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REPORT No VL-5515-D-1



AMMUNITION RELIABILITY/
INFORMATION EVALUATION
SYSTEM

ARIES USERS' MANUAL

A.P. TRIPPE
P.J. DONOVAN
CALSPAN CORPORATION

JULY 1975

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FOR

AMMUNITION SYSTEMS RELIABILITY & SAFETY DIVISION
PRODUCT ASSURANCE DIRECTORATE
PICATINNY ARSENAL
DOVER, NEW JERSEY 07801

WORK PERFORMED UNDER CONTRACT NUMBERS

DAAA21-74-C-0403
DAAA21-74-C-0402

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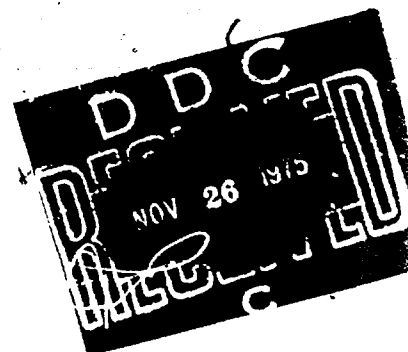
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WORK PERFORMED UNDER CONTRACT NUMBERS
DAAA21-71-C-0403
DAAA21-71-C-0492



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⑩ Anthony P. Trippe
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CALSPAN CORPORATION

⑭ CALSPAN-VL-5515-D-1

⑪ JUL 1975

⑮ DAAHAT-74-C-0403

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DAAA21-74-C-0492

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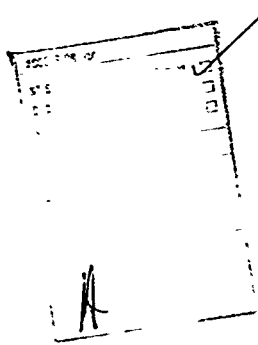
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WORK PERFORMED UNDER CONTRACT NUMBERS:
DAAA21-74-C-0403
DAAA21-74-C-0492

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FOREWORD

This Users' Manual has been prepared by Calspan Corporation as partial fulfillment of the requirements specified in Picatinny Arsenal Contracts DAAA21-74-C-0403 and DAAA21-74-C-0492. Technical guidance and assistance at Picatinny was provided by George Covington, Geza Pap, and Sheldon Rachlin of the Ammunition Systems Reliability and Safety Division, PAD. The authors wish to acknowledge with gratitude the considerable contributions made by these gentlemen during the design and development phases of this work. Responsibility for any errors or omissions and for the opinions expressed is solely the authors.

AMMUNITION RELIABILITY INFORMATION EVALUATION SYSTEM
ARIES

Users' Manual

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ii. HOW TO USE THIS MANUAL

ARIES is an acronym for Ammunition Reliability Information Evaluation System. ARIES is a group of data bases and retrieval/analysis capabilities. A user may retrieve data from one or more data bases and then statistically analyze and graphically display that data. Data base access can be either interactive or batch and analysis/display functions are batch operated.

The following documentation symbols are used throughout the manual*:

- <> The enclosed item is user supplied.
- [] The enclosed item is mandatory. When more than one choice is shown, the user must pick one.
- { } The enclosed item is optional and has a default setting if no user option is declared.
- Δ Indicates a blank.
- _____ Underlined statements indicate a system response to a command.

These symbols do not appear as actual commands or output. They are documentation conventions only.

All commands which retrieve data end in a %. For example:

PRINT MEAN VEL WHERE LOT EQ MA-012-036%

*These symbols are also applicable to the System 2000 Reference Manual. The more advanced user may desire to consult this manual for intricate, special purpose retrieval instructions.

Also, all lot numbers are in the form:

AAA-000-000

OR

AA-000-000

So that MA-1-1 becomes MA-001-001. The request for data concerning lot number MA-1-1 will result in the message "0-data sets selected" unless the lot number is specified in the correct format. This rule also applies to component lot numbers.

A dictionary of common data base terms and acceptable values for specific data elements has been provided as an aid in using this manual. Users not familiar with data base nomenclature are urged to review the definitions therein.

I. INTRODUCTION

This project has developed a data retrieval storage and analysis system which manages performance and test data collected during manufacture and acceptance testing of complete rounds, components, subassemblies, propellants, and fuzes. The set of data files with their retrieval functions and analysis capabilities is referred to as the Ammunition Reliability Information Evaluation System, ARIES. It is expected that ARIES will be useful in evaluating developmental programs, in trouble-shooting problems as they arise and in performing reliability assessments.

Data access can be performed in both the interactive and batch modes. Interactive data access is useful when a user requires a quick, short answer to a question with little or no analysis. Data retrieved interactively is displayed on the screen or teletype. Batch processing of ARIES jobs allows for retrieval of several, large groups of data and for detailed analysis and display of that data.

II. DATA BASE STRUCTURE

ARIES is a special purpose data base structure and data analysis system designed for use by engineering personnel for the storage and analysis of data pertaining to several broad areas of armaments design and production. Component lot assembly data, ballistic and static component test data, and complete round ballistic acceptance test data for artillery, mortar and rocket ammunitions are managed within the ARIES structure. This section will describe from the user's point-how to access and analyze data.

1. ARIES OVERVIEW

ARIES utilizes System 2000 (S2K), a general purpose data base management system, developed and marketed by MRI Systems Corporation, Austin, TX. In order to retrieve data which is meaningful and correctly categorized for analysis, it is necessary for the user to understand some of the basic concepts of how the data is formatted and how to structure retrieval commands. The following pages provide an abbreviated discussion of many of the data manipulation concepts which underlie the S2K data management programs. For a more in-depth discussion of these topics the user is referred to the System 2000 Reference Manual.

ARIES operates on the CDC-6600 computer at Picatinny Arsenal. The data base, the retrieval functions, and the analysis programs all reside on disc files. Program examples in the manual will also provide the control cards necessary to activate these programs.

Figure 1 shows the structure of the Ammunition Reliability Information Evaluation System. User inputs are entered either interactively at a teletype (or screen) or batch in the form of a deck of punched cards. These inputs are interpreted by an S2K natural language program which (i) opens the data base, (ii) retrieves data, (iii) creates formatted data lists, and (iv) provides informational aids to the interactive user. Data bases are maintained

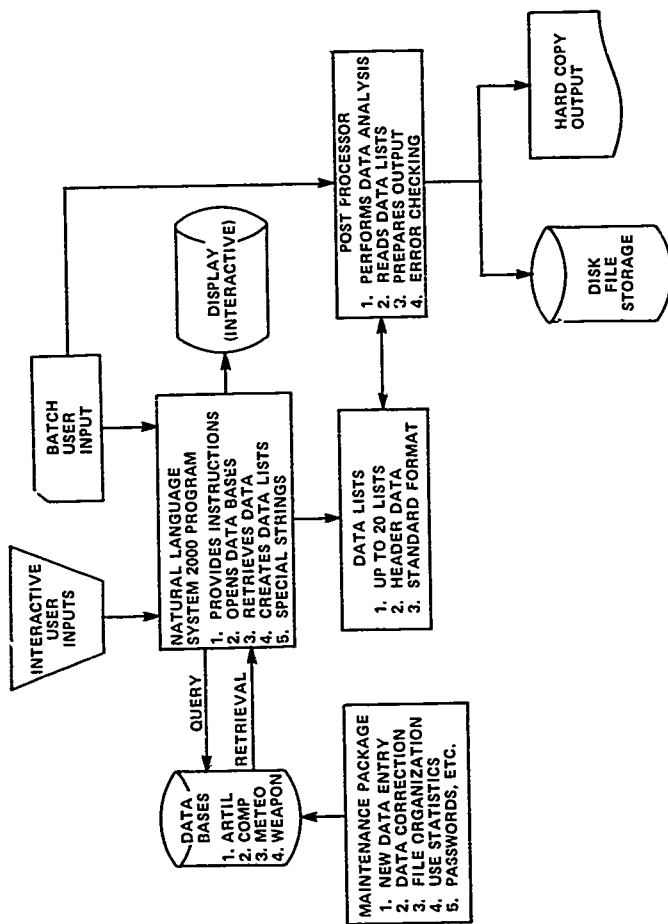


Figure 1 THE AMMUNITION RELIABILITY INFORMATION EVALUATION SYSTEM

as disc files and are accessible to the typical user in the read only mode. Updates and structure changes are performed by use of a maintenance package accessible to those who need it (details for using these programs are provided in the ARIES System Programming Manual). Interactive users receive their data immediately on the device at which they are working. Data lists can be created in the interactive mode and cataloged for future processing. Batch users create formatted data groups (up to a maximum of twenty) which are then read as input to a post processor which provides statistical analyses and graphical displays of the data by groups.

2. DATA BASE DEFINITIONS

A data base definition is a list of all the data items of interest in a logical structure which aids the user in data retrieval. The definition shows the relationships between each data item and all others in the data base. The basic components of the definition are data elements and repeating groups. Values are stored in data elements. Repeating groups describe a structure for storing multiple sets of values and also serve to link hierarchical levels of the definition.

At this point, let us use the data base ARTIL as an example. The definition for ARTIL can be found in the Appendix section of this manual. Each data item in ARTIL has a component number and a component name. Component number one (C1) is named caliber. The information following the component name defines the format in which that piece of information is stored. Elements are either key or non-key (if not specified in the definition an element is key by default). Elements are typed as name, text, integer, decimal, date, or money with varying lengths (e.g. name X(10) is a ten-character name or integer 9(6) is a six-digit number). These element formats have little effect on the retrieval process and, therefore, will not be discussed in detail. It is sufficient to state that only numeric elements may be processed by the analysis routines. That is to say that it is incorrect to request a mean and standard deviation of the lot numbers and if this occurs, a processing error will result.

3. REPEATING GROUPS

The definition for ARTIL is indented at several points. Each indentation signifies a repeating group level. It is the repeating group concept that allows multiple occurrences of data set information and associated elements and/or associated lower level repeating groups. These associations are always specified within the component description. Elements and repeating groups are always members of some repeating group, thus the repeating group relationship is as shown for the ARTIL definition. Figure 2 is the repeating group structure for ARTIL. Notice how the data for a lot of ammunition is clustered at each level. Level zero is the basic lot data and at this level the repeating group relationship is not specified but implicitly related to component number zero which is referred to as ENTRY. For all non-level-zero elements the repeating group specification is explicit and shows in the definition.

In ARTIL, there are four repeating groups on level one as shown. Four more exist at level two, three at level three and two at level four. This repeating group structure is the means by which data can be retrieved from any branch of the data tree without a sequential search of the entire data base.

4. DATA STRUCTURE

Let us now look at how the values for a specific lot of ammunition would fit into the ARTIL structure. Figure 3 illustrates typical data value storage in ARTIL. KN-816-095 is 37,125 rounds of 105mm, HE, M1 ammunition which were tested and accepted at Jefferson Proving Ground on February 20, 1975. The level zero data is shown in Figure 4. Notice how the first seventeen data elements in the ARTIL definition are filled with the specific data for lot number KN-816-095. The next element in the definition is number 100* ARTILLERY TEST INFO(RG) which is a level one repeating group. Figure 5 shows the elements in this repeating group and the values for the example lot. This repeating group is referred to as RG100. The definition next shows 200* HE WP FORMAT INFO(RG in 100) or RG200. The elements in RG200

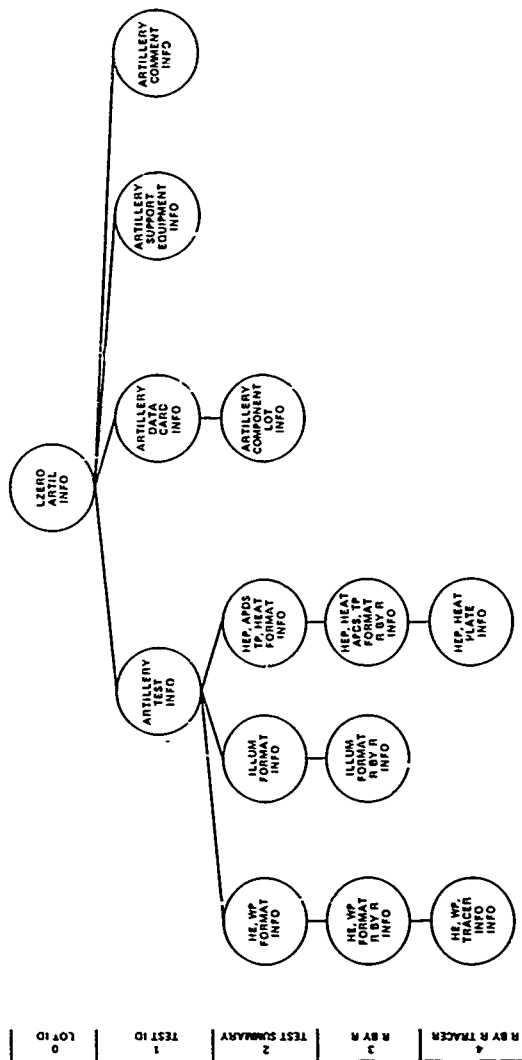


FIGURE 2 ARTILLERY DATA BASE STRUCTURE

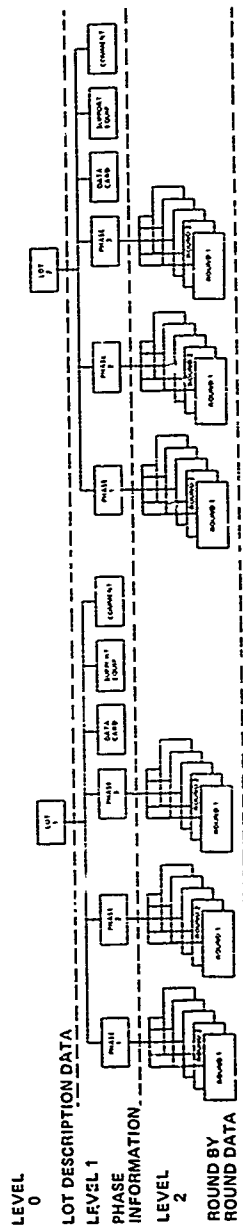


Figure 3 DATA VALUES STORAGE IN ARTIL

CALIBER* 105 MM
 TYPE* HE
 LOT* KN-816-095
 M NUMBER* M1
 QUANTITY* 37125
 MANUFACTURER* KANSAS
 INITIAL DISP* ACCEPTED
 FINAL DISP* ACCEPTED
 PROVING GROUND* JEFFERSON
 TEST DATE* 02/20/1975
 ASSEMBLY DATE* -NULL-
 TYPE TEST* FIRST TEST
 FIRING RECORD NUMBER* 374
 ITEM NOMENCLATURE* CTG, 105MM, HE, M1 DUALGRAN, W/SUPPL CHG W/O FUZE F
 /HCW -M2A1,M2A2,M49,M103,M137
 CAUSE OF REJECTION* NONE
 RELATED FIRING RECORD* NONE
 CORRECTION* 1 MPS
 SPECIFICATION* -NULL-
 DRAWING* -NULL-

FIGURE 4 LEVEL ZERO ELEMENTS WITH VALUES

- 1* 105 MM
- 2* HE
- 3* KN-816-095
- 4* M1
- 5* 37125
- 6* KANSAS
- 7* ACCEPTED
- 8* ACCEPTED
- 9* JEFFERSON
- 10* 02/20/1975
- 12* FIRST TEST
- 13* 374
- 14* CTG, 105MM, HE, M1 DUALGRAN, W/SUPPL CHG W/O FUZE F/HCW -M2A1,M2A2
M49,M103,M137
- 15* NONE
- 16* NONE
- 17* 1 MPS

TEST NAME* ACCEPTANCE
TEST PHASE* VEL AND
REF VS TEST* REF
DATE FIRLD* 02/20/1975
APPROX TIME FIRED* 912
AZIMUTH* 353.90
TARGET DISTANCE* -NULL-
FIRING POSITION* A-13
WIND VELOCITY* -NULL-
WIND DIRECTION* -NULL-
PROP CHG* 7 INCR
TEST REMARKS* FUNCTION, AMB

Level One

Artillery Test Info

MAJFUNCTIONS* -NULL-
TEST SAMPLES* 10

VEL N* 10
VEL UNCORR MEAN* 464.00
VEL CORR MEAN* -NULL-
VEL STD* 1.70
VEL MAXIMUM* 467.00
VEL MINIMUM* 462.00
PRES N* -NULL-
PRES MEAN* -NULL-
PRES MAXIMUM* -NULL-
PRES MINIMUM* -NULL-
RNG N* -NULL-
RNG MEAN* -NULL-
RNG STD* -NULL-
RNG MAXIMUM* -NULL-
RNG MINIMUM* -NULL-
DEFL N* 10
DEFL MEAN* 260.0
DEFL STD* .0
TRACER N* -NULL-
TRACER MEAN* -NULL-
TRACER MAXIMUM* -NULL-
TRACER MINIMUM* -NULL-
FLAG* -NULL-

Level Two

IE, WP, Format Info

RND NO* 1955
SAMP NO* 1
PROJ FUNC* -NULL-
FUZE ACTION* -NULL-
VEL* 467.0
RNG* -NULL-
DEFL* 260
PRES* -NULL-
WT* -NULL-
REMARKS* -NULL-
RFLAG* -NULL-
HE-WP DEFECT* -NULL-

Level Three

IE, WP, Format Round

By Round Information

FIGURE 5 LEVEL ONE, TWO, AND THREE ELEMENTS AND VALUES

and the example values are also shown in Figure 5. RG280 is a repeating group in RG200 and contains elements which refer to round by round measurements. Values for the first round fired in lot KN-816-095 are also shown in Figure 5. Looking at the data values in Figures 4 and 5, and at the definition and the tree structure (Figure 2) one can see that the data for KN-816-095 is stored in an easily defined manner so that any one data value may be accessed quickly.

Figure 6 is the elements for RG280 with the values for the second through fifth rounds. This illustrates the use of the repeating group structure for data storage. It was not necessary to define elements for each round fired, but rather data for each round is stored in a generalized definition (RG280) which allows for repeated value insertions. We see in Figure 5 that 10 rounds were fired (Test Samples = 10) and therefore we would expect to find 10 sets of data in RG280 (only the first five are shown here).

So far we have seen the level zero data and the data concerning the reference phase of the acceptance test for KN-816-095. The results of the test phase are stored as a second set of data in RG100. Figure 7 shows the data for the test and safety phases in the RG100, RG200, and RG280 structures. Notice how the data for this example lot has now been layered onto the definition in a hierarchical manner so that each value is uniquely stored and can be identified by lot number, phase name, and round number for easy access.

The tree structure in Figure 2 shows three level one repeating groups of data in addition to the test information discussed above. Data card, support equipment, and comment information groups contain the values for KN-816-095 as presented in Figure 8. With the inclusion of this data, all the important manufacturing and acceptance test results are stored in data base ARTIL and can be retrieved by referencing either the element number or name.

