-PF11PF12
HELP EN	ID			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.

06-12-31	QUQF	Select	Active File Number	for	Display	22	7	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:					
					-			5
FNR 17		FNR	FNR		FNR		FIN	R
- 1/								
_ 202								
_ 230								
_12345								
Enter-PF1	-PF2PF	3PF4-	PF5PF6PF7	PF	8PF9	PF10	PF1	1PF12
HELP	END						H	TIXI

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.

06	5-12-	31	Qĭ	JQF	Current	τ	Jse	ers		Wit	hin	File	17		2	27		14	: 32	::1	.1
US	SERQ:	AC	CTV	MAX	HI% USE																
			5	20	31																
						А	U	Е	U	С							Α	U	Е	U	С
						С	Ρ	Х	т	L							С	Ρ	Х	т	L
	SEC	ID	INT	UID	JOB NAME	С	D	U	Ι	U	SEC	ID	INT	UID	JOB	NAME	С	D	U	Ι	U
						-	-	-	-	-							-	-	-	-	-
d	TREE	11	0014	40023	LO1TSI	Х	Х														
_	TREE	12	0014	40089	P01G13	Х															
_	TREE	13	9A42	10643	D01XXAS4	Х															
_	TREE	14	0022	28043	TSI8833	Х	Х														
Er	iter-	PF1	1	PF2	PF3PF4-	E	F5	5	- E	PF6-	PF	7PE	78	-PF9	-PF1	0PF	11	I	PF1	2-	-
		HEI	P	E	IND								Q	JQF			E۶	ΓI			

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.

06	-12-31	OLION	Select	Program	For	User	0110110	Display	227		14:32:20
00	10 01	2021	501000	1109100	101	0001	Queue	USERO:	ACTV	MAX	HT%USE
								<u>c</u>	5	20	31
	Enter a	n 'S'	next to th	e desire	d ent	ry,					
	or ente	r any	Program na	me here:							
	PROGRAM		PROGRAM	P	ROGRA	M	P	ROGRAM	PF	OGRAM	
		-		-			-				-
_	APPLOT										
—	BATRUGL										
—	CARPR										
_	CARPX										
s	CARPY	NT									
—	MUNITIO.	LN .									
-	TRACION										
-	X49D3G										
-	M191 90										
En	ter-PF1-	PF2-	PF3PF	4PF5-	PF6	PI	F7P	F8PF9	PF10-	-PF11-	PF12
	HELP		END							EX	IT

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.

06-12-31 QUQN	User Queue For NATURAL TEST-DATABASI	Program: CARPY E	227 14:32:22
		NATURAL	SESSION
SEC ID USER ID	JOB NAME APPL LIB NSS UI	O CMDS I/O	DUR-SEC
TREE1 ?f??	DBA43 TRIMRTM TREE1	90 5	53 32
Enter-PF1PF2	-PF3PF4PF5PF6PF'	7PF8PF9PF1()PF11PF12
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.

06-12-31	QUQA	User Que	ue For App TEST-1	plication DATABASE	Library:	BOMBAY	227 14:32:29
					NATU	RAL SES	SION
SEC ID	UID	JOB NAME	NAT PROG	NSS UID	CMDS	I/O	DUR-SEC
TREE1 TREE2	?f?? ??DC	DBA43 DBA81	TRMQUQA TRMMENU	TREE1 DBA	92 7	54 10	33 8
Enter-PF1- HELP	PF2-	PF3PF END	4PF5	-PF6PF'	7PF8P OUOA	F9PF1	0PF11PF12 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.

06-12-31	QUQU	User Queu	e For NSS TEST-DATAI	User ID: BASE	AJ143P9	227	14:32:36	
					NATU	JRAL SESS	SION	
SEC ID	UID	JOB NAME	NAT PROG	APPL LIB	CMDS	I/0	DUR-SEC	
TREE1	?f??	DBA43	TRMQUQU	B3943X3	93	55	34	
				<				
Enter-PF1- HELF	PF2P P EN	F3PF4 D	-PF.2PF.6	5PF'/	-PF.8PF.9- OUOU	bF.T01	EXIT 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.

06-	12-3	1 Q	CQ	ADA	BAS	Comm	and	Quei	ıe		17	14:32:58
					ΕN	TRIES	: /	ACTV 2	MA. 2	x. 0		
		TD UEV	GROUPNOR	CIMD	C1			TOD	NTA ME	TTDDADY	DDOGDAM	NGG UID
01	200	000050	SEQUENCE 30015	S1	ĊA	LLS 1	116	JOB A\$49	NAME XP3Z	B3943X3	PROGRAM N416PQ	TREE1
ABC	D C1	C2C3C4	30016	L2		2	43	CICS	3	PAYTEST	PAYPGM12	DBA
Ent	er-P	F1P	F2PF3-	PF4-	PF	5Pi	F6	-PF7-	PF	8PF9	-PF10PF	11PF12
	H	ELP	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.

06-12-	31 QSC	Tabl	e Of	Sequent	cial	Commands	22	7	14:33:05
USERQ:	ACTV M	AX HI% USE		ENTRIES	: ACI	V 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	LЗ	19700001	L C1D7F1F	2 123	AA
L3	00900001	C1C2C3C6	24	XX	LЗ	38300001	L C1F7F1F	2 123	AA
L3	10200001	C4C1F4F3	24	XX	LЗ	47600001	L C1C2C3C	6 123	AA
L3	14200001	C4C1F4F3	25	AB	L9	90100001	L C1D7F1F	2 123	BB
L3	59400001	C1C2C3C6	24	XX	L9	10100001	L C1D7F1F	2 123	AA
L3	00900001	C4C1F4F3	24	XX	L9	47300001	L C1C2C3C	6 123	AA
L3	19900001	C4C1F4F3	24	SA	L9	51600001	L C1D7F1F	2 123	CC
L3	24700001	C1C2C3C6	24	XX	L9	24300001	L C1D7F1F	2 123	AA
L3	12300001	C4C1F4F3	24	XX	L9	80700001	L C1C2C3C	6 123	AA
0									
0									
0									
Enter-	PF1PF2	PF3PF4	PF	5PF6	PF7	/PF8	-PF9PF1	0PF11	PF12
	HELP	END						Ež	KIT

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.

06-12-	-31	QHSC		Sequential	Commands	Ву Ні	igh Usa	age		227	14:33:16	
USERQ	ACT	'V M	AX :	HI% USE	ENTRIES:	ACTV	L2	L3	L9	ALLOC	HI% USE	
		5	20	31		29	12	15	3	2996	27	
			UID	CMDS				UID		CMDS		
		C4C	1F4F3	13								
		ClD	7F1F2	7								
		ClC	3C2C6	5								
		ClC	3C2C8	2								
		ClC	3C2C9	1								
		ClC	3C2C7	1								
Enter-	-PF1-	PF2	PF	3PF4PF	5PF6	-PF7	PF8	PF9	PF	10PF11	LPF12	
	HELP	•	END							E	XIT	

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.

06-12-3	31 QS	R		Table	Of	Sear	ch Re	esult	S	22	7	14:33:23
USERQ:	ACTV	MAX	HI%	USE	ENT	RIES:	ACTV	S2-	S9 S	AV-OPT	ALLOC	HI% USE
	5	20	3	1			8		б	2	1996	30
		SEC	ID	CMD ID		FNR	SEÇ	2-NR	S2/9	R	ABNS	
		C4C1F	4F3	D5C5E601	L	13		101	N		4	
		C4C1F	4F3	D5C5E602	2	13		102	N		7	
		C1D7F	1F2	D5C5D701	L	28		103	Y		13	
		C4C1F	4F3	D5C5E603	3	13		104	N		393	
		C1D7F	1F2	D5C5D702	2	28		105	N		27	
		C1D7F	1F2	D5C5D703	3	28		106	N		7	
		C4C1F	4F3	D5C5E604	1	13		107	N		12	
		C4C1F	4F3	D5C5E605	5	13		108	N		2	
Enter-H	PF1P	F2P	F3	PF4PF5	5	PF6	-PF7	PF8	PF	9PF1	0PF1	1PF12
H	IELP	EN	D								E	XIT

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.

06-12	-31	(QHSR	Se	arch	Results	Ву	High	Usage	2	27	14:33:2	7
USERQ	: AC	TV	MAX	HI% US	E	ENTRI	ES:	ACTV	S2-S9	SAV-OPT	ALLOC	HI% US	Е
		5	20	31				8	6	2	1996	30	
			UID	LIST	S	RABNS			UID	LISTS	RA	BNS	
		(C4C1F4F3		5	418							
		(C1D7F1F2		3	47							
						_	-						
Enter	-PF1		-PF2P	F3PF	41	PF5PF	6	-PF7	PF8	PF9PF	10PF1	1PF12-	-
	HEI	ιP	EN	D							H	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.

06-12-31	QIF	In	ternal	Form	nat	Buffe	er		22	7	14:33	3:29
USERQ: AC	CTV MAX	HI% USE	IFB	ENTRI	ES	ACTV	GLOB	AL		ALLOC	HI%	USE
	5 20	31				7		3		799	96	53
GLOBAL	GLOBAI	HEX	UID	C	CID	CID	HEX		FNR	BYTES		
? A J	C0AD17240	14AD101							2748	636		
? ?J	COAD189F3	ABAD101							379	814		
? 1 J	C0AD1927F	'14AD101							16	297		
			C4C1F	4F3	?	0000	0001		13	1026		
			C1D7F	1F2 3	2 5	9B34	472A2		28	358		
			C4C1F	4F3	?	0000	0002		12	712		
			C4C1F	4F3 F	REV1	. D9C5	5E5F1		16	874		
Enter-PF	LPF2E	PF3PF4-	PF5	PF6-	F	PF7I	PF8	PF9	PF1	0PF11	PF1	12
HEI	LP EN	ID								E	XIT	

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.

06-12-	31 QHI	F	I	intern	al Fo	rmat	Buff	er	High	Usage		227 1	4:33:	37
USERQ:	ACTV	MAX	HI%	USE	IFB	ENI	RIES:	AC	TV	GLOBAL		ALLOC	HI% I	JSE
	5	20		31					7	3		7996	4	0
					GLO	BAL	CIDS:	3						
	UI	D	IFBS	BY	TES				UID	IFBS	BY	TES		
	C4C1F	4F3	3	2	612									
	C1D7F	1F2	1		358									
Enter-	PF1P	F2	-PF3	-PF4-	PF5	F	РГ6	PF7	PH	8PF9-	PF1	0PF11	PF1	2
	HELP	1	END									E	TIX	

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' lea 06-12-31 TRAC Dy	ve screen blank & hit ENTER namic Trace Facility TEST-DATABASE	227 14:29:5	0
(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 >= W	ork >=	
Enter-PF1PF2PF3PF4- HELP END	PF5PF6PF7PF8PF9 TDSP TACT EXCLD SEL	PF10PF11PF12- 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.

06-12-31 TL	IB Select	tion list for	Applic. Libr	ary 227	14:29:50
The list b from the lis	elow shows the t below (up to	e active entr o 5 max) or e	ies on the sy nter up to 5	vstem. You may values here:	y select
LIBRARY _ N2OTEST _ TREE12 _ TREE13 _ TRIMTEST _ ZLIB	LIBRARY	LIBRARY	LIBRARY	LIBRARY	LIBRARY
Enter-PF1P	F2PF3PF4	4PF5PF6	PF7PF8-	PF9PF10	-PF11PF12
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 perfo	To perform a 'TRACE ALL' leave screen blank & hit ENTER									
06-12-31	TRAC Dynamic Trace Facility 227	14:29:50								
	Tracing: TEST-DATABASE									
(TALL.)		+								
(TFNR)	Help for Response Code Trace	İ								
(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									
(11150)	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.	İ								
	+	+								
(TI/O) .	(TI/O) ADABAS I/O's: Assoc >= Data >= Work >=									
Enton DE										
Encer-PF	T = 54 7 54 7 54 2 54, 9 54, 1 54, 8 54, 3 54, 1 0 5 T = 54, 7 54, 7 54, 9	PYTE								
HE.	LF FUD SET IACI	5AL1								

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.									
06-12-31	TRAC	Dynamic Trac	ce Facility	7	227	14:29:50			
		Tracing: TES	ST-DATABASE	1					
(France Frankthing								
(TENR) F	Tile Number	:							
(TRSP) F	Response Code	:							
(110)1 / 1	copponde code								
(TJOB) J	Job Name	:							
(TPGM) E	Program Name	: N2O*							
(TLIB) A	Application Librar	y: N2OTEST_							
(TSID) S	Security ID	:							
(TUID) 1	Internal User ID	:							
(TNSU) N	NSS User ID	:							
	NDABAS Command	· T 2	C1	50					
(ICMD) F	ADABAS COmmand	: 113	51	59					
(TDUR) C	Command Duration	>= n	illisecond	ls					
(TI/O) <i>P</i>	ADABAS I/O's: Ass	oc >=	_ Data >=	W	ork >=	_			
Enter-PF1	LPF2PF3PF	4PF5PF	6PF7	PF8PF9	PF10PF1	1PF12			
HEI	LP END	TDSI	P SE	L 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.

06-12-31	TDSP		Γ	ynamic Tra	ace Faci	lity	227	14:29:50
TIME	CM	FNR	RSP	ISN	SEC ID	PROGRAM J	JOB NAME	DUR-MS
_ 14:29:49	S1	200	0	217	TREE11	N2OEDIT	TREE11	137.1
_ 14:29:49	L3	202	0	12474	TREE12	N204330S	TREE12	48.5
_ 14:29:49	S1	202	0	112	TREE11	N2OEDIT	TREE11	114.6
_ 14:29:49	L3	202	0	12491	TREE12	N204330S	TREE12	120.9
_ 14:29:49	L3	202	0	12525	TREE12	N204330S	TREE12	43.0
_ 14:29:49	L3	202	0	21788	TREE12	N204330S	TREE12	67.6
_ 14:29:49	L3	202	0	33620	TREE12	N204330S	TREE12	64.2
_ 14:29:49	L3	202	0	33659	TREE12	N204330S	TREE12	43.3
_ 14:29:49	L3	202	0	33673	TREE12	N204330S	TREE12	6.7
_ 14:29:50	L3	202	0	33814	TREE12	N204330S	TREE12	39.8
_ 14:29:50	S1	202	0	33845	TREE12	N204330S	TREE12	38.9
_ 14:29:50	S1	202	0	112	TREE11	N2OEDIT	TREE11	121.0
_ 14:29:50	L3	202	0	33872	TREE12	N204330S	TREE12	47.2
_ 14:29:50	S1	200	0	8	TREE11	N2OEDIT	TREE11	81.0
_ 14:29:50	L3	202	0	33879	TREE12	N204330S	TREE12	70.4
_ 14:29:50	L3	202	0	33884	TREE12	N204330S	TREE12	6.1
_ 14:29:50	L3	202	0	33894	TREE12	N204330S	TREE12	6.8
				LINE 69 T	HRU 85 C)F 85		
Enter-PF1-	PF2-	PF3	PF4	PF5i	PF6PF	7PF8	-PF9P	F10PF11PF12
HELP		END	UII	LIB '	TACT	UP	DOWN I	NFO RIGHT EXIT

Enter PF11 to scroll right and view additional statistics.

06-12-31	TDSP		Dy	namic Trac	e Fac	cility	221	7 14:29:50
TIME	CM AIO	DIO	WIO	ISNQ	COP	ADD1	ADD2(hex)	ADD5(hex)
_ 14:29:49	S1	1	2	100729344		TH99903	00000000	00000000000000000
_ 14:29:49	L3	1	2	100729344		TH99900	00000000	4040404040404040
_ 14:29:49	S1	1	4		F		00000002	000000000000000000
_ 14:29:49	LЗ	1	2		v		00000002	4040404040404040
_ 14:29:49	L3	1	2				00000002	4040404040404040
_ 14:29:49	L3 1	1	3		V		00000005	0000000000000000000
_ 14:29:49	L3 1	1	2				00000002	000000000000000000
_ 14:29:49	L3	1	2		F		00000002	4040404040404040
_ 14:29:49	L3				v		00000002	000000000000000000
_ 14:29:50	L3	1	2				00000002	0000000000000000000
_ 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	0000000000000000000
_ 14:29:50	S1	1	2				00000005	0000000000000000000
_ 14:29:50	L3	1	4		v		00000002	4040404040404040
_ 14:29:50	L3		3		v		00000002	4040404040404040
_ 14:29:50	L3		2		F		00000002	000000000000000000
Enter-PF1-	PF2	-PF3	-PF4-	PF5PF6	PI	7PF8-	PF9PF3	L0PF11PF12
HELP	_	END	-	OPTI	NS	DOWN	INFO LEI	T 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.

06-12-31	Detail Information	n for Selected	Line	14:30:22
Date and Time Command Issued	Command Received Response Code d	d A Command of on	Was Issued Thread	ADABAS Command ID
12/31/01 14:21:45	0		1	08100201
ADABAS Issued Against Command File	ISN Accessed	Duration of Command (MSEC)	ADABAS I/ by C	0 Required Command
L3 202 READ LOGICAL	12474	48	Assoc Data Work	=> => 1 =>
NATURAL Progra Name	um Line Number in Program	Application Library	Job Name	
N204330S	0810	N2OTEST	TREE12	
Security ID	Internal Id	External ID	NSS User ID	
TREE12	92	000005C	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.

06-12-31 TCMD ADABAS	Commands Selection List	227 14:30:22
Enter the 2-character code to	be used	
for the trace criteria. Up t	o 5	
commands may be entered:		
Cmds:		
Al - 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
Cl - 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
El - 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-PF1PF2PF3PF4	-PF5PF6PF7PF8PF	9PF10PF11PF12
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.



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.

06-12-31	TPGM	Selection li	st for Progra	ams 2	27 14:30:22
The list from the l	below shows ist below (up	the active en to 5 max) or	tries on the enter up to	system. Yo 5 values he	u may select re:
PROGRAM _ AEDIT _ MENU _ N2OEDIT _ N2057701 _ SYSKEY _ TRMTSEL _ ZAS01010	PROGRAM	PROGRA	M PROGRI	AM PROG	RAM PROGRAM
Enter-PF1	-PF2PF3	PF4PF5P	F6PF7P	F8PF9P	F10PF11PF12
HELP	END				EXIT

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.

06-12-31	TSID	Seleo	ction List H	'or User ID	Trace	227	14:30:22
The list perform t the ID he	below shows he trace on re:	the act any ID	ive users o (up to 5 ma	on the syste ax). Please	m. Howev select t	rer, you m The ID(s)	ay or enter
SEC ID _ TREE04 _ TREE12 _ TREE19 _ TREE19 _ TREE13 _ TREE11 _ TREE06	INT ID N 00000055 T 00000068 T 00000066 T 00000067 T 00000070 T 00000071 T	ISS ID REE04 REE12 REE18 REE19 REE13 REE11 REE06	JOB NAME TREE04 TREE12 TREE18 TREE19 TREE13 TREE11 TREE06	SEC ID	INT ID	NSS ID	JOB NAME
Enter-PF1- HELP	PF2PF3 END	8PF4	PF5PF6-	PF7PF8	PF9	PF10PF1	1PF12 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.



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 T	races, 'I' for Information on Trace	es.	
06-12-31 TACT	Active Trace Display TEST-DATABASE	227	14:30:22
Security Trace		Trace	Time
ID Type	Trace Value	Date	Started
_ TREE18 DUR >=	1000 milliseconds	12/31	13:53:44
_ TREEI2 CMPLX * C	omplex Trace - Use an 'l' for Info	* 12/31	13:55:25
To stop another	user's trace		
please enter pa	ssword:		
Enter-PF1PF2PF3	-PF4PF5PF6PF7PF8PF9-	PF10P	F11PF12
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.

```
06-12-31 Trace Information Display Screen 14:30:22
User TREE12 is performing a trace against DBID 1 . The Trace was
initiated on 12/31 at 13:53:25 and is collecting information based
on the following criteria:
INCLUDE: ALL : TRACE ALL DATABASE ACTIVITY
```

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.

06-12-31	INFO		Database Information TEST-DATABASE	227	14:34:09
		Code	Description		
		A B C D ?	General Database Info File Control Block Field Definition Table Database Device Type Info RTM Help Facility Return to RTM Main Menu	(IGCB) (IFCB) (IFDT) (IDEV) (HELP) (MENU)	
			Code: .		
Enter-PF1 HEL	PF2 P	-PF3PF	4PF5PF6PF7PF8	PF9PF10-	PF11PF12 EXIT

The screen on the previous page displays the various functions available. Each function and a brief description follows:

Field	Des	cription				
ENTER CODE	The function to be executed. Valid value 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.				
	В	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.

06-12-31	IGCB		General	Databa	se Info	rmatio	on	227	14:3	34:17
				TEST-DA	TABASEA					
		DEVICE	FIRS	T RABN	LASI	' RABN	TOT	AL RABNS		
	ASSO-1	3350		1		3,289		3,289		
	ASSO-2	3350		3,290	1	3,156		9,867		
		2250		-						
	DAIA-1	3350		1		5,394		5,294		
	DATA-2	3350		5,395	2	1,576		16,182		
		2250		-				10 500		
	WORK-1	3350		T	1	0,788		10,788		
Maximum	Files	1000	Highest	FNR 3	0 Ori	ginal	Load	01/01/99	14:55	:41
Enter-PF	1PF2-	PF3	-PF4P	F5PF	6PF7-	PF8	PF9-	PF10	PF11PH	712
HE	LP	END							E	KIT

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.

+	+
L	Please enter the File Number
İ	you wish to view FCB information
Ĺ	on, or press PF9 for a selection
Ĺ	list. FNR:
÷	+

Assume PF9 is pressed. The following screen is displayed.

06-12-31	IFCB	File Sele	ection Li	lst	227	14:34:17
		TEST-I	DATABASE			
Enter 'S'	beside FNR to s	elect file d	or enter d	lesired	FNR here:	
FNR	FILE NAME	FNR	FILE NA	ME	FNR	FILE NAME
_1	EMPLOYEES	_232	PRD313-1	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	PF2PF3P	F4PF5I	PF6PF7-	PF8	PF9PF10	-PF11PF12
HEI	P 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.

06-12-31 IFCB	File TH	e Information EST-DATABASE	227	14:34:26				
	FILE 202	Personnel						
Status: AVAILABL	E							
High ISN Used Max ISN	36911 38135	Highest Index Level	L 3					
Min ISN	0	Max Compressed RECI	4088					
ISN Reuse	No	ASSO Padding Factor	c 10%					
Space Reuse ADAM File	Yes No	DATA Padding Factor	c 10%					
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-PF1PF2-	Enter-PF1PF2PF3PF4PF5PF6PF7PF8PF9PF10PF11PF12							
HELP	END	S	EL	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.

06-12-	31 IF0	СВ		File RAB TEST-DA	N Usage TABASE	227		14:34:34
			FI	LE 202 P	ersonnel			
								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-	PF1PI	F2PF	3PF	4PF5PF	6PF7PF		10PF11-	PF12
	HELP	ENI)			SEL	EX	IT

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.



Assume PF9 is pressed. The following screen is displayed.

06-12-31	IFDT	File	Selection	n Lis	st	227	14:34:17
Enter 'S'	beside FNR to	select	file or en	nter d	lesired	FNR here:	_
FNR	FILE NAME	FNR	FIL	E NAM	Ξ	FNR	FILE NAME
_1 35	EMPLOYEES CONTROL	232	PRD	313-FI	DIC		
_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	ł					
_223	NON-RES-TIME						
_230	NAT216-FNAT						
_231	NAT216-FUSER						
Enter-PF1-	PF2PF3I	PF4PF	5PF6	-PF7	-PF8	PF9PF10-	-PF11PF12
HELP	END		P	REV I	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.

06-12	-31	IFDT			Field	Descriptio	ons		2	27	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			0			
3	2	AB	12	А	NU			0			
4	2	AC	6	A	NU			0			
5	1	GB									
б	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						
0											
0											
0											
Enter	-PF1-	PF2-	PF3-	Pl	F4PF5-	PF6PF'	7P1	F81	PF91	PF10	PF11PF12
	HELP		END								EXIT

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.

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.

06-12-31	IFDT	1		Special Descr	iptors	227	14:	34:49
					File	202		
TYPE	NAME	LNGTH	FMT	COMPONENT	S (POSITIO	NS)		
PHONDE	PH			BB				
SUBDE	SB	5	A	BB(3:7)				
SUPDE	SA	9	A	AA(1:3)	AB(10:12)	AC(1:3)		
				*** CONTAIN	S NU FIELD	(5)		
SUPDE	SC	12	A	AA(1:3)	CB(12:15)	CC(1:1)	AC(3:6)	
				*** CONTAIN	S NU FIELD	(S)		
SUPDE	SD	19	A	AA(1:3)	BB(12:15)	CB(15:17)	AC(1:6) E	BC(1:3)
				*** CONTAIN	S MU NU FI	ELD(S)		
SUPDE	SE	25	A	AA(1:8)	AB(5:7)	CA(1:14)		
				*** CONTAIN	S 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) A	AP(4:8)
				BB(12:16)	BC(5:12)	BD(6:10)	BE(8:15) E	3F(7:13)
				*** CONTAIN	S NU FIELD	(S)		
Enter-PF1	PF2	PF3-	PF4	PF5PF61	PF7PF8-	PF9PF	10PF11F	F12
HEL	P	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.

06-12-31 IFDT	Field Description T File: 20	able Totals 2	227	14:34:55				
FIE	L D S	Special Fields / De	scriptor	s				
Total Fields	71	Descriptors	4					
Non-PE Groups PE Groups	з О	Unique Descriptor	0					
with MU	Field 0	Sub Descriptors	0					
without	MU Field 3	Super Descriptors	10					
Multi-Value	0	Hyper Descriptors	0					
		Phonetic Descript	ors	0				
S U P P R	ESSION							
Null Suppressed	69	Sub Field	0					
Fixed	2	Super Field	0					
Normal	0							
Record Length of file: 552								
Enter-PF1PF2-	PF3PF4PF5PF6-	PF7PF8PF9	-PF10PI	F11PF12				
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.

06-12-31	IDEV	Dai	tabase Dev TEST	vice Defi -DATABASE	227	14:35:05				
	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-PF	Enter-PF1PF2PF3PF4PF5PF6PF7PF8PF9PF10PF11PF12									
HE	LP	END				RABNS	EXIT			

06-12-31	IDEV	Dat	Database Device Definition TEST-DATABASE			227	14:35:05		
	TRKS	RABNS PER CYLINDER							
DEVICE	/CYL	ASSO	DATA	WORK	TP/SR	PLOG	CLOG		
3310		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-PF	Enter-PF1PF2PF3PF4PF5PF6PF7PF8PF9PF10PF11PF12								
HF	LP	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.

06-12-31	VMEN		SECURITRE Interface TEST-DATABASE	227	14:35:05
		Code	Description		
		A B C D E F G H I	Violation by User ID Violation by Job Name Violation by File Number Violation by Nat Program Violation by Nat Sec Appl Violation by Security ID Table Purge Information Transfer to SECURITRE RTM	(VUID) (VJOB) (VFNR) (VPGM) (VNSA) (VSID) (VPUR) (VACT)	
		:	Return to RTM Main Menu	(MENU)	
			Code : .		
Enter-PF1- HELI	PF2- P	PF3 END	-PF4PF5PF6PF7PF8	-PF9PF10	-PF11PF12 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.

06-12-31	VUID	SECURITRE Violatio	ns – User ID	227	14:35:21			
	UID	COUNT	UID	COUNT				
	0000005C	2						
	000000A2	3						
	C3E2E3F2	1						
	C3E2E3F5	1						
		Total	Violations: 7					
Enter-PF	Enter_DF1DF2DF3DF4DF5DF6DF7DF8DF9DF11DF11DF12							
HEI	LP	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.

06-12-31	VJOB	SECURITRE	Violations - Job Name		227	14:35:33
	JOB NAME	COUNT	JOB NAME	COUNT		
	CICSTEST	2				
	MAINT16A	3				
	PRDEV04	2				
		То	otal Violations: 7			
Enter-PF1	PF2PF3	-PF4PF5-	PF6PF7PF8PF	79PF	10PF1	1PF12
HEL	P END				 I	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.