RNL NO* 1956
SAMP NO* 2
PROJ FUNC* -NULL-
FUZE ACTION* -NULL-
VEL* 466.0
RNG* -NULL-
DEFL* 260
PRES* -NULL-
WT* -NULL-
REMARKS* -NULL-
RFLAG* -NULL-
HE-WP DEFECT* -NULL-

RNL NO* 1957
SAMP NO* 3
PROJ FUNC* -NULL-
FUZE ACTION* -NULL-
VEL* 465.0
RNG* -NULL-
DEFL* 260
PRES* -NULL-
WT* -NULL-
REMARKS* -NULL-
RFLAG* -NULL-
HE-WP DEFECT* -NULL-

RNL NO* 1958
SAMP NO* 4
PROJ FUNC* -NULL-
FUZE ACTION* -NULL-
VEL* 464.0
RNG* -NULL-
DEFL* 260
PRES* -NULL-
WT* -NULL-
REMARKS* -NULL-
RFLAG* -NULL-
HE-WP DEFECT* -NULL-

RNL NO* 1959
SAMP NO* 5
PROJ FUNC* -NULL-
FUZE ACTION* -NULL-
VEL* 463.0
RNG* -NULL-
DEFL* 260
PRES* -NULL-
WT* -NULL-
REMARKS* -NULL-
RFLAG* -NULL-
HE-WP DEFECT* -NULL-

FIGURE 6 LEVEL THREE ELEMENTS WITH REPEATING VALUES

TEST NAME* ACCEPTANCE
 TEST PHASE* VEL APD
 REF VS TEST* TEST
 DATE FINE* 02/20/1975
 APPROX TIME FINE* 913
 AZIMUTH* 353.90
 TARGET DISTANCE* -NULL-
 FIRING POSITION* 1-13
 WIND VELOCITY* -NULL-
 WIND DIRECTION* -NULL-
 PRCP CHG* 7 INCR
 TEST REMARKS* FUNCTIONAL, AMB

MALFUNCTIONS* -NULL-
 TEST SAMPLES* 10

VEL N* 10
 VEL LINCORR MEAN* 467.00
 VEL CORR MEAN* 465.00
 VEL STD* 1.20
 VEL MAXIMUM* 467.00
 VEL MINIMUM* 465.00
 PRES N* -NULL-
 PRES MEAN* -NULL-
 PRES MAXIMUM* -NULL-
 PRES MINIMUM* -NULL-
 RNG N* -NULL-
 RNG MEAN* -NULL-
 RNG STD* -NULL-
 RNG MAXIMUM* -NULL-
 RNG MINIMUM* -NULL-
 DEFL N* 10
 DEFL MEAN* 200.0
 DEFL STD* .0
 TRACK N* -NULL-
 TRACK MEAN* -NULL-
 TRACK MAXIMUM* -NULL-
 TRACK MINIMUM* -NULL-
 FLAG* -NULL-

RMI NG* 1956
 SAMP NO* 1
 PROG FUNC* -NULL-
 FUZE ACTION* -NULL-
 VEL* 467.0
 RNG* -NULL-
 DEFL* 260
 PRES* -NULL-
 WT* 52.50
 REMARKS* -NULL-
 RFLAG* -NULL-
 ME-wf DEFECT* -NULL-

FIGURE 7 TEST PHASE REPEATING VALUES

110* ACCEPTANCE
111* SAFETY
112* TEST
113* 02/20/1975
114* 957
115* 352.87
117* H-12
120* EXCESS
123* 5

220* 5
221* 427
222* 431
223* 415
240* 5
241* -150.0
242* .0

281* 1153
282* 1
287* -150
288* 415

281* 1154
282* 12
287* -150
288* 430

281* 1155
282* 13
287* -150
288* 429

281* 1156
282* 14
287* -150
288* 430

281* 1157
282* 15
287* -150
288* 431

FIGURE 7 (CONT'D.) SAFETY PHASE REPEATING VALUES

EQUIP NAME* HQ* 105MM
EQUIP MODEL* M2A2
EQUIP LOT* 18913

EQUIP NAME* TUBE*105MM
EQUIP MODEL* M2A2
EQUIP LOT* 67375

EQUIP NAME* CARRIAGE
EQUIP MODEL* M2A2
EQUIP LOT* 6567

EQUIP NAME* RECOIL
EQUIP MODEL* M2A5
EQUIP LOT* 2370

ARTILLERY SUPPORT

EQUIPMENT

EQUIP NAME* HQ* 105MM
EQUIP MODEL* M157L1
EQUIP LOT* 2052

EQUIP NAME* TUBE*105MM
EQUIP MODEL* M157L1
EQUIP LOT* 60120

EQUIP NAME* CARRIAGE
EQUIP MODEL* M31
EQUIP LOT* 790

EQUIP NAME* RECOIL
EQUIP MODEL* M37
EQUIP LOT* 2638

COMMENTS* ALL VEL CORR TO PROJ WT=33 LB. ARTILLERY COMMENT
INFORMATION

COMMENTS* PERCENT LOT LRF= 0.00

FIGURE 8 ADDITIONAL LEVEL ONE DATA

III. DATA RETRIEVAL

As illustrated in Figure 1, several data retrieval formats exist within ARIELS. Interactive data requests result in an immediate display on the peripheral in use; data lists can be created either interactively or batch; data lists can be stored as permanent disc files or they can be used as input files to the analysis routines; data lists or analysis outputs are available from line printers. Interactive and batch retrievals will be discussed separately. A few System 2000 concepts will also be discussed.

1. String Concept in System 2000

A string is a predefined command which when executed results in the performance of multiple S2K commands. The use of strings is particularly useful when a user has a repetitive or lengthy retrieval and would like to refer to this series (or string) of commands by some shortened code word.

There are two types of strings. The first, the simple string, allows the definition of a series of S2K commands directly callable by nothing other than the string number or name. No variables are allowed in the simple string. The second type, the extended string, also allows the definition of a series of S2K commands, but these commands may contain symbolic arguments which are satisfied by the substitution of actual arguments when the extended string is executed.

An example of a simple string can be found in data base ARTIL, component number 4030.

4030 * TALLY (STRING \$ TALLY/EACH/C1% TALLY/EACH/C2% TALLY/EACH/C4%)

This simple string will execute the three S2K commands shown above in the string definition. It results in the printing of each unique value for components C1, C2, and C4 (caliber, type, and M-number). In order to call this series of S2K commands the user must punch on a card or type into the system:

TALLY

OR

C4030

The output will appear on the screen or as part of the output file for a batch program. Further explanation of this string and other available strings can be found in Appendix A.

An example of an extended string can be found in data base AKTIL, component number 4005.

```
4005 * DISPLAY (STRING $ PRINT/NAME, STUB, GROUP, NULL SUPPRESS, REPEAT
      SUPPRESS/BY ENTRY, C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C12,
      C13, C14, C100, C200, C300, C400, C920, C98 WHERE C3 EQ *1* % $)
```

This extended string will execute this lengthy command when it is called in the following manner:

```
*DISPLAY(MA-014-492)%           OR           *C4005(MA-014-492)%
```

The lot number provided as an argument during execution is substituted between the asterisks where the number "1" appears in the string. Extended strings with multiple arguments are also possible. The four argument string CSUM is called by:

```
*CSUM(81 MM,ME,01/01/74,01/31/74)%
```

and will list summary data for all 81MM, ME lots manufactured during January 1974. The use of extended strings is also described in Appendix A.

2. The 'WHERE' Clause in System 2000

The purpose of the WHERE clause is to specify the conditions required to qualify data sets from which retrievals are to be made. For example:

```
PRINT LOT WHERE MEAN VEL LQ 850%
```

The ARIES user must understand the WHERE clause structure because some of the strings discussed in Appendix A require a legal where clause as an input argument.

The object of a where clause must be a keyed data item (see Section 11.2). A quick look at the definition will tell the user whether the where clause object item is a key or non-key element. If an element is not specified as being non-key, it is assumed to be a key element.

The conditions modifying WHERE can be simple or complex combinations of restrictions on the qualifying data sets. All WHERE clauses employ system operators of one type or another -- e.g., EXISTS, FAILS, EQ, NE, LT, LE, GT, GE, and SPANS. Most are self-explanatory, and no more than a brief knowledge of their meanings should be necessary to understand this discussion.

The effect of a WHERE clause is to focus data retrievals on just those segments of the data base of specific interest. Without a WHERE clause, the entire data base qualifies and every valued retrieval component specified will be output. There would be considerable difference in the output produced from the ARTIL data base, for example, by issuing these two commands:

PRINT CALIBER%

PRINT CALIBER WHERE LOT EQ MA-014-495%

In a retrieval command containing a WHERE clause, the WHERE clause is processed first to determine which portion of the data base should be considered for those actions specified to the left of the WHERE clause. The normalizing concept has to do with the problem of selecting the appropriate elements or repeating groups for retrieval. This is important to the user because, understanding the concept, he can construct his command to achieve the unique results desired.

Three new terms are required at this point to assist in the understanding of this concept.

a. Specified Data Sets - the data sets implicitly identified by the components listed to the left of the WHERE clause statement in a retrieval request. The component may be identified by name or by number. The data sets are implicitly identified by requesting elements within the data sets or naming

the repeating group which generates the Specified Data Sets. The level within the data base structure where these Specified Data Sets occur is of great importance. If elements are used to identify the Specified Data Sets, then the elements and the data sets will be at the same level, since the elements come from within the data set. If a repeating group is used to identify the sets, then the Selected Data Sets will occur at one level below the listed repeating group.

b. Qualified Data Sets - data sets that satisfy the entire WHERE clause condition(s). When the system starts processing a command it processes the WHERE clause first. Those data sets which satisfy all the conditions in the WHERE clause are temporarily "collected" and tested to see if any of the Qualified Data Sets are named or implied by the Specified Data Sets. If they are, they become:

c. Selected Data Sets - data sets produced from the Qualified Data Sets. That is, those data sets named by the Specified Data Sets and selected by qualification for retrieval.

As explained previously, some retrieval requests do not use the WHERE clause. If the request contains no WHERE clause, then the entire data base qualifies for output. If a WHERE clause is used, but no data sets satisfy the conditions imposed by the WHERE clause, no action is taken for the request. If a list of Qualified Data Sets is produced, then each Qualified Data Set is examined to see if it is also a Specified Data Set. If it is, then it becomes a Selected Data Set. If all components in the WHERE clause reference only the Specified Data Sets, then all Qualified Data Sets are also the Selected Data Sets. The following example uses the ARTIL Data Base Definition and Data Base Structure.

PRINT VEL CORR MEAN, PRES MAXIMUM, RRG MEAN WHERE LOT EQ LS-067-133%

OR

PRINT C212, C222, C231 WHERE C3 EQ LS-067-133%

Effect: There is only one qualified data set and when it is selected the following output will result:

212 * 351.38

222 * -NULL-

231 * 1048

212 * 874.54

222 * 82

231 * 4659

Two sets of data are generated because data exists for both the one increment and nine increment firing phases. To obtain only one set of data the where clause should be:

WHERE LOT EQ LS-067-133 AND TEST PHASE EQ 1 INCR%

OR

WHERE C3 EQ LS-067-133 AND C111 EQ 1 INCR%

3. Interactive ARIES Retrievals

The first step in the performance of an interactive ARIES retrieval is to LOGIN at a teletype or screen location. It is assumed that the user knows how to do this. The following steps should then be performed.

COMMAND

ATTACH, ABSFIL, ID=ASRSD

PFN = ABSFIL

CYCLE NO. = 1

COMMAND

ABSFIL.

07/07/75 14.17.15*BEGIN SYSTLM 2000*

USER, PAD%

#

DATA BASE NAME IS <DBN> %

ASSIGNED <DBN> 47 37 06/18/75 14.13.08

#

Legal arguments for the data base name (DBN) are ARTIL, COMP, etc.

At this point strings or S2K commands may be typed into the system. All requested outputs will be printed on the screen unless a report file is named. This is accomplished by typing:

REPORT FILE IS logical file name> %

where logical file name is any 1-7 character-file name acceptable to CDC operating system. This command directs all outputs to the logical file which then can be manipulated as any other CDC system file.

The interactive execution of strings must be approached with a note of caution. The user should execute from a teletype or screen only those strings in Appendix A which have a suggested operating mode of INTERACTIVE. Those strings labeled as BATCH will produce a large volume of data in a 130-character wide format suitable for line printer display. On a teletype, this format is time consuming and unsightly due to wrap around which results from overflow of the teletype field.

There are several help commands embedded in ARIES to aid the user by (1) listing the basic ARIES strings and (2) providing instructions for their use. For a list of all the ARIES strings available within a data base type:

HELPCOMMAND%

To obtain instructions for any one of these commands, type:

*HELPI(XXXX)%

where XXXX is the ARIES string name.

The instructions for each command are subdivided into three sections. They are:

FUNCTION - Lists purpose of string
USAGE - Describes how to use string
EXAMPLE - Provides an actual example

The HELP1 string displays all three sections. If only one section is desired, the HELP2 string is used.

*HELP2(XXXX,YYYY)

where XXXX is the ARIES string name

and YYYY is the name of the section.

*HELP1(SUMMARY) will display a three section description of the ARIES string called SUMMARY.

*HELP2(SUMMARY,EXAMPLE) will only display the example section of the instructions.

To obtain a synopsis of these instructions, the user need only type
HELP.

4. Batch Processing of ARIES Retrievals

Deck structure for the batch processing of ARIES retrievals is shown in Figure 9. The control cards are as shown except that the user must use his cost center and charge codes on the comment card.

All strings and S2K commands may be placed on punched cards in the section indicated. All strings and commands end in a percent sign. The output is returned via the line printer at the point of deck input unless otherwise specified. The formats and definitions of the strings can be found in Appendix A. For the user who wishes to construct his own strings, reference is made to the System 2000 Reference Manual for instructions.

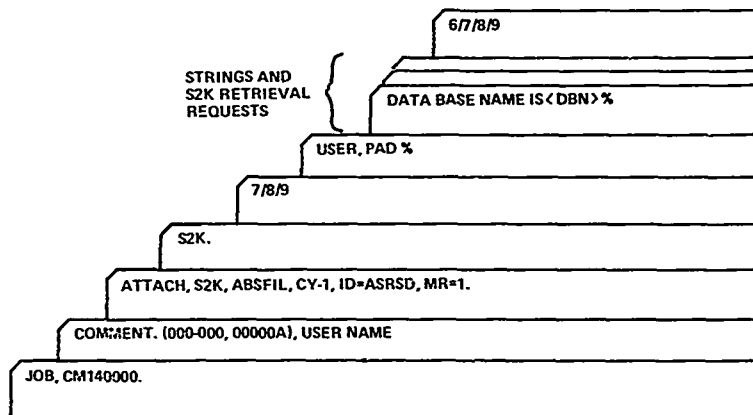


Figure 9 DECK STRUCTURE FOR BATCH PROCESSING RETRIEVALS

IV. DATA ANALYSIS

ARIES allows the user to retrieve groups of data using a set of strings. These groups (or files) of data can then be read by a post processor which will display and analyze retrieved groups.

1. Deck Structure

The deck structure for ARIES data retrieval and analyses is shown in Figure 10. The user must put his own cost center and charge codes on the comment card.

The data retrieval section is a set of punched cards each requesting a group of data to be retrieved for subsequent analysis. Each card calls an extended string with two arguments. The use of these strings (FILE1, FILE2, FILE3, . . . FILE19, FILE20) is explained in the Analysis Commands Section of Appendix A. One to twenty data files can be created with these strings. The first argument of each string is the component name or number for the data to be stored on the local file. The second argument is a legal System 2000 WHERE clause which qualifies the data set being retrieved. For example:

*FILE14(LOT, CALIBER EQ 81MM)%

will retrieve all the lot numbers for all the 81mm lots stored in data base ARTIL. This list of lot numbers will exist on a local file called FILE14.

The data analysis section contains a set of punched cards which allow the user to specify which local files of retrieved data should be analyzed and the manner in which the data will be displayed or analyzed. The available analysis routines are presented in Appendix B. The format of the input data analysis section is the same as the format for a NAMELIST reader input. That format is a blank in column one followed by a dollar sign and an analysis routine name. The arguments for each routine are separated by commas and the end of the arguments is denoted by another dollar sign. For example:

SNREG LIST=1, 16EP=11, IND1=S, IND2=3, IRES=1\$

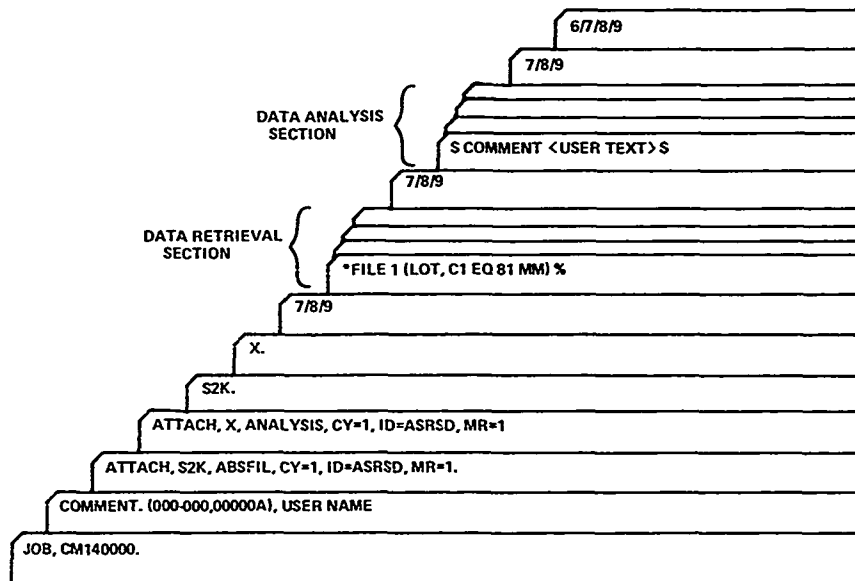


Figure 10 DECK STRUCTURE FOR DATA RETRIEVAL AND ANALYSIS

will request a multiple regression analysis with a list of the raw data with the data in FILE11 as the dependent variable and the data in FILE5 and FILE3 as independent variables. A list of the residuals is also requested.

Several examples of retrieval and analysis programs are presented in the Examples Section of this manual.

DICTIONARY

Analysis Commands

- Those instructions by which the user defines how he wants the data analyzed and displayed. For example, the analysis commands may request a multiple regression analysis and a plot of variable A vs. variable B.

Batch Processing

- A batch processed program is one that is presented to the computer through the input queue, and competes with other jobs in that queue for access to the computer. A batch job is normally a deck of punched cards passed through a card reader. See interactive processing.

Catalog

- The process whereby a local file is made permanent and thereby recoverable at a later time.

Data Base

- A non-redundant collection or interrelated data items processable by one or more techniques.

Data Element

- The unique name used for specifying a single set of element values. In ARIES a data element may be the "C" number or the element name (e.g. C1 or caliber is a specific data element). See data value.

Data List

- The set of all data values resulting from a specific retrieval command. This list is usually a local file.

Data Value

- The stored information are data values. Data values are stored in specific data elements. Usually several data values exist within each data element (e.g. for the data element C3*LOT, the data values are all individual lot numbers).

Disc Files

- Disc files are those files which are stored on computer central site devices called disc packs. Data, programs or command sequences can be stored as disc files. Disc files are permanent records which can quickly be read into computer memory.

Format

- The physical configuration of the data. There are input data formats, storage formats and output formats. Data formats are important because computers are usually programmed to expect data is a strictly defined configuration and unformatted or wrong formatted data is not interpretable by the machine. A typical data format may be I4 which means an integer number with four significant digits. To express the number twelve in I4 format is 0012.

Interactive Processing

- An interactive program is one that is presented to the computer through a dedicated input channel and is processed almost immediately. An interactive job is normally executed from a teletype and allows the user to input data during processing so that an interaction between the program logic and the user exists.

Key Element

- A data element name which is specified as a key element in the definition has an auxiliary table associated with it. In this table, all the data values are segmented into ordered groups. The table also contains storage addresses for each data value. When a retrieval is requested for key element values, the segmented table is used to select those values which meet the request criteria. The use of this table eliminates the time consuming need to sequentially retrieve from disc and test each data

value. The number of key elements dictates the amount of storage space necessary for a data base because the auxiliary tables do require storage areas.

Local File

- The CDC Scope operating system allows the user to create groups of data or commands or programs on files each having a unique name. These files when created are local files which will be lost upon conclusion of the job. In order not to lose one or more of these files, the user must issue a catalog command for each file he desires to be recoverable for another job. The issuance of a catalog command causes a copy of the file to be stored as a permanent disc file from which it can be recovered when needed.

Logical Structure

- The logical structure of a data base is the set of relationships between data elements in the data base. The understanding of the logical structure of a data base will aid the user in structuring data retrievals.

Non-Key Element

- A non-key data element has no auxiliary table associated with it; therefore, it takes less storage than a key element. However, the retrieval of a subset of the data values from a non-key element requires a time consuming sequential search through all stored values for that element.

Permanent File

- A permanent file is one whose contents are not lost upon completion of a job. See local file.

- Query
- The act of requesting specific select data values from the data base. A query is a structured request for qualified data values.
- Read Only Programs
- When a program is catalogued as a permanent file, the access to it may be specified in a variety of ways. A set of passwords control this access and only those who know the passwords may change, purge or extend the program. A read only program can be read and executed by anyone who attaches it, but may be altered only by those who know the passwords.
- Retrieval
- The act of grouping a set of specific data values in an output file. See query.
- Structure
- The structure of a data base consists of the definition and the repeating group structure which defines the hierarchy of data storage levels. See logical structure.
- S2K Natural Language
- The syntax whereby retrievals can be made from an S2K data base.
- Update
- The process of adding new data or deleting obsolete data from a data base.

APPENDIX A

STRINGS

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GENERAL INSTRUCTIONS

STRING INVOCATION

BATCH MODE USAGE:

FROM CARDS:

```
USLR, PAD%  
DEN IS <DATA BASE NAME> %  
      <STRING> %  
EXIT %
```

FROM SCREEN OR TELETYPE:

```
USLR, PAD%  
DEN IS <DATA BASE NAME> %  
REPORT FILE IS XXX%  
      <STRING> %  
LXIT %  
BATCH, XXX, PRINT, AM, ABC.
```

where:

AM = ID FOR 200 USER TERMINAL WHERE FILE IS TO PRINT
ABC = NAME OF FILE AFTER BATCHING IS COMPLETED

INTERACTIVE MODE USAGE:

FROM SCREEN OR TELETYPE:

```
USLR, .PAD%  
DEN IS <DATA BASE NAME> %  
      <STRING> %  
      (STRING OUTPUT APPEARS ON SCREEN OR TELETYPE)  
EXIT %
```

HELP COMMANDS

STRING:

HELP

NUMBLR:

1060

DATA BASL:

ARTIL, COMF, LAH, TH075, WEAPON

SUGGESTED OPERATING MODE:

INTERACTIVE OR BATCH

PURPOSE:

TO PROVIDE USERS WITH INSTRUCTIONS FOR USING
THE THREE BASIC HELP COMMANDS -- *HELPCOMMAND*,
HELP1() AND *HELP2(,)*.

USAGE:

HLP

OR

C1060

SAMPLE OUTPUT:

HELP

HELP

FUNCTION

THE PURPOSE OF THE SEVERAL HELP COMMANDS IS TO-

1) LIST ALL AVAILABLE COMMANDS

2) PROVIDE INSTRUCTIONS FOR USING BASIC ARIES COMMANDS

USAGE

***** ALL COMMANDS MUST BE FOLLOWED BY A PERCENT SIGN *****
FOR LIST OF ALL COMMANDS AVAILABLE IN ARIIL. TYPE

HELP COMMAND

THE INSTRUCTIONS FOR EACH COMMAND ARE SUBDIVIDED INTO 3 SECTIONS

THESE 3 SECTIONS ARE

A) FUNCTION - LISTS PURPOSE OF COMMAND

B) USAGE - DESCRIBES HOW TO USE COMMAND

C) EXAMPLE - GIVES EXAMPLE OF COMMAND USE

TO LIST FUNCTION, USAGE AND EXAMPLE OF COMMAND XXXX. TYPE

*HELP1(XXXX)

WHERE XXXX = ARIES COMMAND NAME

TO LIST ONLY THE FUNCTION, USAGE OR EXAMPLE OF COMMAND XXXX. TYPE

*HELP2(XXXX,YYYY)

WHERE XXXX = ARIES COMMAND NAME

YYYY = FUNCTION, USAGE OR EXAMPLE

EXAMPLE

***** ALL COMMANDS MUST BE FOLLOWED BY A PERCENT SIGN *****

SAMPLE FOR COMMAND HELP COMMAND

LIST ALL BASIC ARIES COMMANDS

HELP COMMAND

SAMPLE FOR COMMAND HELP1

LIST FUNCTION, USAGE AND EXAMPLE OF ARIES COMMAND COMFLOT

*HELP1(COMFLOT)

SAMPLE FOR COMMAND HELP2

LIST ONLY USAGE OF ARIES COMMAND COMFLOT

*HELP2(COMFLOT,USAGE)

STRING: HELPCO-TAND

NUMBER: 1090

DATA BASE: ARTIL, COMF, LAW, TWO75, WEAPON

SUGGESTED OPERATING MODE: INTERACTIVE OR BATCH

PURPOSE: TO LIST ALL BASIC COMMANDS AVAILABLE TO ARIES
USERS. ONLY THOSE COMMANDS APPLICABLE TO THE
ATTACHED DATA BASE ARE LISTED.

USAGE: *HELPCO-TAND* 1
OR
C1090 1

STRING: HELP1

NUMBER: 1070

DATA BASE: ARTIL, COMP, LAW, TWO75, WEAPON

SUGGESTED OPERATING MODE: INTERACTIVE OR BATCH

PURPOSE: TO LIST INSTRUCTIONS FOR USING A USER SELECTED
ARIES COMMAND. THE INSTRUCTIONS FOR EACH COMMAND
ARE SUBDIVIDED INTO 3 SECTIONS:

- a). FUNCTION - LISTS PURPOSE OF COMMAND.
- b). USAGE - DESCRIBES HOW TO USE COMMAND.
- c). EXAMPLE - GIVES EXAMPLE OF COMMAND USE.

THE HELP1 COMMAND LISTS ALL 3 OF THE ABOVE FOR
SELECTED COMMAND.

NOTE: SEE COMMAND HELP2 FOR INSTRUCTIONS ON
HOW TO RETRIEVE ONLY THE FUNCTION, USAGE OR
EXAMPLE INSTRUCTIONS. SEE COMMAND HELP/COMMAND
FOR LIST OF ALL AVAILABLE COMMANDS.

USAGL: *HELP1(ARG1)%
 OR
 *C1070(ARG1) %

ARGUMENTS: ARG1 = ARIES COMMAND NAME

EXAMPLE: *HELP1(COMPL0T) %
 LISTS FUNCTION, USAGE AND EXAMPLE OF ARIES COMMAND
 COMPL0T

STRING: iLLP2

NUMBER: 1080

DATA BASE: ARTIL, COMP, L'N TH075, WEAPON

SUGGESTED OPERATING MODE: INTERACTIVE OR BATCH

PURPOSE: TO LIST INSTRUCTION SUBSET FOR USER SELECTED
ARIES COMMAND. THE INSTRUCTIONS FOR EACH COMMAND
ARE SUBDIVIDED INTO 3 SECTIONS:

- a). FUNCTION - LISTS PURPOSE OF COMMAND
 - b). USAGE - DESCRIBES HOW TO USE COMMAND
 - c). EXAMPLE - GIVES EXAMPLE OF COMMAND USE
- THE HELP2 COMMAND LISTS EITHER THE FUNCTION,
USAGE OR EXAMPLE OF THE SELECTED COMMAND.

NOTE: SEE COMMAND HELP1 FOR INFORMATION ON
HOW TO RETRIEVE COMPLETE INSTRUCTIONS FOR THE
SELECTED COMMAND. SEE COMMAND HELPCOMMAND FOR
LIST OF ALL AVAILABLE COMMANDS.

USAGE: *HELP2(ARG1, ARG2)%
OR
*C1080(ARG1, ARG2)%

ARGUMENTS: ARG1 = ARIES COMMAND NAME
ARG2 = FUNCTION, USAGE OR EXAMPLE

EXAMPLE: *HELP2(COMPL0T,USAGE)%
LISTS USAGE OF ARIES COMMAND COMPL0T.

SAMPLE OUTPUT:

HELP COMMAND

ARIES COMMAND SUMMARY
09/18/75

COMMAND NAME

**

HELP
FILE1
SUMMARY
DISPLAY
COMPLUT
CSEARCH
HELPER
ILLUMPH
HEPHEATER
ASUM
BSUM
CSUM

CROSS
ACROSS
TALLY
TYPESUM
CALSUM
CALTYPE
DISPOSITION
DATESUM

HELP1

COMPLUT

FUNCTION

THIS COMMAND PROVIDES COMPONENT LOT INFORMATION FOR A SPECIFIED
COMPLETE ROUND LOT NUMBER. THE NAME, LOT NUMBER, QUANTITY USED
AND MANUFACTURER ARE GIVEN FOR EACH COMPONENT.

USAGE

*COMPLUT(ARG1) OR *C4006(ARG1) WHERE
ARG1 = COMPLETE ROUND LOT NUMBER

EXAMPLE

***** ALL COMMANDS MUST BE FOLLOWED BY A PERCENT SIGN *****
*COMPLUT(PA-014-492)

HELP2

COMPLUT

USAGE

*COMPLUT(ARG1) OR *C4006(ARG1) WHERE
ARG1 = COMPLETE ROUND LOT NUMBER

BATCH DATA RETRIEVAL COMMANDS

STRING: FILE1
 FILE2
 FILE3
 :
 FILE19
 FILE20

NUMBER: 2001
 2002
 2003
 :
 2019
 2020

DATA BASE: ARTIL, COMP, LAW, TW075, WEAPON

SUGGESTED OPERATING MODE: BATCH ONLY

PURPOSE: TO CREATE DATA FILES IN FORMAT COMPATIBLE WITH
 ANALYSIS PACKAGE. ONE TO TWENTY ANALYSIS FILES
 MAY BE CREATED USING STRINGS FILE1---FILE20.
 THE OUTPUT OF EACH RETRIEVAL OPERATION IS STORED
 ON LOGICAL FILES FILE1---FILE20.

USAGE: *FILE1 (ARG1,ARG2)%
 OR
 *C2001 (ARG1,ARG2)%
 :
 *FILE20 (ARG1,ARG2)%
 OR
 *C2020 (ARG1,ARG2)%

ARGUMENTS: ARG1 = ONE COMPONENT NUMBER OR NAME OF VARIABLE TO BE
 RETRIEVED
 ARG2 = QUALIFICATIONS ON ARG1 IN WHERE CLAUSE FORMAT.

NOTE: STRING IS LIMITED TO 80 CARD COLUMNS, AND NESTED WHERE CLAUSES ARE NOT
 ALLOWED

EXAMPLE: ARTIL DATA BASE: *FILE1(LOT,CALIBER EQ 60MM AND TYPE EQ HE)%
 CREATES A FILE CALLED FILE1 CONTAINING THE LOT NUMBERS OF ALL 60MM, HE
 COMPLETE ROUNDS. OR: *FILE(C3, C1 EQ 60 MM AND C2 EQ HE)%

DATA BASE ARTIL

STRING: SUMMARY

NUMBER: 4000

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: BATCH

PURPOSE: TO LIST CALIBER, TYPE, LOT NUMBER, N NUMBER,
TEST DATE, AND FINAL DISPOSITION FOR ALL LOTS.
DATA ARE SORTED BY CALIBER, TYPE, AND LOT
NUMBER.

USAGE: *SUMMARY* %

OR

C4000 %

STRING: DISPLAY

NUMBER: 4005

DATA BASE: ARTIL

SUGGESTED OPERATING MODES: BATCH OR INTERACTIVE

PURPOSE: TO PRINT ALL AVAILABLE DATA FOR GIVEN COMPLETE
ROUND LOT NUMBER.

USAGE: *DISPLAY(ARG1)%

OR

*C4005(ARG1)%

ARGUMENTS: ARG1 = COMPLETE ROUND LOT NUMBER

EXAMPLE: *DISPLAY(1A-014-492)%

SAMPLE OUTPUT:

DISPLAY

CALIBER* 60 MM
TYPE* HE
LOT* MA-614-492
M NUMBER* M49A4
QUANTITY* 99579
MANUFACTURER* PILAN
INITIAL DISP* PROV ACCEP
FINAL DISP* PENDING
PROVING GROUND* JEFFERSON
TEST DATE* 02/27/1973
TYPE TEST* FIRST TEST
FIRING RECORD NUMBER* 73-636
ITEM NOMENCLATURE* M49A4 60 MM HE

TEST NAME* ACCEPTANCE
TEST PHASE* R-A 0 INCR
REF VS TEST* TEST
WIND VELOCITY* 24
TEST REMARKS*

TUBE NUMBER* NONE

VEL N* 24
VEL UNCORK MEAN* 167.00
VEL STD* 1.50
VEL MAXIMUM* 169.00
VEL MINIMUM* 165.00
RNG N* 24
RNG PLAN* 249
RNG STD* 5.1
RNG MAXIMUM* 256
DEFL N* 24
DEFL MEAN* -004.0
DEFL STD* 1.2

TEST NAME* ACCEPTANCE
TEST PHASE* R-A 4 INCR
REF VS TEST* TEST
WIND VELOCITY* 24
TEST REMARKS*

TUBE NUMBER* NONE

VEL N* 24
VEL UNCORK MEAN* 496.00
VEL STD* 4.60
VEL MAXIMUM* 507.00
VEL MINIMUM* 487.00
PRES N* 24
PRES MEAN* 34
PRES MAXIMUM* 37
PRES MINIMUM* 30
RNG N* 24
RNG PLAN* 1796
RNG STD* 27.5
RNG MAXIMUM* 1841
RNG MINIMUM* 1749
DEFL N* 24
DEFL MEAN* -056.9
DEFL STD* 6.2

EQUIP NAME* WEAPON ONE
EQUIP LOT* 7260

45

EQUIP NAME* WEAPON TWO

STRING: COMPLET

NUMBER: 4006

DATA BASE: ARTIL

SUGGESTED OPERATING MODES: BATCH OR INTERACTIVE

PURPOSE: TO PRINT COMPONENT NAME, LOT NUMBER, QUANTITY
AND MANUFACTURE DATA FOR GIVEN COMPLETE
ROUND LOT NUMBER.

USAGE: *COMPLET(ARG1) %

OR

*C4006(ARG1) %

ARGUMENTS: ARG1 = COMPLETE ROUND LOT NUMBER

EXAMPLE: *COMPLET(1A-014-492) %

SAMPLE OUTPUT:

COMLOT

CALIBER* 60 MM
 TYPE* HE
 LOT* MA-014-492
 N NUMBER* M49A4
 QUANTITY* 99579
 MANUFACTURER* MILAN
 INITIAL DISP* PROV ACCEP
 FINAL DISP* PENDING
 PROVING GROUND* JEFFERSON
 TEST DATE* 02/27/1973
 TYPE TEST* FIRST TEST
 FIRING RECORD NUMBER* 73-636
 ITEM NOMENCLATURE* F49A4 60 MM HE

COMPONENT NAME* PROPELLANT

COMPONENT LOT* HAL-66686

COMPONENT NAME* PROP LOT2

COMPONENT NAME* FUZE

COMPONENT LOT* FA-025-018

COMPONENT LOT* MA-025-019

COMPONENT NAME* IGN CARTR

COMPONENT LOT* SIG-010-019

COMPONENT LOT* SIG-010-020

COMPONENT NAME* PROJECTILE

COMPONENT LOT* YCC-002-017

COMPONENT LOT* YCC-002-018

COMPONENT NAME* FIN ASSEMBY

COMPONENT LOT* DEL-004-002

COMPONENT NAME* OBSTURATOR

COMPONENT NAME* PRIMER

COMPONENT LOT* MA-006-046

COMPONENT LOT* MA-006-047

COMPONENT LOT* MA-006-048

STRING: CSEARCH

NUMBLR: 4008

ATA BASL: ARTIL

SUGGESTED OPERATING MODES: BATCH OR INTERACTIVE

PURPOSE: TO LIST, THE COMPLETE ROUND LOT NUMBER, QUANTITY, INITIAL DISPOSITION AND TEST DATE FOR EACH COMPLETE ROUND USING COMPONENTS WITH A GIVEN COMPONENT LOT NUMBER. THE COMPONENT QUANTITY USED IN EACH COMPLETE ROUND LOT IS ALSO LISTED. DATA ARE SORTED BY COMPLETE ROUND LOT NUMBER AND TEST DATE.

JSAGL: *CSEARCH(ARG1)%

OR

*C4008(ARG1)%

ARGUMENTS: ARG1 = COMPONENT LOT NUMBER

EXAMPLE: *CSEARCH(LS-116-018)%

RETRIEVES ALL COMPLETE ROUNDS USING FUZZ LOT
LS-116-018.

SAMPLE OUTPUT:

CSEARCH

LS-116-018
05/18/75

CR LGT NUMBER	CR QUANT	CR DISP	CR TEST DATE	COMPONENT QUANT
** LS-067-045	31012	PROV ACCEP	01/26/1973	
LS-067-046	5969	PROV ACCLP	01/26/1973	
LS-067-047	41670	ACCEPTED	02/02/1973	

THIS IS UNTIL

STRING. HLWPFRR

NUMBER: 4040

DATA BASL: ARTIL

SUGGESTED OPERATING MODE: BATCH ONLY

PURPOSE: TO PROVIDE ACCEPTANCE TEST SUMMARY AND DATA CARD INFORMATION FOR ONE USER SELECTED HE OR WP (SMOKE) LOT NUMBER. THE FOLLOWING DATA ARE LISTED:

- a). GENERAL LOT INFORMATION
- b). TEST IDENTIFICATION DATA
- c). TEST SUMMARY DATA
- d). ROUND BY ROUND DATA
- e). DATA CARD SUMMARY
- f). SUPPORT EQUIPMENT SUMMARY
- g). COMMENT INFORMATION

USAGL: •HLWPFRR(ARG1) %
OR
•C4040(ARG1) %

ARGUMENTS: ARG1 = COMPLETE ROUND HE OR WP LOT NUMBER

EXAMPLE: •HLWPFRR(PB-010-026) %

LISTS ACCEPTANCE TEST SUMMARY AND DATA CARD INFORMATION FOR 105MM SMOKE LOT PB-010-026.