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.

06-12-31	VPGM	SECURITRE Vio	lations - Program	227	14:35:37
	PROGRAM	COUNT	PROGRAM	COUNT	
	01				
	#NOLEBOT	3			
	PRO4XYZ	1			
	USCN	2			
		Total	Violations: 7		
D	550	DD2 DD4 DD5			11 5510
Enter-PF1 HEI	PF2! .P	PF3PF4PF5 END	-Бғ.0Бғ.1Бғ.8Б	.F. A 5 F, T O 5 F	EXIT EXIT
Enter-PF1 HEI	PF21	Total PF3PF4PF5 END	Violations: 7 -PF6PF7PF8P	F9PF10PF	11PF12 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.

06-12-31	VNSA	SECURITRE	Violations	- Application	Library	227	14:36:13
	LIBRARY	COUN	лт	LIBRARY	COUNT		
	#NOTEB0 PRDEV USC01	1	3 2 2				
			Total Vi	iolations: 7			
						10 -	-1110
Enter-PF1 HEI	LPF2 GP	-PF3PF4- END	PF5PF6	5PF'/PF8-	PF9PF	101	F11PF12 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.

06-12-31	VSID	SECURITRE	Violations	- Security	ID 227	14:36:13
	SEC ID	COUNT		SEC ID	COUNT	
	TREE01		3			
	TREE02		2			
	TREE03		2			
			Total Viol	ations: 7		
Enter-PF1	PF21	PF3PF4	-PF5PF6	-PF7PF8-	PF9PF10	PF11PF12
HEL	P 1	END				EXIT



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.

06-12-31	VPUR	SECURITRE	Table	Purge	Inform	ation	227	14:36:24
Counts	s Of SECURITRE	Table Purg	ges:					
	Inactive User	s Due To Ta	able Fu	11 2				
	All Users Due	To Table 1	Full	0				
	Inactive User	s Due To T	ime Int	erval		5		
	All Users Due	To Time I	nterval	0				
	All Users On 1	Demand		0				
Enter-PF	1PF2PF3-	PF4PF	5PF6	PF7	/PF8	PF9PF	10PF1	1PF12
HEI	LP END						E	TIXI

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.

06-12-31	VACT	SECURITRE	Table Acti	lvity	Infor	mation	227	14:36:54
Count	s Of SECUR	ITRE Table A	nd Security	/ Pacl	kage A	ccesses:		
	Dimost To	blo Nagoga 1	No DAGE Cho	ole M	andad	417		
	Direct la	DIE ACCESS, I	NO RACE CHE	ECK IN	eeueu	41/		
	Direct Ta	ble Access, 2	Also RACF C	Check	Neede	d	22	
	Found In	Table, No RA	CF Check Ne	eeded		9		
	Found In	Table, Also 1	RACF Check	Neede	ed	7		
	Not Found	l In Table, R	ACF Check N	leedeo	ł	15		
	Non-File-	Related RACF	Checks (SI	TRNAT	, etc.)	0	
	RACF Call	s Issued For	Logging Or	nly			0	
Enter-PF	1PF2	PF3PF4	PF5PF6	PF7-	PF8	PF9	-PF10	PF11PF12
HE	LP	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 User-Exit-1, User-Exit-4, 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.

06-12-	-31 EMEN Env	vironment	Informa	tion 227	14:37:01
		TEST-DAT	TABASE		
Code	Description		Code	Description	
A	ADABAS Information	(EAIN)	J	TRIM User-Exit-2 In	fo (EUX2)
В	ADABAS Addresses of Mods	s (EAAM)	K	TRIM User-Exit-4 In	fo (E4IN)
С	ADABAS Addresses of Tbls	(EAAT)	L	TRIM UEX4 Addr of M	odules (E4AM)
D	NATURAL Information	(ENIN)	М	TRIM UEX4 Addr of T	ables (E4AT)
E	NATURAL Buffer Pool	(ENBP)	N	TRIM UEX4 Logging P	arms (E4LO)
F	TRIM User-Exit-B Info	(EUXB)	0	TRIM UEX4 Resp Code	Parms (E4RS)
G	TRIM User-Exit-A Info	(EUXA)	?	RTM Help Facility	(HELP)
Н	TRIM User-Exit-1 Info	(ElIN)		Return to RTM Main	Menu (MENU)
I	TRIM UEX1 Comm Run Parms	(E1PA)			
		Coc	le: .		
Enter	-PF1PF2PF3PF4	PF5PF6	5PF7-	PF8PF9PF10	PF11PF12
	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 User-Exit-1 through 4, 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 User-Exit-B Information (EUXB)

Displays information about User-Exit-B(s), including the date and time the user-exit was assembled, the version of TRIM the user-exit is for, the Zap switch settings, and the parameters specified for Batch Slowdown.

• TRIM User-Exit-A Information (EUXA)

Displays user-exit-a name, version, and the time it was assembled.

• TRIM User-Exit-1 Information (E1IN)

Displays information about User-Exit-1 including the date the user-exit was assembled, the version of TRIM the user-exit is for, and the number of User-Exit-1 Communication runs that have been executed during the session.

• TRIM User-Exit-1 Parameters (E1PA)

Displays information about the User-Exit-1 parameters currently in effect.

TRIM User-Exit-2 Information (EUX2)

TRIM does not use User-Exit-2 at this time.

• TRIM User-Exit-4 Information (E4IN)

Displays information about User-Exit-4, including the date and time the user-exit was assembled, the TRIM version, the number of User-Exit-4 Communication runs that have been executed during the session, and the number of CLOG Detail, PRESUM, and TRELOG Records written.

- TRIM User-Exit-4 Addresses of Modules (E4AM)
 Displays information about the User-Exit-4 module addresses.
- TRIM User-Exit-4 Addresses of Tables (E4AT)
 Displays information about the User-Exit-4 table addresses.
- TRIM User-Exit-4 Logging Parameters (E4LO)
 Displays information about the User-Exit-4 logging parameters currently in effect.
- TRIM User-Exit-4 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.



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.

06 - 12	-31	ΕΔΔΜ			ADAR	AS Module	Addre		227		14:37:33
00 12	51	010101			110110	nouure	naar	00000	227		11.21.32
			AI	DALNK 0)37DD98			ADAEX1	000722	58	
			AT	DATOR 0	38EEF8			ADAEX2	000000	0	
			AT	DAMPM 0	070958			ADAEX3	0000000	0	
			AT	DALOG 0	06EE58			ADAEX4	00074D	48	
			AT	DANET 0	0000000						
					ADA	BAS NUCLE	us				_
0	0002	20A00	2	00027E	28 4	0003AFA0	6	0004AB	50 8	0005E5B8	
1	0002	23960	3	0003304	18 5	00044958	7	0005221	во 9	00068658	
					- ADABA	S HYPER E	XITS ·				-
1	0000	00000	8	000000	0 15	00000000	22	0000000	00 29	00000000	
2	0000	00000	9	000000	0 16	00000000	23	0000000	00 30	00000000	
3	0000	00000	10	000000	0 17	00000000	24	0000000	00 31	00000000	
4	0000	00000	11	000000	0 18	00000000	25	0000000	00		
5	0000	00000	12	000000	0 19	00000000	26	0000000	00		
6	0000	00000	13	000000	0 20	00000000	27	0000000	00		
7	0000	00000	14	000000	0 21	00000000	28	0000000	00		
Enter	-PF1-	PF2-	PE	73PF	1PF5	PF6	PF7	-PF81	PF9PI	F10PF11	PF12
	HELI	2	EI	JD						E	KIT