SAMPLE OUTPUT:

HEMPER - 1

ACCEPTANCE TEST SUMMARY

05/10/75

LOT NUMBER	CALIBER	TYPE	M NUMBER	QUANTITY	MANUFACTURER	INITIAL DISP	FINAL DISP	PROVING GROUND
PA-010-025	105 MM	SMKE	M60A2	15092	PINE BLUFF	ACCEPTED	ACCEPTED	JEFFERSON

TEST DATE* 02/05/1975

TYPE TEST* FIRST TEST

FIRING RECORD NUMBER* 241

ITEM NUMERICAL UNIT* C18, 105MM* SMKE* WP* M60A2

CAUSE OF REJECTION* NONE

51

RELATED FIRING RECORD* NONE

CORRECTION* 0 MPS

TEST NAME*	ACCEPTANCE	TEST NAME*	ACCEPTANCE
TEST PHASE*	VEL AMB	TEST PHASE*	VEL AMB
REF VS TEST*	TEST	REF VS TEST*	TEST
DATE FIRED*	02/05/1975	DATE FIRED*	02/05/1975
APPROX TIME FIRED*	906	APPROX TIME FIRED*	905
AZIMUTH*	335.90	AZIMUTH*	00
FIRING POSITION*	H-13	FIRING POSITION*	H-12
PROP CHG*	7 INCH	PROP CHG*	EXCESS
TEST REMARKS*		TEST REMARKS*	

VEL N*	6	VEL N*	10
VEL UNCORR PLAS*	465.00	VEL UNCORR PLAS*	433
VEL STD*	3.70	VEL UNCORR MEAN*	455.00
VEL MAXIMUM*	466.00	VEL CORR PEAK*	463.00
VEL MINIMUM*	450.00	VEL STD*	1.50
DEFL N*	10	VEL MAXIMUM*	465.00
DEFL MEAN*	260.0	VEL MINIMUM*	461.00
DEFL STD*	.0	DEFL N*	10
		DEFL MEAN*	260.0
		DEFL STD*	.0

SAMPLE OUTPUT:
HUMPER - 2

ROUND BY ROUND DATA
09/18/75

LOT NUMBER	PR'SL	ROUND NUMBER	SAMPLE NUMBER	PROJ FUNC	FLZL ACTION	VEL	N	NGE	DEFL	PRES	WEIGHT	MEMA
50	VEL AMU	1813	1	NONE	INERT				260			
		1815	2	NONE	INERT	468.0			260			
		1817	3	NONE	INERT	467.0			260			
		1819	4	NONE	INERT	466.0			260			
		1821	5	NONE	INERT	466.0			260			
		1823	6	NONE	INERT	466.0			260			
		1825	7	NONE	INERT				260			
		1827	8	NONE	INERT	466.0			260			
		1829	9	NONE	INERT	465.0			260			
		1831	10	NONE	INERT	466.0			260			
51	VEL AMU	1814	1	SAT	S.W.				260			34.32
		1816	2	SAT	S.W.	417.0			260			34.32
		1818	3	SAT	S.W.	417.0			260			34.33
		1820	4	SAT	S.W.	416.0			260			34.33
		1822	5	SAT	S.W.	416.0			260			34.32
		1824	6	SAT	S.W.	414.0			260			34.36
		1826	7	SAT	S.W.	414.0			260			34.35
		1828	8	SAT	S.W.	416.0			260			34.31
		1830	9	SAT	S.W.	415.0			260			34.28
		1832	10	SAT	S.W.	414.0			260			34.34
52	SAFETY	4508	11	SAT	S.W.				-106	434		
		4509	12	SAT	S.W.				-166	436		
		4510	13	SAT	S.W.				-166	449		
		4511	14	SAT	S.W.				-166	437		
		4512	15	SAT	S.W.				-166	437		
		4513	16	SAT	S.W.				-166	431		
		4514	17	SAT	S.W.				-166	425		
		4515	18	SAT	S.W.				-166	424		
		4516	19	SAT	S.W.				-166	431		
		4517	20	SAT	S.W.				-166	428		

SAMPLE OUTPUT:

HEMPR - 3

DATA CARD SUMMARY

09/18/75

COMPONENT QUANTITY COMPONENT DATE WAWU

COMPONENT

LOT

COMPONENT

LOT

NAME

LOT NUMBER

** PI-010-026

SUPPORT EQUIPMENT SUMMARY
09/18/75

LOT NUMBER	EQUIP NAME	EQUIP MODEL	EQUIP LOT
** PI-010-026	M2A2	M2A2	18913
	TUBE, 105MM	M2A2	67375
	CARRIAGE	M2A2	6567
	RECOIL	M2A5	2370
	M2A2	M137E1	2052
	TUBE, 105MM	M137E1	64848
	CARRIAGE	M31	790
	RECOIL	M37	2658

COMPONENTS ALL VEL CORR TO PROJ WT=33 LB.

COMPONENTS PERCENT LOT DLP= 0.00

STRING: ILLUMFR

NUMBER: 3000

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: BATCH ONLY

PURPOSE: TO PROVIDE ACCEPTANCE TEST SUMMARY AND DATA CARD INFORMATION FOR ONE USER SELECTED ILLUMINATING LOT NUMBER. THE FOLLOWING DATA ARE LISTED:

- a). GENERAL LOT INFORMATION
- b). TEST IDENTIFICATION DATA
- c). TEST SUMMARY DATA
- d). ROUND BY ROUND DATA
- e). DATA CARD SUMMARY
- f). SUPPORT EQUIPMENT SUMMARY
- g). COMMENT INFORMATION

USAGE: *ILLUMFR(ARG1)%
OR
*C3000(ARG1)%

ARGUMENTS: ARG1 = COMPLETE ROUND ILLUMINATING LOT NUMBER

EXAMPLE: *ILLUMFR(LON-040-015) %
LISTS ACCEPTANCE TEST SUMMARY AND DATA CARD INFORMATION FOR 10544 ILLUMINATING LOT LON-040-015.

SAMPLE OUTPUT:

ILMFR - 1

ACCEPTANCE TEST SUMMARY
09/18/75

LOT NUMBER	CALIBER	TYPE	M NUMBER	QUANTITY	MFG-FACTORY	INITIAL DISP
** LCM-U40-015	105 MM	ILLUM	M314A3	6000	LOUISIANA	ACCEPTED

TEST DATE* 01/30/1975

TYPE TEST* FIRST TEST

FIRING RECORD NUMBER* 75-191

ITEM NOMENCLATURE* CARTRIDGE, 105MM, ILLUM M314A3

CAUSE OF REJECTION* NONE

RELATED FIRING RECORD* NONE

CORRECTIONS* NONE

TEST NAME* ACCEPTANCE

TEST PHASE* FACT AMP

REF VS TEST* TEST

DATE FIRED* 01/30/1975

APPROX TIME FIRED* 925

AZIMUTH* 1-52

FIRING POSITION* H-13

PROP CHG* 7 INCH

TEST REMARKS* 2 HAD NO ILLUM.

EFFECT ILLUM K* 32

EFFECT ILLUM MAXIMUM* 81.0

EFFECT ILLUM MINIMUM* 55.0

FUZE TIME N* 34

FUZE TIME MEAN* 26.00

FUZE TIME STD* .00

FUZE TIME MAXIMUM* 28.00

FUZE TIME MINIMUM* 28.00

DEFLEC N* 34

DEFLEC MAXIMUM* 15

DEFLEC MINIMUM* 0

TEST NAME* ACCEPTANCE

TEST PHASE* SAFETY

REF VS TEST* TEST

DATE FIRED* 01/30/1975

APPROX TIME FIRED* 1046

AZIMUTH* 1-52

FIRING POSITION* H-13

PROP CHG* EXCESS

TEST REMARKS* NONE

DEFLEC N* 3

DEFLEC MAXIMUM* 35

55

DEFLEC MINIMUM* 35

09718775

LOT NUMBER

LOW-040-025

PHASE	ROUND NUMBER	SAMPLE NUMBER	EFFECT ILLUM	BURST PI	HORIZ RANGE	RUZE TIME	CHUTE DELAY	VEL	DEFLEC	DESCENT RATE	PRES	REMARK
FACT AMB	1747	1	65.0			28.00			15		HGB	
	1748	2	65.0			28.00			15			
	1749	3	65.0			28.00			15			
	1750	4	75.0			28.00			15			
	1751	5	60.0			28.00			15		100	
	1752	6	75.0			28.00			15			
	1753	7	65.0			28.00			15			
	1754	8	75.0			28.00			15		100	
	1755	9	65.0			28.00			15			
	1756	10	60.0			28.00			0			
	1757	11	64.0			28.00			0			
	1758	12	66.0			28.00			0			
	1759	13	72.0			28.00			0			
	1760	14	65.0			28.00			0			
5	1761	15	70.0			28.00			0			
	1762	16	70.0			28.00			0			
	1763	17				28.00			0			
	1764	18	74.0			28.00			0			
	1765	19	66.0			28.00			0			
	1766	20	81.0			28.00			0			
	1767	21	71.0			28.00			0			
	1768	22	73.0			28.00			0			
	1769	23	75.0			28.00			0			
	1770	24	65.0			28.00			0			
	1771	25	73.0			28.00			0			
	1772	26	70.0			28.00			0			
	1773	27	68.0			28.00			0			
	1774	28	77.0			28.00			0			
	1775	29	61.0			28.00			0			
	1776	30				28.00			0			
	1777	31	70.0			28.00			0			
	1778	32	55.0			28.00			0			
	1779	33	77.0			28.00			0			
	1780	34	77.0			28.00			0			
SAFETY	1781	35							35		383	
	1782	36							35		393	
	1783	37							35		389	

SAMPLE OUTPUT:

ELLUMFR - 3

DATA CARD SUMMARY
09/18/75

LOT NUMBER	COMPONENT NAME	COMPONENT LOT	COMPONENT QUANTITY	COMPONENT DATE MANU
**				
LOW-040-015				

SUPPORT EQUIPMENT SUMMARY
09/18/75

LOT NUMBER	EQUIP NAME	EQUIP MODEL	EQUIP LOT
**			
LOW-040-015	HCW, 105MM	M2A2	18915
	TUBE, 105MM	M2A2	67375
	CARTRIDGE	M2A2	8567
	RECOIL	M2A5	2370

THIS IS ARTIL

STRING: HEPHEATFR

NUMBER: 3010

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: BATCH ONLY

PURPOSE: TO PROVIDE ACCEPTANCE TEST SUMMARY AND DATA
CARD INFORMATION FOR ONE USER SELECTED HEP,
HEAT, APDS OR TP LOT NUMBER. THE FOLLOWING
DATA ARE LISTED.

- a). GENERAL LOT INFORMATION
- b). TEST IDENTIFICATION DATA
- c). TEST SUMMARY DATA
- d). ROUND BY ROUND DATA
- e). DATA CARD SUMMARY
- f). SUPPORT EQUIPMENT SUMMARY
- g). COMMENT INFORMATION

USAGE: *HEPHEATFR(ARG1) %
OR
*C3010(ARG1) %

ARGUMENTS: ARG1 = COMPLETE ROUND HEP, HEAT, APDS OR TP
LOT NUMBER

STRING: ASUM

NUMBER: 4086

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: BATCH

PURPOSE: To provide a summary data list for a group of lots qualified by a legal "where" clause. Data provided for each lot in the group includes lot number, date, disposition, malfunction, velocity, pressure and range data by phase.

USAGE: *ASUM(ARG1)% OR *C4086(ARG1)%

ARGUMENTS: ARG1 = A legal where clause to qualify a group of lots

EXAMPLE: *ASUM(C4 EQ M374A2 AND MEAN VELOCITY GT 850)%

STRING: BSUM

NUMBER: 4087

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: BATCH

PURPOSE: To provide a summary data list for all lots containing a specific M-number. Data returned includes lot number, date, disposition, malfunction, velocity, pressure and range data by phase ordered by lots.

USAGE: *BSUM(ARG1)% OR *C4087(ARG1)%

ARGUMENTS: ARG1 = The M-Number of interest

EXAMPL: *BSUM(M374A2)%

STRING

CSUM

NUMBER:

4088

DATA BASE:

ARTIL

SUGGESTED OPERATING MODE:

INTERACTIVE

PURPOSE:

To provide a summary data list for all lots of a particular caliber and type for a specific time period. Data provided includes lot number, date, disposition, malfunction, pressure, velocity and range data by phase.

USAGE:

*CSUM(ARG1,ARG2,ARG3,ARG4);
OR
*C4088(ARG1,ARG2,ARG3,ARG4);

ARGUMENTS:

ARG1 = CALIBER (105 MM or 4.2 INCH)
ARG2 = TYPE (HE, WP, ILLUM, HEP)
ARG3 = INITIAL SEARCH DATE MM/DD/YY
ARG4 = FINAL SEARCH DATE MM/DD/YY

EXAMPLE:

*CSUM(81MM,HE,01/01/74,01/31/74);
LISTS SPECIFIED DATA FOR ALL 81MM HE
ROUNDS FOR JANUARY 1974.

SAMPLE OUTPUT:

CSUM

ACCEPTANCE TEST SUMMARY

09/18/75

LOTNUMBER	TEST DATE	STATUS	PHASE	FAILRECTIONS
**				
AGY-500-009	01/15/1974		R-A 0 INCR	
LS-067-100	01/04/1974	ACCEPTED	R-A 1 INCR	1 RD FAJCR-NLLL-
			R-A 9 INCR	NONE
LS-067-109	01/10/1974	ACCEPTED	R-A 1 INCR	NONE
			R-A 9 INCR	3 RD FAJCR-NLLL-
LS-067-110	01/10/1974	ACCEPTED	R-A 1 INCR	NONE
			R-A 9 INCR	NONE
LS-067-111	01/24/1974	ACCEPTED	R-A 1 INCR	NONE
			R-A 9 INCR	1 FISFIRE -NLLL-
LS-067-112	01/31/1974	ACCEPTED	R-A 1 INCR	NONE
			R-A 9 INCR	NONE
MA-007-0280	01/22/1974		R-A 0 INCR	
			VEL+70	
			RANGE-ACC	
MA-136-096	01/04/1974	ACCEPTED	R-A 1 INCR	NONE
			R-A 9 INCR	1 RD FAJCR-NLLL-
MA-136-095	01/22/1974	ACCEPTED	R-A 1 INCR	NONE
			R-A 9 INCR	NONE
MA-136-100	01/31/1974	ACCEPTED	R-A 9 INCR	NONE
			R-A 1 INCR	NONE

MEAN VEL	S.D. VEL	MEAN PRESS	MAX PRESS	MEAN RANGE	S.D. RANGE
347.00	2.20			1025	13.4
872.00	2.00	75	81	4613	39.7
347.00	1.60			1034	11.7
873.00	2.70	80	82	4746	29.3
350.00	2.30			1040	12.8
873.00	1.80	79	82	4695	40.4
345.00	1.80			980	8.4
865.00	2.70	75	77	4279	37.1
348.00	1.60			1026	8.2
866.00	2.50	77	79	4324	37.9
347.00	2.20			1023	12.9
868.00	1.80	80	82	4568	41.7
352.00	2.30			1035	13.7
862.00	3.10	77	78	4485	33.3
865.00	2.50	77	79	4298	30.5
349.00	1.80			1023	10.5

STRING: CROSS

NUMBER: 4090

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: INTERACTIVE

PURPOSE: To obtain a listing of ballistic test results for a complete round lot and the fuze and propellant lots associated with it. The listing is on a local file named CROSS. This string is normally used immediately preceeding C4091*ACROSS. CROSS must be batched to a line printer. (BATCH,CROSS,PRINT,AM,AXXX).

USAGE: *CROSS(ARG1)% OR *C4090(ARG1)%

ARGUMENTS: ARG1 = Complete round lot number

EXAMPLE: *CROSS(MA-136-073)%

STRING: ACROSS

NUMBER: 4091

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: INTERACTIVE

PURPOSE: To obtain a listing of ballistic test results for a complete round lot and the fuze and propellant lots associated with it. This string is normally used after string C4090*CROSS which will display the propellant and fuze lot numbers on the TTY. Data is listed on a local file named CROS. CROS must be batched to a line printer.

USAGE: *ACROSS(ARG1,ARG2)% OR *C4091(ARG1,ARG2)%
EXIT%
BATCH,CROS,PRINT,HERE,BM.

ARGUMENTS: ARG1 = Propellant lot number
ARG2 = Fuze lot number

EXAMPLE: *ACROSS(CIL-68518,4A-071-028)%

STRING: TALLY

NUMBER: 4030

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: BATCH OR INTERACTIVE

PURPOSE: TO TALLY FREQUENCY OF OCCURRENCE IN DATA
BASE OF EACH CALIBER, TYPE AND H NUMBER.

USAGE: *TALLY*%

OR

C4030%

SAMPLE OUTPUT:

TALLY

ELEMENT- CALLER

FREQUENCY VALUE

1 HELP
730 105 MF
47 106 MF
17 152 MF
414 40 MF
54 4.2 IN
44 07 MF
545 60 MF
468 61 MF
1 90 MF

10 UNIQUE VALUES

2321 OCCURRENCES

ELEMENT- TYPE

FREQUENCY VALUE

39 AFDS-I
14 APERS
1 AP-I
2 BLANK
184 HE
13 HE w/FMS51
69 HEAT
23 HEAT-FS
136 HELP /MS50
24 HEF
66 HEF-T
572 ILLUP
9 MOHI
8 SMK KP
198 SMOKE
2 TP
13 TPDS-I
66 TP-I
122 WS

19 UNIQUE VALUES

2281 OCCURRENCES

ELEMENT- NUMBER

FREQUENCY VALUE

219 F1
11 F1F00
19 F242
171 F301A3
31 F302A1
7 F306A1
37 F307A1
143 F314A3
1 F316
1 F329A1
33 F335A2
23 F344A1
24 F346A1
207 F374A2
80 F375A2
61 F363
39 F392A2
16 F393A2
2 F395
73 F406
22 F407A1
17 F411A3
6 F43A1
136 F433
39 F456A1
286 F49A4
65 F490
10 F454
122 F563A1
95 F60A2
4 F67
10 F724A1
13 F724E1
230 F83A3
4 XMS4E

35 UNIQUE VALUES

2339 OCCURRENCES

STRING: TYPESUM

NUMBER: 4050

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: BATCH

PURPOSE: TO LIST CALIBER, TYPE, LOT NUMBER, M NUMBER, TEST DATE AND FINAL DISPOSITION FOR ALL LOTS OF GIVEN TYPE. DATA ARE SORTED BY CALIBER, TYPE AND LOT NUMBER.

USAGE: *TYPESUM(ARG1) %

OR

*C4050(ARG1)%

ARGUMENTS: ARG1 = ITEM TYPE

EXAMPLE: *TYPESUM(III) %

ARGUMENT SUMMARY: ARG1 - IIE
ILLUM
SMOKE

STRING: CALSUM

NUMBER: 4051

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: BATCH

PURPOSE: TO LIST CALIBER, TYPE, LOT NUMBER, N NUMBER,
TEST DATE, AND FINAL DISPOSITION FOR ALL LOTS
OF GIVEN CALIBER. DATA ARE SORTED BY TYPE
AND LOT NUMBER.

USAGE: *CALSUM(ARG1) %

OR

*C4051(ARG1) %

ARGUMENTS: ARG1 = CALIBER

EXAMPLE: *CALSUM(105MM) %

ARGUMENT SUMMARY: ARG1 = 4.2 IN
60 MM
81 MM
105 MM
etc.

STRING: CALTYPE

NUMBER: 4052

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: BATCH

PURPOSE: TO LIST CALIBER, TYPE, LOT NUMBER, M NUMBER,
TEST DATE, AND FINAL DISPOSITION FOR ALL
LOTS OF GIVEN CALIBER AND TYPE. DATA ARE
SORTED BY CALIBER, TYPE AND LOT NUMBER.