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.

```
06-12-31
          EAAT
                             ADABAS Table Addresses
                                                               227
                                                                       14:37:39
                                 Command Oueue: 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.

06-	12-	31	ENIN		NA	ATURAL Information	L				
14:36	:19										
	NT 7	ד א כוו זידי	Creation	Files		ם דג כווית או	moduate		a + a ·	1100	
	ΝA	IURAL	J SYSCEM	FILES		NATURAL P	Toquets	5 111;	sta.	Lieu	Undate
Fil	e		DBID	FNR	Туре	Product		Ver	SM	Date	Level
	.LE .	155	1	73	ADA /	NATURAL	appura	2.3	1	98-04-	22
LF 1	LE .	156	1	/4	ADA /	ADABAS ONLINE	SERVIC	6.2	1	98-04-	22
ΓF, 1	LE .	157	1	75	ADA 7	PREDICT		3.4	T	98-04-2	21
STE	PLI	в	1	231	ADA7						
FSF	POOL		1	8	ADA7						
FDI	C		1	11	ADA7						
FSE	C		1	8	ADA7						
FNA	Т		1	8	ADA7						
Ente	er-P	F1	-PF2P	F3P	F4F	PF5PF6PF7	PF8E	F9-	PI	F10PF	11PF12
	H	ELP	E	ND							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.

06-12-	-31	ENBP	Buf	fer Po	ool (Dbject	ts	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	Ν	N	N	
_	SYSLIB	USR0050N	1	8	Ν	N	N	
_	SYSLIB	INTSUB2	1	8	N	N	N	
_	SYSLIBS	NAT00002	1	8	Ν	N	N	
_	SYSLIB	XLOGON	1	8	N	N	N	
_	TRMV710	MENU	1	231	N	N	N	
_	TRMV710	TRMGDA	1	231	Ν	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	Ν	N	N	
_	SYSLIBS	NAT00050	1	8	Ν	N	N	
_	SYSLIBS	NAT00005	1	8	Ν	N	N	
_	TRMV710	TRMCUST	1	231	N	N	N	
Enter-	-PF1PF	2PF3I	PF4PH	75PI	Еб	-PF7	PF8	-PF9PF10PF11PF12
	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.				

06-12-31 ENH	BP	Buffer Po	ool Object	ts 22	7	15:18:32
	Object: Library:	MAINMENU SYSLIB	Current	User: Term:	Date: Time:	
Object A	Address			Object	Flags	
Dir Address Object Address	s: 0619C100 s: 0619DA30			Res Locked/Lo Marked for I	sident: N bading: N Delete: N	
Object Locat	ion			Obje	ect Sizes	
Database-ID: File Number:	1 8			Object S Allocated S	ze: ze:	3520 bytes 4096 bytes
Use Co	ounts				Timestamp	S
Max Concurrent Current	:: ::	1 0 3	1	Loaded: Last Action:	1998-08-1 1998-08-1	1 15:18:15.0 1 15:18:15.0
Enter-PF1PF2	2PF3PF	4PF5	-PF6PF'	7PF8PF9	9PF10	PF11PF12
HELP	END			IN	70	EXIT

If an 'I' is entered next to an object on the previous screen, the following screen is displayed:

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.

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.

(continued from previous page)

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 H	FOR: TRMCUST
Object Type: Subpro Saved on: 06-03-02 a	ogram at 14:45:41
Saved with NAT ver: Saved by user: From terminal: Original library: Original name: Mode: REC Size: Size in ESIZE: Size in USIZE: Buffer Pool Size: Turbo Code Length: Recatalog Possible:	3.16 MJH1 TCP00006 TRMV751 TRMCUST Structured Mode 2250 4226 360 1040 0 YES

SOURCE MODULE INFO H	FOR: TRMCUST
Object Type: Subpro CAT on: 06-03-02 at	ogram 14:45:41
CAT with NAT ver: CAT with NAT ver: CAT by user: From terminal: Original library: Original name: Mode: REC Size: Size in ESIZE: Size in ESIZE: Size in USIZE: Buffer Pool Size: Turbo code length: Recatalog Possible: GDA Size: Num of subroutines Num of repeats: Num of Write Files:	3.16 MJH1 TCP00006 TRMV751 TRMCUST Structured Mode 2250 0 360 1040 0 YES 0 0 0 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:

- 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:

- User-Exit-A Invoked after the command from the ADABAS Link Routine.
- User-Exit-B(s) Invoked before the command is executed from the ADABAS Link Routine(s).
- User-Exit-1 In the ADABAS Partition, invoked before the command is executed.
- User-Exit-4 In the ADABAS Partition, invoked after the command has executed.

II.14.8 TRIM User-Exit-B Information (EUXB)

The information available about TRIM User-Exit-B includes the type of user-exit (e.g., Batch, COM-PLETE, CICS), the date the user-exit was assembled, the version of the TRIM user-exit, and the Zap switch settings.

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 User-Exit-B 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 User-Exit-B 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 online environment to have increased access to the database.

The information about TRIM User-Exit-B may be displayed by entering "D" on the Environment Information Main Menu screen or the function name EUXB on any RTM screen.

06-1	2-31 E	UXB				Use	er-E	Sxit	с-В	Envi	iron	nent	ts	23	27	-	L4:37	:55
USER	ASSEM	TRIM	1	2	ZAI	? SV	NITC 5	CHES	5 7	0			BATCH	H SLO	OW DOWN	PAI	RAMETH	IRS
	DAIL	V ER											WAII					
BB B	mm/dd mm/dd	751 751	0 0 0 0	00 00	0 0 0 0	00 00	FF 00	00 00	00	00 00	500	MS	EVERY	250	CMDS		9	17
в2	mm/dd	751																
BC	mm/dd	751																
22	22222	751																
	TRIM USE	R-EXIT	-Bs	: 4														
	NON-TRIM	USER	EXIJ	ΓВ	'S 4	AND	CAI	LS	WIT	CH NO) USE	ER 1	INFO WI	ERE 1	ENCOUNT	EREI).	
Ente	r-PF1	PF2	PF3-	J	PF4-	I	PF5-	I	PF6-	PH	7	-PF8	8PF9	91	PF10P	F11-	PF12	2
	HELP		END													ΕX	TT	

The left column of this screen indicates five TRIM User-Exit-Bs are involved in the ADABAS environment and have been active against this TRIM-monitored database:

BB -	Batch TRMUEXBB, Vxxx, with Batch Slowdown set	
------	---	--

- B CICS TRMUEXB, Vxxx (prior to CICS 3.2)
- B2 CICS TRMUEXB2, Vxxx (CICS 3.2 and later)
- BC COMPLETE TRMUEXBC, (prior to COMPLETE V4.5)
- B5 COMPLETE TRMUEXB5, (COMPLETE V4.5 and later)
- ?? An out-of-date TRIM User-Exit-B, Vxxx

In addition, it is noted near the bottom of the screen that non-TRIM User-Exit-Bs have been detected, and some Link Routines may not have TRIM User-Exit-B included (or properly linked). 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. Note that the time setting is in milliseconds.

II.14.9 TRIM User-Exit-A Information (EUXA)

The information available about TRIM User-Exit-A includes the name, version, and the date and time it was assembled.

06-12- 14:38:	-31 02	EUXA		TRIM	User-Exit-A	Information	227	
					Name: Version:	TRMUEXA 751		
				Date Time	Assembled: Assembled:	mm/dd/yy 03:12 PM		
Enter-	PF1H HELP	PF21	PF3PF END	°4I	PF5PF61	PF7PF8I	PF9PF10PF11-	-PF12 EXIT

II.14.10 TRIM User-Exit-1 Information (E1IN)

TRIM User-Exit-1 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.

User-Exit-1 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 User-Exit-1 information may be viewed by entering "H" on the Environment Information Main Menu screen or the function name E1IN on any RTM screen.

06-12-31	Elin	User-Exit-	1 Information	227	14:38:13
		Data Jara			
		Date Asse	mbled. mm/aa/yy		
		TRIM Version N	<pre>/umber:7.6.1</pre>		
		UEX1 Communication	Runs: 2		
		User-Exit-1 Ac	tivity		
		Disallows:	3		
		Locks:	47		
		Fails:	0		
		Set PASsword:	0		
ENTER-PF1	PF2J	PF3PF4PF5PF	'6PF7PF8F	PF9PF10PF	11PF12
HEL	P	END			EXIT

This screen indicates that two UEX1 Communication Runs have been made, the second overriding the first. In this session, some UEX1 Command Disallows and Locks have occurred due to the UEX1 parameters.

II.14.11 TRIM User-Exit-1 Communication Run Parameters (E1PA)

The information about TRIM User-Exit-1 Communication Run parameters currently in effect may be displayed by entering "G" on the Environment Information Main Menu screen or the function name E1PA on any RTM screen.

06-12-31	Elpa	TRMUEX1 Par	ameter Displa	ay	227	14:38:28
UEX1	PARAMETERS	EFFECTIVE DATE:	12/31/99	EFFECTIVE	TIME: 1	4:38:28
DISALLOW S2,FNF	n R=(1-17,19-65	5535)				
LOCK 137,JC	ов 🗖 (дваааал	AA-DBAZZZZZ)				
Enter-PF	1PF2PF	73PF4PF5P	F6PF7PI	F8PF9	-PF10PI	F11PF12
HE	LP EN	1D				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.14.12 TRIM User-Exit-4 Information (E4IN)

User-Exit-4 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 User-Exit-4 may be viewed by entering "I" on the Environment Information Main Menu screen or the function name E4IN on any RTM screen.

06-12-31	E4IN	User-Exit-4 Information	227 14:38:45
		Date Assembled: mm/dd/yy	
		TRIM Version Number: 7.6.1	
		User-Exit-4 Size: REGULAR	
		UEX4 Communication Runs: 1	
		ADABAS CLOG Type: 5	
		Clog Records Written	
		DETAIL: 17	
		PRESUM: 650	
		TRELOG: 5	
Dates DE1	DEO		
HELF	PF.Z	PF 3 PF 4 PF 5 PF 6 PF 7 PF 8 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.14.13 User-Exit-4 Addresses of Modules (E4AM)

The address of the various parts of TRIM User-Exit-4 may be viewed by entering "J" on the Environment Information Main Menu screen or the function name E4AM on any RTM screen.

06-12-3	1 E4AM	User-Exit-4 Modu	ule Addresses	227	14:38:54
		TRMX4MAL:	00074D48		
		TRMX4S1L:	00112388		
		TRMX4S2L:	001145D0		
		TRMX4S3L:	00077E30		
		DATACS :	0007A850		
		End Of TRIM User-Exit-4:	00119EC0		
	-1				
Enter-P	F.Tbb.5-	PF3PF4PF5PF6	-PF./bE8bE		LPF12
H	ELP	END		E	XIT

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 User-Exit-4 Addresses of Tables (E4AT)

The addresses of the various accumulator tables used by TRIM may be viewed by entering "K" on the Environment Information Main Menu screen or the function name E4AT on any RTM screen.

06-12-31	E4AT	User-	Exit-4 T	'able	Addresses	227	14:39:01
			BY		BY 5 HOURS	BY NUCLEUS	SECURITRE
			5 MINUT	ES	AND PRESUM	SESSION	VIOLATORS
	Commands Within	File	000000	00	00000000	00181C38	00000000
ADABAS	or Alternate Us	er ID	00142E	ΕO	0015C490	0019C7F8	001A09B0
	Job	Name	0013F3	D0	0014F8C0	0018A780	001A0AC0
	Program	Name	001407	80	00152CB0	0018D798	001A0C58
	Response	Code	0013D3	FO	001481B0	00186438	00000000
	ADABAS Command	Code	0013DB	E8	001495C0	00186A48	00000000
	ADABS File N	umber	0013E3	ΕO	00149AA0	00186B48	001A0DF0
	Т	hread	0013EB	D8	0014E4B0	00187158	00000000
	User	Area	001475	D0	0017C988	0019E808	00000000
	NSS Us	er ID	001462	20	0016DF20	001967C8	00000000
	Application Li	brary	00144E	70	00167B30	001937B0	001A0EC0
	CICS Transacti	on ID	00143A	C0	00161740	00187768	00000000
	System Securi	ty ID	00141B	30	001590A0	001997E0	001A0818
	Extended User	Queue	000F84	30		Trace Tables	0013AB48
User	-Exit-B Environ	ments	001100	70	High Dur	ations Table	0010A480
			000000	00	00174310	00000000	00000000
Enter-PF1	PF2PF3	PF4	PF5PF	'6F	PF7PF8	-PF9PF10	PF11PF12
HEI	P 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 User-Exit-4 Logging Parameters (E4LO)

The Command Logging parameters used by TRIM may be viewed by entering "L" 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 User-Exit-4 setting, or all of the settings for User-Exit-4, as shown on the following pages.

06-12-	-31 E4	1LO	TRMUEX4	Logging	Parameter	Lists		227	14:39:18
		Enter 'S'	Before L	ist To I	Display -	Or -	Press	ENTER	
		TRMLOG	DE	ALOG1					
Enter-	-PF1I	PF2PF3	-PF4PF	5PF6-	PF7P	PF8Pl	F9PF	10PF1	1PF12
11	HELP	END						1	EXIT

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 User-Exit-4 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.

06-12-31	E4LO	TRMUEX4	Logging	Parameter Dis	splay	227	14:39:26
LIST ID		LOG	GING	PARAMI	ETERS		
TRMLOG	LOGCB LOGCB & FNR=2146 LOG JOB=(DBP & CMD=(N1, & FNR=(14, LOG FNR=115 & DUR>1500 LOG DUR>2000	53 WPDT, PAYI E1) 16) 00	ROLL, SPE	CIAL)			
DBALOG1	LOGVB & FNR=(8,9 LOGSB & FNR=(8,9	9,10) 9,10)					
Enter-PF1	LPF2PF3	8PF4	-PF5PI	F6PF7PF8	8PF9PF	10PF1	1PF12
HEI	LP ENI)				E	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 User-Exit-4. 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 User-Exit-4 Exceptional Response Codes (E4RS)

The exceptional response codes TRIM is to monitor may be viewed by entering "M" 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.

06-12-	31 E4RS	Exceptional 1 TE:	Response Co ST-DATABASI	de Selections	227	14:39:37
RSP	DESIGNATED	TEXT	RSP	DESIGNATED TEXT	ſ	
19 46 47 48 76 79	ATTEMPT TO MAX NQCID E MAX NISNHQ OPEN ERROR OVERFLOW IN HYPEREXIT N	UPDATE BY ACC U XCEEDED EXCEEDED ENCOUNTERED INVERTED LIST OT IN ADARUN PA	ISER 86 98 152 162 INDX 173 IRMS 255	HYPEREXIT RETU DUPLICATE FOR LU VALUE TOO S SHORT ON SPACE INVALID DATA S ALL ATTACHED B	RN ERROR UNIQUE DI MALL - BUFR P(TORAGE R <i>I</i> UFFERS AI	E DOL HDRS ABN LLOCATED
Enter-	PF1PF2I HELP	PF3PF4PF5 END	PF6PH	7PF8PF9	-PF10PH	F11PF12 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.

06-12-31	Exceptional Response Code Warnings TEST-DATABASE	227	14:33:43
	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.

06	5-12	-31 WARI	N Exce	ptional	Response	Code	Wa	rnings	227	14:33:56
	RC	DATE 12-31-01	TIME 15:11:59	UID	PROGRAM	CMD	FNR	EXPLANA XUO REI	TION NITIALIZED	
	2 70	12-31-01 12-31-01	09:45:49 13:55:03	C4C1D9D7 C8D7D1D3	FINDXYZ CHECKER	L4 L4	123 81	OFLO HQ OFLO TS	, PROB:C1C4 Q,PROB:D6D5	D9D7 743 C3C2 98
Er	iter	-PF1PF: HELP	2PF3 END	-PF4PF PRINT PT	5PF6- CLR	PF7	PF	8PF9-	PF10PF1	1PF12 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)
 Program issues an update command to ADABAS 	ADABAS Call Start
 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.

06-12-31	NTNM	TRIM NATURAL MONITOR MAIN MENU	11:38:00
	Code	Description	
	A B	Administration Reporting Return to RTM Main Menu	(NADM) (NREP) (MENU)
		Code: _	
Enter-PF1H HELP	PF2PF3PF END	°4PF5PF6PF7PF8	PF9PF10PF11PF12 EXIT

Field

ENTER CODE

Description

The function to be executed. Valid values are as follows:

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.

06-12-31 11:38:00 MAIN MENU	NTNM	TRIM NATURAL MOI	NITOR	
	Code	Description		
	 A	Administration	(NADM)	
	в	Reporting	(NREP)	
		Return to RTM Main Men	nu (MENU)	
		Code: _		
Enter-PF1PF	2PF3	-PF4PF5PF6PF7	PF8PF9PF10	PF11PF12
HELP	END			EXIT

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.

06-12-31	NADM	TRIM NATURAL MONITOR MAIN MENU	11:38:00
-	+		+
	To change	the current password, please confi the new password	irm
		New Password:	
	PF1 for	HELP PF3 to END ENTER to CONFIRM	+
		Code: a	
Enter-PF1PF HELP	END	'4PF5PF6PF'/PF8PF9F	PFIUPFIIPF12 EXIT



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 value follows:			
	Α	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.		
	В	Convert Detail Data		
		Expands Detail data records to be included in Detail reports.		
	С	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.

06-12-31	NADM	TRIM NATURAL MONITOR	11:38:00
		Define Data Collection Parameters	
		Enable Detail Data Collection (y/n): Y	
		Enable Summary Data Collection (y/n): Y	
Enter-PF1	LPF2	-PF3PF4PF5PF6PF7PF8PF9PF10P	F11PF12
HEI	ЪР	END	EXIT

Field		Description		
Enable Detail Data Collection	Y	Activates detail data collection		
	Ν	Does not collect detail data		
Enable Summary Data Collection	Y	Activates summary data collection		
	Ν	Does not collect summary data		

06-12-31		TR	IM NATURAL	MONITOR	11:38:00
			L DAIA COLL	ECIION PARAMETERS	
Detail Da Parm Set	uta Collect User-ID	ion Paraemt Library	ers: Program	Last Updated: Event Types (Enter	00-12-14 08:36:59 'X'):
1	USER24	P*	*	X ADA Calls X Pgm	Exec X Term I/Os
2				_ ADA Calls _ Pgm	Exec _ Term I/Os
3				_ ADA Calls _ Pgm	Exec _ Term I/Os
4				_ ADA Calls _ Pgm	Exec _ Term I/Os
5				_ ADA Calls _ Pgm	Exec _ Term I/Os
Enter-PF1 HEL	PF2P .P E	F3PF4 ND	PF5PF6	-PF7PF8PF9P	F10PF11PF12 EXIT

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 Def options f	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.

06-12-31	NPRM	T	RIM NATURAL	MONITOR 11:38:00	
	DE	SFINE DETAI	L DATA COLL	ECTION PARAMETERS	
Detail Da	ta Collecti	ion Paramet	ers:	Last Updated: 06-12-14 08:37:30	
Parm Set	USER-ID	Library	Program	Event Types (Enter 'X'):	
1	USER24	P*	*	X ADA Calls X Pgm Exec X Term I/Os	
2	USER26	P*	*	X ADA Calls X Pgm Exec X Term I/Os	
3				_ ADA Calls _ Pgm Exec _ Term I/Os	
4				_ ADA Calls _ Pgm Exec _ Term I/Os	
5	+			+c _ Term I/Os	
	Data	a Collectic	on Parameter:	s modified successfully	
		Pr	ess ENTER to	o Continue	
Enter-PF1	PF2PF	73PF4	PF5PF6	-PF7PF8PF9PF10PF11PF12	
HEL	P EN	JD		EXIT	

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.

06-1			11:38:00
	+	+	
	Enal	ole restart option during data conversion (Y/N): N	
	R -	، 	-+
	f	Convert Detail Data Confirmation	
	Р	Converting all records will create approximately	
	 +	450	
		new Detail records.	
		Provide a User-ID to convert only that user's data	
		User-ID:	
		PF1 for HELP PF3 to END Enter to CONFIRM	
	+		-+
Enter	-PF1	-PF2PF3PF4PF5PF6PF'/PF8PF9PF10P	F11PF12
	HELP	END	EXIT

Field	Description

User-ID Limits the conversion of Detail records to the (optional) 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.

i			
06-1			16:11:14
	+	+	
	Enal	ble restart option during data conversion (Y/N) : N	
	i biia.	bie restart option during data conversion (1/N). N	
	_	1	
	R	+	-+
	f	Convert Detail Data Confirmation	
	i		i
	Þ	Converting all records will create approximately	i
	1 -	converting are records will create approximately	
	1	I	1
	+	++	
		Number of Detail record converted: 110	
		i i	'
		Warning : Do not press any keys during conversion	1
		warning . Do not press any keys during conversion	
			I
		User-ID:	i i
			i
1			
1			
1		PF1 for HELP PF3 to END Enter to CONFIRM	
1	+		+
Enter	-PF1	-PF2PF3PF4PF5PF6PF7PF8PF9PF10PF	711PF12
	HELP	END	EXIT

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.

0C 10 01 NDDG	MDIM NAMUDAL MONTMOD	11.20.00
UD-12-31 NPRS	IRIM NATURAL MONITOR	TT:38:00
	PURGE SUMMARY DATA MENU	
Code	Description	
	565611p0100	
7	Purge Program Summary Data By Date (NDD	ר ז
A	Purge Program Summary Data By Date (NPD)	7)
В	Purge Program Summary Data By Days (NPD)	()
C	Purge Program Summary Data By Library (NPL)	[)
D	Purge User Summary Data By Date (NUD	Γ)
E	Purge User Summary Data By Days (NUD)	()
F	Purge User Summary Data By User-ID (NUUS	5)
	Return to TNM Administration Menu (NADM	1)
	Codo .	
	code	
Enter-PF1PF2PF	F3PF4PF5PF6PF7PF8PF9PF1()PF11PF12
HELP EN	1D	EXIT

Field

ENTER CODE (required)

Description

The function to be executed. Valid values are as follows:

Α	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.

Field	Desc	ription
	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.

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.

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
		DUDGE SUMMARY DATA MENU	
		FORGE SUMMART DATA MENO	
	+		-+
	Pur	rge Program Summary Data By Library	i
	Delete	all Program Summary data that matches	
		the following criteria:	
		Library:	i
		Starting Program:	
		Ending Program:	
			i
	DE1 for UET	D DE2 to END	
	PFI IOI HEI	IF FF5 CO END	
	+		-+
		Code: c	
Entor-DE1	DE2DE2	-DE1	1 -
EIICEL-PFI	FF2PF3	-rrarr5rr6rr/Pr6Pr9Pr10Pr	
HEL	P END		EXIT

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.

Description

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.

Field

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.

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

DateIndicates 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.

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.

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.

06-12-31	NUUS	TRIM NATURAL MONITOR	11:38:00
		PURGE SUMMARI DATA MENU	
-			+
			i i
		Purge User Summary Data By User-ID	
i			i
	D.1	The Contract of the Colling in the The	
	Delete All	User Summary data for the following User-ID:	
i		User-ID:	i
		0501 ID	
	PF1 for HE	LP PF3 to END	
4			+
		Return to TNM Administration Menu (NADM)	
	•	Recurin co inm Adminiscracion Mena (NADM)	
		Code: f	
D	550 553		11 0010
Enter-PFI		ъңаьңаьңаьңаьңаьңаьңаьңтоьң	TTbbJ3
HELP	END		EXIT

Field

Description

User-ID 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.

ir			
06-12-31	NUUS	TRIM NATURAL MONITOR	11:38:00
		PURGE SUMMARY DATA MENU	
+			+
	I	urge User Summary Data By User-I	D
	Delete All I	ser Summary data for the followi	ng User-ID:
	201000 1111 0	ber bunnary adda for one rorrowr	
	+		+
	+		+
	Number of Us	er Summarv records deleted:	10
			-
	Marminat Da		
	warning. Do	not press any keys during delete	
	+		+
		USER24	
	i		
	PFl for	HELP PF3 to END Enter to CON	FIRM
	+		+
Enter-PF1	-PF2PF3F	F4PF5PF6PF7PF8PF9	PF10PF11PF12
HELD	END		EXIT
IIBDE	END		EALI

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.

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.

06-12-31 11:38:00	NPRD	TRIM NATURAL MONITOR	
11 50 00		PURGE DETAIL DATA MENU	
	Code	Function	
	A	Purge Detail Data By Hour	(NDHR)
	B	Purge Detail Data By Library Purge Non-converted Data By Date	(NDLI) (NDDT)
	D	Purge Non-converted Data By Days	(NNDY)
	E	Purge Non-converted Data By User-ID	(NNUS)
	· 	Administration Menu	(NADM)
		Code: _	
Enter-PF1-	PF2PF3	PF4PF5PF6PF7PF8PF9F	PF10PF11PF12
HELP	end End		EXIT

Field	Description	
ENTER CODE (required)	The fu	unction to be executed. Valid values are as
	Α	Purge Detail Data By Hour Deletes Detail data based on the number of hours Detail data is to be retained.
	В	Purge Detail Data By Library Deletes Detail data belonging to a specified library.
	С	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-ke	eys 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.

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.



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.
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.
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.

Description

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.

Field

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.
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.



Description

Date (required)

Field

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.

06-12-31	NNUS	TRIM NATURAL MONITOR PURGE DETAIL DATA MENU	11:38:00
+			+
	Pu	rge Non-converted Data By User-ID	
	Del	ete all non-converted data for the following User-ID:	
		User-ID:	
	PF1 for HELP	PF3 to END	
+			+
		Code: e	
Enter-PF1 HEL	PF2PF3 P END	PF4PF5PF6PF7PF8PF9P	F10PF11PF12 EXIT

Description

User-ID (required)

Field

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.

06-12-31	NREP	TRIM NATURAL MONITOR REPORTING MENU		11:38:00
	Code	Function		
	A B	Summary Reporting Detail Reporting Return to TNM Main Menu	(NRPS) (NRPD) (NTNM)	
		Code: _		
Enter-PF1F HELP	PF2PF3PF END	4PF5PF6PF7PF8-	PF9PF10PF11	PF12 EXIT

Field	Description	
ENTER CODE (required)	The follow	function to be executed. Valid values are as vs:
	А	Summary Reporting
		Displays summarized information on program and user NATURAL activity.
	В	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 SUMMARY REPORTING MENU		11:38:00
	Code	Function		
	A B C D E F	Program Activity Summary Report Program Activity History Report Program Percentage Summary Report User Activity Summary Report User Activity History Report User Percentage Summary Report Return to TNM Reporting Menu	(NPGM) (NPGH) (NPPC) (NUSR) (NUSH) (NUPC) (NREP)	
		code: _		
Enter-PF1PF HELP	2PF3- END	PF4PF5PF6PF7PF8PF9	PF10PF11	PF12 EXIT

Field

ENTER CODE (required)

Description

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	Desc	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.

06-1 ++	8:00
Program Activity Summary Parameters	
Starting Library: PAYPROD_	
Starting Program:	
Average Runtime: 00 04 00 0	
HH MM SS T	
High Runtime: 00 00 0	
HH MM SS T	
Lagt Haor-ID:	
Total Pom Exec:	
Total ADA Calls:	
PF1 for HELP PF3 to END	
Enter	F12
' +	XIT

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.

	Т	RIM NATURAL MON	ITOR	1	1:38:00		
	PRO	GRAM ACTIVITY S	UMMARY		i		
					Page 1		
g Library	/Program:	PAYPROD / *	* * *	Date: 0	1-12-31		
n Library	/Program:	/			i		
	Average	Total		High	Last	High Run	Cataloged
Program	Runtime	Pgm Exec	ADA Calls	Runtime	User-ID	User-ID	Date Time
					i-		
PAYROLL	00:04:00.2	6	6	00:00:01.0	USER22	USER28	06-12-07 17:29:53
PGM1	00:14:32.1	883	11104	00:19:11.1	USER34	USER34	06-12-30 17:06:24
PGM2	00:06:00.1	16	208	00:00:01.0	USER11	USER22	06-12-07 17:06:29
PGM4	00:04:00.6	5	0	00:00:01.0	USER58	USER54	06-12-07 17:06:34
PGM5	00:04:06.1	11	61	00:00:48.0	USER33	USER22	06-12-07 17:30:03
PGM9	00:04:14.0	11	60	00:00:57.0	USER16	USER19	06-12-07 17:30:12
TEST	00:04:37.5	4	12	00:01:25.0	USER23	USER73	06-12-07 17:30:40
TESTRUN	00:04:01.6	3	70	00:08:49.0	USER33	USER23	06-12-14 11:24:05
TESTRUN2	00:04:26.0	3	18	00:01:13.0	USER12	USER12	06-12-07 17:32:26
VER3T	00:04:32.6	3	16	00:01:02.0	USER43	USER10	06-12-07 17:32:32
PF2P	F3PF4P	F5PF6PF7-	PF8PF9-	PF10PF11	PF12		
PARM E	ND	UP	DOWN	LEFT RIGH	T EXIT		
	g Library n Library Program PAYROLL PGM1 PGM2 PGM5 PGM5 PGM5 PGM5 PGM5 PGM5 PGM5 PGM5	T PRC g Library/Program: n Library/Program: Program Runtime Program Runtime PARCOL 00:04:00.2 PGM1 00:14:32.1 PGM2 00:06:00.1 PGM2 00:06:00.1 PGM4 00:04:00.6 PGM5 00:04:00.6 PGM5 00:04:04:0.1 PGM9 00:04:10.6 TESTRUN 00:04:25.0 VER3T 00:04:32.6 VER3T 00:04:32.6 VER3T 00:04:32.6 PGF2PF3PF4F	TRIM NATURAL MON PROGRAM ACTIVITY S g Library/Program: / Average / Program Runtime Pgm Exec Program Runtime Pgm Exec Program Runtime Pgm Exec PAROLL 00:04:00.2 6 PGM1 00:14:32.1 883 PGM2 00:04:00.6 5 PGM5 00:04:06.1 11 PGM9 00:04:14.0 11 PGM9 00:04:16.6 3 TESTRUN2 00:04:26.0 3 VER3T 00:04:32.6 3 VER3T 00:04:26.0 3 VER3T 00:04:26.0 1 PAPE PF2PF3PF4PF5PF6PF7- PAR END UP	TRIN NATURAL MONITOR PROGRAM ACTIVITY SUMMARY g Library/Program: / **** n Library/Program: / / Average / Program Runtime Pgm Exec ADA Calls	TRIM NATURAL MONITOR PROGRAM ACTIVITY SUMMARY 1 g Library/Program: PAYPROD / **** Date: 0 n Library/Program: / Average / Program Runtime Pgm Exec ADA Calls Runtime Runtime PAYROLL 00:04:00.2 6 6 00:00:01.0 PGM1 00:14:32.1 883 11104 00:19:11.1 PGM2 00:06:00.1 16 208 00:00:01.0 PGM4 00:04:00.6 5 0 00:00:01.0 PGM5 00:04:10.6 3 100:00:48.0 Demotions.01:02.0 PGM9 00:04:14.0 11 60 00:00:57.0 TESTRUND 00:04:26.0 3 18 00:10:12.5.0 VER3T 00:04:26.0 3 16 00:01:20.0	TRIN NATURAL MONITOR 11:38:00 PROGRAM ACTIVITY SUMMARY Page 1 g Library/Program: PAYPROD / **** Date: 01-12-31 n Library/Program: / Average / Average / Program Runtime Pgm Exec ADA Calls Runtime User-ID PATROLL 00:04:00.2 6 6 00:00:01.0 USER22 PGM1 00:14:32.1 883 11104 00:19:11.1 USER14 PGM2 00:06:00.1 16 208 00:00:01.0 USER14 PGM4 00:04:06.1 11 61 00:00:01:0.0 USER58 PGM5 00:04:14.0 11 60 00:00:17.0 USER58 PGM5 00:04:16.6 3 70 00:08:87.3 USER23 TESTRUN2 00:04:26.0 3 18 00:01:13.0 USER12 VER3T 00:04:26.0 3 16 00:01:02.0 USER34 VER3T 00:04:32.6 3 16 00:	TRIM NATURAL MONITOR PROGRAM ACTIVITY SUMMARY Page 1 g Library/Program: PAYPROD / **** Date: 01-12-31 n Library/Program: /

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.

06-1 ++ 8:00	
i l	
Program Activity History Parameters	
Starting Date:	
Ending Date:	
Starting Library: PAYTEST_	
Starting Program: PGM3	
Average Runtime: 00 00 00 0	
HH MM SS T	
High Runtime: 00 00 00 0	
HH MM SS T	
Last User-ID:	
High Run User-ID:	
Total Pem Exec:	
Total ADA Calls:	
Enter DEL for UELD DE2 to END	

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		TI	RIM NATURAL MONI	LTOR		11:38:00			
Start	ing Librar	v/Program:	PAYTEST / PGM	3		Page 1			
Reposit	ion Librar	v/Program;	/				ļ		
		Average	Total	 1	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	USER 22	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	USER 32	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	USER 34	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
							į		
Inter-PF1	PF2P	F3PF4PF	75PF6PF7	PF8PF9-	PF10PF11	PF12			
HEL	P PARM B	ND	UP	DOWN	LEFT RIGH	T 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.

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 following PF-keys are provided for the Program Activity History Report:

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:

• "20041231" 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	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			TR IM PROGRAM	NATURAL PERCENTA	MONITOR GE SUMMARY		11:38:00	1			
Starting	g Library.	/Progra	m: PAY	TEST/ P	GM1	Date	Page 1 : 01-12-31				
Reposition	Library	/Progra	m:	/				i			
		Per	centage					1			
Library	Program	Runtim	Pgm ne Exec	ADA Calls	Runtime	Pgm Exec	ADA Calls	User-ID	h Run Runtime	Cata Date	loged 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	USER 23	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	USER 22	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
								i i			
Enter-PF1P	PF2PF3	PF4-	PF5	PF6PF7	PF8PF9-	PF10PF1	1PF12	•			
HELP I	PARM END			UP	DOWN L	EFT 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.

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.

The following PF-keys are provided for the Program Percentage Summary Report:

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.

06-1 ++ 8	:00
User Activity Summary Parameters	
Active User-IDs Only: Y	
Starting User-ID: USER22 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 F7	12
++ X	IT

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 USER ACTIVITY SUMMARY	11:38:00
Starting User-ID: USER22 Ending User-ID: **** Act	Page 1 Date: 01-12-31 tive User-IDs Only: Y
Reposition User-ID:	
Avg Rsp Last Executed Total User-ID (secs) Library Program Line Pgm Exec 	Last Trans Last Transmission NATURAL Start ADA Calls Time Date Pgm Exec ADA Calls Date Time
*USER22 03:42.3 PAYSYS TEST12 0032 3048 *USER23 00:03.3 PAYLIB PGM1 5172 8096 *USER26 00:22.7 PAYTEST PGM7 0032 943 *USER31 00:12.7 PAYLEST PGM3 0032 861 *USER33 00:02.0 PAYLEST PGM3 0032 5599 *USER43 00:02.3 PAYLIB TEST 0032 26	44092 10:32:05 06-12-31 66 9126 06-12-31 11:22:02 709 09:22:48 06-12-31 11 55 06-12-31 10:13:25 3571 11:13:00 06-12-31 92 237 06-12-31 09:12:12 2638 02:19:04 06-12-31 0 0 06-12-31 07:13:15 5205 08:03:44 06-12-31 23 81 06-12-31 07:13:00 3620 09:44:59 06-12-31 5 37 06-12-31 08:00:49 170 09:33:11 06-12-31 26 170 06-12-31 08:00:49
Enter-PF1PF2PF3PF4PF5PF6PF7PF8PF9- HELP PARM END UP DOWN	
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.

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.

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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 Pa	arameters	
	Starting Date:	20061226	
		YYYYMMDD	
	Ending Date:		
		YYYYMMDD	
	Starting User-ID:	USER17	
	Ending User-ID:		
	Ava Rap:		
		MM SS T	
	Total Pgm Exec:		
	Total ADA Calls:		
	Last Transmission Dom Eyec:		
	Last Transmission ADA Calls:		
		ĺ	
Enter	PF1 for HELP PF3 to END		F12
4		+	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 Starting User-ID: USER17 Ending User-ID: ****	Page 1
Reposition User-ID:	
Avg Rsp Last Executed Total - User-ID (secs) Library Program Line Pgm Exec ADA	Last Transmission NATURAL Start Calls Date Time Pgm Exec ADA Calls Date Time
USERI7 00:01.8 PAYSYS TEST1 1230 942 USERI7 00:01.3 PAYLET TEST1 1230 942 USERI7 00:00.9 PAYTEST PRO5 2981 781 USERI7 00:10.2 PAYTEST PRO5 2981 781 USERI7 00:12.4 PAYLE PGM2 1198 769 USERI9 00:01.5 PAYTEST PGM10 0193 832 USER22 00:01.8 PAYLE PAYFOLL 1100 791 USER22 00:01.8 PAYLE PGM1 0200 905 USER22 00:01.8 PAYLE PGM1 0200 905 USER22 00:01.8 PAYLE PGM1 1250 778 	923 06-12-26 08:33:26 448 321 06-12-26 07:03:22 788 06-12-27 01:10:35 100 109 06-12-28 07:03:22 788 06-12-27 01:10:35 100 109 06-12-28 08:05:43 822 06-12-29 04:10:27 301 382 06-12-20 07:03:22 900 06-12-29 09:44:11 13 7693 06-12-30 07:22:13 900 06-12-27 10:23:12 202 229 06-12-28 08:00:33 750 06-12-29 06:39:00 302 137 06-12-28 08:10:22 623 06-12-29 05:21:50 92 109 06-12-29 02:45:02 822 06-12-30 03:11:21 393 592 06-12-30 08:22:10 730 06-12-30 02:12:39 429 92 06-12-30 09:39:34
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.
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.

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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.

06-1 +	++	8:00
	User Percentage Summary Parameters	
	Date: 20061231	
	YYYYMMDD	
	Active User-IDs Only: Y	
	Starting User-ID:	
	Ending User-ID:	
	Percentage Rsp Time: 5	
	Percentage Pgm Exec: 5	
	Percentage ADA Calls: 5	
	Total Rsp Time: 00 05 00 0	
	HH MM SS T	
	Total Pgm Exec:	
	Total ADA Calls:	
Enter	PF1 for HELP PF3 to END	F12
+	+++	XIT

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	1					
1		USER P	ERCENTAG	E SUMMARY			i					
1			Page 1				i i					
Starting Use	er-ID:	****	Ending	User-ID:	**** I	Date: 01-12-31	I					
1					Active Use	er-IDs Only: Y	!					
Reposition U	Jser-ID:						1					
1		Domaontogo					i					
1	Pen	Dom	202		Total		1	- NATURAL	Start -	Last	Executed	
User-TD	Time	Evec	Calls	Rsp Time	Pam Exec	ADA Calls	Date	Date	Time	Library	Program	Line
*USER17	13.0	22.0	8.0	00:13:00.0	220	80	06-12-31	06-12-31	23:31	PAYTEST	PAYROLL	1230
*USER19	60.0	8.0	50.0	01:00:00.0	80	500	06-12-31	06-12-31	01:05	PAYSYS	TEST3	1878
*USER22	10.0	17.0	10.0	00:10:00.0	170	100	06-12-31	06-12-31	12:15	PAYSYS	PRO3	4752
*USER28	7.0	40.0	22.0	00:07:00.0	400	220	06-12-31	06-12-31	12:15	PAYTEST	PROG6	4752
*USER31	10.0	13.0	10.0	00:10:00.0	130	100	06-12-31	06-12-31	12:15	PAYSYS	TEST1	4752
							1					
							i					
Dates DB1 DB2		DE4 DE5		 DD7 DD0	DE0 DE10	DE11 DE10	1					
UPID DAD	2253 DM END	pr4PF5-		ID DOWN	-PFSPF10	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.

06-12-31	NRPD	TRIM NATURAL MONITOR		11:38:00
		DETAIL REPORTING MENU		
	Code	Function		
	 A	Program Nest Report	(NPGN)	
	В	Program Statistics Report	(NPGS)	
	C	User Trace Report	(NUTR)	
	· 		(INREP)	
		Code:		
Enter-PF1PI	F2PF3	-PF4PF5PF6PF7PF8	PF9PF10PF12	LPF12
HELP	END			EXIT

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	Valid v	Valid values are as follows:			
(required)	A	Program Nest Report Displays program relationships in a nested format. It also identifies programs, external subroutines, and maps that are called from programs.			
	В	Program Statistics Report Displays the most heavily used programs, programs making the most ADABAS calls, and programs with the best/worst response times.			
	С	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.

06-12-31	NPGN	TRIM NATURAL MONITOR	11:38:00		
		DETAIL REPORTING MENU			
+		+			
		Program Nest Report Parameters			
		Starting Date: 20061230			
i		YYYYMMDD			
		Starting Time: 00 00 00 0			
		HH MM SS T			
		User-ID: USER17			
	PF1 for HEI	LP PF3 to END			
	FFI IOI IIBI				
+		ا +			
Enter-PF1PF2PF3PF4PF5PF6PF7PF8PF9PF10PF11PF12					
HELP	END		EXIT		

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	TI	11:38:00	1		
	PRO	GRAM NEST REPO	RT		!
				Page 1	
User-ID: USER17	Starting	Date: 01-12-3	0 5	tarting Time: 00:00:00.0	
					1
	Program	Program			
Elapsed Time	Start Time	End Time	Lev	Library/Program	Date
	16.00.14 7				06 10 20
	10.08.14.7		1	PATIESI PATROLL	06-12-30
	16:08:15.0		2	PAYTEST PGM1	06-12-30
	16:08:15.0		3	PAYTEST MAP1	I 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:

16:09:0	8.3	2	PAYTEST PGM28	06-12-30
16:09:0	9.1	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
16:09:11	2.6	2	PAYTEST PGM30	06-12-30
00:01:21.2019	16:10:33.8	2	PAYTEST PGM30	06-12-30
16:10:3	3.8	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
				1
Enter-PF1PF2PF3	-PF4PF5PF6I	PF7PF	8PF9PF10PF11PF12	I
HELP PARM END	τ	JP DC	WN 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.

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.

The following PF-keys are provided for the Program Nest Report:

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.

06-12-31	NPGS	TRIM NATURAL N	MONITOR		11:38:00
	+ 			+	
				İ	
		Program Statistics Rep	port Para	ameters	
		Starting Data:	20061221		
		Starting Date	YYYYMMDD		
	i	Starting Time: (00 00 00	0	
		I	HH MM SS	Т	
		Ending Date: 2	20061231 VVVVMMDD		
		Ending Time: (00 00 00	0	
	ĺ	I	HH MM SS	Т	
		User-ID: U	USER17		
		Starting Program:			
	i	Ending Program:			
	PF1 +	tor HELP PF3 to END			
Enter-PF1P	F2PF3	PF4PF5PF61	PF7PF8	3PF9PF10:	PF11PF12
HELP	END				EXIT

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			TR	IM NATUF	RAL MON	ITOR			11:38:00	1						
11:38:00			PROGRA	AM STATI	ISTICS H	REPORT				i						
									Page 1	i						
Start	ing Date/1	lime: 06-1	2-21 00	0:00:00.	. 0					1						
Endin	g Date/Tim	ne: 06-1	2-31 00	0:00:00.	. 0					I						
									Total ADABAS	Avg AD	ABAS			Total		Average
Library	Program	Pgm Exec	Total I	Runtime	Avg I	Runtime	ADA Cal	ls	Elapsed Time	Elapsed '	Time	Terminal I	/0s	Response Time	Respor	se Time
PAYTEST	MENU	4	00:00:	17.8273	00:00:0	04.4568		8 (00:00:00.4335	00:00:00.	0541		0			
PAYTEST	MENU1	4	00:00:0	05.1288	00:00:0	01.2822		0					3	00:00:00.6867	00:00:	00.1144
PAYTEST	PAYERR1	3	00:00:	12.2704	00:00:0	09.0901		4 (00:00:00.2287	00:00:00.	0571		0			
PAYTEST	PAYMAP2	3	00:00:	11.4251	00:00:0	08.8083		0		i			6	00:00:07.8139	00:00:	01.3023
PAYTEST	PRODA	3901	00:05:4	48.0678	00:02:4	45.5026		34 (00:00:09.3544	00:00:04.	5738		0			
PAYTEST	PROHELP	2	00:00:0	09.8273	00:00:0	04.9136		2 (00:00:00.1250	00:00:00.	0625		0			
PAYTEST	PROHELP1	5	00:00:0	07.1735	00:00:0	01.4347		0		1			14	00:00:01.8463	00:00:	00.6154
PAYTEST	PROHEVNT	2	00:00:0	00.6071	00:00:0	0.3035		4 (00:00:00.4036	00:00:00.	1009		0			
PAYTEST	TEST3	4	00:00:0	00.8398	00:00:0	0.2099		0		I			3	00:00:00.9287	00:00:	00.2391
PAYTEST	TEST45	2	00:00:0	00.3017	00:00:0	0.1508		0					6	00:00:01.2398	00:00:	00.4928
PAYTEST	TESTR4	5	00:00:	36.5989	00:00:0	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-PF	1PF2	PF3PF4	PF5	PF6	-PF71	PF8PF9	PF10-	-PF	11PF12	•						
HE	LP PARM	END			UP I	DOWN	LEFT	RIC	GHT 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.

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.

The following PF-keys are provided for the Program Statistics Report:

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.

06-12-31	TRIM NATURAL MONITOR 1	1:38:00
-	+	+
	User Trace Report Parameters	
		1
		1
	Starting Date: 20061220	
	YYYYMMDD	
	Starting Time: 14 25 46 8	
	HH MM SS T	
	User-ID: USER17	
	Combine Database Calls (v/n): Y	
		1
	Fuent typed to report: ADARAS CALL START	1
	Event types to report ADADAS CALL START	
	_ ADABAS CALL END	
	_ PROGRAM START	
	_ PROGRAM END	
	_ TERMINAL I/O	
	PF1 for HELP PF3 to END	İ
Enter-PF1		PF12
 UFT .	1	

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

Description
Limits statistics to dates including and/or alphabetically following this value (defaults to the current date).
Limits statistics to times including and/or alphabetically following this value.
Limits statistics to the specified user (defaults to the current User-ID).
"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.
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
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 USER TRACE	MONITOR REPORT		11:38:00		!		
User-ID: USER17 Combine Database	Sta Calls: Y	rting Date: 06-1	2-20 Start	ing Time: 1	Page 1 4:25:46.8				
Event T	ime	Elapsed Time	Response Time	Library	Program	Line	ADAE CMD/DE	AS /File	Date
TERMINAL I/O 1	4:25:46.8			PAYTEST	MAP1	0012			06-12-20
PROGRAM END 1	4:25:47.2	00:00:01.4963		PAYTEST	MAP1		i		06-12-20
<< 1 ADABAS CALL	>>	00:00:00.0283	F	AYTEST	PGMRUN1	0150	RC 2	0	06-12-20
PROGRAM START 1	4:25:47.2			PAYTEST	PGMST5		-		06-12-20
<<493 ADABAS CALL	S >>	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 1	4:25:54.5		00:00:07.7330	PAYTEST	MAPR7		1		06-12-20
TERMINAL I/O 1	4:26:00.5			PAYTEST	MAPR7	0220	i		06-12-20
PROGRAM END 1	4:26:06.5	00:00:12.0688		PAYTEST	MAPR7		!		06-12-20
PROGRAM END 1	4:26:07.1	00:00:19.9461		PAYTEST	PGMST5		1		06-12-20
					12		!		
HELP PARM	END	UP	DOWN	LEFT RIGH	T 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.</natnuc>		
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 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" ٠ 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	<u>G</u>	PAGE
MENU	Main Menu		II-15
STOP	Terminate the RTM		II-15
CONTROL	LS		
CMEN	Control O	ptions Main Menu	II-17
	CTRL	RTM Control	II-18
	CTAP	Time Adjustable Parameter (TRMTAP) Settings	II-23
	CTRE	tRelational Control	II-26
MINUTE C	COUNTS		
MMEN	Minute St	tatistics 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 St	atistics 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

SESSION STATISTICS

SMEN	Session St	atistics 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	d 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)

PAGE

PAGE NAME MEANING TRACE TRAC II-77 **Dynamic Trace Facility** TLIB II-78 Trace By Application Library 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 Database Information Main Monu INFO

INFO	Database information Main Menu		11-90
	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	SECURI	TRE 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

ENVIRONMENT INFORMATION

EMEN	Environmer	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
	EUXB	TRIM User-Exit-B Information	II-112
	EUXA	TRIM User-Exit-A Information	II-113
	E1IN	TRIM User-Exit-1 Information	II-113
	E1PA	TRIM User-Exit-1 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
	EUX2	TRIM User-Exit-2 Information (no data available)	

WARNING

WARN	Exceptional Response Code Warnings	II-119
------	------------------------------------	--------

TRIM NATURAL Monitor (TNM)

NTNM	TRIM NATU	URAL Monitor Main Menu II-1			
NADM	TRIM NATU	JRAL Monitor Administration Menu			
	NPRM	Define Data	Collection Parameters	II-128	
	NCON	Convert Deta	ail Data	II-131	
	NPRS	Purge Summ	nary Data Menu	II-133	
		NPDT	Purge Program Summary Data By Date	II-135	
		NPDY	Purge Program Summary Data By Days	ll-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	ail Data Menu		
		NDHR	Purge Detail Data By Hour	II-148	
		NDLI	Purge Detail Data By Library	II-150	
		NNDT	Purge Non-converted Data By Date	ll-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)

TRIM Reference Manual

PAGE

NAME	MEANING			PAGE	
NREP	Reporting Menu				
	NRPS	Summary R	eporting 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	ll-177	
		NUPC	User Percentage Summary Report	II-181	
	NRPD	Detail Repo	rting 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=*
            DD
//CMPRT01
                     SYSOUT=A
//CMSYNIN
              DD
LOGON TRMV751
#PROGRAM
#CONTROL
FIN
/*
11
```

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 TRMV751
#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 1 F 80(STRING LOGON TRMV751'
'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 CMPRINT 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 TRMV751

TNMBPSUM

(#PROGRAM) (#CONTROL)

,,09:22:00:3,11:32:00:0,,USER24,10,

#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 TRMV751

TNMBPHIS

(#PROGRAM) (#CONTROL)

20041221,20041231,,,08:22:10:0,,USER24,,14,

#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 Sum	mary Report			
#PROGRAM:	INMBPPC			
#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 TRMV751				
TNMBPPC		(#PROGRAM)		
20040622,,,43,,,00:05:0	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 Repo	rt	
#PROGRAM:	TNMBUSR	
#CONTROL: Active User-IDs Only, Rsp,Total Pgm Exec, Pgm Exec,Last Trans		r,Starting User-ID,Ending User-ID,Avg ,Total ADA Calls,Last Transmission smission ADA Calls
Report Example LOGON TRMV751		
TNMBUSR	(#PF	ROGRAM)
Y,USER24,,00:12:0,,,,	(#CC	ONTROL)
#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.
<u>User Activity History Report</u> #PROGRAM:	TNMBUHIS	
#CONTROL:	Starting Date,Endir User-ID,Avg Rsp,T Transmission Pgm	ng Date,Starting User-ID,Ending Total Pgm Exec,Total ADA Calls,Last Exec,Last Transmission ADA Calls
<u>Report Example</u> LOGON TRMV751		
TNMBUHIS		(#PROGRAM)
20041103,19950322,,,00:1	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.