USAGE: *CALTYPE(ARG1,ARG2) %

OR

*C4052(ARG1,ARG2) %

ARGUMENTS: ARG1 = CALIBER
ARG2 = ITEM TYPE

EXAMPLE: *CALTYPE(105MM,IE) %

ARGUMENT SUMMARY: ARG1 = 4.2 IN
60 IN
81 IN
105 IN

ARG2 = IE
SMOKE
ILLUM

STRING: DATACARD

NUMBER: 4060

DATA BASE: ARTIL

SUGGESTED OPERATING MODL: BATCH

PURPOSE: TO LIST CALIBER, TYPE, LOT NUMBER, M NUMBER,
TEST DATE AND FINAL DISPOSITION FOR ALL LOTS
HAVING DATA CARD INFORMATION. DATA ARE SORTED
BY CALIBER, TYPE AND LOT NUMBER.

USACL: *DATA CARD*
OR
C4060

STRING: NODATACARD

NUMBER: 4061

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: BATCH

PURPOSE: TO LIST CALIBER, TYPE, LOT NUMBER, M NUMBER,
TEST DATE AND FINAL DISPOSITION FOR ALL LOTS
MISSING DATA CARD INFORMATION. DATA ARE
SORTED BY CALIBER, TYPE AND LOT NUMBER.

USAGE: *NO DATACARD*%

OR

C4061%

STRING: DISPOSITION

NUMBER: 4070

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: BATCH

PURPOSE: TO PROVIDE SUMMARY LISTING OF CALIBER, TYPE,
LOT NUMBER, M NUMBER, TEST DATE AND FINAL
DISPOSITION OF ALL LOTS WITH GIVEN FINAL
DISPOSITION. DATA ARE SORTED BY CALIBER,
TYPE AND LOT NUMBER.

USAGE: *DISPOSITION(ARG1) %

OR

*C4070(ARG1) %

ARGUMENTS: ARG1 - LOT DISPOSITION

EXAMPLE: *DISPOSITION(REJECTED) %

ARGUMENT SUMMARY: ARG1 = ACCEPTED
REJECTED
PENDING

STRING: DATESUM

NUMBER: 4080

DATA BASE: ARTIL

SUGGESTED OPERATING MODE: BATCH

PURPOSE: TO LIST CALIBER, TYPE, LOT NUMBER, N NUMBER,
TEST DATE, AND FINAL DISPOSITION FOR ALL LOTS
BETWEEN TWO TEST DATES. DATA ARE SORTED BY
TEST DATE, CALIBER, TYPE AND LOT NUMBER.

USAGE: *DATESUM(ARG1,ARG2)%

OR

*C4080(ARG1,ARG2)%

ARGUMENTS: ARG1 = START TEST DATE MM/DD/YY
ARG2 = END TEST DATE MM/DD/YY

EXAMPLE: *DATESUM(03/01/74, 03/31/74)%
ALL DATA FOR MARCH 1974 SUMMARIZED

DATA BASE COMP

STRING: SUMMARY

NUMBER: 4000

DATA BASE: COMP

SUGGESTED OPERATING MODE: BATCH

PURPOSE: TO LIST TYPE, LOT NUMBER, M NUMBER, TEST
DATE, AND FINAL DISPOSITION FOR ALL LOTS.
DATA ASSORTED BY TYPE, LOT NUMBER AND M
NUMBER.

USAGE: *SUMMARY*§

OR

C4000§

STRING: PROP

NUMBER: 4040

DATA BASE: COMP

SUGGESTED OPERATING MODE: BATCH ONLY

PURPOSE: TO PROVIDE ACCEPTANCE, TEST SUMMARY, AND PROPELLANT DESCRIPTION SHEET DATA FOR USER SELECTED PROPELLANT LOT NUMBER. THE FOLLOWING DATA ARE LISTED.

- a). GENERAL LOT INFORMATION
- b). MEASURED CHARACTERISTICS
- c). RECOMMENDED CHARGE DATA
- d). DIMENSION DATA
- e). SUPPORT EQUIPMENT SUMMARY

USAGE: *PROP(ARG1) %
OR
*C4040(ARG1) %

ARGUMENTS: ARG1 = PROPELLANT LOT NUMBER

EXAMPLE: *PROP(CIL-69090) %

LISTS ACCEPTANCE TEST SUMMARY AND PROPELLANT DESCRIPTION FOR PROPELLANT LOT CIL-69090.

STRING: FUZE

NUMBER: 4060

DATA BASE: COMP

SUGGESTED OPERATING MODE: BATCH ONLY

PURPOSE: TO PROVIDE ACCEPTANCE TEST SUMMARY, DATA CARD SUMMARY AND COMPONENT FAILURE SUMMARY FOR ONE USER SELECTED FUZE LOT NUMBER. THE FOLLOWING DATA ARE LISTED:

- a). GENERAL LOT INFORMATION
- b). TEST IDENTIFICATION DATA
- c). TEST MEASUREMENT SUMMARY
- d). FUZE DATA CARD SUMMARY
- e). FUZE COMPONENT FAILURE SUMMARY
- f). COMMENT INFORMATION

USAGE: *FUZE(ARG1)%
OR
*C4060(ARG1)%

ARGUMENTS: ARG1 = FUZE LOT NUMBER

EXAMPLE: *FUZE(MA-071-015)%

LISTS ACCEPTANCE TEST SUMMARY DATA CARD SUMMARY AND COMPONENT FAILURE SUMMARY FOR MS24A6 FUZE LOT NO-071-015.

STRING: IGNICART

NUMBER: 4070

DATA BASE: COMP

SUGGESTED OPERATING MODE: BATCH ONLY

PURPOSE: TO PROVIDE ACCEPTANCE TEST SUMMARY FOR ONE
IGNITION CARTRIDGE LOT NUMBER. THE FOLLOWING
DATA ARE LISTED:

- a). GENERAL LOT INFORMATION
- b). TEST IDENTIFICATION AND MEASUREMENT
SUMMARY
- c). COMMENT INFORMATION

USAGE: *IGNICART(ARG1) %
OR
*C4070(ARG1) %

ARGUMENTS: ARG1 - IGNITION CARTRIDGE LOT NUMBER

EXAMPLE: *IGNICART(SGK-033-052) %

LISTS ACCEPTANCE TEST SUMMARY FOR #1285
IGNITION CARTRIDGE LOT SGK-033-053.

STRING: TALLY

NUMBER: 4030

DATA BASE: COMP

SUGGESTED OPERATING MODE: BATCH OR INTERACTIVE

PURPOSE: TO TALLY FREQUENCY OF OCCURRENCE IN DATA
BASE OF EACH CALIBER, TYPE AND MI NUMBER.

USAGE: *TALLY*

OR

C4030

STRING:	TYPESUM
NUMBER:	4050
DATA BASE:	COMP
SUGGESTED OPERATING MODE:	BATCH
PURPOSE:	TO LIST TYPE, LOT NUMBER, M NUMBER, TEST DATE AND FINAL DISPOSITION FOR ALL LOTS OF SPECIFIED TYPE. DATA IS SORTED BY LOT NUMBER AND M NUMBER.
USAGE:	*TYPESUM(ARG1) % OR *C4050(ARG1)%
ARGUMENTS:	ARG1 = ITEM TYPE
EXAMPLE:	*TYPESUM(FUZE)%
ARGUMENT SUMMARY:	ARG1 = FUZE HEAD ASHBY IGN CART PROPELLANT

DATA BASE LAW

DATA BASE TWO75

DATA BASE WEAPON

STRING:

SUMMARY

NUMBER:

4000

DATA BASE:

WEAPON

SUGGESTED OPERATING MODE:

BATCH

PURPOSE:

TO LIST CALIBER, MODEL NUMBER, TUBE NUMBER,
GUN NUMBER AND ROUNDS FIRED FOR ALL TUBE
AND GUN NUMBERS. DATA ARE SORTED BY CALIBER,
MODEL NUMBER, TUBE NUMBER, GUN NUMBER AND
ROUNDS FIRED.

USAGE:

~~SUMMARY~~

OR

~~C4000~~

STRING: RIFLED

NUMBER: 4010

DATA BASE: WEAPON

SUGGESTED OPERATING MODE: BATCH ONLY

PURPOSE: TO LIST STARGAGE INSPECTION DATA FOR RIFLED
WEAPONS WITH USER SELECTED TUBE NUMBER AND
GUN NUMBER. THE FOLLOWING INFORMATION IS
LISTED:

- a). GENERAL GUN/TUBE INFORMATION
- b). TUBE MEASUREMENT DATA
- c). PULLOVER MEASUREMENT DATA
- d). CLAMBER MEASUREMENT DATA

USAGE: *RIFLED(ARG1,ARG2)%
OR
*C4010(ARG1,ARG2)%

ARGUMENTS: ARG1 = TUBE NUMBER
ARG2 = GUN NUMBER

EXAMPLE: *RIFLED(5620,2100)%

LISTS RIFLED WEAPON DATA FOR TUBE 5620,
GUN 2100

STRING: SM.OTH

NUMBER: 4320

DATA BASE: WEAPON

SUGGESTED OPERATING MODE: BATCH ONLY

PURPOSE: TO LIST STARGAGE INSPECTION DATA FOR SMOOTH
BORE WEAPONS WITH USER SELECTED TUBE NUMBER
AND GUN NUMBER. THE FOLLOWING INFORMATION
IS LISTED:

- a). GENERAL GUN/TUBE INFORMATION
- b). SMOOTH BORE MUZZLE DATA

USAGE: *SMOOTH(ARG1,ARG2)%
OR
*C4020(ARG1,ARG2)%

ARGUMENTS: ARG1 = TUBE NUMBER
ARG2 = GUN NUMBER

EXAMPLE: *SMOOTH(5116,1124)%
LISTS SMOOTH BORE DATA FOR TUBE 5116,
GUN 1124

DATA BASE METEO

STRING: SUMMARY

NUMBER: 4000

DATA BASE: METEO

SUGGESTED OPERATING MODE: BATCH ONLY

PURPOSE: TO LIST DATE, PROVING GROUND, RELATED FIRING RECORD, TIME, WIND DIRECTION, MINIMUM WIND VELOCITY, MAXIMUM WIND VELOCITY, BAROMETRIC PRESSURE, TEMPERATURE, AIR DENSITY, PRECIPITATION AND CEILING FOR USER SELECTED DAYS AND PROVING GROUND. DATA ARE SORTED BY DATE, PROVING GROUND, AND TIME.

USAGE: *SUMMARY(ARG1,ARG2,ARG3)%
OR
*C4000(ARG1,ARG2,ARG3)%

ARGUMENTS: ARG1 = START DATE MM/DD/YY
ARG2 = END DATE MM/DD/YY
ARG3 = PROVING GROUND

EXAMPLE: *SUMMARY(01/01/75,01/31/75,JEFFERSON)%

LIST METEOROLOGICAL INFORMATION FOR 1 JANUARY
1975 TO 31 JANUARY 1975 AT JEFFERSON PROVING
GROUND.

DATA BASE CHECK

STRING: SUMMARY

NUMBER: 4000

DATA BASE: CHECK

SUGGESTED OPERATING MODE: BATCH

PURPOSE: TO PROVIDE SUMMARY LISTING OF CHECK DATA BASE INFORMATION. DATA PRINTED INCLUDES FOR

- 1). NUMERIC VARIABLES WITH MAX/MIN BOUNDS
 - a). DATA BASE NAME
 - b). COMPONENT NUMBER
 - c). ELEMENT NAME
 - d). SCHEMA NUMBER
 - e). WORD BOUNDARY WITHIN SCHEMA
 - f). MINIMUM PERMISSIBLE VALUE
 - g). MAXIMUM PERMISSIBLE VALUE
 - 2). ALPHANUMERIC VARIABLES WITH EXACT COMPARE VALUES
 - a). DATA BASE NAME
 - b). COMPONENT NUMBER
 - c). ELEMENT NAME
 - d). SCHEMA NUMBER
 - e). WORD BOUNDARY
 - f). PERMISSIBLE EXACT COMPARE VALUES
 - 3). NUMERIC/ALPHANUMERIC VARIABLES NOT CHECKED
 - a). DATA BASE NAME
 - b). COMPONENT NUMBER
 - c). ELEMENT NAME
 - d). SCHEMA NUMBER
 - e). WORD BOUNDARY WITHIN SCHEMA
- DATA ARE SORTED BY DATA BASE NAME, SCHEMA NUMBER AND WORD BOUNDARY.

USAGE: *SUMMARY*
OR
C4000

STRING: NUMERIC

NUMBER: 4001

DATA BASE: CHECK

SUGGESTED OPERATING MODE: BATCH

PURPOSE: TO PROVIDE SUMMARY LISTING OF NUMERIC VARIABLES
SUBJECTED TO MAX/MIN LIMIT CHECKS. THE
FOLLOWING INFORMATION IS LISTED.

- a). DATA BASE NAME
- b). COMPONENT NUMBER
- c). ELEMENT NAME
- d). SCHEMA NUMBER
- e). WORD BOUNDARY WITHIN SCHEMA
- f). MINIMUM PERMISSIBLE VALUE
- g). MAXIMUM PERMISSIBLE VALUE

DATA ARE SORTED BY DATA BASE NAME, SCHEMA
AND WORD BOUNDARY.

USAGE: *NUMERIC* %

OR

C4001 %

STRING: ALPHA

NUMBER: 4002

DATA BASE: CHECK

SUGGESTED OPERATING MODE: BATCH

PURPOSE: TO PROVIDE SUMMARY LISTING OF ALPHANUMERIC
VARIABLES SUBJECTED TO EXACT COMPARE CHECKS.
THE FOLLOWING INFORMATION IS LISTED.

- a). DATA BASE NAME
- b). COMPONENT NUMBER
- c). ELEMENT NAME
- d). SCHEMA NUMBER
- e). WORD BOUNDARY WITHIN SCHEMA
- f). PERMISSIBLE EXACT COMPARE VALUES

DATA ARE SORTED BY DATA BASE NAME, SCHEMA
NUMBER AND WORD BOUNDARY.

USAGE: *ALPHA*

OR

C4002

STRING: NOLIMITS

NUMBER: 4003

DATA BASE: CHECK

SUGGESTED OPERATING MODE: BATCH

PURPOSE: TO PROVIDE SUMMARY LISTING OF CHECK DATA
BASE NUMERIC AND ALPHANUMERIC VARIABLES NOT
SUBJECT TO LIMIT OR EXACT COMPARE CHECKS. THE
FOLLOWING INFORMATION IS LISTED.

- a). DATA BASE NAME
- b). COMPONENT NUMBER
- c). ELEMENT NAME
- d). SCHEMA NUMBER
- e). WORD BOUNDARY WITHIN SCHEMA

DATA ARE SORTED BY DATA BASE NAME, SCHEMA
NUMBER AND WORD BOUNDARY.

USAGE: *NOLIMITS* %

OR

C4003 %

APPENDIX B

<u>Routine Number</u>	<u>Routine Name</u>	<u>Page Number</u>
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ROUTINE NO.: 0

ROUTINE NAME: COMMENT

PURPOSE: To provide capability of user inserted comments in
ARIES input stream.

USAGE: Δ\$ COMMENT < User TEXT > S

OR

C < User Text >

↑
Col. 1

ROUTINE NO.: 1

ROUTINE NAME: OUTPUT

PURPOSE: To provide capability of user modification of ARIES IO and program termination procedures.

USAGE: Δ \$OUTPUT < PARAMETERS > \$

PARAMETERS:

LIST	<u>DATA</u> <u>FILE</u> <u>LIST</u> <u>Indicator</u>
= 0	(Default) Do not provide list of input files
= 1	provide list of user data files (Data in first 10 files listed)

ROUTINE NO.: 2

ROUTINE NAME: BASIC

PURPOSE: To compute basic statistical parameters for user selected input data. Statistical output includes:

Number of Observations
Mean Values
Standard Deviations
Variance Covariance Matrix
Correlation Matrix

Using option "IOVER" the user may optionally request the following additional tests to be performed on each input data file.

1. GHSQ Goodness of Fit for Normal Distribution
2. 1-Way Analysis of Variance (GE 2 input groups)
3. Pooled Mean and Variance Estimate (GE 2 input groups)
4. T-test for difference in means (2 input groups)
5. F-test for difference in Variance (2 input groups)
6. Bartlett's test for homogeneity of Variance (GE 2 input groups).

USAGE: Δ \$ BASIC < PARAMETERS > \$

PARAMETERS:

LIST Data File List Indicator

- = 0 (Default)
Do not provide list of data files
- = 1 Provide list of user data files (active)

II Data File Inclusion Indicator

- = 0 (Default)
First input file undefined
- = k File number k contains data for first variable in analysis

I2 Additional Data File Inclusion Indicators
 I3 = 0 (Default)
 I4 2nd to 10th analysis variables undefined
 I5 = k File number k contains data for 2nd to 10th
 I6 variables in analysis
 I7
 I8
 I9
 I10

IOVER Failsafe Indicator
 IOVER = 0 Do not perform data check
 IOVER = 1 F-test (No override) 2 input groups
 IOVER = 2 Bartlett's Test (No override) 2 or more input groups
 IOVER = 3 T-test (No override) 2 input groups
 IOVER = 4 Pooled mean and variance (No override 2 or more input
 groups
 IOVER = 5 1-way ANOVA (No override) 2 or more input groups

To override failsafe checks add 10 to IOVER, e.g. IOVER=11 performs F-test with override

If override not indicated, program does not output user requested test results if following assumptions are not met:

<u>Test</u>	<u>Assumption</u>
F	Each sample comes from <u>normally</u> distributed population. Test each sample for normality at $\alpha = 0.95$ using CHISQ goodness of fit test.
Bartlett	Same as above
t-test	Same as above
Sp ²	The sample variances must be homogeneous. Use Bartlett's test to decide significance at $\alpha = 0.95$.
ANOVA 1-Way	Same as Sp ² .

Computational Procedure

Let X_i = vector of observations for i^{th} sample
 N = number of samples

then:

The maximum likelihood of the centroid or mean value is an unbiased estimator and is given by the column vector m -

$$m = \frac{1}{N} \sum_{i=1}^N X_i$$

The maximum likelihood estimator D of the dispersion or variance covariance matrix is

$$D = \frac{1}{N} \sum_{i=1}^N (X_i - m)(X_i - m)'$$

or computationally

$$D = \frac{1}{N} \left[\sum_{i=1}^N X_i X_i' \right] - m m'$$

The standard deviations are obtained by taking the square root of the diagonal elements of D .

The elements of the maximum likelihood estimator of the correlation matrix R are computable from the variance covariance matrix D as

$$r_{jk} = \frac{d_{j k}}{\sqrt{d_{j j} d_{k k}}}$$

ROUTINE NO.: 3

ROUTINE NAME: MREG

PURPOSE: To perform a multiple regression analysis on one dependent variable and from one to five independent variables.

USAGE: Δ \$ MREG < PARAMETERS > \$

PARAMETERS:

MREG parameters are same as those used for SREG except:

FLCV has no function in MREG

Computational Procedure

Consider the 2 variable regression model

$$Y = B_0 + B_1 Z_1 + B_2 Z_2 + E$$

where B_0 , B_1 , and B_2 are referred to as the raw regression weights and Z_1 , and Z_2 are the unscaled input data.