(continued from previous page)		
#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 Exe (optional)	ЭC	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	y Report	
#PROGRAM:	TNMBUPC	
#CONTROL:	Date,Active User- User-ID,Percentage Exec,Percentage Exec,Total ADA C	IDs Only,Starting User-ID,Ending ge Rsp Time,Percentage Pgm ADA Calls,Total Rsp Time,Total Pgm Calls
Report Example LOGON TRMV751		
TNMBUPC		(#PROGRAM)
20041031,N,,USER24,5	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 TRMV751
#PROGRAM
#CONTROL
FIN
/*
11
```

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 TRMV751
#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 1 F 80(STRING LOGON TRMV751'
'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 * CLEAR'
'FILEDEF CMSYNIN DISK TNMREPT CMSYNIN A'
'FILEDEF CMPRINT PRINTER'
'FILEDEF CMPRINT PRINTER'
'EXEC NAT BATCH'
'ERASE TNMREPT CMSYNIN A'
exit
```

Program Nest Report #PROGRAM: TNMBPGN #CONTROL: Starting Date, Starting Time, User-ID **Report Example** LOGON TRMV751 TNMBPGN (#PROGRAM) 20040401,09:00:00:0,USER24 (#CONTROL) **#CONTROL** DESCRIPTION FORMAT Starting Date YYYYMMDD Report on programs beginning with the specified starting date or later. (required)

Starting Time (required)	HH:MM:SS:T	Report specified	on d sta	programs arting time o	execute or later.	d at	the
User-ID (required)		Report executed	on d by	programs the specifie	that ha d user-IE	ve).	been

Program Statistics Report

#PROGRAM:

TNMBPGS

#CONTROL:

Starting Date, Starting Time, Ending Date, Ending Time, User-ID, Library, Starting Program, Ending Program

Report Example

LOGON TRMV751 TNMBPGS 20040401,09:00:00:0,20040402,09:00:00:0,,,,

(#PROGRAM) (#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 TRMV751		
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)	Х	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 User-Exit-1. 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-1, 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-1 to 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-1. 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 both the supplied User-Exit-1 and User-Exit-4 for use with ADABAS
- Be sure the ADARUN parameters are specified as:

LOGGING=YES, UEX1=TRMUEX1, UEX4=TRMUEX4

Code a few TRIM parameters and execute the TRIM User-Exit-1 Communication
Run

TRIM User-Exit-1 is "dormant", permitting all commands to go through to ADABAS until the first User-Exit-1 Communication Run is executed. For example, this TRIM run may direct User-Exit-1 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 User-Exit-1, 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 User-Exit-1 with different parameters. TRIM User-Exit-1 Communication is not "incremental". In other words, each Communication Run completely replaces any previous Communication Run to the same User-Exit-1 on the same database. To negate the effect of User-Exit-1, the user may run TRIM with only a UEX1 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. TRIM User-Exit-4 may be instructed not to log.

The RTM screen E1PA may be used to view the User-Exit-1 Communication Run in effect.

Refer to Section V.7 Dynamic Control and TRMUEX1 of the TRIM Installation and Operations Manual for operational details.

Figure 2 shows sample parameters to be communicated to User-Exit-1.

```
** SAMPLE TRIM PARAMETER CARDS FOR COMMUNICATION TO UEX1 **
*****
         UEX1
                                  FIND SORTED OK FOR THESE FILES
OTHERWISE, DISALLOW FIND SORTED
FIND SORTED OK FOR THESE FILES
OTHERWISE, DISALLOW FIND SORTED
ALLOW ONLY DBA ACCESS TO FILE 11
OTHERWISE, NOBODY CAN ACCESS IT
ALLOW
            S2,FNR=(43,47)
DISALLOW
          S2
            S9, FNR=(43,47)
ALLOW
DISALLOW
             S9
            11,JOB=DBAFIMOD
UNLOCK
LOCK
            11
           FNR=89, ADD3=SECRET03
FNR=89, ADD3=SECRET04
PASS
PASS
                                              NO OTHER PASSWORDS PERMITTED
FAIL
            FNR=89
             NEWBASIC, FNR=(41,36447-36481)
                                               ASSIGN NEW PASSWORD
SETPW
```

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 Secu	<u>urity Initiation</u>	
op-codes:	UEX1	Informs TRIM that the subsequent statements are for communication to USER-EXIT-1.
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 <u>UEX1</u>

This parameter informs TRIM that communication is to be made to TRMUEX1.

SYNTAX:

UEX1 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.

<u>SYNTAX</u>

{ 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 DISALLOW S2,FNR=(17,29708),JOB=(PAAAAAAA-P9999999) 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.

<u>SYNTAX</u>

{ 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 <u>SETPW</u>

The SETPW statement specifies the criteria for assigning a new password in the Control Block ADDITIONS-3 field for use by ADABAS.

<u>SYNTAX</u>

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
COMMAND	CMD	COMMAND CODE	С
COMMAND-ID	CID, CIDX	COMMAND-ID	С
FNR	FILE	FILE NUMBER	В
RESPONSE-CODE	RSP RESPONSE RESPCODE RC RESP-CODE RESP	ADABAS Response Code	В
ISN		Internal Sequence Number of ADABAS Record	В
ISNLL		ISN Lower Limit	В
ISNQ		ISN Quantity	В
CB-FBL		Format Buffer Length	В
CB-RBL		Record Buffer Length	В
CB-SBL		Search Buffer Length	В
CB-VBL		Value Buffer Length	В
CB-IBL		ISN Buffer Length	В
COP1	OP1	Command Option 1	С
COP2	OP2	Command Option 2	С
ADD1	ADDIT1	Additions Field 1	С
*UIDALT		Terminal ID	С
*USERID	UID, USER-ID, VMID USERIDX, USER-IDX UIDX, VMIDX	Internal User-ID	С
ADD3	ADDIT3	Additions Field-3 (Password, printed in character format)	С
ADD3X	ADDIT3X	Additions Field-3X (Password, printed in hex format)	С

* Valid for User-Exit-4 only - use SID for User-Exit-1

Figure 3 - Dynamic Control Fields

FIELD NAME	NAME & ALIAS	DEFINITION	FMT	LEN
ADD4	ADDIT4	Additions Field-4 (Cipher, in character format)	С	
ADD4X	ADDIT4X	Additions Field-4X (Cipher, in hex format)	С	8
NATPROG		Reserved field (Formerly Reserved)	С	
USER-AREA	UA USA UAX USAX	User-Area of Control Block (in character format)	С	4
USER-AREAN	UAN USAN	User-Area of Control Block (in numeric format)	В	4
JOB	JOB-NAME JOBNAME	Job Name	С	8
SID	SEC-ID SECURITY-ID	Security-ID	С	8

FIGURE 3 - DYNAMIC CONTROL FIELDS (continued)

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 TRIM User-Exit-4 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 User-Exit-4. This facility significantly reduces the large amount of detail data typically logged.

Log Cruncher

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 124 bytes to an average of 45 bytes for CLOGLAYOUT=4, or 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

(required)
(required)
(optional)
(optional)
(optional)
(optional)
(optional)
(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 User-Exit-4. The Time Adjustable Parameters, TRIM Dynamic Logging User-Exit-4 Communication Runs, and Control Screen adjustments may then direct User-Exit-4 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
- 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 User-Exit-4 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 User-Exit-4 Communication Run, the User-Exit-4 inhibits writing of all Detail Records and buffers specified in the ADARUN parameters. Optionally, TRIM User-Exit-4 Zaps may be applied to cause the User-Exit-4 to start off in detail logging mode, logging all detail records until instructed otherwise.

User-Exit-4 communicated parameters are "incremental". The default is to not log. Default logging parameters may be macro generated through the TRMLOG macro and linked with User-Exit-4. Any further communicated parameters about logging are in addition to TRMLOG defaults.

Macro generated PRESUM requirements may be preset and linked with User-Exit-4 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 **
*******
*
            ID=RUTHTEST
  UEX4
          FNR=(250-255),JOB=(C1091AAA-C1091999) LOG THESE
  LOG
  LOG
           FNR=(3-7,16-19,35,93)
                                             LOG THESE
           RSP¬(0,3,9)
                                           BAD RESPONSE CODES
  LOG
  LOGCB
  LOGFB
            FNR=(7,93)
                                    WE ARE STUDYING FIELD ORDER FOR THESE
  LOGFB
            RSP¬(0,3,9)
                                BAD RESPONSE CODES
  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 Buffe	r Selection	
op-codes:	LOGCB LOGFB LOGRB LOGSB LOGVB LOGIB	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

LOGIO LOGUB

For general parameter syntax rules, refer to Appendix A: General Parameter Rules.

IV.5.1 <u>UEX4</u>

<u>SYNTAX</u>

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 <u>LOG</u>

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).

<u>SYNTAX</u>

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. 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:

СВ	Control Block (for CLOGLAYOUT=4 only)
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.

<u>SYNTAX</u>

LOGxx 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; 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.

FIELD NAME	LOGGING NAME & ALIAS	DEFINITION	PARMS	FMT	LE
CMDTYPE		ADABAS Command Type (Simple, Complex, Update) as a hex code	LOG	С	1
ECBS		Event Control Blocks Posted	LOG	В	1
THREAD	THD	ADABAS Thread number	LOG	В	1
DESUPD		Number of Descriptors Updated	LOG	В	2
JOB	JOBNAME JOB-NAME	Job Name	LOG	С	8
**UIDALT		(USERID) Terminal ID	LOG	С	4
*USERID	USER-ID, UID	User-ID (Character format)	LOG	С	8
*USERIDX	USER-IDX, UIDX	User-ID (Hex format)	LOG	С	8
ASSOIO	ASSO, ASSO-IO	Physical I/Os to Associator for the command	LOG	В	2
DATAIO	DATA, DATA-IO	Physical I/Os to the Data for the command	LOG	В	2
WORKIO	WORK, WORK-IO	Physical I/Os to the Work for the command	LOG	В	2
ADD2	ADDIT2	Additions Field-2	LOG	С	4
COP1	OP1	Command Option-1	LOG	С	1
COP2	OP2	Command Option-2	LOG	С	1
COMMAND	CMD	ADABAS Command Code	LOG	С	2

Figure 5 - Dynamic Logging Fields

- * With ADABAS CLOGLAYOUT=5 format, the User-ID field has been changed from 4 to 8 bytes and now contains the VMID from the CQE CQEVMID field. To obtain a valid User-ID, set the Zap SWITCH at location X'3C' to X'FE', which will cause the Security-ID to be passed in the ADD4 CLOG field. Then use ADD4 to log the User-ID.
- ** If the alternate User-ID Zap SWITCH (X'32') is set to "Y" (the default), this field will contain the four byte Terminal ID.

FIELD NAME	NAME & ALIAS	DEFINITION	LOGGING PARMS	FMT	LEN
CID	COMMAND-ID	Command ID (in character)	LOG	С	4
CIDX	COMMAND-IDX	Command ID (in hex)	LOG	С	4
FNR	FILE	ADABAS File Number	LOG	В	2
RSP	RESPONSE, RESPCODE, RC, RESP-CODE, RESP	ADABAS Response Code	LOG	В	2
**CPUID	COMCPUID	CPU ID Communications ID (in hex)	LOG	С	8
**OPSYSID	COMOPSYS	Operating System Communications ID (in hex)	LOG	С	4
**UBUID	COMUBUID	User Buffer Communications ID	LOG	В	8
**UACSN		Unique Command Sequence Number	LOG	В	4
**DBID	DB	Database ID	LOG	В	2
**PHYS	PHYSICAL PHYS-ID	Physical Call Count (ADANET Log Types Only)	LOG	В	2
ISN		Internal Sequence number of ADABAS record	LOG LOGCB	В	4
ISNLL		ISN Lower Limit	LOG LOGCB	В	4
ISNQ		ISN Quantity (in character)	LOG LOGCB	В	4
CB-FBL		Format Buffer Length in Control Block	LOG LOGCB	В	2
CB-RBL		Record Buffer Length in Control Block	LOG LOGCB	В	2
CB-SBL		Search Buffer Length in Control Block	LOG LOGCB	В	2
CB-VBL		Value Buffer Length in Control Block	LOG LOGCB	В	2

** These are new fields for CLOGLAYOUT=5.

Figure 5 - Dynamic Logging Fields (continued)

FIELD NAME	NAME & ALIAS	DEFINITION	LOGGING PARMS	FMT	L
CB-IBL		ISN Buffer Length in Control Block	LOG LOGCB	В	
ADD1	ADDIT1	Additions Field-1	LOG LOGCB	С	
ADD3	ADDIT3	Additions Field-3	LOG LOGCB	С	
ADD3X	ADDIT3X	Additions Field-3X	LOG LOGCB	С	
ADD4	ADDIT4	Additions Field-4	LOG LOGCB	С	
ADD4X	ADDIT4X	Additions Field-4X	LOG LOGCB	С	
RES	NATPROG, RESERVED	Reserved field in CB character format	LOG LOGCB	С	
RESX	NATPROGX, RESERVEDX	Reserved field in CB hex format	LOG LOGCB	С	
UA	USER-AREA USA	User Area of Control Block (in Character)	LOG LOGCB	С	
UAX	USER-AREAX USAX	User Area of Control Block (in Hex)	LOG LOGCB	С	
UAN	USER-AREAN USAN	User Area of Control Block (in Numeric)	LOG LOGCB	В	
DURATION	DUR	Wall Clock time spent to complete command in tenths of milliseconds	LOG LOGCB	В	
HOUR	HR	Hour of the day (0-23)	LOG LOGCB	В	

Figure 5 - Dynamic Logging Fields (continued)

If subsequent CLOG processing will be done, and the report will be used for field/file usage analysis, code LOGFB and/or LOGSB. These buffers will provide TRIM with the necessary information to produce this report.

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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; optional, . recommended for CLOGLAYOUT=4) 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 for calculating the CPU time of ADABAS commands, the NATURAL program, and other useful information.

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

The ADABAS Command Log Detail Record contains many fields that are shown in the *ADABAS Reference Manuals* in the *Command Log Section* and are listed in **Appendix I**: **Command Log Basic Record and Control Block Fields (CLOGLAYOUT=4 Format)** and **Appendix J: Command Log Basic Record and Control Block Fields (CLOGLAYOUT=5 Format)** of this manual. Some of the fields are binary numeric values and some are alphanumeric. Some of the fields are useless (SIBAIO). 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, Database-ID, CPU-ID, etc. The Database-ID, CPU-ID, and other new information is available in the new CLOGLAYOUT=5 (CLOG5) format of Command Logging. And, the record format is different for OS (or VM) and DOS versions of ADABAS.

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, definition, format, and length. First the usable fields contained in the Basic Part and Control Block portions of the Detail Record are listed. Then the TRIM-derived fields are listed.

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	FORMAT CHAR/ BINARY	LENGTH IN BYTES
FNR	FILE	ADABAS File Number	В	2
COMMAND	CMD	ADABAS Command Code	С	2
JOBNAME	JOB, JOB-NAME	Job Name	С	8
ASSOIO	ASSO, ASSO-IO	Physical I/Os to Associator for the Command	В	2
DATAIO	DATA, DATA-IO	Physical I/Os to the DATA for the Command	В	2
WORKIO	WORK, WORK-IO	Physical I/Os to the WORK for the Command	В	2
CID	COMMAND-ID	Command-ID (Printed in character format)	С	4
CIDX	COMMAND-IDX	Command-IDX (Printed in hex format)	С	4
RSP	RESPONSE, RESPCODE, RC, RESP- CODE, RESP	ADABAS Response Code	В	2

Figure 6 - Expanded Command Log Detail Record Fields

FIELD NAME	ALIAS NAMES	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
ISN		Internal Sequence Number of ADABAS Record (Displayed as 7 digits)	В	4
ISN8		Internal Sequence Number of ADABAS Record (Displayed as 8 digits)	В	4
ISN10		Internal Sequence Number of ADABAS Record (Displayed as 10 digits)	В	4
ISNQ		ISN Quantity	В	4
USERID	USER-ID, UID	User-ID (printed in character format) Refer to Note 5	С	8
UIDALT		User-ID (Alternative User-ID) Refer to Note 5	С	4
USERIDX	USER-IDX, UIDX	User-ID (printed in hex format) Refer to Note 5	С	8
THREAD	THD	ADABAS Thread Number	В	1
ECBS		Event Control Blocks Posted	В	1
CMDTYPE		ADABAS Command Type (Simple, Complex, Update) as a hex code	С	1
DESUPD		Number of Descriptors Updated	В	2
ISNLL		Lower Limit	В	4
ADD1	ADDIT1	Additions Field-1	С	8
ADD2	ADDIT2	Additions Field-2	С	4
ADD2X	ADDIT2X	Additions Field-2X Printed in hex format	С	4
ADD3	ADDIT3	Additions Field- 3(Password, printed in character format)	С	8
ADD3X	ADDIT3X	Additions Field- 3X(Password, printed in hex format)	С	8

Figure 6 - Expanded Command Log Detail Record Fields

(continued on next page)

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FIELD NAME	ALIAS NAMES	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
ADD4	ADDIT4	Additions Field-4 (Cipher, printed in character format))	С	8
ADD4X	ADDIT4X	Additions Field-4X (Cipher, printed in hex format)	С	8
COP1	OP1	Command Option-1	С	1
COP2	OP2	Command Option-2	С	1
CB-FBL		Format Buffer Length in Control Block	В	2
CB-RBL		Record Buffer Length in Control Block	В	2
CB-SBL		Search Buffer Length in Control Block	В	2
CB-VBL		Value Buffer Length in Control Block	В	2
CB-IBL		ISN Buffer Length in Control Block	В	2
CTIME	CMD-TIME	CPU time required for this command	В	4
USER-AREA	UA, USA	User-Area of Control Block (printed in character format)	С	4
USER-AREAX	UAX, USAX	User-Area of Control Block (printed in hex format)	С	4
USER-AREAN	UAN, USAN	User-Area of Control Block (printed in numeric format)	В	4
RES	RESERVED	Reserved Field in Control Block	С	8
RESX	RESERVEDX	Reserved Field in Control Block (printed in hex format)	С	8
USERIO	USER-IOS, U-IOS	User Session Total IOs Refer to Note 4	В	4
USERCNT	USER-CNT, USER- CMDS, U-CNT, U-CMDS	User Session Total Commands Refer to Note 4	В	4
USERCPU	USER-CPU, U-CPU	User Session Total CPU Time Refer to Note 4	В	4

Figure 6 - Expanded Command Log Detail Record Fields

FIELD NAME	ALIAS NAMES	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
CPUID	COMCPUID	CPU ID Communications ID (printed in hex)	С	16
CPUIDC		CPU ID (printed in character)	С	8
OPSYSID	COMOPSYS	Operating System Communications ID	С	8
OPSYSIDC		Operating System (printed in character)	С	4
**UBUID	COMUBUID	User Buffer Communications ID	В	8
**UACSN		Unique Command Sequence Number	В	4
**DBID	DB	Database ID	В	2
**PHYS	PHYSICAL, PHYS-ID	Physical Call Count (ADNET Log Types Only)	В	2
**REC5TYPE	REC5T	Log Record Type	В	2
SEQUENCE	SEQ	Sequence number of input record (max 6 digits printed)	В	4
SEQ7		Sequence number of input record (max 7 digits printed)	В	4
SEQ8		Sequence number of input record (max 8 digits printed)	В	4
DURATION	DUR	Wall-clock time spent to complete command in tenths of milliseconds	В	4
10	IOS	Combined total of Associator, Data and Work I/Os	В	2
CPUTIME	CPU, CPU-TIME, CPUMS	Approximate ADABAS CPU Time spent to complete the command in tenths of milliseconds (Refer to Appendix B)	В	4
TID	TERMINAL-ID	Terminal-ID (for COM-PLETE users)	В	2

** These are new fields for CLOGLAYOUT=5.

This marks the end of the fields on the Basic and Control Block parts of the Detail Record. The fields automatically "derived" by TRIM from information contained on the record are listed next.

FIELD NAME	ELD NAME ALIAS NAMES DEFINITION		FORMAT CHAR/ BINARY	LENGTH IN BYTES
NATFILE		NATURAL File Refer to Note 2	В	1
NATFUNC		NATURAL Function (LOGONUS, LOGONAP, LSTFILES, LSTPROGS, LSTMODLS, RUN- PROG, FETCH-PG, EXECUTE, EDIT, SAVE, CATALOG, EDIT/SAV, CAT/PURG) Refer to Note 2	С	8
NATLOGON		NATURAL LOGON or Application Library Refer to Note 2	С	8
NATPROG		NATURAL Program Refer to Note 2	С	8
NATLINE		NATURAL Line or Statement Number Refer to Note 2	В	2
NSSUID	NATUID, NSSUSER, NATUSER, NSU	NATURAL Security User-ID Refer to Note 2	С	8
NSSAPPL	NATAPPL, APPL, APPLIC, NSA	NATURAL Application Library Refer to Note 2	С	8
FBL	CALC-FBL	Format Buffer Length on Command Log	В	2
RBL	CALC-RBL	Record Buffer Length on Command Log	В	2
SBL	CALC-SBL	Search Buffer Length on Command Log	В	2
VBL	CALC-VBL	Value Buffer Length on Command Log	В	2
IBL	CALC-IBL	ISN Buffer Length on Command Log	В	2
SB-16		First 16 (maximum) bytes of Search Buffer	С	16
DATE	YYDDD, YY-DDD	Julian Date (Year/Day)	С	5

Figure 6 - Expanded Command Log Detail Record Fields

FIELD NAME	ALIAS NAMES	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
DATE4	YYYYDDD, YYYY-DDD	Julian Date (Year as 4 Digits/Day)	С	7
YYMMDD	YY-MM-DD	Date in Year, Month, Day Format	С	6
YYYYMMDD		Date in Year as 4 Digits, Month, Day Format	С	8
TIME		Time of Day Command entered ADABAS in hours, mins, secs	С	6
DATETIME	DATE-TIME	Refer to Note 1	С	16
DATE4TIME	DATE4-TIME	Refer to Note 1	С	16
HOUR	HR	Hour of the Day (0-23)	В	1
MINUTE	MIN, MI	Minute of the Hour (0-59)	В	1
DAY	DA	Day of Month (1-31)	В	1
WEEK	WK	Week of Year (1-53)	В	1
MONTH	МО	Month of Year (1-12)	В	1
WEEKDAY	WEEK-DAY	Day of Week expressed as 3 characters (SUN, MON, etc.)	С	3
MONTH-NAME	MONAME	Month of Year expressed as 3 characters (JAN, FEB, etc.)	С	3
QUARTER	QU	Quarter of Year (1-4) determined by week (13 weeks per quarter, except last quarter possible 14 weeks)	В	1
YEAR	YR	Two-digit Year	В	1
YEAR4	YR4	Four-digit Year	В	2
FB-FIELD		Refer to Note 3	С	2
SB-FIELD		Refer to Note 3	С	2

All 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 YYY-DDD, 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 (\$).

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:

With the buffer pool logic in NATURAL, the NATFILE and NATFUNC fields no longer contain meaningful information. NSSUID and NSSAPPL are better alternatives to NATLOGON.

Referring to any of the fields NATFILE, NATFUNC, NATLOGON, NATPROG, NATLINE, NSSUID, or NSSAPPL causes a large amount of overhead. For runs with a very small volume of input, the overhead may not be noticed. The larger the amount of input, the more the performance will be affected. It is best to avoid referencing these fields. There is a way to reference the NATURAL program, NATURAL Application Library, and NATURAL Security User without incurring the additional overhead by substituting the following fields:

<u>To Report On</u>	<u>Reference</u>
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:

ADABAS release 5.2 expanded the USER-ID field to 8 bytes. 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	V.1.3	Sample Command Log Detail Report
--	-------	----------------------------------

	DUDIMION				04 10	21 10	1	DIGE	1
EXCESSIVE	DURATION		TRIM 7.4	T	04-12	-31 19	:23:51	PAGE	T
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	б
15:50:21	C5827STM	1275.8	822	08495736	S1	81	0	0	б
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 requires the use of CLOGLAYOUT=5.

		Туре
THD	(Thread)	Т
CMD	(Command)	С
FNR	(File Number)	F
NAT	(NATURAL program)	Р
JOB	(Job Name)	J
UID	(User-ID)	U
SID	(Security-ID)	S
RSP	(Response Code)	R
NSA	(NATURAL Application Library)	А
NSU	(NATURAL Security User-ID)	В
USA	(User-Area of the Control Block)	W
CTI	CICS Transaction ID	Х
SPE	(SPECIAL) refer to note below	Y

There are several types of PRESUM records, including:

- 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 User-Exit-B 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

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.

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• 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.

In TRIM V7.6.1, the PRESUM record was extended to 172 bytes.

TRIM V7.6.1 will process PRESUM data only from V7.6.1. Attempting to input data from previous versions into TRIM V7.6.1 will produce unpredictable results. Also attempting to input V7.6.1 PRESUM data into earlier TRIM versions will produce unpredictable results.

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: A change to the PRESUM data record length and format was necessary in TRIM V7.6.1 to provide compatibility with ADABAS V7.4.2. TRIM 7.6.1 can only process PRESUM data generated from ADABAS 7.4.2 with the TRIM 7.6.1 User-exit-4. 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)	С	1
DBID	DB	Database-ID	В	2
THREAD	THD	Thread Number	В	2
FNR	FILE	ADABAS File Number	В	2
COMMAND	CMD	ADABAS Command Code	С	2
NATPROG	NAT	NATURAL Program	С	8
JOB	JOB-NAME, JOBNAME	Job Name	С	8
USERID	USER-ID, UID	User-ID (printed in character format)	С	4
USERIDX	USER-IDX, UIDX	User-ID (printed in hex format)	С	4
SID	SECURITY-ID, SEC-ID	Security-ID	С	8
RSP	RESPONSE, RESPCODE, RC, RESP-CODE, RESP	ADABAS Response Code	В	2
NSSUID	NATUID, NSSUSER, NATUSER, NSU	NATURAL Security User-ID	С	8
USER-AREA	UA, USA	User-Area of Control Block (printed in character format)	С	4
USER-AREAX	UAX, USAX	User-Area of Control Block (printed in hex format)	С	4
USER-AREAN	UAN, USAN	User-Area of Control Block (printed in numeric format)	В	4
NSSAPPL	NATAPPL, APPL, APPLIC, NSA	NATURAL Application Library	С	8
CTI	TRANSID	CICS Transaction-IDs	С	8
SPECIAL	SPE	Special User-Defined PRESUM Category	С	16

Figure 7 - Expanded Presum Record Fields

(continued on next page)

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FIELD NAME	ALIAS NAMES	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
COUNT		Number of commands for this entry	В	4
DURATION	DUR	Wall-clock time spent to complete command in tenths of milliseconds	В	4
10	IOS	Combined Total of Associator, Data, and Work I/Os	В	4
SEQUENCE	SEQ	Sequence number of input record	В	4
SEQ7		Sequence number of input records (max 7 digits printed)	В	4
SEQ8		Sequence number of input records (max 8 digits printed)	В	4
CPUTIME	CPU, CPU-TIME, CPUMS	Approximate ADABAS CPU Time spent to complete the command in tenths of milliseconds (Refer to Appendix B)	В	4
DATE	YYDDD, YY-DDD	Julian Date (Year/Day)	С	5
DATE4	YYYYDDD, YYYY-DDD	Julian Date (Year as 4 Digits/Day)	С	7
YYMMDDYY-MM	-C	Date in Year, Month, Day Format	С	6
YYYYMMDD		Date in Year as 4 Digits, Month, Day Format	С	8
TIME		Time of Day Command entered ADABAS in hours, mins, secs	С	6
DATETIME	DATE-TIME	Refer to Note 1	С	16
DATE4TIME	DATE4-TIME	Refer to Note 1	С	16
HOUR	HR	Hour of the Day (0-23)	В	1
MINUTE	MIN, MI	Minute of the Hour (0-59)	В	1

Note: Only the leftmost four bytes of the CLOG5 format USERID field are used in PRESUM records. This field is equivalent to the USERID field in the CLOG4 format that was expanded to eight bytes in the CLOG5 format. Refer to the Expanded Command Log Detail Record Fields.

Figure 7 - Expanded Presum Record Fields

FIELD NAME	ALIAS NAMES	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
DAY	DA	Day of Month (1-31)	В	1
WEEK	WK	Week of Year (1-53)	В	1
MONTH	МО	Month of Year (1-12)	В	1
WEEKDAY	WEEK-DAY	Day of Week expressed as 3 characters (SUN, MON, etc.)	С	3
MONTH-NAME	MONAME	Month of Year expressed as 3 characters (JAN, FEB, etc.)	С	3
QUARTER	QU	Quarter of Year (1-4) determined by week (13 weeks per quarter, except last quarter possible 14 weeks)	В	1
YEAR	YR	Two-digit Year	В	1
YEAR4	YR4	Four-digit Year	В	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 numeric characters without editing symbols as (e.g., DATE4TIME=20041231**180500).

<u>NOTE 1:</u>

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 SUN	MMARY	TRIM 7.6	.1 FRI 04-12	2-31 19:23:51	PAGE 1
BY COMMAND		LOG FROM	04-12-31 15:47:	56 TO 04-12-31	15:54:21
			AVER	AVER	AVER
CMD	COUNT	00	IO	CPU(MS)	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
Nl	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 WITHIN DEPT		LOG	TRIM 7.6	5.1 -12-31 1	FRI 04-12- 5:47:56 TO	31 19:23:5 04-12-31 15	1 PAGE 1 :54:21
WIIIIN DEII		LOG	FROM 01	12 31 1	.5.17.50 10	01 12 51 15	. 5 1 . 2 1
				SUI	M AVER	AVER	CHRG
DEPT	FNR	COUNT	olo	I/C	D I/O	DUR(MS)	CPU(MS)
Accounting	160	1,481	14.8	3,004	1 2.0	108.37	\$13.20
Accounting	169	2	.0	154	1 77.0	3,897.25	\$15.77
Accounting	* * *	1,483	14.8	3,158	3 2.1	113.48	\$28.97
Consulting	80	1,852	18.5	1,303	3.7	25.68	\$2.33
Consulting	81	3,097	31.0	7,803	3 2.5	95.31	\$.77
Consulting	213	1,640	16.4	167	7.1	4.05	\$.09
Consulting	* * *	6,589	65.9	9,273	3 1.4	53.02	\$3.19
•							
•							
MISC 0	4	.0	64	16.0	417.53	\$2.16	
MISC 63	72	.7	8	.1	L 4.47	\$.07	
MISC 206	2	.0	5	2.5	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.

	ALIAS NAMES	DEFINITION	FORMAT Char/ Binary	LENGTH IN BYTES
RECID		Record Identifier (FFFt where	В	2
		t=TRELOG record type)		
STCK	STCK5	ADABAS STCK Time (CLOG5)	В	8
VERSION		TRELOG ID and Version Number	С	6
COUNT		Count of SB Occurrences	В	4
DBID	DB	Data Base ID	В	2
RECTYPE		TRELOG Record Type (1,2,3,or4)	В	1
FNR	FILE	ADABAS File Number	В	2
COMMAND	CMD	ADABAS Command Code	С	2
RSP	RESPONSE, RSPCODE, RC, RESP-CODE, RESP	ADABAS Response Code	В	2
ADD1	ADDIT1	Additions-1 Field	С	8
SBL	CALC-SBL	Search Buffer Field Length	В	1
SB-40		Search Buffer (up to 40 bytes)	С	40
SEQUENCE	SEQ	Sequence number of input record	В	4
SEQ7		Sequence number of input records (max 7 digits printed)	В	4
SEQ8		Sequence Number of input records (max 8 digits printed)	В	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

FIELD NAME	ALIAS NAMES	DEFINITION	FORMAT CHAR/ BINARY	LENGTH IN BYTES
DATE	YYDDD, YY-DDD	Julian Date (Year/Day)	С	5
DATE4	YYYYDDD, YYYY-DDD	Julian Date (Year as 4 Digits/Day)	С	7
YYMMDD	YY-MM-DD	Date in Year, Month, Day Format	С	6
YYYYMMDD		Date in Year as 4 Digits, Month, Day Format	С	8
TIME		Time of Day Command entered ADABAS in hours, mins, secs.	С	6
DATETIME	DATE-TIME	Refer to Note 1	С	16
DATE4TIME	DATE4-TIME	Refer to Note 1	С	16
HOUR	HR	Hour of the Day (0-23)	В	1
MINUTE	MIN, MI	Minute of the Hour (0-59)	В	1
DAY	DA	Day of Month (1-31)	В	1
WEEK	WK	Week of Year (1-53)	В	1
MONTH	МО	Month of Year (1-12)	В	1
WEEKDAY	WEEK-DAY	Day of Week expressed as 3 characters (SUN, MON, etc.)	С	3
MONTH-NAME	MONAME	Month of Year expressed as 3 characters (JAN, FEB, etc.)	С	3
QUARTER	QU	Quarter of year (1-4) determined by week (13 weeks per quarter, except last quarter - possible 14 weeks)	В	1
YEAR	YR	Two-digit Year	В	1
YEAR4	YR4	Four-digit Year	В	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 YYY-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 characters stated as numeric without editing symbols (e.g., DATE4TIME=20041231**180500).

<u>NOTE 1:</u>

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 S BY FI	JMMARY DESCRTRIM 7LE & CMDLOG FROM 04-	.6.1 FRI 04-12-31 -12-31 20:19:20 TO 0	08:34:23 4-12-31 2	PAGE 1 0:12:31
_				-
FNR 1	SB-40	CM	ID COUNT	8
1		A	.2 554	.0 16 4
1		I	5 112	2.1
1		*	* 668	19.7
1	AA .008.A	I	3 2.353	69.5
1	AA ,008,A,	I	6 303	8.9
1	AA ,008,A,	*	* 2,656	78.4
1	AE ,020,A,	I	.6 1	.0
1	AE ,020,A,	*	* 1	.0
1	*****	*****	* 3,325	98.1
240		7	1 /	1
240		на на на на на на на на на на на на на н	1 4 1 1	.1
240		E	4 2	.0
240		I	.1 1	.0
240		N	11 4	.1
240		*	* 12	.4
240	LE ,004,Y,	S	61 6	.2
240	L3 ,004,U,	*	* 6	.2
240	LL ,018,A,S,LL ,018,A,.	S	1 1	.0
240	LL ,018,A,S,LL ,018,A,.	*	* 1	.0
240	LO ,008,A,	S	1 1	.0
240	LO ,008,A,	*	* 1	.0
240	LO ,009,A,	S	19	.6
240	LO ,009,A,		4 7	. 2
240	LO ,009,A,	*	* 24	.8
240	LO ,014,A,	S	9	.3
240	LO ,014,A,	*	* 9	.3
240	LE ,4,U,	S	9	.3
240	LE ,4,U,	*	* 9	.3
240	LJ ,018,A,	I	.9 1	.0
240	LJ ,018,A,	*	* 1	.0
240	*****	*****	* 63	1.9
* * * *	*****	*****	* 3,388	100.0
DESCRIPT	DRS 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 7.6.1 FRI 04-12-31 08:53:32 PAGE 1

SEQ	CMD	FNR	DBID	ADD1		SB-40	COUNT
1	N1	242	3	00000000000000000			44
2	L4	242	3	000000000000000000000000000000000000000			7
3	L1	242	3	00000000000000000			23
4	E1	242	3	000000000000000000000000000000000000000			б
5	A1	242	3	00000000000000000			37
6	N1	241	3	000000000000000000000000000000000000000			39
7	E4	241	3	00000000000000000			22
8	E1	241	3	00000000000000000			8
9	A1	241	3	00000000000000000			53
10	N1	240	3	00000000000000000			4
11	L1	240	3	000000000000000000000000000000000000000			1
12	E4	240	3	00000000000000000			2
13	E1	240	3	000000000000000000000000000000000000000			1
14	A1	240	3	00000000000000000			4
15	L5	1	3	000000000000000000000000000000000000000			1
16	L5	1	3	00000000000000000			111
17	L2	1	3	000000000000000000000000000000000000000			554
18	A1	1	3	00000000000000000			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	Lб	242	3	D2C7BBCA40404040	KG	,20,A	- 10
24	L6	242	3	C1C4BBCA40404040	AD	,067,A,	22
25	Lб	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,	б
32	L9	241	3	4040404040404040	LL	,018,A,	б
33	L9	241	3	4040404040404040	LJ	,018,1,	19
34	Lб	241	3	D3D3BBCA40404040	LL	,18,A	- 28
35	Lб	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	В	2
ISN		Internal Sequence Number of ADABAS Record	В	4
USERID8	USER-ID8, UID8	8-character User-ID (printed in character format)	С	8
USERID	USER-ID, UID	User-ID (rightmost 4 characters of USERID8) (printed in character format)	С	4
USERIDX	USER-IDX, UIDX	User-ID (printed in hex format)	С	4
RUI	RESTART-USERID	Restart User-ID	С	8
SESSION	SESSION-NUMBER	ADABAS Session Number	В	2
BLOCK-COUNT	BLKCNT	Block Count for use with ADAREP checkpoint file list	В	4
RABN		Relative ADABAS Block Number	В	4
TSN		Transaction Sequence Number	В	4
DBID	DB	Database-ID	В	2
LEN	RECLEN	Image Record Length RECORD-LENGTH	В	2
SEQUENCE	SEQ	Sequence number of input record	В	4
SEQ7		Sequence number of input record (max 7 digits printed	В	4
SEQ8		Sequence number of input record (max 8 digits printed	В	4
IMAGTYP	IMAGE-TYPE	"BEFORE" or "AFTER"	С	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)	В	2
DATE	YYDDD, YY-DDD	Julian Date (Year/Day)	С	5
DATE4	YYYYDDD, YYYY-DDD	Julian Date (Year as 4 Digits/Day)	С	7
YYMMDD	YY-MM-DD	Date in Year, Month, Day Format	С	6
YYYYMMDD		Date in Year as 4 Digits, Month, Day Format	С	8
TIME		Time of Day Command entered ADABAS in hours, mins, secs	С	6
DATETIME	DATE-TIME	Refer to Note 1	С	16
DATE4TIME	DATE4-TIME	Refer to Note 1	С	16
HOUR	HR	Hour of the Day (0-23)	В	1
MINUTE	MIN, MI	Minute of the Hour (0-59)	В	1
DAY	DA	Day of Month (1-31)	В	1
WEEK	WK	Week of Year (1-53)	В	1
MONTH	MO	Month of Year (1-12)	В	1
WEEKDAY	WEEK-DAY	Day of Week expressed as 3 characters (SUN, MON, etc.)	С	3
MONTH-NAME	MONAME	Month of Year expressed as 3 characters (JAN, FEB, etc.)	С	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)	В	1
YEAR	YR	Two-digit Year	В	1
YEAR4	YR4	Four-digit Year	В	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 characters without editina stated as numeric symbols (e.g., DATE4TIME=20041231**180500).

<u>NOTE 1:</u>

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 FROM PROTECTION LOG	TRIM 7.6.1	FRI 04-12-31	19:23:51 PAGE 1
YY-MM-DDTIME FNR	ISNUSERIDX	IMAGTYP	
04-12-3112:27:53	37 1847	00001417	AFTER
BA=DAVENPORT BB=CHARLES BC=M			LAST-NAME FIRST-NAME INITIAL
F.B=20000		SALARY	
04-12-3112:27:59	37 1893	00001417	AFTER
BA=SMITH BB=MARTHA BC=C		LAST-NAME	FIRST-NAME INITIAL
FB=45000		SALARY	
04-12-3112:28:14	37 989	00001417	AFTER
BA=COHEN BB=MARK BC=		LAST-NAME	FIRST-NAME INITIAL
rb=33000		SALAKY	

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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

INPUTDefines the input logtype, specifies any derived fields, and definesFIELDother "global" information, such as the NATURAL System File(s),VALUEetc.

Report Definition REPORT

Defines the report type, heading lines, format, etc.

Record Selection

INCLUDESpecifies 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
SUMSpecifies 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.

MINIMUM MAXIMUM PERCENT CHARGE

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 <u>INPUT</u> SYNTAX				
INPUT	LOGTYPE	=	{ <u>COMMAND</u> (CLOG CLOG5 (CLOGLAYO PRESUM TRELOG PROTECTION * }	LAYOUT=4 format) UT=5 format)
	LIMIT	=	{	
	CPU-FACTOR	=	{ numeric-value 920000	
	ENV-FACTOR	=	{ numeric-value <u>1.0000</u> }	
	CLOCK- FACTOR	=	{ numeric-value <u>0</u> }	
	TAPES	=	{ numeric-value <u>0</u> }	(DOS and VM only)
	VMBLK	=	{ YES <u>NO</u> }	(VM only)
	SYSNO	=	{ <u>010</u> 012 }	(DOS only)
	REWIND		{ <u>YES</u> NO }	(DOS only)
	STOPDATE		{	
	STOPDATE4		{	
	STOPTIME		{	

- LOGTYPE: Defines the input to be the COMMAND or CLOG5 (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.
- 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=COMMAND,LIMIT=1000

The first 1000 Detail Records from an ADABAS Command Log are to be processed.

INPUT LOGTYPE=COMMAND, 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 <u>0</u> }	

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.

<u>SYNTAX</u>

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".

```
FIELDNAME=WARNING,LENGTH=8,FORMAT=CVALUEHIGH,DEPT=ENG,FNR=(148-151)VALUEMEDIUM,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.

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 PRODV711
```

Set the value of the derived field "DBNAME" to "PRODV711" to indicate that the statistics will be for the production database Version 7.1.1.

Note that the field "DBID" available on Command Logs with CLOGLAYOUT=5 format is now 2 bytes in length.

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 <u>REPORT</u>

The REPORT statement defines the type of report to be generated, along with heading line(s) and report format.

<u>SYNTAX</u>

REPOR1	TYPE	=	{ <u>DETAIL</u> SUMMARY }	
	HEADING	=	'up to 60 characters'	
	HEADING2	=	'up to 60 characters'	
	LIMIT	=	{ <u>999999999</u> numeric-value }	
	LINE-SIZE	=	{ <u>133</u> numeric-value }	
	PAGE-SIZE	=	{ <u>55</u> numeric-value }	

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.
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.
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.

<u>SYNTAX</u>

{ 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 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 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.

<u>SYNTAX</u>

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 <u>SHOW</u>

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.

<u>SYNTAX</u>

SHOW ADABAS-FIELD[,ADABAS-FIELD]...,FNR=file number SHOW ALL,FNR=file number

SHOW ALL will print <u>all</u> 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 FIRST-NAME BB=ANN BC=P INITIAL CA=F SEX CB=38 AGE CD= ٠ . 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.

<u>SYNTAX</u>

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.

<u>SYNTAX</u>

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 <u>SUM</u>

The SUM parameter specifies which input fields are summed and shown on the summary report.

<u>SYNTAX</u>

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.

<u>SYNTAX</u>

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.

<u>SYNTAX</u>

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.

<u>SYNTAX</u>

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 then 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 <u>OUTPUT</u>

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.

<u>SYNTAX</u>

OUTPUT	LIMIT	=	{	<u>999999</u> numeri	<u>)99</u> c-value	}
	ID	=	{	charac <u>USER</u>	ter-string	}
	UNCRUNCH	=	{	<u>NO</u> YES	}	(CLOG only)
	DERIVED	=	{	<u>NO</u> YES	}	(CLOG only)
	COMPRESS	=	{	<u>NO</u> YES	}	(PLOG only)
	YEARFMT	=	{	<u>2</u> 4	}	
	SYSNO	=	{	011 013 021 023 031 033 041 043 051 053		(DOS only)
	UNLOAD	=	{	<u>YES</u> NO	}	(DOS and VM only)

- LIMIT: Specifies a limit to the number of output records.
- 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.

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 <u>Report Headings</u>

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 <u>Report Dimensions</u>

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., 24×80) or "spread-sheet" manipulation (more than 55 x more than 133).

VI.4.3 <u>Report Destinations</u>

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.

TRIM User-Exit-4 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 TRIM User-Exit-4 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 User-Exit-4 of the TRIM Installation and Operations Manual.)

VII.2 Sample Statistics

TRIMX4 00227 TRIMV751 STARTUP IS IN PROGRESS TRIMX4 00227 TRIMV751 TRIM IS ACTIVE TRIMX4 00227 TRIMV751 TRIM WILL USE TRMTAP PARMS TRIMX4 00227 TRIMV751 TRIM WILL USE TRMLOG PARMS TRIMX4 00227 TRIMV751 TRIM WILL USE TRMRSP PARMS

T R I M VERSION 7.6.1 SESSION STATISTICS

MODULE AND TABLE ADDRESSES

MOD/TBL	ADDRESS	MOD/TBL	ADDRESS	MOD/TBL	ADDRESS	MOD/TBL	ADDRESS
ADALNK	nnnnnnn	ADAIOR	nnnnnnn	ADAMPM	nnnnnnn	ADALOG	nnnnnnn
adanc0	nnnnnnn	ADANC1	nnnnnnn	ADANC2	nnnnnnn	ADANC3	nnnnnnn
ADANC4	nnnnnnn	ADANC5	nnnnnnn	ADANC6	nnnnnnn	ADANC7	nnnnnnn
ADANC8	nnnnnnn	ADANC9	nnnnnnn	ADANCA	nnnnnnn	ADANCB	nnnnnnn
ADANCC	nnnnnnn	ADAEX1	nnnnnnn	ADAEX2	nnnnnnn	ADAEX4	nnnnnnn
CQ	nnnnnnn	HQ	nnnnnnn	THDTABLE	nnnnnnn	UQ	nnnnnnn
BUFPOOL	nnnnnnn	IFB	nnnnnnn	TSR	nnnnnnn	TSC	nnnnnnn

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	nnnnnnn	TRMX4SU1	nnnnnnn	TRMX4SU2	nnnnnnn	TRMX4SU3	nnnnnnn
DATACS	nnnnnnn	TRELOG	nnnnnnn	TRELGHDR	nnnnnnn	TREBUF	nnnnnnn
TRMUSYS	nnnnnnn	MUID	nnnnnnn	MJOB	nnnnnnn	MNAT	nnnnnnn
MRSP	nnnnnnn	MCMD	nnnnnnn	MFNR	nnnnnnn	MTHD	nnnnnnn
MUSA	nnnnnnn	MNSU	nnnnnnn	MNSA	nnnnnnn	MCTI	nnnnnnn
MSID	nnnnnnn	HUID	nnnnnnn	HJOB	nnnnnnn	HNAT	nnnnnnn
HRSP	nnnnnnn	HCMD	nnnnnnn	HFNR	nnnnnnn	HTHD	nnnnnnn
HSPE	nnnnnnn	HUSA	nnnnnnn	HNSU	nnnnnnn	HNSA	nnnnnnn
HCTI	nnnnnnn	HSID	nnnnnnn	SCWF	nnnnnnn	SUID	nnnnnnn
SJOB	nnnnnnn	SNAT	nnnnnnn	SRSP	nnnnnnn	SCMD	nnnnnnn
SFNR	nnnnnnn	STHD	nnnnnnn	SUSA	nnnnnnn	SNSU	nnnnnnn
SNSA	nnnnnnn	SCTI	nnnnnnn	SSID	nnnnnnn	VUID	nnnnnnn
VJOB	nnnnnnn	VNAT	nnnnnnn	VFNR	nnnnnnn	VNSA	nnnnnnn
VSID	nnnnnnn	XUQ	nnnnnnn	XUQOLDST	nnnnnnn	HIDURTBL	nnnnnnn
TRACETBL	nnnnnnn	EUXB	nnnnnnn	FNRNAME	nnnnnnn		

	Т	R	I	М		VERS	ION	7.6.1	L		SESSI	ON STATISTICS
FROM		04	1-36	55	06	:11:25	5	Т	0	04-	365	20:20:22
SESSIO	N S	STAR				04-	365	0	6:11	L:25		
DBID			22	7		TEST	-DA	TABASE	C			
LFP		12	,00	0		7	8	USED	3	365/09	:38:37	
LI		10	,00	0		0	%	USED		365/09	:38:37	
LQ		10	,00	0		1	8	USED	1	365/09	:38:37	
NU			2	0		30	90	USED		365/09	:38:09	
LWP		150	,00	0		51	90	USED		365/09	:38:37	
LCP		10	,00	0		0	8	USED	1	365/09	:38:37	
NH			50	0		7	90	USED		365/09	:38:09	
NC			2	0		0	90	USED	1	365/09	:38:37	
NAB			4	9		5	90	USED	1	365/09	:38:37	
CT			5	7								
DUALCLD		9	,33	2								
DUALCLS			10	8								
DUALPLD		9	,33	2						Not	that	the high-water %
DUALPLS			21	6						usa	ige of N	NH, NU, LFP, LI,
LP		1	,00	0						and	l LQ at	pove. The day
MODE		N	1							of t	he yea	r and time of
RDONLY		ľ	10							higl	h usag	e are indicated.
TT			85	8						-	-	
TNAA			85	8								
TNAE			85	8								
TNAX			85	8								
LOGGING		7	ES									
LOGCB		Ν	10									
LOGFB		ľ	10									
LOGRB		ľ	10									
LOGSB		ľ	10									
LOGVB		ľ	10									
LOGIB		ľ	10									
LOGIO		ľ	10									
FB TRANSLATIONS	191											
-------------------	-------------											
USER COMMANDS	236,350,119											
INTERNAL CMDS	19,632											
THROWBACKS	0											
INTERRUPTS	1,080											
BUFFER CALLS	2,488											
	0.05											
BOLLER ELLICIENCY	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											
סראס	060											
READS	000											
WRITES	171											
TOT IOS	1,039											
	0											
UEXI DISALLOWED	0											
UEX1 LOCKED OUT	0											
	Ũ											
UEX1 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	١
RD counts.	

COMMAND COUNTS BY: T H R E A D -----

THD	1	=	17,043	COMMANDS	/	4.66	olo	
THD	2	=	289,089	COMMANDS	/	79.12	%	
THD	3	=	38,437	COMMANDS	/	10.52	8	
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	00	

COMMAND CO	OUNTS BY:		RΕ	S P	O N	S I	Ε	C O	DE	1				
RESPONSE	0	=		363	,497		(COMM	AND	S	/	99.4	49	00
RESPONSE	3	=		1	,013		(COMM	AND	S	/	0.1	28	%
RESPONSE	9	=			712		(COMM	AND	S	/	0.1	19	%
RESPONSE	40	=			13		(COMM	AND	S	/	0.0	00	8
RESPONSE	41	=			3		(COMM	AND	S	/	0.0	00	%
RESPONSE	52	=			27		(COMM	AND	S	/	0.0	01	8
RESPONSE	67	=			101		(COMM	AND	S	/	0.0	03	8
RESPONSE	17403	=			1		(COMM	AND	S	/	0.0	00	olo
TOTAL		=		365	,367		(COMM	AND	S	/	100.	00	90
*** TOTAL	RESPONSES	3	=	8 *	* *									

COMMAND	COUNTS BY:	C	OMMAN	D	CODE	
A1	COMMANDS	=	177	/	.05	Ŷ
BT	COMMANDS	=	43	/	.01	8
CL	COMMANDS	=	27	/	.00	8
C1	COMMANDS	=	3	/	.00	8
ET	COMMANDS	=	1,090	/	.3	8
E1	COMMANDS	=	226	/	.06	olo
L1	COMMANDS	=	7,884	/	2.16	00
L2	COMMANDS	=	114,092	/	31.23	00
L3	COMMANDS	=	27,767	/	7.6	olo
Lб	COMMANDS	=	98,276	/	26.90	8
L9	COMMANDS	=	30,504	/	8.35	olo
OP	COMMANDS	=	83	/	.02	00
RC	COMMANDS	=	70,040	/	19.17	olo
S1	COMMANDS	=	12,746	/	3.49	olo
S8	COMMANDS	=	2,409	/	.66	00
TOTAL	COMMANDS	=	365,367	/	100.00	00
UPDATE			1,649	/	0.45	olo
SIMPLE 1	NON-FINDS		349,153	/	95.56	00
SIMPLE	FINDS		12,016	/	3.29	olo
COMPLEX	FINDS		2,549	/	0.70	00

51 COMMANDS WITH HIGHEST DURATION 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	С	0	3	0	00184733	00000002	291	0	2	12,747
365/15:50:28	M39XTP4	FINDER	PAYLIB	S2	00321796	64	С	0	3	0	00184733	00000002	283	0	2	12,569
365/15:51:45	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	1	0	00184733	00000002	243	0	4	12,387
365/16:02:04	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	3	0	00184733	00000002	227	0	2	12,123
365/15:50:13	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	1	0	00184733	00000002	227	0	2	11,994
365/14:32:00	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	3	0	00184733	00000002	227	0	3	11,547
365/14:48:49	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	3	0	00184733	00000002	223	0	2	11,321
365/14:32:01	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	4	0	00184733	00000002	214	0	2	11,263
365/14:48:22	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	3	0	00184733	00000002	210	0	4	11,038
365/15:57:44	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	3	0	00184733	00000002	210	0	2	10,888
365/15:50:26	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	4	0	00184733	00000002	209	0	2	10,635
365/14:32:01	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	3	0	00184733	00000002	208	0	2	10,495
365/15:57:15	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	3	0	00184733	00000002	208	0	5	10,164
365/14:48:17	M39XTP4	FINDER	PAYLIB	S4	00321796	27	С	0	4	0	00184733	00000002	207	0	2	9,967
365/15:50:35	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	3	0	00184733	00000002	200	0	2	9,862
365/15:57:22	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	3	0	00184733	00000002	198	0	4	9,666
365/15:50:26	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	3	0	00184733	00000002	198	0	3	9,325
365/14:48:21	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	3	0	00184733	00000002	197	0	2	9,095
365/15:57:29	M39XTP4	FINDER	PAYLIB	S2	00321796	27	С	0	1	0	00184733	00000002	196	0	2	8,897
0																
0																
0																

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 issdued the command.
PGM NAME	The name of the program that issued the comand.
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
Т	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.