Let S be the sum of squares and cross product matrix computed as follows

$$S = \begin{bmatrix} S_{11} & S_{12} \\ S_{21} & S_{22} \end{bmatrix}$$

$$S_{j\ell} = \sum_{i=1}^N (Z_{ji} - \bar{Z}_j)(Z_{\ell i} - \bar{Z}_\ell) \quad j, \ell = 1, 2$$

The data can be transformed as follows

$$X_{ji} = \frac{(Z_{ji} - \bar{Z}_j)}{S_{jj}^{1/2}} \quad y_i = \frac{(Y_i - \bar{Y})}{S_{yy}^{1/2}}$$

where

$$S_{yy} = \sum_{i=1}^N (Y_i - \bar{Y})^2$$

The regression equation then becomes

$$y = \alpha_1 X_1 + \alpha_2 X_2 + E$$

where

$$\alpha_i = B_i \left(\frac{S_{ii}}{S_{yy}} \right)^{1/2}$$

The correlation matrix of the Z 's is

$$r_{12} = \frac{S_{12}}{(S_{11} S_{22})^{1/2}} = r_{21}$$

The correlation between Z_1 and Y is written

$$r_{jy} = \frac{S_{jy}}{(S_{jj} S_{yy})^{1/2}}$$

where

$$S_{jy} = \sum_{i=1}^N (Z_{ji} - \bar{Z}_j)(Y_i - \bar{Y})$$

letting a_1, a_2 be the least squares estimates of α_1, α_2 the normal equations for the regression become

$$\begin{bmatrix} 1 & r_{12} \\ r_{21} & 1 \end{bmatrix} \begin{bmatrix} a_1 \\ a_2 \end{bmatrix} = \begin{bmatrix} r_{1y} \\ r_{2y} \end{bmatrix}$$

therefore

$$a_1 = \frac{(r_{1y} - r_{12} r_{2y})}{D}$$

$$a_2 = \frac{(r_{2y} - r_{12} r_{1y})}{D}$$

where $D = (1 - r_{12}^2)$ = the determinant of the correlation matrix.

The raw regression weights B_0, B_1, B_2 can be estimated as follows

$$B_1 = a_1 \left(\frac{S_{yy}}{S_{11}} \right)^{1/2}$$

$$B_2 = a_2 \left(\frac{S_{yy}}{S_{22}} \right)^{1/2}$$

$$B_0 = \bar{Y} - B_1 \bar{Z}_1 - B_2 \bar{Z}_2$$

CautionIn computing the values of a_1 and a_2 above one must divide by $D = 1 - r_{12}^2$, the determinant of the correlation matrix. As a result when r_{12}^2 approaches 1, D is nearly zero (collinearity) and the solution to a_1 and a_2 becomes indeterminate. In the above situation, the two variables represent in fact the only 1 independent equation.

ROUTINE NO.: 4

ROUTINE NAME: SREG

PURPOSE: To perform a stepwise regression analysis on one dependent variable and from one to five independent variables.

USAGE: A\$ SREG < PARAMETERS > \$

PARAMETERS:

LIST Data File List Indicator

- = 0 (Default)
Do not provide list of input files used in regression
- = 1 Provide list of input files used in regression

INDEP DEPENDENT Variable Indicator

- = 0 (Default)
Dependent Variable undefined
- = k File number k contains dependent variable

IND1 Independent Variable Indicator

- = 0 (Default)
1st Independent Variable undefined
- = k File number k contains 1st independent variable

IND2 Additional Independent Variable Indicator

- IND3 = 0 (Default)
2nd - 5th Independent variables undefined
- IND4 = k File number k contains 2nd - 5th Independent variables
- IND5

FLDV Tolerance Level

- = .00001 (Default)
- = x Tolerance level is x

IRES Residual Print Indicator

- = 0 (Default)
Do not print residuals
- = 1 Print residuals

IPLT Regression Data Plot Indicator

= 0 (Default) Do not plot independent variables versus dependent variable

= 1 Plot Data

ITRAN1 IND1 Transgeneration Code

= 0 (Default) Do not transgenerate file IND1

= k Transgenerate file IND1 using transgeneration k and transgeneration constant RTRAN1. (See computations procedures below).

RTRAN1 IND1 Transgeneration Constant

= 0 (Default) Transgeneration constant = 0.

= X Transgeneration constant for file IND1 = X. (See restrictions in computational procedures below).

Transgeneration Codes for

ITRAN2 IND2
ITRAN3 IND3
ITRAN4 IND4
ITRAN5 IND5

Transgeneration Constants for

RTRAN2 IND2
RTRAN3 IND3
RTRAN4 IND4
RTRAN5 IND5

COMPUTATIONAL PROCEDURE:

Definition of Transgeneration Codes:

Let:

C = RTRAN
X = Variable before transgeneration

<u>ITRAN</u>	<u>Transgeneration</u>	<u>Restrictions</u>
1	$x \rightarrow \sqrt{x}$	$x \geq 0.$
2	$x \rightarrow \log_{10}(x)$	$x > 0.$
3	$x \rightarrow \log_e(x)$	$x > 0.$
4	$x \rightarrow e^x$	---
5	$x \rightarrow 1/x$	$x \neq 0.$
6	$x \rightarrow x + c$	---
7	$x \rightarrow cx$	---
8	$x \rightarrow x^c$	$x \geq 0.$
9	$x \rightarrow \sin(x)$	---
10	$x \rightarrow \cos(x)$	---
11	$x \rightarrow c^x$	$c > 0.$
12	If $x \geq c$ $x \rightarrow 1$ o.w. $x \rightarrow 0$	---

Computational Procedure

Stepwise regression can be used in data analysis to obtain the best fit in a least squares sense of a set of observations of independent and dependent variables by an equation of the form:

$$Y = b_0 + b_1 X_1 + b_2 X_2 + \dots + b_N X_N$$

where Y is the dependent variable;
 $X_1, X_2, \dots, X_N$ are the independent variables;
 $b_0, b_1, \dots, b_N$ are the coefficients to be determined

In the stepwise procedure outlined below, several intermediate regression equations are formulated by adding one variable at a time to the regression.

The variable added is that one which makes the greatest improvement in "goodness of fit." The coefficients represent the best values when the equation is fitted by the specific variables included in the equation.

An important property of the stepwise procedure is based on the facts that (a) a variable may be indicated to be significant in any early stage and thus enter the equation, and (b) after several other variables are added to the regression equation, the initial variable may be indicated to be insignificant. The insignificant variable will be removed from the regression equation before adding an additional variable. Therefore, only significant variables are included in the final regression.

The criterion used to select the X_i variable to add (or remove) from the regression is as follows:

1. If the variance contribution of a variable in the regression is insignificant at a specified F-level, this variable is removed. If no variable is to be removed then the following criterion is used.
2. If the variance reduction obtained by adding a variable to the regression is significant at a specified F-level, this variance is entered.

ROUTINE NO.: 5

ROUTINE NAME: LOTPLT

PURPOSE: To plot from one to three variables versus lot number.

USAGE: Δ \$LOTPLT <PARAMETERS > \$

PARAMETERS:

IDEP Lot File Indicator
= 0 (Default) File containing lot numbers is undefined
= k File number k contains lot numbers

IND1 Variable Number 1 Indicator
= 0 (Default) 1st variable undefined. ***ERROR***
= k File k contains 1st variable

IND2 Variable Number 2 Indicator
= 0 (Default) 2nd variable undefined
= k File k contains 2nd variable

IND3 Variable Number 3 Indicator
= 0 (Default) 3rd variable undefined
= k File k contains 3rd variable

YMIN Y Axis (IND1,IND2,IND3) Minimum
= -99. (Default) Program scales data
= X User provided minimum value for Y axis

YMAX Y Axis (IND1,IND2,IND3) Maximum
 = -99. (Default) Program scales data
 = X User provided maximum value for Y axis.

YBAR1 Y Axis Control Limit Minimum
 = -99. (Default) No control line printed
 = X Constant line printed at Y = X

YBAR2 Y Axis Control Limit Maximum
 = -99. (Default) No control line printed
 = X Constant line printed at Y = X

RESTRICTIONS:

1. If only 1 variable plotted IND1 used
2. If only 2 variables plotted IND1,IND2 used
3. If YMIN $\neq$ -99., YMAX $\neq$ -99.
4. If YBAR1 $\neq$ -99., YBAR2 $\neq$ -99.
5. A maximum of 1024 data points may be plotted for each variable.

ROUTINE NO.: 6

ROUTINE NAME: PLOT

PURPOSE: To provide printer plot of one dependent variable versus from one to five independent variables. Routine has provisions for user input of axis scaling and plot dimensions.

USAGE: Δ SPLOT <PARAMETERS> 3

PARAMETERS:

IDEP Dependent Variable Indicator

- = 0 (Default)
Dependent Variable undefined
- = k File number k contains dependent variable

IND1 Independent Variable Indicator No. 1

- = 0 (Default)
1st independent variable undefined
- = k File number k contains 1st independent variable

IND2 Additional Independent Variable Indicators

- IND3 = 0 (Default)
2nd - 5th Independent Variables undefined
- IND4 = k File number k contains 2nd-5th independent variables.
- IND5

LENX X axis (Dependent Variable) Length Indicator

- = 120 lines (Default)
- = k x axis is k lines long ($K_{max} = 200$) k must be multiple of 10

LENY Y Axis (Independent Variable) Length Indicator

- = 120 spaces (Default)
- = k y axis is k spaces long ($K_{max} = 120$). k must be multiple of 10

XMIN X Axis Minimum Value Indicator

- = -99. (Default) Program Scales Data
- = x User Provided minimum value for x axis

XMAX X Axis Maximum Value Indicator
 = -99. (Default) Program scales data
 = x User provided maximum value for x axis

 YMIN1 Y Axis(1st Independent Variable) Minimum Value Indicator
 = -99. (Default) Program scales data
 = x User provided minimum value for y axis

 YMIN2 Additional Y axis Minimum Value Indicators
 YMIN3 Action same as for YMIN1 except independent variables
 2-3-4-5 referenced

 YMAX1 Y Axis (1st Independent Variable) Maximum Value Indicator
 = -99. (Default) Program scales data
 = x User provided maximum value for y axis

 YMAX2 Additional Y axis Maximum Value Indicators
 YMAX3 Action same as for YMAX1 except independent variables
 YMAX4 2-3-4-5 referenced
 YMAX5

- RESTRICTIONS:
1. A maximum of 1024 observations for the dependent variable (x-axis) and $5 \times 1024 = 5120$ independent variable observations may be plotted. Excess data points are neglected with warning message issued.
 2. If user provides non default value for any axis scaling parameter he must also provide values for all other applicable scaling values.

ROUTINE NO.: 7

ROUTINE NAME: HIST

PURPOSE: To provide printer histograms of user selected data files.

USAGE: Δ \$HIST < PARAMETERS > \$

PARAMETERS:

NBAR Histogram Interval Indicator

- = 10 (Default) Histogram contains 10 intervals.
- = k Histogram contains k intervals 1 k 30

NSP Histogram Spacing Indicator

- = 4 (Default) Histogram bar spacing interval is 4 spaces.
- = 0 or 1 Histogram bar spacing interval is 0 spaces or 1 space respectively.

RUP Histogram Upper Bound Indicator
(Used with RLON below)

- = -99. (Default) Program scales data into NBAR equidistant categories from min value to max value.
- = x User provided upper bound of histogram program scales data into NBAR + 2 intervals with:
Interval 1 containing data PLOW
Interval RBAR + 2 containing data PUP
Remaining intervals are equidistant with size

RLON Histogram Lower Bound Indicator
(Used with RUP above)

- = -99. (Default) Program scales data into NBAR equidistant categories from min value to max value
- = x User provided lower bound of histogram. (see discussion of RUP above for complete details).

IDFP Histogram Variable Indicator

- = 0 (Default) Histogram file undefined
- = k Plot histogram of file k

RESTRICTIONS: 1. If non default value of RUP is inputted, a non-default value of RLW must also be inputted. Similarly, if RLW has non-default value, RUP must have non-default value. If this criterion is not met, a message is issued and default criterion used.

ROUTINE NO.: 8

ROUTINE NAME: TIME

PURPOSE: To plot from one to five independent variables versus a time parameter such as date. A variety of user scaling options are included.

USAGE: Δ \$TIME < PARAMETERS > S

PARAMETERS: (see PL\$T)

All parameters used in routine TIME are identical to those used in PL\$T except:

XMIN X Axis Initial Date Indicator

= -99. (Default) Program scales data
= x User provided initial date for x-axis.
This date must be in format YYYYMM.

XMAX X Axis Final Date Indicator

= -99. (Default) Program scales data
= x User provided final date for x axis.
This date must be in format YYYYMM.

```

YMIN      Y Axis Minimum Indicator
          = -99.(Default) Program scales data. Y axis starts at
            minimum value in file IDEP
          = X   Y axis starts at X

YMAX      Y Axis Maximum Indicator
          = -99.(Default) Program scales data. Y axis ends at
            maximum value in file IDEP.
          = X   Y axis ends at X.

YBAR1     Y Axis Minimum Reference
          = -99.(Default) No reference line provided.
          = X   Reference line plotted at X.  YBAR1 < YBAR2

YBAR2     Y Axis Maximum Reference
          = -99.(Default) No reference line provided.
          = X   Reference line plotted at X.  YBAR2 > YBAR1.

```

Y Axis Minimum Indicator

YMAX

Y Axis Maximum Indicator

YBAR1

Y Axis Minimum Reference

YBAR2

Y Axis Maximum Reference

RESTRICTIONS:

ROUTINE NO.: 9

ROUTINE NAME: TABLE

PURPOSE: To print selected statistical tables for use in interpreting results of user requested statistical routines.

USAGE: Δ TABLE < PARAMETERS > \$

PARAMETERS:

ITABLE

Table Indicator

- = 0 (Default) No table printed.
- = 1 Normal distribution
- = 2 Students t-distribution
ALPHA = .001, .005, .01, .02, .05 (TABLE gives area in both tails.)
- = 3 CHISQ Distribution
ALPHA = .001, .005, .01, .025, .05, .1 (TABLE gives area in single tail)
- = 4 F-Distribution
ALPHA = .01, .05 (TABLE gives area in single tail).

DEFINITIONS

APPENDIX C

<u>Definition Name</u>	<u>Page No.</u>
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SYSTEM RELEASE NUMBER 2-303

DATA BASE NAME IS M111

DEFINITION NUMBER 56

DATA BASE CYCLE 621

1* CALIBER (NAME X(11)) WITH SOME FUTURE ADDITIONS)
2* TYPE (NAME X(10)) WITH SOME FUTURE ADDITIONS)
3* LOT (NAME X(12))
4* R NUMBER (NAME X(10)) WITH SOME FUTURE ADDITIONS)
5* QUANTITY (NON-KEY INTEGER NUMBER 5(6))
6* PRODUCTION (NAME X(10)) WITH SOME FUTURE ADDITIONS)
7* INITIAL LIST (NAME X(10)) WITH SOME FUTURE ADDITIONS)
8* FINAL DISP (NAME X(10)) WITH SOME FUTURE ADDITIONS)
9* PROVIDED GROUP (NAME X(10)) WITH SOME FUTURE ADDITIONS)
10* TEST DATE (DATE)
11* ASSEMBLY DATE (DATE)
12* TYPE TEST (NON-KEY NAME X(10))
13* Firing Record Number (NON-KEY NAME X(10))
14* ITEM NOMENCLATURE (NON-KEY TEXT X(60))
15* CAUSE OF REJECTION (NON-KEY TEXT X(80))
16* RELATED Firing Record (NON-KEY NAME X(10))
17* CORRECTION (NON-KEY NAME X(10))
18* SPECIFICATION (NAME X(15))
19* DRAWING (NAME X(10))
100* BALLISTIC TEST INFO (RG)
110* TEST NAME (NAME X(10)) IN 100)
111* PHASE (NAME X(10)) IN 100)
112* REF VS TEST (NAME XXXX IN 100)
113* DATE FIRED (DATE IN 100)
114* APPROX TIME FIRED (NON-KEY INTEGER NUMBER 9999 IN 100)
115* AZIMUTH (NON-KEY DECIMAL NUMBER 999.99 IN 100)
116* TARGET DISTANCE (NON-KEY INTEGER NUMBER 9(5) IN 100)
117* Firing POSITION (NON-KEY NAME X(5)) IN 100)
118* WIND VELOCITY (NON-KEY INTEGER NUMBER 999 IN 100)
119* WIND DIRECTION (NON-KEY INTEGER NUMBER 999 IN 100)
120* PROP CG (NAME X(10)) IN 100)
121* TEST REMARKS (NON-KEY TEXT X(80)) IN 100)
122* Load NUMBER (NAME X(20)) IN 100)
123* TEST SAMPLES (NON-KEY INTEGER NUMBER 9(5) IN 100)

200* PHASE SUMMARY-HE WP (RG IN 100)

210* VEL N-HE (NON-KEY INTEGER NUMBER 999 IN 200)
 211* VEL PEAK-HE (DECIMAL NUMBER 9(5).99 IN 200)
 212* VEL CORR PEAK-HE (DECIMAL NUMBER 9(5).99 IN 200)
 213* VEL STD-HE (DECIMAL NUMBER 999.99 IN 200)
 214* VEL MAX-HE (NON-KEY DECIMAL NUMBER 9(5).99 IN 200)
 215* VEL MIN-HE (NON-KEY DECIMAL NUMBER 9(5).99 IN 200)
 220* PRESS N-HE (NON-KEY INTEGER NUMBER 999 IN 200)
 221* PRESS MEAN-HE (INTEGER NUMBER 9(6) IN 200)
 222* PRESS FAX-HE (INTEGER NUMBER 9(6) IN 200)
 223* PRESS MIN-HE (INTEGER NUMBER 9(6) IN 200)
 230* RANGE N-HE (NON-KEY INTEGER NUMBER 999 IN 200)
 231* RANGE PEAK-HE (INTEGER NUMBER 9(5) IN 200)
 232* RRG STD (NON-KEY DECIMAL NUMBER 999.9 IN 200)
 233* RANGE FAX-HE (NON-KEY INTEGER NUMBER 9(5) IN 200)
 234* RANGE MIN-HE (NON-KEY INTEGER NUMBER 9(5) IN 200)
 240* DEFL N-HE (NON-KEY INTEGER NUMBER 999 IN 200)
 241* DEFL PEAK-HE (DECIMAL NUMBER 9999.9 IN 200)
 242* DEFL STD-HE (NON-KEY DECIMAL NUMBER 999.9 IN 200)
 250* TRACKER N-HE (NON-KEY INTEGER NUMBER 999 IN 200)
 251* TRACKER PEAK-HE (DECIMAL NUMBER 99.9 IN 200)
 252* TRACKER STD-HE (NON-KEY DECIMAL NUMBER 99.9 IN 200)
 253* TRACKER MIN-HE (NON-KEY DECIMAL NUMBER 99.9 IN 200)
 254* FLAG-HE (INTEGER NUMBER 9 IN 200)

200* R BY R INFO-HE WP (RG IN 200)

261* ROUND-HE (NON-KEY INTEGER NUMBER 9(5) IN 280)
 282* SAMPLE-HE (NON-KEY INTEGER NUMBER 999 IN 280)
 283* PROJ FNC1-HE (NON-KEY NAME X(9) IN 280)
 284* FUZE FNC1-HE (NON-KEY NAME X(9) IN 280)
 285* VEL-HE (NON-KEY DECIMAL NUMBER 9999.9 IN 280)
 286* RANGE-HE (NON-KEY INTEGER NUMBER 9999 IN 280)
 287* DEFL-HE (NON-KEY INTEGER NUMBER 9999 IN 280)
 288* PRESS-HE (NON-KEY INTEGER NUMBER 999 IN 280)
 289* WEIGHT-HE (NON-KEY DECIMAL NUMBER 999.99 IN 280)
 290* REPARA-HE (NON-KEY NAME X(9) IN 280)
 291* RFLAG-HE (INTEGER NUMBER 9 IN 280)
 292* DEFECT-HE (NAME X(10) IN 280)
 295* TRACKER INFO-HE WP (RG IN 280)