ſ

COMMAN	D COUNTS	BY:	FILE	NUMBER			
FILE	0	=	81,047	COMMANDS	/	22.18	8
FILE	1	=	489	COMMANDS	/	.13	%
FILE	7	=	17,896	COMMANDS	/	4.90	8
FILE	8	=	29,834	COMMANDS	/	8.17	8
FILE	9	=	9,819	COMMANDS	/	2.69	%
FILE	10	=	9,795	COMMANDS	/	2.68	%
FILE	13	=	23,876	COMMANDS	/	6.53	8
FILE	17	=	6,309	COMMANDS	/	1.73	%
FILE	18	=	12	COMMANDS	/	.00	8
FILE	31	=	2	COMMANDS	/	.00	%
FILE	32	=	41,673	COMMANDS	/	11.41	%
FILE	33	=	5,094	COMMANDS	/	1.39	%
FILE	38	=	1	COMMANDS	/	.00	8
FILE	49	=	87,040	COMMANDS	/	23.82	%
FILE	52	=	12	COMMANDS	/	.00	%
FILE	71	=	16,150	COMMANDS	/	4.42	8
FILE	72	=	188	COMMANDS	/	.05	%
FILE	107	=	10	COMMANDS	/	.00	8
FILE	119	=	27,926	COMMANDS	/	7.64	%
FILE	12703	=	8,194	COMMANDS	/	2.24	00
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 ET E1/4 L3/6 L9	COMMANDS COMMANDS COMMANDS COMMANDS COMMANDS	= = = =	30 150 120 7,409 2,086	.31 % 1.53 % 1.23 % 75.64 % 21.30 %	.01 % .04 % .03 % 2.03 % .57 %
TOTAL	COMMANDS	=	9,795	100.00 %	2.68 %
FILE	13		CMD COUNT	% OF FILE	% OF TOTAL
A1/4 CL E1/4 ET L3/6 OP	COMMANDS COMMANDS COMMANDS COMMANDS COMMANDS COMMANDS	= = = =	101 21 84 195 23,654 21	.42 % .09 % .35 % .82 % 99.07 % .09 %	.03 % .00 % .02 % .05 % 6.47 % .00 %
TOTAL	COMMANDS	=	23,876	100.00 %	6.53 %
FILE	13		CMD COUNT	% OF FILE	% OF TOTAL
CL L1/4 OP S1/4	COMMANDS COMMANDS COMMANDS COMMANDS	= = =	33 3,122 33 3,121	.52 % 49.42 % .52 % 49.47 %	.01 % .85 % .01 % .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
 /
 .53 %

 PROGRAM FINDX
 =
 2,711
 COMMANDS
 /
 .53 %

 PROGRAM LOOKUP
 =
 111,008
 COMMANDS
 /
 .01 %

 PROGRAM MENU
 =
 49
 COMMANDS
 /
 .01 %

 PROGRAM MENU2
 =
 140
 COMMANDS
 /
 .01 %

 PROGRAM REVENUE
 =
 364
 COMMANDS
 /
 .10 %

 PROGRAM RIP
 =
 69,892
 COMMANDS
 /
 18.18 %

 •
 •
 •
 •
 •
 •
 •

 •
 •
 •
 •
 •
 •
 •

 •
 •
 •
 •
 •
 •
 •

 •
 •
 •
 •
 100.00 %

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 C	OUNTS BY:	N A	Т Р	ROG	R A M		SORTED	BY	FREQUENCY
PROGRAM PROGRAM PROGRAM PROGRAM PROGRAM PROGRAM PROGRAM PROGRAM • •	LOOKUP RIP STATS CARNEGIE FINDX JOHNS2 KILLZAT JUNE BATTLE		111,0 69,8 66,4 16,6 12,8 6,3 5,0 2,7 1,4	08 92 09 22 96 42 07 11 89	COMMAN COMMAN COMMAN COMMAN COMMAN COMMAN COMMAN COMMAN	IDS , IDS , IDS , IDS , IDS , IDS , IDS , IDS , IDS ,		30.3 L9.1 4.5 3.5 1.7 1.3 .7	8 % % % % % % 8 % % % % % 5 3 % % % % 7 % % 1
 TOTAL*** *** TOTAL	PROGRAMS	 = 79 *	365,3	67	COMMAN	IDS ,	/ 10	0.0	 0 %
COMMAND C	OUNTS BY:	J	0 B	N A M	E 	SORTE:	D BY C#	ATEG	ORY
JOB ARMOR JOB BUILD	12 = ER =	2	296	COM COM	MANDS MANDS	1	.6	3 %	
JOB BUSTE JOB CM3A4 JOB DELTA	R = 2 = 7 =	87	,951 26 ,205	COM COM COM	MANDS MANDS MANDS	/	24.0 .0	7 % 1 % 2 %	
JOB ECCEN JOB FINDI	T3 = T8 =	4 1	,344 ,055	COM COM	MANDS MANDS	, 	1.1	9 % 9 %	
JOB GREEN JOB HA315 JOB JOYS9	4 = 9 = 3 =	99 30 27	,669 ,544 ,695	COM COM COM	MANDS MANDS MANDS	 	27.2 8.3 7.5	8 8 6 8 8 8	
TOTAL***	= 36	5,367		СОМ	MANDS	/	100.0	0 %	
*** TOTAL	JOBS =	47 **	*						

Section VII - TRIM Nucleus Session Stats

COMMAND	COUNTS	BY:		J () В	N	A	ME]	SOF	RTED	BY	FRE	QUENCY
JOB GREI JOB BUS' JOB DEL' JOB HA3: JOB JOY JOB TAF' JOB ECCI JOB ARMO JOB MISS JOB ZEPI •	EN4 FER FA7 159 593 FER5 ENT3 OR12 SILE SILE LIN1		9 8 3 2 1	9,6 7,9 6,2 7,6 9,3 4,3 2,0 1,9	69 51 05 44 95 42 44 96 93 38		OMM OMM OMM OMM OMM OMM OMM	IANE IANE IANE IANE IANE IANE IANE	0S 0S 0S 0S 0S 0S 0S 0S 0S 0S 0S	///////////////////////////////////////	27 24 18 7 5 1	.28 .07 .12 .36 .58 .29 .19 .63 .57 .53	ماه ماه ماه ماه ماه ماه ماه ماه	
TOTAL**	*	=	36	5,3	67	C	OMM	ANE	os	/	100	.00	00	
*** TOTA	AL JOBS	=	4	7 *	* *									
COMMAND	COUNTS	BY:	1	U S	E R	I :	D	SC	RTEI	D BY	CATI	EGOF	RY	
USER ID USER ID USER ID USER ID USER ID USER ID USER ID USER ID USER ID USER ID • •	AEB3421 AFB5C22 B1C2C30 B1C2C31 B5DCA34 BA88726 CACEC51 CD11976 CD12345 CDAB206	11 29 26 20 47 54 13 55 55 55		62 30 1 86 3 8 10	,821 309 ,242 ,188 97 ,555 ,106 ,463 804 ,020		C0 C0 C0 C0 C0 C0 C0 C0 C0	MMA MMA MMA MMA MMA MMA MMA	NDS NDS NDS NDS NDS NDS NDS NDS	 	17 8 23 2 2	.19 .08 .28 .33 .03 .69 .85 .32 .22 .74	ماه ماه ماه ماه ماه ماه ماه ماه ماه	
TOTAL**	*		=	365	,367		CO	MMA	NDS	/	100	.00	00	
*** TOTA	AL USERS	5 = BV:	:	96 ·	*** ק ק	т	П	90	סרידיד	BV	FRF	ារកោ	ICV	
USER ID USER ID USER ID USER ID USER ID USER ID USER ID USER ID USER ID USER ID • •	BA88726 AEB3421 B1C2C30 FFE4339 D3D5C64 CDAB206 EEEEAB0 EFAA956 CD11976 DE00008	54 11 26 9A 47 55 30 55 30	= = = = = = =	86 62 30 29 18 10 10 9 8 5	,555 ,821 ,242 ,666 ,778 ,020 ,001 ,242 ,463 ,552		COM COM COM COM COM COM COM COM	MAN MAN MAN MAN MAN MAN MAN MAN	IDS IDS IDS IDS IDS IDS IDS IDS IDS IDS	/ / / / / /	23 17 8 5 2 2 2 2 1	.69 .19 .28 .12 .14 .74 .53 .32 .52		
TOTAL**	*	=		365	,367	(СОМ	MAN	IDS	/	100	.00	00	
*** TOTA	AL USERS	3 =		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 /
 .232

 SEC ID TREE09 =
 804
 COMMANDS /
 .222

 SEC ID TREE10 =
 10,020
 COMMANDS /
 2.74

 17.19 % Ŷ ŝ ÷ ŝ ŝ 응 Ŷ Ŷ ŝ _____ 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 /
 2.53 %

 SEC ID TREE21 =
 9,242
 COMMANDS /
 2.32 %

 SEC ID TREE08 =
 8,463
 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

 NSAPPL N20LIB
 =
 7,424
 COMMANDS
 /
 2.03

 .24 % 6.06 % .33 % .97 % è ° 8 ŝ ÷ _____ 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, N₂O.

COMMAND	COUNTS BY:	NAT	URAL S	SECU	JRITY A	APPLID		SORTED	BY	FREQUENCY
NSSAPPL	TREED882	=	147,3	 315	COMMA	ANDS	/	40.	32	* *
NSSAPPL	CAPTAIN8	=	77,0	685	COMMA	NDS	/	21.	26	olo
NSSAPPL	DELTAPI9	=	66,8	819	COMMA	NDS	/	18.	29	00
NSSAPPL	AXAA45T3	=	22,2	154	COMMA	NDS	/	б.	06	00
NSSAPPL	LAMBDAXA	=	18,0	800	COMMA	NDS	/	4.	93	00
NSSAPPL	N2OLIB	=	7,4	424	COMMA	NDS	/	2.	03	00
NSSAPPL	prxt3ab9	=	6,0	026	COMMA	NDS	/	1.	65	00
NSSAPPL	C3C6D7BA	=	5,6	590	COMMA	NDS	/	1.	56	00
NSSAPPL	BRYAN12	=	3,5	549	COMMA	NDS	/		97	00
•										
•										
•										
TOTAL***	:=	365,	367CON	1MAN	DS		/	100.	00	e
*** TOTA	L NSSAPPLS	=	73 **	*						
COMMAND	COUNTS BY:	NAT	URAL :	SECU	JRITY (JSERID		SORTEI) B	Y CATEGORY
NSSUID	A9909765	=	4,8	00	COMMA	NDS	/	1.3	1	8
NSSUID	CM3RTA51	=	30,0:	19	COMMA	NDS	/	8.2	2	00
NSSUID	CLTN8709	=	12,3	55	COMMA	NDS	/	3.3	8	00
NSSUID	GROUCHO5	=	36,24	42	COMMA	NDS	/	9.9	2	010
NSSUID	HMH37521	=	5,28	87	COMMA	NDS	/	1.4	5	00
NSSUID	INTRBANK	=	9,8	88	COMMA	NDS	/	2.7	1	90
NSSUID	LOGPER1A	=	27,8	55	COMMA	NDS	/	7.6	2	00
NSSUID	MASTER54	=	25,0	58	COMMA	NDS	/	6.8	6	00
•										
•										
 TOTAL***	=	365,	367CON		DS			100.0	0	 %
*** "0""	I MAGUIDA		06 44							
A TOTA	L NSSUIDS	=	26 **	~						
COMMAND	COUNTS BY:	NAT	URAL S	SECU	JRITY (JSERID		SORTEI	B	Y FREQUENC
NSSUID	TABL42	 =	70.8	 45	COMMZ	NDS		 19	39	 %
NSSUID	USER0987	=	58.9	19	COMMZ	NDS	'/	16	13	
NSSUID	LOGPER1A	=	49,8	85	COMMA	NDS	'/	13	65	8
NSSUID	GROUCHO5	=	36,24	42	COMMA	NDS	1		92	8
NSSUID	CM3RTA51	=	30.0	19	COMMZ	NDS	1	8	22	8
NSSUID	KERRAVON	=	29,8	57	COMMA	NDS	'/	8.	17	-
NSSUTD	LOGPERIA	=	27.8	55	COMMZ	NDS	'/	3. 7	 62	- 8
NSSUID	MASTER54	=	25.0	58	COMMA	NDS	'/	6	86	- 8
•			23,0		CO1-11-1F		/	0.		v
•										
•										
		 265	26700		 סס			100	 0.0	 o
TOTAL * *	=	305,	30700	'II'IAN.	72		/	T00.	00	6
*** TOTA	L NSSUIDS	=	26 **	*						

COMMAND	COUNTS BY:	TRANS	SID	SORTED	BY C	ATEGORY	
TRANSID	BATC	=	4,800	COMMANDS		1.31	90
TRANSID	CICSA413	=	30,019	COMMANDS	/	8.22	9
TRANSID	CICSB4Z1	=	12.355	COMMANDS		3.38	2
TRANSID		=	36,242	COMMANDS	,	9.92	9
TRANSID	CICSDE01	=	5 287	COMMANDS	<i>'</i> ,	1 45	o.
TRANSID	CICSDE02	_	9 888	COMMANDS	<i>'</i> ,	2 71	9 9
TRANSID	CICSDE02	_	27 855	COMMANDS		7 62	9 9
TRANSID	CICSINZS	_	27,000	COMMANDS		7.02	° 0.
TRANSID	150	=	25,058	COMMANDS	/	0.80	6
•							
•							
•							
TOTAL***	:	=	365,367	COMMANDS	/	100.00	00
***TOTAL	TRANSIDS	=	26 ***				
COMMAND	COUNTS BY:	TRANS	SID	SORTED B	Y FR	EQUENCY	
TRANSID	BATC	=	70,845	COMMANDS		19.39	alo
TRANSID	CICSA413	=	58,919	COMMANDS		16.13	9
TRANSID	CICSB4Z1	=	49.885	COMMANDS	'/	13.65	0
TRANSID	CICSDDOD	=	36,242	COMMANDS	'/	9,92	9
TRANGID	CICSDE01	_	30 019	COMMANDS	<i>'</i> ,	8 22	2
TRANSID	CICSDEUI	_	20,019	COMMANDS		0.22	° 0.
TRANSID	CICSDEUZ	=	29,857	COMMANDS		8.17	б 0.
TRANSID	CICSINZ3	=	27,855	COMMANDS		7.62	б 0.
TRANSID	150	=	25,058	COMMANDS	/	6.86	8
•							
•							
•							
TOTAL***		=	365,367	COMMANDS	/	100.00	90
***TOTAL	TRANSIDS	=	26 ***				
COMMAND	COUNTS BY:	LOO	GUSER	AREA	SC	RTED BY	CATEGORY
USER ARE	 IA	=	81,519	COMMANDS		22.31	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
USER ARF	CA A1C4	=	1,902	COMMANDS	/	.52	90
USER APP	A C5D4	=	19,584	COMMANDS	<i>'</i> ,	5 36	- 01
USER ARE	C6D4	_	2 012	COMMANDS	<i>'</i> ,	5.50	0
IIGER ARE		_	997	COMMANDS	<i>'</i> ,	.55	9 9
IICED ADD		_	201	COMMANDS		.27	۰ ٩
USER ARE	A DOGI	-	24 662	COMMANDS		.10	ъ о
USER ARE	LA EZFO	=	24,662	COMMANDS	Ι,	6./5	6
USER ARE	GA G3R?	=	8,212	COMMANDS	/	2.25	*
•							
•							
•							
						100 00	
TOTAL * * *	- =		365,367	COMMANDS	/	100.00	š
*** TOTA	L USER AREA	s =	22 ***				

Section VII - TRIM Nucleus Session Stats

COMMAND COUN	TS BY:	LOG	USER	AREA	SOR	TED BY	FREQUENCY
USER AREA USER AREA USER AREA USER AREA USER AREA USER AREA USER AREA USER AREA •	TVC1 RRB3 ZZTP E2F6 MRY8 C5D4 TAR2	= = = = = = =	81,519 59,080 29,266 22,503 24,662 19,876 19,584 17,282	COMMANDS COMMANDS COMMANDS COMMANDS COMMANDS COMMANDS COMMANDS COMMANDS	/ / / / / /	22.31 16.17 8.01 6.98 6.75 5.44 5.36 4.73	ත්ව ත්ව ත්ව ත්ව ත්ව ත්ව
• TOTAL*** *** TOTAL US	ER AREAS	=	365,367 22 ***	COMMANDS	/	100.00	8 8
END S FROM 99-3	TATI 65 06:1	S T 1:25	ICS S TO 99-3	EGMEN 65 20:20:2	 Т 2 		

Note that after the break the printout would continue for the next hour(s) interval, similar to the pages above, finally ending with:

END SESSION STATISTICS

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-FN	R-SUMMARY-RECORD.			
	05	FILLER	PIC	X(80).	(Header Info)
	05	FNR	PIC	S99999 C	OMP.
	05	FILLER	PIC	XX.	(Alignment)
	05	FNR-COUNT	PIC	S9(5) CO	MP.
	05	FNR-SUM-IO	PIC	S9(10) C	OMP.
	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 User-Exit-B 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 V7.6.1 will process PRESUM data from V7.6.1 only. In V7.6.1, the PRESUM record is 172bytes.

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
11	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	TF	RIM 7.6.1	FRI 04-12-31	15:42:05	PAGE 1
		LOG	FROM 04-12-	31 06:53:08 7	TO 04-12-31	08:09:02
			SUM	SUM	SUM	
FNR	COUNT	/ 5	lo IO	CPU(MS)	DUR(MS)	
0	1,741	17.4	4 1,316	8,589.2	52,430.	4
8	2,050	20.5	5 1,091	13,410.6	25,952.	8
9	121	1.2	2 27	326.4	979.	5
21	46		5 28	411.8	888.	0
99	2	. 8	3 7	53.5	233.	8
249	4,592	45.9	9 6,575	65,475.6	139,213.	4
250	1	. (0 7	57.6	190.	1
251	685	6.9	9 1,593	10,608.9	31,919.	5
252	762	7.6	5 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 7. LOG FROM 04-1	6.1 FRI .2-31 20:52:	04-12-31 22: 28 TO 04-12-3	43:37 PAGE 1 31 21:34:07
FNR	COUNT	/ %	SUM IO	SUM CPU(MS)	SUM DUR(MS)	
0 249 250 252	214 29 10 282	40.0 5.4 1.9 527	13 12 19 361	346.2 163.8 176.8 3,896.4	365.9 294.6 324.0 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

LOGSTDT	LOGSTTI	LOGENDT	LOGENTI	FNR	COUNT	SUM-IO	SUM-DUR
04-12-29	06:53:08	04-12-31	08:09:02	0	1741	29	52430.4
04-12-29	06:53:08	04-12-31	08:09:02	8	2050	700	25952.8
04-12-29	06:53:08	04-12-31	08:09:02	9	121	25	979.5
04-12-29	06:53:08	04-12-31	08:09:02	21	46	20	888.0
04-12-29	06:53:08	04-12-31	08:09:02	99	2	7	233.8
04-12-29	06:53:08	04-12-31	08:09:02	249	4592	6431	139213.4
04-12-29	06:53:08	04-12-31	08:09:02	250	1	7	190.1
04-12-29	06:53:08	04-12-31	08:09:02	251	685	1499	31919.5
04-12-29	06:53:08	04-12-31	08:09:02	252	762	4717	104388.1
04-12-30	20:52:28	04-12-31	21:34:07	0	214	10	365.0
04-12-30	20:52:28	04-12-31	21:34:07	249	29	12	294.6
04-12-30	20:52:28	04-12-31	21:34:07	250	10	19	324.0
04-12-30	20:52:28	04-12-31	21:34:07	252	282	11	5086.8

LIST PREVIOUS SUMMARY DATA TRIM 7.6.1 FRI 04-12-31 15:44:06 PAGE 1

TRIM-PRODUCED SUMMARY REPORT FROM PROCESSING SESSIONS 1 AND 2

SUM FN	R SEVERAI	DAYS TRI	M 7.6.1 FRI	04-12-31	15:44:06 PAGE	1
FNR	COUNT	/ 2	SUM	SUM-TO	SUM	
PINIC	COONI	/ 6	COONT	5011 10	BOW DOK	
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.
                       READ TRIM SUMMARY FILE OUTPUT WHICH HAD
REMARKS.
                       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.
       INPUT-REC.
01
       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.
       HEADING-LINE-1.
01
       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	1	SU	JM	' ·
	03	FILLER	PIC	X(14)	VALUE	1	SU	JM	۰.
	03	FILLER	PIC	X(14)	VALUE	1	SU	JM	۰.
01	COI	JUMN-HEA	DIN	G-2.					
	03	FILLER	PIC	X(07)	VALUE	1	FNR	۰.	
	03	FILLER	PIC	X(07)	VALUE	1	COUNT	۰.	
	03	FILLER	PIC	X(12)	VALUE	1	IO	۰.	
03	FILLER	PIC X(14)	VALUE	' CP	U (MS)	۰.	
	03	FILLER	PIC	X(14)	VALUE	1	DUR (MS)	۰.
01	FNF	R-LINE.							
	03	FNR-PF	R P	IC 999	99.				
	03	FNR-CC	DUNT	-PR PI	C ZZZZZ	29-			
	03	SUM-IC)-PR	PIC Z	(10)9				
	03	SUM-CE	VU-PI	R PIC 2	Z(9)9.9) – (
	03	SUM-DU	JR-PI	R PIC 2	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

MIDPO FNR	INT	FREQ	IO SUM
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



Using SAS and similar products, it is possible to graphically represent ADABAS usage statistics as shown below and on the next page.



ADABAS Commands Processed



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 TRIM User-Exit-4 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 User-Exit-4 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 User-Exit-B. 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	<u>Default</u>	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.



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.



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.

04-12-	31 50	CTRN	4		Rea	l-Tim	e Mon	itor	Contr	ol		227			
11.22.	50														
:	Pass	word	Rete	ntion			(Y=	YES,	N=NO,	V=Vi	olato	ors) =	==> 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														
	Crun	ch Co	omman	d Log	Reco	rds				(Y=YE	S, N=	NO) =	==> N	í	
	Zero	FNR	in C	omman	ds					(Y=YE	S, N=	NO) =	==> N	í	
:	Set '	TRIM	Idle					(Y=	YES,	N=NO,	U=Ue	exb) =	==> Y		
ACCUMS		THD	FNR	CMD	CWF	RSP	PGM	JOB	UID	CTI	NSA	NSU	USA	SPE	
5 MINU	TE	N	Ν	Ν	-	N	Ν	N	Ν	Ν	Ν	Ν	N	-	Ν
5 HOUR		Ν	N	N	-	N	N	N	N	N	N	N	N	-	Ν
SESSIO	N	Ν	N	N	N	N	N	N	N	N	N	N	N	-	N
PRESUM		Ν	N	N	-	N	N	N	N	N	N	N	N	N	N
VIOLAT	IONS	-	Ν	-	-	-	N	N	N	-	N	-	-	-	Ν
Enter-	PF1-	PF2	2P	F3	PF4	-PF5-	PF6	PF	'7F	F8	PF9	-PF10	PF1	1PF	12-
1	HELP		EN	D									!	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.

04-12-31 14:29:50	CTR	RM		Rea	l-Tim	e Mon	itor	Contr	rol		22	7		
Pa	ssword	l Rete	ntion			(Y=	YES,	N=NO,	V=Vi	olato	ors) =	==> N	ſ	
Job Name in Use (C=CQE, U=Uinfo, J=Command Log) ===> C														
Ad	Add-3/Add-4 data (N=None, S=NSA-SID, U=NSA-NSU) ===> N													
Cr	unch C	Comman	d Log	Reco	rds				(Y=YE	S, N=	NO) =	==> N	ſ	
Ze	ro FNR	a in C	omman	ds					(Y=YE	S, N=	NO) =	==> N	r	
Se	t TRIM	1 Idle					(Y=	YES,	N=NO,	U=Ue	exb) =	==> Y		
ACCUMS	. THD	FNR	CMD	CWF	RSP	PGM	JOB	UID	CTI	NSA	NSU	USA	SPE	
5 MINUTE	Y	Y	Y	-	Y	Y	Y	Y	N	N	N	N	-	Ν
5 HOUR	Y	Y	Y	-	Y	Y	Y	Y	N	N	N	N	-	Ν
SESSION	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	-	Ν
PRESUM	N	N	N	-	N	N	N	N	N	N	N	N	N	Ν
VIOLATIO	NS -	Y	-	-	-	Y	Y	Y	-	Y	-	-	-	Y
Enter-PF	Enter-PF1PF2PF3PF4PF5PF6PF7PF8PF9PF10PF11PF12-													
HE	LP	EN	ID]	EXIT	

A typical TRIM menu screen will display the "TRIM is Idle" message as shown below.

```
TRIM on database 227 is idle.
04-12-31 MENU
                   TRIM VERSION 7.1.0
                                                        227
14:22:27
                    REAL-TIME MONITOR
                          TEST-DATABASE
Code
      Description
                                    Code
                                                Description
____
      _____
                                    ____
                                                _____
____
                            (CMEN) H
                                       SECURITRE Interface
                                                              (VMEN)
Α
       Control Options
       Minute Statistics (MMEN) I
В
                                        Environment Information (EMEN)
C
D
                                        Warning Messages
       Hourly Statistics
                            (HMEN)
                                                               (WARN)
                                    J
       Hourly Statistics (SMEN)
Session Statistics (SMEN)
Oueues and Tables (QUES)
                                    к
?
                                        TRIM Natural Monitor
                                                             (NTNM)
                                        RTM Help Facility
                                                              (HELP)
Е
F
       Dynamic Trace Facility (TRAC)
                                        Exit Real-Time Monitor (STOP)
                                    .
       Database Information (INFO)
G
                           -----
                                    ____
                                                -----
_____
                             Code : _
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--
PF12--
     HELP
               END
                                                              EXIT
```

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.

04-12-	-31 SMEN	ADABAS Session Statistics TEST-DATABASE	227	14:30:51
Code	Description	Code Descriptio	n 	
A B C D F G H I I 	File Number ADABAS Command Coc Program Name Job Name +- ADABAS User ID Response Code Commands Within Commands of Lon Application Lib ++	(SFNR) J NSS User ID le (SCMD) K CICS Transac (SPGM) L User Area Session Statistics for Job Name for DBID 227 has been deactivated or TRIM is Idle.	(S tion ID (S S atistics (S acility (H RTM Main Menu	NSU) CTI) USA) SID) NUC) PRM) ELP) (MENU)
-	HELP END			EXIT

TRIM on databa 04-12-31 IGG	ase 227 is i CB Ge	dle. meral Database TES	Information T-DATABASE	227	14:32:17
ASSO	DEVICE -1 3380	FIRST RABN 1	LAST RABN 42,731	TOTAL RABNS 42,731	
DATA	-1 3380	1	20,241	20,241	
WORK	-1 3380	1	4,792	4,792	
MAXIMUM FILES	379 FILE	S LOADED 35	ORIGINAL LOAD	01/01/01	14:55:41
Enter-PF1PI -	F2PF3I	PF4PF5PF6-	PF7PF8F	PF9PF10	PF11PF12-
HELP	END				EXIT

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.

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.

04-12-31	MMEN		Commands per Minute TEST-DATABASE	227	14:34:45
		Code	Description		
		A B C +	File Number ADABAS Command Code Program Name	(MFNR) (MCMD) (MPGM) (MJOB)	
			The Minute Accumulator for Programs for DBID 227 has been deactivated or TRIM is Idle.	(MUID) (MSID) (MRSP) (MTHD) (MNSA) (MNSU) (MCTI)	
		L	User Area Return to RTM Main Menu	(MUSA) (MENU)	
	Code	: c			
Enter-PF1	PF2-	PF3-	PF4PF5PF6PF7PF8	PF9PF10-	-PF11PF12-
HEL	2	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 AI 04-12-31 TRAC	L' leave screen blank & h Dynamic Trace Facilit TEST-DATABASE	nit ENTER ty 227	14:35:42						
(TALL) Trace Everythi	.ng								
(TRSP) Response Code	·								
(TJOB) Job Name (TPGM) Program Name - (TLIB) Application	:	 +							
(TSID) Security ID (TUID) Internal Use (TNSU) NSS User ID	The TRACE facility for DBID 227 has been deactivated or TRIM is Idle								
(TCMD) ADABAS Command	·	+							
(TDUR) Command Duration >= milliseconds									
(TI/O) ADABAS I/O's:	Assoc >= Data >=	= Work >= _							
Enter-PF1PF2PF3PF4PF5PF6PF7PF8PF9PF10PF11PF12-									
- 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.

04-12-31	TI	DSP		Dyn	amic Trad	ce Facil	227	14:36:42			
Trace is	not	active	е								
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	N204330S	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	N204330S	TREE12	120		1
14:29:49	1	0	L3	202	12525	TREE12	N204330S	TREE12	43		1
14:29:49	1	0	L3	202	21788	TREE12	N204330S	TREE12	67	1	1
14:29:49	1	0	L3	202	33620	TREE12	N204330S	TREE12	64	1	1
14:29:49	1	0	L3	202	33659	TREE12	N204330S	TREE12	43		1
14:29:49	1	0	L3	202	33673	TREE12	N204330S	TREE12	6		
14:29:50	1	0	L3	202	33814	TREE12	N204330S	TREE12	39		1
14:29:50	1	0	S1	202	33845	TREE12	N204330S	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	N204330S	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	N204330S	TREE12	70		1
14:29:50	1	0	L3	202	33884	TREE12	N204330S	TREE12	б		
14:29:50	1	0	L3	202	33894	TREE12	N204330S	TREE12	6		
LINE 69 THRU 85 OF 85											
Enter-PF1PF2PF3PF4PF5PF6PF7PF8PF9PF10PF11PF12											
HEI	LP	1	END	UID	LIB TA	ACT UP	DOWN	INFO	RIGHT	EX1	т

APPENDIX A

GENERAL PARAMETER RULES

All batch TRIM runs are controlled by parameter statements. This includes the Dynamic Control and Security User-Exit-1 Communication Run, Dynamic Logging Facility User-Exit-4 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 I.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			Μ	AC	HINE	I	NSTR	UC	TIONS	3			
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)	+	(370	00	* DES	SUE	PD)		
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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APPENDIX C

OUTPUT DATASET FORMATS

The format of output Command Log datasets for Detail Reports is identical to the input Command Log format.

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
 - "TRIM74", 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.

The format of output "COMPRESS=YES" Protection Log datasets for Detail Reports is identical to the input Protection Log format.

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
 - "TRIM74", 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
 - unused, 2 bytes
- 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

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- second shown field value
- etc.

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=COMMAND, 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)
               ACCOUNTING, JOB=(C4000AAA-C5999ZZZZ)
     VALUE
     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
            TYPE=DETAIL, HEADING='RESPONSES ABOUT INVALID BUFFERS',
  REPORT
            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
            TYPE=SUMMARY, HEADING='PERF STATS BY ADABAS CMD WITHIN FNR',
  REPORT
            HEADING2=' FOR FNR 7-22'
     INCLUDE FNR = (7 - 22)
     CONTROL FNR, CMD
     SUM
               ASSO, DATA, WORK, CPU, DUR
     AVERAGE ASSO, DATA, WORK, CPU, DUR
           TYPE=DETAIL,HEADING='EXCESSIVE RESPONSE TIME (DURATION)'
  REPORT
     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
               WORKTO>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)
               FB-FIELD
     CONTROL
  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
                                  (continued on next page)
```

(continued from previous page)

CPU*.0001 CHARGE AVERAGE IO SUM ΤO 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 7.6.1 FRI 04-12-31 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 201 HCOMP 001401A1 S1 04-12-31 07:28:23 0 ECUTE C5653 124 2 0 FD2TEST MISC 04-12-31 07:30:00 201 HCOMP FD2TEST MISC 001401A1 S1 0 ECUTE C5653 124 1 0 RESPONSES ABOUT INVALID BUFFERS TRIM 7.6.1 FRI 04-12-31 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 04-12-31 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 /HEX/F2F4F1F6F9F1F0F1F0F0 4216910100 04-12-31 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 7.6.1 FRI 04-12-31 17:46:07 PAGE 1 LOG FROM 04-12-31 07:04:20 TO 04-12-31 08:10:43 SEQ YY-MM-DD HH-MM-SS JOB-NAME FNR CMD ISN 5192 04-12-31 07:49:30 HCOMP 18142 42 Δ4 5746 04-12-31 07:55:36 HCOMP 42 Α4 18257 7652 04-12-31 07:59:45 C3931E 7852 04-12-31 08:01:18 HCOMP C3931PC4 41 Α4 1171 18236 42 Δ4 8144 04-12-31 08:02:20 HCOMP 42 Α4 2188 9261 04-12-31 08:05:49 HCOMP 42 Α4 18176 04-12-31 08:05:59 HCOMP 2557 9277 42 Α4 9440 04-12-31 08:06:58 HCOMP 42 N1 21275

PERF FOR	STATS FNR	5 BY AD 7-22	ABAS (MD WIT	HIN FNR LOG	TR FROM	IM 7.6. 1 04-12-	1 F 31 07	FRI :04:	04-12- 20 TO	-31 17 04-12	:46:07 -31 08	PAGI	E 1 3	
FNR	CMD	COUNT	olo	SUM ASSO	SUM DATA N	SUM IORK	SUM CPU(MS)	SUN DUR	4 (MS)	AVER ASSO	AVER DATA	AVER WORK	AVI CPU	ER (MS)	AVER DUR(MS)
8	RТ	22	7.9	0	0	0	2.2		2.2	. 0	. 0	. 0		10	.10
8	ET	14	5.0	0	0 0	3	3.7	19	97.6	.0	.0	.2		.26	14.11
8	E1	2	.7	4	1	0	12.6	18	32.1	2.0	.5	.0	6	5.30	91.05
8	L3	116	41.4	65	70	0	89.3	3,23	31.4	.6	.6	.0		.77	27.86
8	N1	3	1.1	2	1	0	2.9	. 6	55.5	.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	2,17	71.4	2.0	.2	.0	-	1.84	65.80
8	* *	220	78.6	137	78	3	174.4	5,85	54.8	.6	.4	.0		.79	26.61
19	ET	4	1.4	0	0	2	1.4	8	37.6	.0	.0	.5		.35	21.90
19	E4	1	.4	7	0	0	4.8	10	08.7	7.0	.0	.0	4	4.80	108.70
19	LF	1	.4	2	0	0	.9	5	50.2	2.0	.0	.0		.90	50.20
19	L1	4	1.4	0	1	2	3.9	4	14.9	.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	5	71.8	2.0	1.0	.0	2	2.40	71.80
19	S1	4	1.4	7	1	1	7.6	19	91.7	1.8	.3	.3	-	1.90	47.93
19	* *	16	5.7	18	3	5	21.3	55	55.8	1.1	. 2	.3	-	1.33	34.74
21	Α4	1	. 4	0	0	0	. 5		1.0	. 0	. 0	. 0		.50	1.00
21	ET	1	.4	0	0	1	.5	5	75.2	.0	.0	.0		.50	75.20
21	L1	20	7.1	15	15	0	17.0	89	99.2	. 8	. 8	.0		.85	44.96
21	L4	1	.4	0	1	0	.7	1	13.8	.0	1.0	.0		.70	13.80
21	S1	21	7.5	68	1	0	55.7	1,77	70.4	3.2	.0	.0	-	2.65	84.30
21	**	44	15.7	83	17	1	74.4	2,75	59.6	1.9	.4	.0	1	1.69	62.72
* * * * *	* *	280	100.0	238	98	9	270.1	9,17	70.2	.9	.4	.0		1.0	32.8
EXCESS	SIVE F	CR-NAME	TIME	(DURAT	ION)	TF	CMD ENP	1 TON	FOR	FRI	04-12	-31 17	:46:07	P	AGE 1
пп-14141-	-35 U	OB-NAME	DUR(I	45) IID	USER-1	JA	CMD FNR	TSI	ECD;	5 KSP	A550	DATA	WORK I	NAILO	JON NAIPROG
07:25	:08 H	COMP	3075	5.8 595	001402	53	S2 184	9857 5249	1	0	164	0	4 2 T	א הרדא הכ	
07.29	• эо п • эт с	100MP 155187FF	20412	5 5 95	CE6D58	23 5 F	CQ 184	9857	1	0	159	0	3 (A CMIRRID
07:35	:01 H	COMP	2558	3.2 843	001403	4B	S9 155	10337	1	0	123	0	3 F	RANDA	CMTKRID
07:45	:31 н	COMP	9963	3.2 35	001400	23	S9 155	5249	1	0	445	0	3 H	RANDA	1 CMTKRID
07:49	:49 н	COMP	4261	L.7 863	001403	5F	CL 0	0	1	0	1	1	1 F	RANDAN	1 CMTKRID
07:50	:31 н	COMP	2447	7.7 28	001400	LC	S1 38	15509	1	0	4	1	0		
07:52	:25 н	COMP	9862	2.5 919	001403	97	S9 155	7236	1	0	429	0	3 I	RANDAN	1 LSETKRID
07:53	:00 H	COMP	9105	5.0 919	001403	97	S9 155	2156	1	0	394	0	3 I	RANDAI	4 LSETKRID
EXCESS	SIVE I	E/O		TRI	M 7.6.1				FRI	04-12	-31 17	:46:07	PAGE	1	
SEQ Y	YY-MM-	-DD HH-N	M-SS	ASSO DA	ATA WORK	JOB-	NAME US	ER-IDX	CMD	CIDX		FNR	ISN	ECB	S DUR(MS) I
2989 (04-12-	-31 07:2	25:08	164	0 4	HCOM	1P 00	140253	S2	OF21F	3во	180	9857	1	3075.8
3532 (04-12-	-31 07:2	29:58	445	0 3	HCON	1P 003	140023	S9	00600	201	155	5249	1	10412.9
3646 (04-12-	-31 07:3	31:27	159	0 3	C551	SAFE CF	6D585F	S9	00700	201	184	9857	1	2975.5
4533 (04-12-	-31 07:3	35:01	123	0 3	HCON	1P 003	14034B	S9	00600	201	155	10337	1	2558.2
5046 (U4-12-	-31 07:4	15:31	445	U 3	HCON	1P 003	140023	S9	00600	201	155	5249	1	9963.2
5465 0	J4-12- 14_12	-31 07:5	52.25	429 394	U 3 0 2	HCON	112° UU. 11D 00'	14039/	59	00600	∠U⊥ 201	155	7230 2156	⊥ 1	9002.5 9105 0
J-05 (J = - 1 Z -	JT 0/+3	10.00	コンモ	J 3	псOP	ι <u>ε</u> υυ.	1 2 0 2 7 /	59	00000	∠U⊥	100	2 T D D	+	2103.0

TRIM Reference Manual

RSP

FIELD	USAGEFO	OR FILES	39-41		TI	RIM 7.0	6.1	FRI 04-	12-31	17:46:	07 PAGE	1
ANALYZ	ING FILE	DESIGN,	FIELD	ORDER	LOG	FROM	04-12-31	07:04:20	TO 04	1-12-31	08:10:4	3
FB-FLI	COUNT	00										
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-ВЗ	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 SHOWING C	FNR WI HARGE-B	THIN JO ACK FIG	BNAME	TRIM 7.6.1 FRI 04-12-31 17 LOG FROM 04-12-31 07:04:20 TO 04-					7:46:07 PAGE 1 -12-31 08:10:43		
				AVER	SUM	CHRG	AVER	SUM	CHRG		
JOB-NAME	FNR	COUNT	8	CPU(MS)	CPU(MS)	CPU(MS)	I/0	1/0	I/0	\$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 JOBNAM SHOWING CHARGE-BACK FIGURE				TRIM LOG	7.6.1 FROM 04	H -12-31	RI 04-12 07:04:20	-31 TO (17:46:07)4-12-31	PAGE 2 08:10:43
				A 17ED	CUM	auna		CID		
JOB-NAME	FNR	COUNT	Qo	AVER CPU(MS)	CPU(MS)	CPU(MS)) I/O	50F I/(D 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	.0	1 63	13 0	\$ 00	1 9	15	\$ 08	\$ 08
C6019PC9	12	2	• •	2 10	13.0	\$ 00	2 5	5	\$ 03	\$ 03
C6019PC9	42	16	• •	2.10	12 2	\$ 00	2.5	0	\$.05 \$ 05	\$ 05
	40	27	• ∠	• 70	17 /	¢.00	.0	9 11	\$.05 ¢.05	\$.UJ \$ 06
C0019PC9	45	37	• 4	• 4 /	1/.4	\$.00	. 3	11	Ş.00	\$.00
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
C7639.JTN	80	1.279	12.8	. 4 4	561.9	\$.06	.3	380	\$1.90	\$1.96
5.00901N	00	-,2,7		• • •		+ • • • •	• 5	200	+ 1 • 5 0	+1.50
C7639JIN	****	1,281	12.8	.44	567.3	\$.06	.3	393	\$1.97	\$2.03

REPORT BY FNR WITHIN JOBNAME SHOWING CHARGE-BACK FIGURES				TRIM 7.6.1 FRI 04-12-31 17:4 LOG FROM 04-12-31 07:04:20 TO 04-12					46:07 2-31 08:	PAGE 3 10:43
				AVER	SUM	CHRG	AVER	SUM	CHRG	
JOB-NAME	FNR	COUNT	QO	CPU(MS)	CPU(MS)	CPU(MS)	I/0	I/0	I/0	\$ТОТ
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
C83750P	0	2	.0	8.80	17.6	\$.00	22.0	44	\$.22	\$.22
C83750P	247	12	.1	.37	4.4	\$.00	.3	3	\$.02	\$.02
C83750P	* * * * *	14	.1	1.57	22.0	\$.00	3.4	47	\$.24	\$.24
C83950P	0	5	.1	.44	2.2	\$.00	.6	3	\$.02	\$.02
C83950P	247	2,575	25.8	.32	822.1	\$.08	.0	127	\$.64	\$.72
C83950P	****	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	Ş.02	.8	224	\$1.12	\$1 . 14

REPORT BY FNR WITHIN JOBNAME TRIM					TRIM 7.6	.1 F1	RI 04-1	2-31 1	7:46:07	PAGE 4
SHOWING	CHARGE-	-BACK FI	IGURES		LOG FROM	04-12-31	0 7:04	:20 TO	04-12-31	08:10:43
				117 ED	CIIM	CUDC	7750	CIIM	CUDC	
TOD NAME	END	COUNT	0	AVER CDU(MC)	CDU(MC)	CHRG	AVER T/O	50M T/O		¢mom
JOB-NAME	FNR	COUNT	6	CPU(MS)	CPO(MS)	CPU(MS)	170	170	1/0	\$101
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 CERTA	IN CRITICAL	FILES TRIM	7.6.1 FRI	04-12-31	17:46:07	PAGE 1
		LOG FRO	M U4-1∠-31	07.04.20 10	∪ 4 -1∠-31	00.10.43	
FNR	ISN	COUNT	olo				
42	2188	З	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 1	18142	3	2.8				
42 1	10170	4	3.8				
42 1	10225	1	.9				
42 1	18250	3	2.0				
42 1	18526	1	2.0				
42 1	18527	1	9				
42 1	18576	1	.9				
42 2	21222	1	.9				
42 2	21230	2	1.9				
42 2	21243	3	2.7				
42 2	21245	1	.9				
42 2	21247	4	3.8				
42 2	21249	1	.9				
42 2	21260	2	1.9				
42 2	21261	2	1.9				
42 2	21262	2	1.9				
42 2	21264	2	1.9				
42 2	21266	2	1.9				
42 2	21267	3	2.8				
42 2	21274	12	11.3				
42 2	21275	1	.9				

106 100.0

* * * * *

* * * * *

APPENDIX E

PRESUM DATA EXTRACTION FROM SMF

TRMSMFEX is an example of a NATURAL program to extract PRESUM records from the SMF log using the SMF functionality in TRIM. SMF record type (in decimal) is input (CMSYNIN) to this sample program. The SMF file will be read in as CMWKF01. All records with the specified record type are written to an output file (CMWKF02) in a format that will be accepted by TRIM batch for LOGTYPE=PRESUM.

A change to the PRESUM data record length and format was necessary in TRIM V7.6.1 to accommodate ADABAS V7.4.2. TRIM V7.6.1 can only process PRESUM data generated from ADABAS V7.4.2 with the TRIM V7.6.1 User-exit-4.

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.

* PROPRIETARY SOFTWARE OF TREEHOUSE SOFTWARE, INC. ALL RIGHTS RESERVED NAME: TRMSMFEX * DESCR: TO EXTRACT PRESUM RECORDS FROM THE SMF FILES * NOTES: THIS IS A SAMPLE PROGRAM FOR DATA EXTRACTION. THIS CODE IS NOT SUPPORTED BY TREEHOUSE SOFTWARE. CALCULATIONS AND DISPLAYS MAY BE MODIFIED TO ACCOMODATE SITE SPECIFICATIONS. * * WORK FILE 1 SHOULD BE SET TO THE DATASET WHERE THE SMF ARE LOCATED. WORK FILE 2 SHOULD BE SET TO THE DATASET THAT WILL HOLD THE EXTRACTED SMF TRIM RECORDS. SINCE THE NATURAL JCL MUST REFLECT THE SMF RECORD AND THE OUTPUT DATASETS, IT IS SUGGESTED THAT THIS PROGRAM BE RUN * VIA NATURAL BATCH. HOWEVER, USING THIS PROGRAM ONLINE IS POSSIBLE IF THE NATURAL STARTUP JCL IS MODIFIED AND THE SMF DATASET IS A SHARED DATASET. DEFINE DATA LOCAL /* THE SMF INPUT RECORD 01 IN-RECORDB (A188) 01 REDEFINE IN-RECORDB /* THE SMF HEADER * 02 REC-LNGTH (B2) * 02 SEG-DESCR (B2) (B1) 02 FILL1 02 REC-TYPE (B1) 02 TIME (B4) 02 DATE (B4) 02 SYSID (A4) 02 ZERO (B2) 02 PSUM-LL (B2) 02 PSUM-NULL (B2) 02 PRESUM-REC (A168) 02 REDEFINE PRESUM-REC /* PRESUM INFO 03 PSUM-INDIC (B2) 03 PSUM-NULL2 (B2) 03 PSUM-STCK (B8) 03 PSUM-CNT (B4) 03 PSUM-DUR (B4) 03 PSUM-IOS (B4) 03 PSUM-CPU (B4) 03 PSUM-DBID (B2) 03 PSUM-TYPE (A1) 03 PSUM-NULL3 (B1) 03 PSUM-OBJ (A16) 03 REDEFINE PSUM-OBJ 04 PSUM-OBJB2 (B2) 03 PSUM-NULL4 (B24) 03 PSUM-PLXR (B2) 03 PSUM-NULL5 (B10) 03 PSUM-PLXE (B2) 03 PSUM-NULL6 (B82) * /* VARIABLES USED IN THE CALCULATIONS 01 DISP-CNT (N10) 01 DISP-DUR (N8.2) /* BELOW 01 DISP-IOS (N10) 01 DISP-CPU (N8.2) 01 DISP-OBJ (A16) 01 WORK-FNR (N5) 01 CNT (P10) 01 SEL-CNT (P10) 01 #SMF-IN (N3) (B1) 01 #SMF-BIN +

(continued on next page)

```
(continued from previous page)
```

```
END-DEFINE
 *
                                        /* GET SMF RECORD TYPE FROM USER
 INPUT #SMF-IN
 IF \#SMF-IN > 255
  WRITE 'INVALID RECORD TYPE INPUT'
   STOP
END-IF
 *
 MOVE #SMF-IN TO #SMF-BIN
 READ WORK FILE 1 IN-RECORDB
   ADD 1 TO CNT
   IF REC-TYPE = #SMF-BIN
     MOVE PSUM-CNT TO DISP-CNT
     MOVE PSUM-DUR
                      TO DISP-DUR
     MOVE PSUM-DOK TO DISP-DOK
MOVE PSUM-IOS TO DISP-IOS
     MOVE PSUM-CPU TO DISP-CPU
     DECIDE ON FIRST VALUE PSUM-TYPE
       VALUE 'T'
         MOVE EDITED PSUM-OBJ (EM=HH) TO DISP-OBJ
       VALUE 'U'
        MOVE EDITED PSUM-OBJ (EM=HHHH) TO DISP-OBJ
       VALUE 'F'
         MOVE PSUM-OBJB2 TO WORK-FNR
         MOVE WORK-FNR TO PSUM-OBJ
       NONE VALUE
         MOVE PSUM-OBJ TO DISP-OBJ
     END-DECIDE
     DISPLAY 'TYPE' PSUM-TYPE(EM=HH) 'OBJECT' DISP-OBJ
       'STCK' PSUM-STCK 'COUNT' DISP-CNT 'DURATION' DISP-DUR
'IOS' DISP-IOS /* 'CPU' DISP-CPU
     ADD 1 TO SEL-CNT
     WRITE WORK FILE 2 VARIABLE PRESUM-REC
   END-IF
 END-WORK
 WRITE // 'RECORDS READ' CNT / 'RECORDS SELECTED' SEL-CNT
 END
```

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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)	Т
CMD	(Command)	С
FNR	(File Number)	F
NAT	(NATURAL Program)	Р
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)	В
USA	(User-Area of the Control Block) W	
CTI	(CICS Transaction ID)	Х
SPE	(Special)	Y

Appendix F -Sample Command Log PRESUM Analysis Input Parameters and Reports

```
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)