296* TRACE FUNC (NON-KEY NAME XXXX IN 295)

297* TRACE TIME (NON-KEY DECIMAL NUMBER 99.9 IN 295)

300* PHASE SUMMARY-ILLUM (RG IN 100)

301* EFFECT ILLUM N (NON-KEY INTEGER NUMBER 999 IN 300)
 302* EFFECT ILLUM MAXIMUM (DECIMAL NUMBER 999.9 IN 300)
 303* EFFECT ILLUM MINIMUM (DECIMAL NUMBER 999.9 IN 300)
 310* BURST MT N (NON-KEY INTEGER NUMBER 999 IN 300)
 311* BURST MT MAXIMUM (INTEGER NUMBER 9999 IN 300)
 312* BURST MT MINIMUM (INTEGER NUMBER 9999 IN 300)
 320* RANGE N-ILLUM (NON-KEY INTEGER NUMBER 999 IN 300)
 321* RANGE PEAK-ILLUM (INTEGER NUMBER 9999 IN 300)
 322* RANGE FAX-ILLUM (INTEGER NUMBER 9999 IN 300)
 323* RANGE MIN-ILLUM (INTEGER NUMBER 9999 IN 300)
 330* FUZE TIME N (NON-KEY INTEGER NUMBER 999 IN 300)
 331* FUZE TIME MEAN (DECIMAL NUMBER 99.99 IN 300)
 332* FUZE TIME STD (NON-KEY DECIMAL NUMBER 99.99 IN 300)
 333* FUZE TIME MAXIMUM (DECIMAL NUMBER 99.99 IN 300)
 334* FUZE TIME MINIMUM (DECIMAL NUMBER 99.99 IN 300)
 335* FUZE TIME LOT DEF (DECIMAL NUMBER 999.999 IN 300)
 336* FUZE TIME CORRECTION (NON-KEY DECIMAL NUMBER 9.999 IN 300)

340* CHUTE DELAY N (NON-KEY INTEGER NUMBER 999 IN 300)
 341* CHUTE DELAY MAXIMUM (DECIMAL NUMBER 99.9 IN 300)
 342* CHUTE DELAY MINIMUM (DECIMAL NUMBER 99.9 IN 300)
 350* VEL N-ILLUM (NON-KEY INTEGER NUMBER 999 IN 300)
 351* VEL MAX-ILLUM (INTEGER NUMBER 9999 IN 300)
 352* VEL MIN-ILLUM (INTEGER NUMBER 9999 IN 300)
 360* DEFL N-ILLUM (NON-KEY INTEGER NUMBER 999 IN 300)
 361* DEFL MAX-ILLUM (INTEGER NUMBER 9999 IN 300)
 362* DEFL MIN-ILLUM (INTEGER NUMBER 9999 IN 300)
 370* DESCENT RATE N (NON-KEY INTEGER NUMBER 999 IN 300)
 371* DESCENT RATE MAXIMUM (DECIMAL NUMBER 99.9 IN 300)
 372* DESCENT RATE MINIMUM (DECIMAL NUMBER 99.9 IN 300)
 373* FLAG-ILLUM (INTEGER NUMBER 9 IN 300)
 380* R BY R INFO-ILLUM (RG IN 300)
 381* ROUND-ILLUM (NON-KEY INTEGER NUMBER 915) IN 360
 382* SAMPLE-ILLUM (NON-KEY INTEGER NUMBER 999 IN 360)
 383* EFFECT ILLUM (NON-KEY DECIMAL NUMBER 999.9 IN 360)
 384* BURST HI (NON-KEY INTEGER NUMBER 9999 IN 360)
 385* RANGE-ILLUM (NON-KEY INTEGER NUMBER 9999 IN 360)
 386* FUZE TIME UNCOCK (NON-KEY DECIMAL NUMBER 99.99 IN 360)
 387* CHUTE DELAY (NON-KEY DECIMAL NUMBER 99.9 IN 360)
 388* VEL-ILLUM (NON-KEY INTEGER NUMBER 9999 IN 360)
 389* DEFL-ILLUM (NON-KEY INTEGER NUMBER 9999 IN 360)
 390* DESCENT RATE (NON-KEY DECIMAL NUMBER 99.9 IN 360)
 391* REMARK-ILLUM (NON-KEY NAME X(5) IN 360)
 392* PRESS-ILLUM (NON-KEY INTEGER NUMBER 999 IN 360)
 393* RFLAG-ILLUM (INTEGER NUMBER 9 IN 360)
 394* DEFECT-ILLUM (NAME X(10) IN 360)
 400* PHASE SUMMARY-HEP HEAT APDS TP (RG IN 400)
 410* VEL N-HEP (NON-KEY INTEGER NUMBER 999 IN 400)
 411* VEL PEAK-HEP (INTEGER NUMBER 9999 IN 400)
 412* VEL CORR MEAN-HEP (INTEGER NUMBER 9999 IN 400)
 413* VEL STD-HEP (DECIMAL NUMBER 99.9 IN 400)
 414* VEL EXT VAR-HEP (NON-KEY INTEGER NUMBER 999 IN 400)
 420* PRESS N-HEP (NON-KEY INTEGER NUMBER 999 IN 400)
 421* PRESS PEAK-HEP (INTEGER NUMBER 999 IN 400)
 422* PRESS STD-HEP (NON-KEY DECIMAL NUMBER 99.9 IN 400)
 423* PRESS MAX-HEP (INTEGER NUMBER 999 IN 400)
 424* PRESS MIN-HEP (INTEGER NUMBER 999 IN 400)
 430* PE N (NON-KEY INTEGER NUMBER 999 IN 400)
 431* PE HCN (DECIMAL NUMBER 9.99 IN 400)
 432* PE VERT (DECIMAL NUMBER 9.99 IN 400)
 440* DISP N (NON-KEY INTEGER NUMBER 999 IN 400)
 441* DISP HCR (INTEGER NUMBER 999 IN 400)
 442* DISP VERT (INTEGER NUMBER 999 IN 400)
 443* FLAG-HEP (INTEGER NUMBER 9 IN 400)
 444* DISP HCN STD (DECIMAL NUMBER 999.99 IN 400)
 445* DISP VERT STD (DECIMAL NUMBER 999.99 IN 400)
 460* R BY R INFO-HEP HEAT APDS TP (RG IN 400)
 461* ROUND-HEP (NON-KEY INTEGER NUMBER 915) IN 460
 462* SAMPLE-HEP (NON-KEY INTEGER NUMBER 999 IN 460)
 463* PROJ FNCT-HEP (NON-KEY NAME XXXX IN 460)
 464* VEL-HEP (NON-KEY DECIMAL NUMBER 9999.9 IN 460)
 465* HOR COORD-HEP (NON-KEY INTEGER NUMBER 999 IN 460)
 466* VERT COORD-HEP (NON-KEY INTEGER NUMBER 999 IN 460)
 467* PRESS-HEP (NON-KEY INTEGER NUMBER 999 IN 460)
 468* WEIGHT-HEP (NON-KEY DECIMAL NUMBER 999.99 IN 460)
 469* TRACER FNCT-HEP (NON-KEY NAME XXXX IN 460)
 470* DEFL-HEP (NON-KEY DECIMAL NUMBER 99.9 IN 460)
 471* REMARK-HEP (NON-KEY NAME X(5) IN 460)
 472* RFLAG-HEP (INTEGER NUMBER 9 IN 460)
 473* DEFECT-HEP (NAME X(10) IN 460)

480* HEP HEAT PLATE INFO (RG IN 460)
 481* P (NON-KEY INTEGER NUMBER 9 IN 480)
 482* EHD HOR (NON-KEY DECIMAL NUMBER 9.99 IN 480)
 483* EHD VERT (NON-KEY DECIMAL NUMBER 9.99 IN 480)
 150* DEFECT SUMMARY (RG IN 100)
 151* DEFECT NAME (NAME X(10) IN 150)
 152* NO OF OCC (INTEGER NUMBER 999 IN 150)
 153* DEFECT NOTE (NON-KEY NAME X(80) IN 150)
 900* DATA CARD INFO (RG)
 901* COMPONENT NAME (NAME X(10) IN 900)
 902* COMPONENT M NUMBER (NAME X(10) IN 900)
 910* COMPONENT LOT INFO (RG IN 900)
 911* COMPONENT LOT (NAME X(12) IN 910)
 912* COMPONENT QUANTITY (NON-KEY INTEGER NUMBER 9(6) IN 910)
 913* COMPONENT DATE (NON-KEY DATE IN 910)
 920* ARTILLERY SUPPORT EQUIPMENT INFO (RG)
 921* EQUIP NAME (NAME X(10) IN 920)
 922* EQUIP MODEL (NON-KEY NAME X(10) IN 920)
 923* EQUIP LOT (NON-KEY NAME X(12) IN 920)
 980* COMMENT INFO (RG)
 981* COMMENTS (TEXT X(100) IN 980)
 4001* AIDS (RG)
 4002* ZZZZ (NON-KEY TEXT X(20) IN 4001)
 1000* PLIP INFO (RG)
 1010* COMMAND NAME (NAME X(10) IN 1000)
 1020* COMMAND INFO (RG IN 1000)
 1030* SUBCOMMAND NAME (NAME X(10) IN 1020)
 1031* SUBCOMMAND SEQUENCE (NON-KEY INTEGER NUMBER 99 IN 1020)
 1040* SUBCOMMAND INFO (RG IN 1020)
 1050* SUBCOMMAND TEXT (NON-KEY TEXT X(72) IN 1040)
 1051* SEQUENCE NUMBER (NON-KEY INTEGER NUMBER 999 IN 1040)
 4003* ZZZI (STRING (MESSAGE FILE IS OUTPUT\$PRINT/NULL SUPPRESS,STUE S
 UPPRESS/ZZZZ\$))
 4004* ANIES (STRING (MESSAGE FILE IS DUMP\$CONTROL\$DBN IS ANIES\$MESSAG
 E FILE IS OUTPUT\$PRINT/NULL SUPPRESS,STUB SUPPRESS/ZZZZ\$))
 4005* DISPLAY (STRING (PRINT/NAME,STUB,GROUP, NULL SUPPRESS, REPEAT SUP
 PRESS\$BY ENTRY,C1,C2,C3,C4,C5,C6,C7,C8,C9,C10,C12,C13,C14,C16,
 C200,C300,C400,C920,C980 WH C3 EQ *1\$*ZZZI*\$))
 4000* SUMMARY (STRING (LIST/REPEAT,TITLE D(25)ARTIL LOT SUMMARY,L(7)C
 ALIBER, L(7) TYPE,L(12)LOT NUMBER,L(8)M NUMBER,L(10)DATE T
 EST,L(10) DISP/C1,C2,C3,C4, C10,C8,08 C1,C2,C3 WH C3 EXISTS\$
)
 4060* DATACARD (STRING (LIST/REPEAT SUP,TITLE D(20)ARTIL DATA CARDS P
 RESENT, L(7)CALIBER,L(7)TYPE,L(12)LOT NUMBER,L(8)M NUMBER,
 L(10)DATE TEST,L(10)DISP/C1, C2,C3,C4,C10,C8,08 C1,C2,C3 WH C3
 EXISTS AND C901 EXISTS\$))
 4061* NODATACARD (STRING (LIST/REPEAT SUP,TITLE D(20)ARTIL DATA CARDS
 MISSING, L(7)CALIBER,L(7)TYPE,L(12)LOT NUMBER,L(8)M NUMBER,
 L(10)DATE TEST,L(10)DISP/C1, C2,C3,C4,C10,C8,08 C1,C2,C3 WH C3
 EXISTS AND C901 FAILS\$))
 4070* DISPOSITION (STRING (LIST/REPEAT,TITLE D(20)ARTIL SUMMARY BY D
 ISP, L(7)CALIBER,L(7)TYPE,L(12)LOT NUMBER,L(8)M NUMBER,L
 (10)DATE TEST,L(10)DISP/C1, C2,C3,C4,C10,C8,08 C1,C2,C3 WH C3
 EXISTS AND C8 EQ *1*\$))
 4050* TYPESUM (STRING (LIST/REPEAT,TITLE D(25)ARTIL LOT SUMMARY BY TY
 PE,L(7)CALIBER,L(7)TYPE,L(12)LOT NUMBER,L(8)M NUMBER,L(10)DATE
 TEST,L(10)DISP/C1,C2,C3,C4, C10,C8,08 C1,C2,C3 WH C3 EXISTS
 AND C2 EQ *1*\$))
 4052* CALTYPE (STRING (LIST/REPEAT,TITLE D(20)ARTIL LOT SUMMARY BY CA
 LIBER TYPE, L(7)CALIBER,L(7)TYPE,L(12)LOT NUMBER,L(8)M NUMBER,
 L(10)DATE TEST,L(10)DISP/C1, C2,C3,C4,C10,C8,08 C1,C2,C3 WH C3
 EXISTS AND C1 EQ *1* AND C2 EQ *2*\$))

4051* CALSUM (STRING (LIST/REPEAT,TITLE D(25)ARTIL LOT SUMMARY BY CAL
IBER,L(7)CALIBER,L(7)TYPE,L(12)LOT NUMBER,L(8)M NUMBER,L(10)CAT
E TEST,L(10)DISP/C1,C2,C3,C4,C10,C8,OB C1,C2,C3 WH C1 EXISTS A
ND C1 EQ *1%))

4080* DATESUM (STRING (LIST/REPEAT,TITLE D(20) ARTIL SUMMARY BY DATE,
L(7)CALIBER,L(7)TYPE,L(12)LOT NUMBER,L(8)M NUMBER,L
(10)DATE TEST,L(10)DISP/C1- C2,C3,C4,C10,C8,OB C10,C1,C2,C3 WH
C3 EXISTS AND C10 GE *1* AND C10 LE *2%*))

4030* TALLY (STRING (TALLY/EACH/C1TALLY/EACH/C2TALLY/EACH/C3%))

3333* FILE (STRING (REPORT FILE IS *1%PRINT/BLOCK,STUD SUP,NULL,
SINGLE SPACE/% DESCRIBE *2% PRINT *2* WH *3%))

3000* ILLUMFR (STRING (*LAB2* *1% *LAB3* *ILAB2* *ILAB2A* *DCLIST*
EQUIP PRINT/NULL SUP,NAME/C981 WH SAME%))

4040* HELPFR (STRING (*LAB2* *1% *LAB3* *LAB6* *DCLIST
* *EQUIP* PRINT/NULL SUP,NAME/C981 WH SAME%))

4043* LAB3 (STRING (PRINT/NAME,NULL SUP,STUD,INDENT/C10,C11,C12,C13,C
14,C15,C16, C17 WH SAME% PRINT/GROUP/ BY ENTRY,C100,C200,C300,
C400 WH SAME%))

4042* LAB2 (STRING (LIST/NULL SUP,TITLE D(30) ACCEPTANCE TEST SUMMARY
L(12)LOT NUMBER,B(2),L(7)CALIBER,B(2),L(6) TYPE,B(2),L(8)M
NUMBER,L(8)QUANTITY,L(10)MANUFACTURER,L(10)INITIAL+ DISP,L
(10)FINAL+DISP,L(10)PROVING+GROUND/*LAB2A%))

4041* LAB2A (STRING (C3,C1,C2,C4,C5,C6,C7,C8,C9 WH LOT EC))

4046* LAB5 (STRING (LIST/TITLE L(10)+TEST NAME,B(2),L(10) TEST+PHASE
B(2),L(3)VEL+ B(2),L(6) VEL+ MEAN,B(2),L(6) VEL+STD,L(4)FRE
S+ N,B(2),L(4)PRES+MEAN,B(2),L(4)PRES+MAX,B(2),L(4)PRES+MIN,L(3)
HKG+ N,B(2),L(5)HKG+MEAN,B(2),L(5)HKG+STD,L(4)DEFL+ N,B(2),*LA
B5A%*))

4047* LAB5A (STRING (L(5)DEFL+MEAN,B(2),L(5)DEFL+STD,L(5)TRACE+ N,B(2),
L(5)TRACE+MEAN/C110,C111,C210,C212,C213,C220,C221,C222,C223,
C230,C231,C232,C240,C241,C242,C250,C251 WH SA))

4048* LAB6 (STRING (LIST/REPEAT SUP,TITLE D(30)ROUND BY ROUND DATA,L(1
12)+LOT NUMBER,L(10)+PHASE,L(6)ROUND+NUMBER,L(6)SAMPLE+NUMBER,L
(6)PROJ+FUNC,L(6)+FUZE+ACTION,L(6)+ VEL,L(5)+RANGE,L(4)+DEFL,L(4)
PRES,L(6)+WEIGHT,L(10)+REMARKS/ *LAB6A%*))

4049* LAB6A (STRING (C3,C111,C201,C202,C203,C204,C205,C206,C207,C208,
C209,C290 WH SA))

4021* EQUIP (STRING (LIST/REPEAT SUP,TITLE D(30)SUPPORT EQUIPMENT SUM
MARY,L(12)+LOT NUMBER,L(10)+EQUIP NAME,L(12)+EQUIP MFG+L(12)+
EQUIP LOT/C3,C921,C922,C923 WH SA%))

3010* HELPFATER (STRING (*LAB2* *1% *LAB3* *HLAB2* *HLAB2A* *DCLIST
* *EQUIP* PRINT/NULL SUP,NAME/ C981 WH SAME%))

3011* HLAB2 (STRING (LIST/REPEAT SUP,TITLE D(30)ROUND BY ROUND DATA,L
(12)+LOT NUMBER,L(10)+PHASE,L(6)ROUND+NUMBER,L(6)SAMPLE+NUMBER,
L(6)PROJ+FUNC,L(6)+VEL+L(5)COORD+HGR,L(6)COORD+VERT,L(4)+FRE
S,L(6)+WEIGHT,L(6)TRACE+FUNC,L(4) AZ+DEFL,L(10)+REMARKS, *HLAB
2A%/))

3012* HLAB2A (STRING (L(3)+ P,L(4)END+HOR,L(4)END+VERT))

3013* HLAB2B (STRING (C3,C111,C461,C462,C463,C464,C465,C466,C467,C468,
C469,C470, C471,C481,C482,C483 WH SAME%))

1060* HELP (STRING (PRINT/NULL SUP,INDENT,REPEAT SUP,STUD SUP,TRF/C1
010,C1030,C1050,OB C1051,C1051 WHERE C1010 EQ HELPPRINT/STUD+R
EPEAT%))

1070* HELP1 (STRING (PRINT/NULL SUP,INDENT,REPEAT SUP,STUD SUP,TRF/
C1010,C1030,C1050,OB C1051,C1051 WHERE C1010 EQ *1% PRINT/STUD
+REPEAT%))

1080* HELP2 (STRING (PRINT/NULL SUP,INDENT,REPEAT SUP,STUD SUP,GRoup/
C1010, C1030,C1050,OB C1051 WHERE C1010 EQ *1* AND C1020
EQ *2%PRINT/STUD+REPEAT,TRF%))