      VALUESURVEL, FMR (20,00)VALUEPACKING, FNR=39VALUEHORSES, FNR=(73-104)VALUETAS, 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
                IO,CPU,DUR
      SUM
      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
                CPU
      PERCENT
      AVERAGE
               DUR
  SIMILAR REPORTS COULD BE PRINTED FOR THD, JOB, UID, ETC.
```

			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
ΕT	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
\mathbf{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
LG	1,270	1.3	.9	.90	54.56
Nl	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

PERFORMANCE SUMMARY--BY CMD TRIM 7.6.1 FRI 04-12-31 17:46:07 PAGE 1 LOG FROM 04-12-31 03:04:20 TO 04-12-31 09:10:43

Appendix F -Sample Command Log PRESUM Analysis Input Parameters and Reports

ALL USERS	TRIM	7.6.1	FRI 04	-12-31 17:46:	07 PAGE 1
FILE SUMMARY	LOG FRO	OM 04-12-31	03:04:20	то 04-12-31	09:10:43
			CIIM	CTIM	CIIM
TINTO	COUNT	0.	SUM	SUM ODU(MO)	SUM (MC)
FNR	COUNT	5	10	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

Appendix F -Sample Command Log PRESUM Analysis Input Parameters and Reports

REPORT TO SHOWNATURAL UTILI	N ZATION	TRIM 7.6. LOG FROM	1 04-12-31	FRI 04-12-31 03:04:20 TO 04-1	17:46:07 PAGE 1 2-31 09:10:43
			AVER	AVER	AVER
NATPROG	COUNT	00	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 NATURAL UTILIZATION		TRIM 7.6 LOG FROM	.1 04-12-3	FRI 31 03:04:	04-12-31 17:46: 20 TO 04-12-31	07 PAGE 2 09:10:43
NATPROG	COUNT	8	AVER I/O	AVER CPU(MS)	AVER 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	

Appendix F -Sample Command Log PRESUM Analysis Input Parameters and Reports

REPORT BY PROJECT, BY FILE TRIM 7.6.1 FRI 04-12-31 17:46:07 PAGE 1 LOG FROM 04-12-31 03:04:20 TO 04-12-31 09:10:43

PROJ	COUNT	8	CHRG 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

REPO BY	RT OF IO HOUR	AND CPU	UTILIZATIO	ON TRIN LOC	4 7.6.2 G FROM	1 04-12-31	FRI 04-12-3 03:04:20 TO	31 17:46:0 04-12-31	7 PAGE 1 09:10:43
HR	COUNT		SUM I/O	AVER I/O	PCT I/O	SUM CPU(MS	AVER (MS)	PCT CPU(MS)	AVER 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

Appendix G - Sample TRELOG Analysis Parameters and Reports

* SAMPLE TRIM TRELOG INPUT PARAMETER CARDS * 000006 INPUT LOGTYPE=TRELOG 000007 REPORT TYPE=SUMMARY, 800000 HEADING='TRELOG SUMMARY OF DESCRIPTORS BY FILE & CMD' 000009 CONTROL FNR,SB-40,CMD TRELOG SUMMARY DESCRIPTORS BY FILE & CMD TRIM 7.6.1 FRI 04-12-31 08:34:23 PAGE 1 LOG FROM 04-12-31 20:19:20 TO 04-12-31 20:39:36 FNR SB-40 CMD COUNT Ŷ 240 LLLЗ 2 .0 240 L9 2 .0 LL* * 240 4 LL.1 240 957 18.3 L3 240 * * 957 18.3 240 LO ,009,A,. - - - - - - - - - - - -L9 11 .2 * * . 2 240 11 20 240 S1 . 4 * * 240 20 .4 240 L0,9,A.- - - - - - - - - - - - -S1 2 .0 240 S4 2 .0 * * 4 240 .1 ***** 240 * * 1,061 20.3 241 A1 53 1.0 241 E1 8 .2 241 _ E422 .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 ,018,A,.- - - - - - - - - - - -241 LLS1 2 .0 LL ,018,A,.- - - - - - - - - - -* * 2 241 .0 LL ,018,A,S,LL ,018,A,. - - -241 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.

* * 00000 00000 00000 00000 * * *	* * * 1 2 3 4 * * * *	* * * * INPUT REPOF DISPI * * *	* * * * F LOGTYE RT 7 H LAY 5 * * * *	* * * * * * * * * * * * PE=TRELOG TYPE=DETAIL, HEADING='TRELOG DETAI SEQUENCE,CMD,FNR,DBII * * * * * * * * * * * *	* * * * * * * * * * * * REPORT' DD1,SB-40,COUNT * * * * * * * * *	* * * * * * *		
TRELO	G DETA	IL REPO	ORT	TRIM 7.6	FRI 04-12	-31 08:53:32 PAG	E 1	
SEQ	CMD	FNR	DBID	ADD1	B-40		COUNT	
55	S4	242	3	000000000000000000000000000000000000000	D ,032,A,		1	
56	S4	242	3	000000000000000000000000000000000000000	G,20,A			14
57	S1	242	3	00000000000000000	6 ,033, S,S6 ,03	3,		1
58	S1	242	3	000000000000000000000000000000000000000	P ,042, S,AP ,04	2,		2
59	S1	242	3	000000000000000000000000000000000000000	7 ,033,			2
60	S1	242	3	00000000000000000	6 ,033,			9
61	S1	242	3	00000000000000000	5 ,033,			2
62	S1	242	3	00000000000000000	4 ,034,			19
63	S1	242	3	00000000000000000	0 ,032,A,			1
64	S1	242	3	00000000000000000	L ,032,A,			1
65	S1	242	3	00000000000000000	L ,008,A,			2
66	S1	242	3	00000000000000000	U ,035,A,			1
67	S1	242	3	00000000000000000	M ,032,A,			13
68	S1	242	3	00000000000000000	I ,006,U,			4
69	S1	242	3	00000000000000000	F ,018,A,			4
70	S4	241	3	00000000000000000	L,18,A			7
71	S4	241	3	00000000000000000	J,18,A			15
72	S1	241	3	00000000000000000	L ,018,A,S,LL ,01	8,A,		8
73	S1	241	3	00000000000000000	J ,018,A,S,LJ ,01	8,A,		4
74	S1	241	3	000000000000000000000000000000000000000	L ,018,A,			2
75	S1	241	3	000000000000000000000000000000000000000	L,18,A			4
76	S4	240	3	000000000000000000000000000000000000000	0 ,009,A,			7
77	S4	240	3	000000000000000000000000000000000000000	0,9,A			2
78	S1	240	3	000000000000000000000000000000000000000	L ,018,1,2,LL ,01	8,A,		1
79	S1	240	3	000000000000000000000000000000000000000	0 ,014,1,			9
80	S1	240	3	00000000000000000	0 ,009,A,			19
81	S1	240	3	00000000000000000	0 ,008			1
82	S1	240	3	000000000000000000000000000000000000000	Е ,004,Ү,		6	
83	S1	240	3	00000000000000000	0,14,A			20
84	S1	240	3	00000000000000000	E,4,U			9
85	S1	240	3	000000000000000000		L0,9,A		

--- 2

Appendix G - Sample TRELOG Analysis Parameters and Reports

* * * * * 000001 000002 000003 000004 * * * *	* * * * F (* * * *	* * * * * INPUT LOGI REPORT CONTROL * * * * *	* * * * * * * * * * * * * * * * * * *
TRELOG	SUMMARY	BY COMMA LOG	AND TRIM 7.6.1 FRI 04-12-31 08:35:09 PAGE 1 3 FROM 04-12-31 20:19:20 TO 04-12-31 20:39:36
CMD	COUNT	00	
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	
Nl	87	1.7	
S1	146	2.8	
S4	60	1.1	
S8	1	.0	
S9	1	.0	

** 5,231 100.0

* * * 00000 00000 00000 00000 * * *	* * * *)1)2)3)4 ; * * *	* * * * INPU REPOR CONTR	* * * * I LOGTYP RT T H ROL C * * * *	* * * * * * * * * * * * E=TRELOG YPE=SUMMARY, EADING='TRELOG SUMMA OMMAND,FNR,RSP,DBID * * * * * * * * * *	* * * * * * * ARY CMD,FNR, ,ADD1,SBL,SB * * * * * *	* * * * * * * * * RSP,DBID,ADD1,SBL, & SB' -40 * * * * * * * * *		
TRELC	G SUMN	1ARY CMI	D,FNR,RS	P,DBID,ADD1SBL, & SH	B LOG F	TRIM 7.6.1 FRI 04-12-31 ROM 04-12-31 20:20:30 TO 04	08:40:22 -12-31 20	PAGE 5 :39:36
CMD	FNR	RSP	DBID	ADD1	CALC-SBL	SB-40	COUNT	00
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**

INPUT LOO REPORT TYP INCLUDE FNF DISPLAY DAT SHOW AA,	TYPE=PROTECTION 'E=DETAIL,HEADING='AUDIT PERSONNEL FILE UPDATES'
REPORT TYE INCLUDE FNF DISPLAY DAT SHOW AA,	PE=DETAIL, HEADING='AUDIT PERSONNEL FILE UPDATES'
INCLUDE FNF DISPLAY DAT SHOW AA,	
DISPLAY DAT SHOW AA,	(=1, IMAGTYP=AFTER
SHOW AA,	'E, TIME, SEQUENCE, USERIDX, RUI, TID, FNR, ISN, IMAGTYP
	BA, BB, BC, LA, FB, DB, DC, BA, FNR=1
* * *	
*** NOTE: THE	ABOVE SHOW STATEMENT LISTS ADABAS 2-CHARACTER
*** NAM	IES FROM THE PERSONNEL FILE. THE FIELDS CAN BE
*** LIS	TED MORE THAN ONCE (BA), AND THE FIELDS DO NOT
*** NEE	D TO BE STATED IN ANY PARTICULAR ORDER. THE PERSONNEL-
*** NUM	IBER (AA), BEING BINARY, IS PRINTED BOTH IN HEX AND
*** IN	A READABLE DECIMAL FORM. NUMERIC FIELDS (FB) ARE
*** UNE	ACKED INTO A READABLE DECIMAL FORM.
* * *	
*** ТО	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	PE=DETAIL,HEADING='AUDIT OF FINANCE FILE CHANGES'
DISPLAY DAT	'E.SEOUENCE.TIME.USERID.RUI.TID.FNR.ISN.IMAGTYP
**DISPLAY IMA	GE
SHOW CCC	

*** NOTE: THE	ABOVE SHOW STATEMENT ILLUSTRATES CCC = SHOW OCCURRENCE
*** COI	INT FOR FIELD CC. $CL_{1-3} = SHOW_3$ OCCURRENCES OF FIELD CL.
*** CC1	= SHOW 1 OCCURRENCE OF FILED CC.

**OUTPUT ID=	AUDITFIN

*** NOTE: IT	IS POSSIBLE TO GENERATE MULTIPLE REPORTS, EACH ABOUT
*** DIF	FERENT FILES OR ABOUT THE SAME FILES BUT DIFFERENT FIELDS.
	ABOVE SHOW STATEMENT LISTS FIELDS TO BE AUDITED
*** THE	
*** THE *** FRC	M FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES
*** THE *** FRC *** ARE	M FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES
*** THE *** FRC *** ARE *** THE	DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE N ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO
*** THE *** FRC *** ARE *** THP *** SHO	DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE IN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO WW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES
*** THE *** FRC *** ARE *** THA *** SHC *** OF	DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE IN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO W FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3).
*** THE *** FRC *** ARE *** THA *** SHC *** OF ***	DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES C USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE IN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO DW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3).
*** THE *** FRC *** ARE *** THZ *** SHC *** OF *** ***	DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES C USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE IN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO W FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3).
*** THE *** FRC *** ARE *** THE *** SHC *** OF *** *** THE ***	DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE IN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO WW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3). FDT FOR FILE 3 IN OS IS SUPPLIED AS: //TRMFD003 DD DSN=XXXXXXXXXX(FDT003).DISP=SHR
*** THE *** FRC *** ARE *** THE *** SHC *** OF *** *** THE ***	DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES 2 USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE IN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO WW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3). 2 FDT FOR FILE 3 IN OS IS SUPPLIED AS: //TRMFD003 DD DSN=XXXXXXXXX(FDT003),DISP=SHR RE FDT003 CONTAINS THE ADAWAN LOADER CARDS FOR FILE 3.
*** THE *** FRC *** ARE *** THE *** SHC *** OF *** OF *** THE *** WHE *** WHE	DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES E USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE IN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO WW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3). C FDT FOR FILE 3 IN OS IS SUPPLIED AS: //TRMFD003 DD DSN=XXXXXXXXX(FDT003),DISP=SHR RE FDT003 CONTAINS THE ADAWAN LOADER CARDS FOR FILE 3,
*** THE *** FRC *** ARE *** THE *** SHC *** OF *** *** THE *** WHE *** WHE *** IF	DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES E USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE AN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO DW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3). C FDT FOR FILE 3 IN OS IS SUPPLIED AS: //TRMFD003 DD DSN=XXXXXXXX(FDT003),DISP=SHR RE FDT003 CONTAINS THE ADAWAN LOADER CARDS FOR FILE 3, THE ** IS REMOVED FROM THE DISPLAY IMAGE STATEMENT.
*** THE *** FRC *** ARE *** THA *** SHC *** OF *** *** THE *** WHE *** WHE *** IF *** ENT	<pre>DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES E USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE AN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO DW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3). C FDT FOR FILE 3 IN OS IS SUPPLIED AS: //TRMFD003 DD DSN=XXXXXXXX(FDT003),DISP=SHR RE FDT003 CONTAINS THE ADAWAN LOADER CARDS FOR FILE 3, THE ** IS REMOVED FROM THE DISPLAY IMAGE STATEMENT, 'IRE BEFORE AND AFTER IMAGES ARE DISPLAYED BOTH IN</pre>
*** THE *** FRC *** ARE *** THE *** SHC *** OF *** *** *** *** *** *** *** *** IF *** IF *** CH2	<pre>DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES E USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE IN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO DW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3). C FDT FOR FILE 3 IN OS IS SUPPLIED AS: //TRMFD003 DD DSN=XXXXXXXX(FDT003),DISP=SHR CRE FDT003 CONTAINS THE ADAWAN LOADER CARDS FOR FILE 3, THE ** IS REMOVED FROM THE DISPLAY IMAGE STATEMENT, 'IRE BEFORE AND AFTER IMAGES ARE DISPLAYED BOTH IN RACTER AND HEX FORMS.</pre>
*** THE *** FRC *** ARE *** THA *** SHC *** OF *** OF *** THE *** THE *** HE *** IF *** ENT *** CHA ***	DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES C USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE IN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO W FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3). C FDT FOR FILE 3 IN OS IS SUPPLIED AS: //TRMFD003 DD DSN=XXXXXXXX(FDT003),DISP=SHR CRE FDT003 CONTAINS THE ADAWAN LOADER CARDS FOR FILE 3, THE ** IS REMOVED FROM THE DISPLAY IMAGE STATEMENT, 'IRE BEFORE AND AFTER IMAGES ARE DISPLAYED BOTH IN RACTER AND HEX FORMS.
*** THE *** FRC *** ARE *** THE *** SHC *** OF *** *** *** *** *** *** *** *** IF *** ***	<pre>DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES E USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE IN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO WW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3). E FDT FOR FILE 3 IN OS IS SUPPLIED AS: //TRMFD003 DD DSN=XXXXXXXX(FDT003),DISP=SHR RE FDT003 CONTAINS THE ADAWAN LOADER CARDS FOR FILE 3, THE ** IS REMOVED FROM THE DISPLAY IMAGE STATEMENT, 'IRE BEFORE AND AFTER IMAGES ARE DISPLAYED BOTH IN RACTER AND HEX FORMS. THE ** IS REMOVED FROM THE OUTPUT STATEMENT. AN OUTPUT</pre>
*** THE *** FRC *** ARE *** THA *** SHC *** OF *** OF *** *** *** *** *** *** *** *** *** *	<pre>DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES E USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE IN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO UW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3). E FDT FOR FILE 3 IN OS IS SUPPLIED AS: //TRMFD003 DD DSN=XXXXXXXXX(FDT003),DISP=SHR ERE FDT003 CONTAINS THE ADAWAN LOADER CARDS FOR FILE 3, THE ** IS REMOVED FROM THE DISPLAY IMAGE STATEMENT, IRE BEFORE AND AFTER IMAGES ARE DISPLAYED BOTH IN RACTER AND HEX FORMS. THE ** IS REMOVED FROM THE OUTPUT STATEMENT, AN OUTPUT UENTIAL DATA SET IS PRODUCED, VARIABLE BLOCKED RECORDS.</pre>
*** THE *** FRC *** ARE *** TH2 *** SHC *** OF *** OF *** *** *** *** *** *** *** *** *** *	<pre>DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES E USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE AN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO DW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3). E FDT FOR FILE 3 IN OS IS SUPPLIED AS: //TRMFD003 DD DSN=XXXXXXXXX(FDT003),DISP=SHR ERE FDT003 CONTAINS THE ADAWAN LOADER CARDS FOR FILE 3, THE ** IS REMOVED FROM THE DISPLAY IMAGE STATEMENT, IRE BEFORE AND AFTER IMAGES ARE DISPLAYED BOTH IN RACTER AND HEX FORMS. THE ** IS REMOVED FROM THE OUTPUT STATEMENT, AN OUTPUT YUENTIAL DATA SET IS PRODUCED, VARIABLE BLOCKED RECORDS, 'H AN 80-BYTE HEADER CONTAINING DATE, TIME, FNR, ETC</pre>
*** THE *** FRC *** ARE *** THA *** SHC *** OF *** THE *** WHE *** WHE *** ENT *** ENT *** CHA *** IF *** SEC *** SEC *** THE	<pre>DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES E USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE AN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO DW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3). E FDT FOR FILE 3 IN OS IS SUPPLIED AS: //TRMFD003 DD DSN=XXXXXXXXX(FDT003),DISP=SHR :RE FDT003 CONTAINS THE ADAWAN LOADER CARDS FOR FILE 3, THE ** IS REMOVED FROM THE DISPLAY IMAGE STATEMENT, !IRE BEFORE AND AFTER IMAGES ARE DISPLAYED BOTH IN !RACTER AND HEX FORMS. THE ** IS REMOVED FROM THE OUTPUT STATEMENT, AN OUTPUT !UENTIAL DATA SET IS PRODUCED, VARIABLE BLOCKED RECORDS, 'H AN 80-BYTE HEADER CONTAINING DATE, TIME, FNR, ETC., :N EACH FIELD LISTED IN THE SHOW STATEMENT ABOVE. THE</pre>
*** THE *** FRC *** ARE *** THA *** SHC *** OF *** THE *** THE *** IF *** ENT *** CHA *** SEC *** SEC *** WIT *** FOF	<pre>DM FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES E USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE IN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO DW FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3). C FDT FOR FILE 3 IN OS IS SUPPLIED AS: //TRMFD003 DD DSN=XXXXXXXX(FDT003),DISP=SHR CRE FDT003 CONTAINS THE ADAWAN LOADER CARDS FOR FILE 3, THE ** IS REMOVED FROM THE DISPLAY IMAGE STATEMENT, CIRE BEFORE AND AFTER IMAGES ARE DISPLAYED BOTH IN RRACTER AND HEX FORMS. THE ** IS REMOVED FROM THE OUTPUT STATEMENT, AN OUTPUT UENTIAL DATA SET IS PRODUCED, VARIABLE BLOCKED RECORDS, 'H AN 80-BYTE HEADER CONTAINING DATE, TIME, FNR, ETC., IN EACH FIELD LISTED IN THE SHOW STATEMENT ABOVE. THE 'MAT AND LENGTH OF THESE FIELDS IS EXACTLY PER THE</pre>
*** THE *** FRC *** ARE *** THA *** SHC *** OF *** OF *** THE *** THE *** IF *** ENT *** CHA *** SEC *** SEC *** WIT *** FOF	 M FINANCE FILE ACTIVITY. BOTH BEFORE AND AFTER IMAGES C USED. FIELDS CAN BE STATED IN ANY ORDER, AND MORE IN ONCE, IF DESIRED. THIS EXAMPLE ILLUSTRATES HOW TO W FIELD COUNTS (CCC), OCCURRENCES (CC1), AND RANGES OCCURRENCES (CL1-3). C FDT FOR FILE 3 IN OS IS SUPPLIED AS: //TRMFD003 DD DSN=XXXXXXXX(FDT003),DISP=SHR CRE FDT003 CONTAINS THE ADAWAN LOADER CARDS FOR FILE 3, THE ** IS REMOVED FROM THE DISPLAY IMAGE STATEMENT, CIRE BEFORE AND AFTER IMAGES ARE DISPLAYED BOTH IN RACTER AND HEX FORMS. THE ** IS REMOVED FROM THE OUTPUT STATEMENT, AN OUTPUT YUENTIAL DATA SET IS PRODUCED, VARIABLE BLOCKED RECORDS, 'H AN 80-BYTE HEADER CONTAINING DATE, TIME, FNR, ETC., N EACH FIELD LISTED IN THE SHOW STATEMENT ABOVE. THE MAT AND LENGTH OF THESE FIELDS IS EXACTLY PER THE E 3 FDT (ADAWAN CARDS).

AUDIT PERSONNEL FILE UPDATES TRIM 7.6.1 FRI 04-12-31 19:07:35 PAGE 1 USER-IDX RES-UID TID FNR ISN IMAGTYP YY-DDD HH-MM-SS SEQ 04-365 15:59:06 10 00000027 C5MICK 39 1 9 AFTER AA= HEX 000000000186F2 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 0000000000187F7 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 000000000188F5 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 000000000188FE 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 7.6.1 FRI 04-12-31 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 000000000186F5 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 000000000186F5 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 000000000186F6 DEC 100,086 CC 1=AVIS CR=06 CB 1=0065 etc.

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APPENDIX I

COMMAND LOG BASIC RECORD AND CONTROL BLOCK FIELDS (ADABAS 4 FORMAT)

FIELD NAME	NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
Record Length		Record length (Inclusive of this field)	В	2	0
Null		x'0000'	В	2	2
Record Type		Data type(s) in this record x'00' Basic record x'01' + Control Block x'02' + Format Buffer x'04' + Record Buffer x'08' + Search Buffer x'10' + Value Buffer x'20' + ISN Buffer x'40' + I/O List	В	1	4
User priority (OS)		Priority assigned user by ope system	В	1	5
Command type (Refer to note 1)	CMDTYPE	ADABAS Command Type as a hex code	В	1	6
ECBs posted	ECBS	Number posted ECBs in Command Queue	В	1	7
Cluster (Refer to note 2)	CLUSTER, CLU	Cluster Number	В	1	8
Thread	THREAD, THD	ADABAS Thread Number	В	1	9
Desc Updated	DESUPD	Number of Descriptors Updated	В	2	10
Job Name	JOBNAME, JOB, JOB-NAME	Job Name	C	8	12
User-ID (Refer to note 3)	USERID, UID, USER-ID	Internal User-ID	В	4	20

(continued on next page)

(continued from previous page)

FIELD NAME	NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
STCK Time	(Refer to note 4)	Store-Clock time in units of 1.048576 seconds	В	4	24
Duration	DURATION, DUR	Duration in units of 16 microseconds	В	4	28
Asso I/O	ASSOIO, ASSO, ASSO-IO	Physical I/Os to the Associator	В	2	32
Data I/O	DATAIO, DATA, DATA-IO	Physical I/Os to Data Storage	В	2	34
Work I/O	WORKIO, WORK, WORK-IO	Physical I/Os to Work	В	2	36
Siba I/O (Refer to note 5)		Physical I/Os to Siba	В	2	38
Additions 2	ADD2, ADDIT2	Additions 2 field after command	В	4	40
Command Option 1	COP1, OP1	Command Option 1	С	1	44
Command Option 2	COP2, OP2	Command Option 2	С	1	45
Command Code	COMMAND, CMD	Command Code	С	2	46
Command-ID	CID, CIDX, COMMAND-ID	Command-ID	В	4	48
File Number	FNR, FILE	ADABAS File Number	В	2	52
Response	RSP, RESP, RESPONSE, RC, RESPCODE, RESP-CODE	ADABAS Response Code	В	2	54
ISN	ISN	Internal Sequence Number of ADABAS Record	В	4	56
THE FOLLOWING FIELDS ARE THE CONTROL BLOCK PORTION OF THE LOG RECORD

FIELD NAME	NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
ISN Lower Limit	ISNLL	ISN Lower Limit	В	4	60
ISN Quantity	ISNQ	ISN Quantity	В	4	64
FB Length	CB-FBL	Format Buffer Length	В	2	68
RB Length	CB-RBL	Record Buffer Length	В	2	70
SB Length	CB-SBL	Search Buffer Length	В	2	72
VB Length	CB-VBL	Value Buffer Length	В	2	74
ISN Buffer Length	CB-IBL	ISN Buffer Length	В	2	76
CB Command Option 1		Command Option 1	С	1	78
CB Command Option 2		Command Option 2	С	1	79
CB Additions 1	ADD1, ADDIT1	Additions Field-1	C/B	8	80
CB Additions 2		Additions Field-2	C/B	4	88
CB Additions 3	ADD3, ADDIT3	Additions Field-3 (Password)	С	8	92
CB Additions 4	ADD4, ADDIT4	Additions Field-4 (Cipher)	С	8	100
CB Additions 5	RES, RESERVED, RESX, RESERVEDX	Additions Field-5	C/B	8	108
Command Time	(Refer to note 6)	Command Time	В	4	116
User Area	USER-AREA, UA, USA, USER-AREAX, USA, USAX, USER-AREAN, UAN, UANX	User definable space	C/B	4	120

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. Cluster is not used in ADABAS Version 6.
- 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. STCK time is expanded in TRIM batch processing to permit reference to DATE, YYDDD, YY-DDD, YYMDD, 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.
- 5. Siba I/O is not used in ADABAS Version 6 and 7.
- 6. Documented in ADABAS manuals as the CPU time for the command.

Note: ADABAS 7 supports CLOGLAYOUT=4 and CLOGLAYOUT=5.

APPENDIX J

COMMAND LOG BASIC RECORD AND CONTROL BLOCK FIELDS (CLOGLAYOUT=5)

FIELD NAME	NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
Record Length		Record length (Inclusive of this field)	В	2	0
Null		x'0000'	В	2	2
Record 5 Type		Log Record Type x'0001' ADABAS Basic Log Record x'0002' ADANET Logical Call Record x'0003' External Call Back to ADANET x'0004' Internal Call Back to ADANET	В	2	4
Null		x'0000'	В	2	6
STCK TIME (Refer to Note 3)		Store-clock time in units of 1.048576 seconds	В	8	8
Record Type		Data Type(s) in this Record x'00' + Basic Record x'01' + Control Block x'02' + Format Buffer x'04' + Record Buffer x'08' + Search Buffer x'10' + Value Buffer x'20' + ISN Buffer x'40' + I/O List x'80' + User-Exit-B Data	В	1	16
User priority (OS)		Priority assigned user by operating system	В	1	17
Command type (Refer to note 1)	CMDTYPE	ADABAS Command Type as a hex code	В	1	18
ECBs posted	ECBS	Number posted ECBs in Command Queue	В	1	19
Thread	THREAD, THD	ADABAS Thread Number	В	1	20

(continued on next page)

FIELD NAME	NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
User Buffer Flag	UBUFFLG	User Buffer Flag	В	1	21
Desc Updated	DESUPD	Number of Descriptors Updated	В	2	22
Job Name	JOBNAME, JOB, JOB-NAME	Job Name	С	8	24
CPU-ID	CPUID COMCPUID	Communication ID	В	8	32
User-ID (Refer to Note 2)	USERID, USER-ID, UID, VMID	Communication ID	В	8	40
Operating System ID	OPSYSID	Communication ID	В	4	48
User Buffer IO	UBID COMUBID	Communication ID	В	8	52
Duration	DURATION DUR	Duration in units of 16 microseconds	В	4	60
UACSN	UACSN	Unique Command Sequence Number	В	4	64
Database ID	DBID, DB	Database ID	В	2	68
Asso I/O	ASSOIO, ASSO, ASSO-IO	Physical I/Os to the Associator	В	2	70
Data I/O	DATAIO, DATA, DATA-IO	Physical I/Os to Data Storage	В	2	72
Work I/O	Workio, Work, Work-Io	Physical I/Os to Work	В	2	74
Physical Calls	PHYS, PHYSICAL, PHYS-ID	Physical Call Count (ADANET Log Types only)	В	2	76
Architecture	ARCH	Architecture byte	В	1	78
Null		Reserved (X'000000000)	В	5	79
Review	REVIEW1, REVIEW	Review	В	4	84
Null		Reserved (X'00000000')	-	4	88

(continued from previous page)

FIELD NAME	NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
Null		Reserved (x'0000')	-	2	92
Command Code	COMMAND, CMD	Command Code	С	2	94
Command ID	CID, CIDX, COMMAND-ID	Command-ID	В	4	96
File Number	FNR, FILE	ADABAS File Number	В	2	100
Response	RSP, RESP, RESPONSE, RC, RESPCODE, RESP-CODE	ADABAS Response Code	В	2	102
ISN	ISN	Internal Sequence Number of ADABAS Record	В	4	104
ISN Lower Limit	ISNLL	ISN Lower Limit	В	4	108
ISN Quantity	ISNQ	ISN Quantity	В	4	112
FB Length	CB-FBL	Format Buffer Length	В	2	116
RB Length	CB-RBL	Record Buffer Length	В	2	118
SB Length	CB-SBL	Search Buffer Length	В	2	120
VB Length	CB-VBL	Value Buffer Length	В	2	122
ISN Buffer Length	CB-IBL	ISN Buffer Length	В	2	124
Command Option	COP1, OP1	Command Option 1	С	1	126
Command Option :	COP2, OP2	Command Option 2	С	1	127
CB Additions 1	ADD1, ADDIT1	Additions 1 field	C/B	8	128
CB Additions 2	ADD2, ADDIT2	Additions 2 field	C/B	4	136
CB Additions 3	ADD3, ADDIT3	Additions 3 field	С	8	140
CB Additions 4	ADD4, ADDIT4	Additions 4 field	С	8	148
Reserved	RES, RESERVED, RESX, RESERVEDX	Additions 5 field	С	8	156
Command Time	(Refer to Note 4)	Command Time	В	4	164
User Area	USER-AREA, UA, USA, USER-AREAX, USAX, USER-AREAN, UAN, UANX	User Definable space	C/B	4	168

<u>NOTES</u>

- 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.

APPENDIX K

PRESUM RECORD FORMAT

If the SMF logging option is selected, the following standard SMF record header will be prefixed to each PRESUM record on the SMF log. For PRESUM logging to the CLOG, there is no SMF header.

STANDARD SMF RECORD HEADER

DEFINITION	FMT	LEN	LOG REC OFFSET	OFFSET FROM PRESUM
Record length	В	2	0	-20
Segment descriptor	В	2	2	-18
System Indicator	В	1	4	-16
Record Type (X'80 -'FF')	В	1	5	-15
Time (since midnight in 1/100s secs)	В	4	6	-14
Date	Р	4	10	-10
System ID	С	4	14	-6
Reserved	В	2	18	-2

NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
	Record Length (x'00AC')	В	2	0
	Null (x'0000')	В	2	2
	PRESUM Indicator (x'FFF7' indicator for TRIM V7.6.1 - CLOGLAYOUT=5)	В	2	4

(continued on next page)

NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
	Null (x'0000')	В	2	6
Refer to Note 2	STCKF5	В	8	8
COUNT	Total Commands represented by this record	В	4	16
DURATION, DUR	Total Duration (in tenths of milliseconds)	В	4	20
IO, IOS	Total IOs (Asso, Data, & Work)	В	4	24
Refer to Note 1	Total CPU instructions	В	4	28
DBID,DB	Database-ID	В	2	32
TYPE,RECORD TYPE	PRESUM type	С	1	34
THREAD, THD FNR, FILE COMMAND, CMD NATPROG JOB, JOB-NAME, JOBNAME USERID, USER-ID, UID USEIDX, USER-IDX, UIDX SECURITYID, SECID, SID RESPONSE, RESPCODE RC, RESP-CODE, RESP NSSUID, NATUID, NSSUSER NATUSER, NSU USER-AREA, UA, USA USE-AREAX, UAX, USAX USER-AREAN, UAN, USAN NSSAPPL, NATAPPL, APPL APPLIC, NSA SPE, SPECIAL CTI, TRANSID	Key Value	B/C	16	36
· · · · · · · · · · · · · · · · · · ·	Null (x'0000')	В	24	52
PLXID (R)	PLXID Remote Nucleus	В	2	76
	Null (x'0000')	В	10	78
PLXID (E)	Executing Nucleus	В	2	88
	Null (x'0000')	В	80	90

(continued from previous page)

NOTES

1. 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.

2. STCK time is expanded in TRIM batch processing to permit reference to various date and item related fields.

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APPENDIX L

TRELOG RECORD FORMAT

NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
	Record Length (x'0056')	В	2	0
	Null (x'0000')	В	2	2
	Record Identifier (x'FFE3')	В	2	4
	Null (x'0000')	В	2	6
Refer to Note 1	STCK Time when record was written	В	8	8
	Version Identifier TREnnn where nnn=version	С	6	16
COUNT	The number of commands represented by this record	В	4	22
	Null (x'0000')	В	2	26
DBID. DB	Database ID	В	2	28
RECTYPE	TRELOG Record Type	В	1	30
FNR,FILE	ADABAS File Number	В	2	31

(continued on next page)

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NAME & ALIAS	DEFINITION	FMT	LEN	LOG RECORD OFFSET
COMMAND,CMD	ADABAS Command Code	С	2	33
RSP,RESPONSE,RC, RESPCODE,RESP-CODE, RESP	ADABAS Response Code	В	2	35
ADD1,ADDIT1	ADDITIONS-1 Field	С	8	37
SBL,CALC-SBL	Length of the SB contained in this record	В	1	45
SB-40	Contents of the SB up to a maximum of 40 bytes	С	40	46
	Null	В	86	86

<u>NOTES</u>

1. STCK time is expanded in TRIM batch processing to permit reference to various date and time related fields.

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