1090* HELPCOMMAND (STRING (LIST/NULL SUP,TITLE D(5)ARIES COMMAND SUM
MARY,L(12)+COMMAND NAME,B(20)/ C1010 WHERE C1 EQ HELP,))

2050* F456A1 (STRING (REPORT FILE IS S2KIN% *A1* *A2* *1* AND TEST DA
TE LE *2*% *A3* *A4* *A5* *A6*))

2051* A1 (STRING (PRINT/NULL,REPEAT SUP,BLOCK,STUB SUPPRESS,GROUP%))

2052* A2 (STRING (PRINT COUNT C3 WHERE C4 EQ M456A1 AND TEST DATE EE
))

2053* A3 (STRING (PRINT COUNT C3 WHERE SAME AND C7 EQ ACCEPTED% PRINT
COUNT C3 WHERE SAME AND C7 EQ REJECTED% PRINT COUNT C3 WHERE S
AME AND C7 EQ PROV ACCEPT%))

2054* A4 (STRING (LIST/NULL SUP,TITLE L(12)+LOT NUMBER,L(5)+PHASE,L(8
)VEL MEAN+UNCORR,L(8)VEL MEAN+CORR,L(8)VEL+STD,L(8)+FE HOR,L(8)
+FE VERT/C3,C112,C411,C412,C413,C431,C432,OB C3,C112 WHERE SAME
%))

2055* A5 (STRING (LIST/TITLE L(12)+LOT NUMBER,L(10)+PHASE,L(10)+N TES
T,L(20)+MALFUNCTIONS/C3,C111,C410,C122,OB C3,C111 WHERE SAME AN
D C111 EQ PLATE OR C111 EQ TRACER%))

2066* A7 (STRING (REPORT FILE IS TEMP UNLOAD/REPEAT, NULL/C901,C902,0
B C901 WHERE SAME AND C901 EQ PROJECTILE OR C901 EQ FLZE OR C90
1 EQ FRIFER OR C901 EQ TRACER))

400F* COMPUT (STRING (PRINT/NAME,STUB,GROUP, NULL SUPPRESS, REPEAT SUP
PRESS,BY ENTRY,C1,C2,C3,C4,C5,C6,C7,C8,C9,C10,C12,C13,C14,C9C0,
C910 WH C3 EQ *1%*ZZZ1%))

4007* CMLOTS (STRING (PRINT/NAME,STUB,GROUP, NULL SUPPRESS, REPEAT SLPP
RESS/BY ENTRY,C3,C5,C7,C6,C10 WHERE C911 EQ *1%*ZZZ1%))

4008* (SEARCH (STRING (LIST/REPEAT SUP,TITLE D(20)*1*,CP+LOT NUMBER,B
(3),L(6)CR+QUANT,B(3),L(10)CR DISP,B(3),L(10)CR TEST+DATE,B(3),
L(10),CUFFONEIT+QUANT,C3,C5,C7,C10,C912,OB C3,C10 WH C911 EQ *1
%*ZZZ1%))

4081* ZZZSUM (STRING (LIST/REPEAT SUP,TITLE D(20) ACCEPTANCE TEST SUM
MARY,L(12)LOTNUMBER,L(10)TEST DATE,L(10)STATUS,L(10)PHASE,L(20)
MALFUNCTIONS,L(5)MEAN+VEL,L(5)S.O.+VEL,L(6)MEAN+PRESS,L(6)MAX+
PRESS,L(5)PLATE+RANGE,L(5)S.O.+RANGE/*ZZZ1SUM%))

4082* ZZ1SUM (STRING (C3,C10,C6,C111,C122,C211,C213,C221,C222,C231,C2
32%))

4086* ASUM (STRING (*ZZZSUM* WHERE *1%*ZZZ1%))

4087* HSUM (STRING (*ZZZSUM*+OB C3 WHERE C4 EQ *1%))

4090* CROSS (STRING (REPORT FILE IS CROSS%LAB2* *1* % *LAB5* *DCLIST*
REPORT FILE IS OUTPUT% PRINT/NULL,NAME/C901,C911 WHERE SAME AN
D C901 EQ PROPELLANT OR C901 EQ FUZE%))

4091* ACROSS (STRING (CONTROL%OB IS COMP%REPORT FILE IS C9C3%LAB1*
*1%*LAB2* *PROP1* *PROP2* *PROP3* *LAB1* *2% *LAB2* *FUZE1* *
FUZE2* *FUZE3* *FUZE4* CONTROL %OB IS ANTIL% REPORT FILE IS O
UTPUT%))

4020* (LIST (STRING (LIST/REPEAT SUP,TITLE D(30)DATA CARD SUMMARY,L(1
2)+LOT NUMBER,L(10)COMPONENT+ NAME,L(20)COMPONENT+ LOT,L(10)
COMPONENT+QUALITY,L(10)COMPONENT+DATE MANU/C3,C901,C111,C912,C
913 WH SAME))

40AP* CSUM (STRING (*ZZZSUM*+OB C3 WHERE C1 EQ *1* AND C2 EQ *2* AND
C10 GE *3* AND C10 LE *4%))

3002* ILA02 (STRING (LIST/REPEAT SUP.TITLE D(30)ROUND BY ROUND DATA.1
(12)+LOT NUMBER.L(10)+PHASE.L(6)ROUND+NUMBER.L(6)SAMPLE+METER.
L(6)EFFICI+ILLUP.L(5)BLKST+ HT.L(5)HORIZ+RANGE.L(5)EL/EFF M.L
(5)CHUTE+VEL.L(4)+VEL.L(6)+DEFLEC.L(7)DESCENT+ RATE.L(4)+FRE
S.))

3003* ILA02A (STRING (L(7)+REMARKS/C3.C111,C381,C362,C383,C364,C385,C
386,C387,C388,C389,C390,C392,C391 WH SAME))

2001* FILE1 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE1
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2002* FILE2 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE2
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2003* FILE3 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE3
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2004* FILE4 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE4
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2005* FILE5 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE5
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2006* FILE6 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE6
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2007* FILE7 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE7
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2008* FILE8 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE8
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2009* FILE9 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE9
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2010* FILE10 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
10% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2011* FILE11 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
11% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2012* FILE12 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
12% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2013* FILE13 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
13% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2014* FILE14 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
14% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2015* FILE15 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
15% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2016* FILE16 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
16% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2017* FILE17 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
17% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2018* FILE18 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
18% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2019* FILE19 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
19% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2020* FILE20 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
20% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2507* DIFS (STRING (PR/NAME/MIN C14,COUNT C3,SUM C123 WH C4 EQ *1*PR
SUM C152 WH SA AND C151 EQ *2%))

SYSTEM RELEASE NUMBER 2-305

DATA BASE NAME IS COMP

DEFINITION NUMBER 31

DATA BASE CYCLE 95

- 1* CALIBER (NAME X(10) WITH SOME FUTURE ADDITIONS)
- 2* TYPE (NAME X(10) WITH SOME FUTURE ADDITIONS)
- 3* LOT (NAME X(12))
- 4* P NUMBER (NAME X(10) WITH SOME FUTURE ADDITIONS)
- 5* CAPACITY (NON-KEY INTEGER NUMBER 9(6))
- 6* MANUFACTURER (NAME X(10) WITH SOME FUTURE ADDITIONS)
- 7* INITIAL DISP (NAME X(10) WITH SOME FUTURE ADDITIONS)
- 8* FINAL DISP (NAME X(10) WITH SOME FUTURE ADDITIONS)
- 9* PROVING (NUMBER NAME X(10) WITH SOME FUTURE ADDITIONS)
- 10* TEST DATE (DATE)
- 11* ASSEMBLY DATE (DATE)
- 12* TYPE TEST (NON-KEY NAME X(10))
- 13* FIRING RECORD NUMBER (NON-KEY NAME X(10))
- 14* ITEM NOMENCLATURE (NON-KEY TEXT X(80))
- 15* TEST DIRECTION (NON-KEY NAME X(10))
- 16* SPECIFICATION (NON-KEY NAME X(10))
- 17* CAUSE OF REJECTION (NAME X(80))
- 18* RELATED FIRING RECORD (NON-KEY NAME X(12))
- 19* DRAWING (NAME X(10))
- 100* PROP TEST INFO (RG)
 - 101* PROP CAUSE OF REJECTION (NON-KEY TEXT X(80) IN 100)
 - 102* PROP RELATED FIRING RECORD (NON-KEY NAME X(10) IN 100)
 - 110* PERCENT NITROCELLULOSE (DECIMAL NUMBER 999.99 IN 100)
 - 111* PERCENT NITROGLYCERINE (DECIMAL NUMBER 999.99 IN 100)
 - 112* PERCENT NITROGUANIDINE (DECIMAL NUMBER 999.99 IN 100)
 - 113* PERCENT ETHYL CENTRALITE (DECIMAL NUMBER 999.99 IN 100)
 - 114* PERCENT DNI (DECIMAL NUMBER 999.99 IN 100)
 - 115* PERCENT GPC (DECIMAL NUMBER 999.99 IN 100)
 - 116* PERCENT SALT (NON-KEY DECIMAL NUMBER 999.99 IN 100)
 - 117* PERCENT VOLATILES (NON-KEY DECIMAL NUMBER 999.99 IN 100)
 - 118* PERCENT MOISTURE (DECIMAL NUMBER 999.99 IN 100)
 - 119* PERCENT GLAZE (NON-KEY DECIMAL NUMBER 999.99 IN 100)
 - 120* RG (DECIMAL NUMBER 999.99 IN 100)
 - 121* KF (DECIMAL NUMBER 999.99 IN 100)
 - 122* CLOSED BOMB STANDARD LOT (NAME X(12) IN 100)
 - 123* HEAT TEST (NON-KEY NAME X(10) IN 100)

150* PROP ACCEPTANCE TEST INFO (RG IN 100)
 151* PROP TEST PHASE (NAME X(10) IN 130)
 152* PROP TEST TEMP (INTEGER NUMBER 9999 IN 130)
 153* PROP N FIRED (NON-KEY INTEGER NUMBER 999 IN 130)
 154* PROP N CONS (NON-KEY INTEGER NUMBER 999 IN 130)
 155* PROP CHG WT (DECIMAL NUMBER 9999.99 IN 130)
 156* PROP MALFUNCTIONS (NAME X(10) IN 130)
 140* PROP OBS VEL FPS MEAN (INTEGER NUMBER 9(5) IN 130)
 141* PROP CORR VEL FPS MEAN (INTEGER NUMBER 9(5) IN 130)
 142* PROP VEL FPS STD (DECIMAL NUMBER 999.9 IN 130)
 143* PROP OBS PRES MEAN (INTEGER NUMBER 9(5) IN 130)
 144* PROP PRES STD (INTEGER NUMBER 9(5) IN 130)
 145* PROP CALIBRATION LOT (NAME X(10) IN 130)
 146* PROP SECONDARY LOT (NAME X(10) IN 130)
 147* PROP VEL CORRECTION (DECIMAL NUMBER 9(6).999 IN 130)
 148* PROP PRES CORRECTION (DECIMAL NUMBER 9(6).999 IN 130)
 149* PROP KT CORRECTION (DECIMAL NUMBER 9(6).999 IN 130)
 137* MUZ TO COIL DIST (NON-KEY DECIMAL NUMBER 999.99 IN 130)
 138* COIL1 TO COIL2 DIST (NON-KEY DECIMAL NUMBER 999.99 IN 130)
 190* PROP MOUNT BY MOUNT (RG IN 130)
 191* MOUNT NUMBER (NON-KEY INTEGER NUMBER 9(5) IN 130)
 192* SAMPLE NUMBER (NON-KEY INTEGER NUMBER 999 IN 130)
 193* PRESSURE (NON-KEY INTEGER NUMBER 9(5) IN 130)
 194* VELOCITY (NON-KEY INTEGER NUMBER 9999 IN 130)
 195* FLAG (INTEGER NUMBER 9 IN 130)
 196* PROP DEFECT (NAME X(10) IN 130)
 150* PROP RECOMMEND CHANGE INFO (RG IN 100)
 151* PROP CONFIGURATION (NAME X(10) IN 150)
 152* PROP ZONE (NAME X(10) IN 150)
 153* PROP REC CHG WT INCR (DECIMAL NUMBER 9(6).999 IN 150)
 154* PROP REC CHG WT TOTAL (DECIMAL NUMBER 9(6).999 IN 150)
 155* PROP REC VEL (DECIMAL NUMBER 9(6).999 IN 150)
 156* PROP REC PRES (DECIMAL NUMBER 9(6).999 IN 150)
 160* PROP DIMENSION INFO (RG IN 100)
 161* PROP DIMENSION NAME (NAME X(10) IN 160)
 162* PROP DIMENSION VALUE (NON-KEY DECIMAL NUMBER 9999.9999 IN 160)
 170* PROP SUPPORT EQUIPMENT INFO (RG IN 100)
 171* PROP EQUIP NAME (NAME X(10) IN 170)
 172* PROP EQUIP MODEL (NON-KEY NAME X(10) IN 170)
 173* PROP EQUIP LOT (NON-KEY NAME X(12) IN 170)
 200* FUZE TEST INFO (RG)
 201* FUZE CAUSE OF REJECTION (NON-KEY TEXT X(80) IN 200)
 202* FUZE RELATED FIRING RECORD (NON-KEY NAME X(10) IN 200)
 203* FUZE CORRECTION (NON-KEY NAME X(10) IN 200)
 220* FUZE PHASE INFO (RG IN 200)
 221* FUZE PHASE NAME (NAME X(20) IN 220)
 222* FUZE WEAPON (NON-KEY NAME X(10) IN 220)
 223* FUZE N FIRED (NON-KEY INTEGER NUMBER 999 IN 220)
 224* FUZE N CONS (NON-KEY INTEGER NUMBER 999 IN 220)
 225* FUZE PROP CHG (NAME X(10) IN 220)
 226* FUZE SET (NAME X(10) IN 220)
 227* FUZE REVERSE (INTEGER NUMBER 99 IN 220)
 228* FUZE ODDS (INTEGER NUMBER 99 IN 220)
 240* FUZE MEASUREMENT INFO (RG IN 200)
 241* FUZE MEAS NAME (NAME X(20) IN 240)
 242* FUZE MEAS MEAN (DECIMAL NUMBER 9(5).999 IN 240)
 243* FUZE MEAS STD (DECIMAL NUMBER 999.999 IN 240)
 244* FUZE MEAS MAXIMUM (NON-KEY DECIMAL NUMBER 9(5).999 IN 240)
 245* FUZE MEAS MINIMUM (NON-KEY DECIMAL NUMBER 9(5).999 IN 240)

900* DATA CARD INFO (RG)
 901* COMPONENT NAME (NAME X(20) IN 900)
 902* COMPONENT N NUMBER (NAME X(10) IN 900)
 910* COMPONENT LOT INFO (RG IN 900)
 911* COMPONENT LOT (NAME X(12) IN 910)
 912* COMPONENT QUANTITY (NON-KEY INTEGER NUMBER 9(6) IN 910)
 913* COMPONENT DATE (NON-KEY DATE IN 910)
 920* COMPONENT TEST INFO (RG IN 910)
 921* COMPONENT TEST NAME (NAME X(10) IN 920)
 922* COMPONENT N (INTEGER NUMBER 9999 IN 920)
 923* COMPONENT FAILURES (INTEGER NUMBER 9999 IN 920)
 950* CURRENT INFO (RG)
 951* COMMENTS (NON-KEY TEXT X(80) IN 950)
 250* FUZE ROUND BY ROUND (RG IN 200)
 251* F ROUND NUMBER (NON-KEY INTEGER NUMBER 9(5) IN 250)
 252* F SAMPLE NUMBER (NON-KEY INTEGER NUMBER 999 IN 250)
 253* F PRESSURE (NON-KEY INTEGER NUMBER 9(5) IN 250)
 254* F VELOCITY (NON-KEY INTEGER NUMBER 9999 IN 250)
 255* F FUNCTION (NAME X(10) IN 250)
 256* FFLAG (INTEGER NUMBER 9 IN 250)
 257* FUZE DEFECT (NAME X(10) IN 250)
 300* PRIMER TEST INFO (RG)
 301* PRIMER CAUSE OF REJECTION (NON-KEY TEXT X(80) IN 300)
 302* PRIMER RELATED FIRING RECORD (NON-KEY NAME X(10) IN 300)
 303* PRIMER CORRECTION (NON-KEY NAME X(10) IN 300)
 320* PRIMER PHASE INFO (RG IN 300)
 321* PRIMER PHASE NAME (NAME X(10) IN 320)
 322* PRIMER N (NON-KEY INTEGER NUMBER 999 IN 320)
 323* PRIMER PROP CHG (NAME X(10) IN 320)
 324* PRIMER MALFUNCTIONS (NAME X(10) IN 320)
 330* PRIMER PHASE MEASUREMENT INFO (RG IN 320)
 331* PRIMER MEAS NAME (NAME X(10) IN 330)
 332* PRIMER MEAS N (NON-KEY INTEGER NUMBER 999 IN 330)
 333* PRIMER MEAS MEAN (DECIMAL NUMBER 9(5).999 IN 330)
 334* PRIMER MEAS MAXIMUM (NON-KEY DECIMAL NUMBER 9(5).999 IN 330)
 335* PRIMER MEAS MINIMUM (NON-KEY DECIMAL NUMBER 9(5).999 IN 330)
 350* PRIMER SUPPORT EQUIP INFO (RG IN 300)
 351* PRIMER EQUIP NAME (NAME X(20) IN 350)
 352* PRIMER EQUIP MODEL (NON-KEY NAME X(10) IN 350)
 353* PRIMER EQUIP LOT (NON-KEY NAME X(12) IN 350)
 400* IGNITION CART TEST INFO (RG)
 401* IGN CART CAUSE OF REJECTION (NON-KEY TEXT X(80) IN 400)
 402* IGN CART RELATED FIRING RECORD (NON-KEY NAME X(10) IN 400)
 403* IGN CART CORRECTION (NON-KEY NAME X(10) IN 400)
 420* IGN CART PHASE INFO (RG IN 400)
 421* IGN CART PHASE NAME (NAME X(20) IN 420)
 422* IGN CART N FIRED (NON-KEY INTEGER NUMBER 999 IN 420)
 423* IGN CART N CONS (NON-KEY INTEGER NUMBER 999 IN 420)
 424* IGN CART MALFUNCTIONS (NAME X(10) IN 420)
 425* IGN CART UNCORR VEL MEAN (DECIMAL NUMBER 9(5).9 IN 420)
 426* IGN CART CURR VEL MEAN (DECIMAL NUMBER 9(5).9 IN 420)
 427* IGN CART VEL STD (NON-KEY DECIMAL NUMBER 999.99 IN 420)

500* METAL PARTS TEST INFO (RG)

501* MPTS CAUSE OF REJECTION (NON-KEY TEXT X(80) IN 500)

502* MPTS RELATEL FIRING RECORD (NON-KEY NAME X(10) IN 500)

503* MPTS CONNECTION (NON-KEY NAME X(10) IN 500)

520* MPTS PHASE INFO (RG IN 500)

521* MPTS PHASE NAME (NAME X(20) IN 520)

522* MPTS N FIRED (NON-KEY INTEGER NUMBER 999 IN 520)

523* MPTS N CUMS (NON-KEY INTEGER NUMBER 999 IN 520)

524* MPTS PROP CHG (NON-KEY NAME X(10) IN 520)

525* MPTS MALFUNCTIONS (NAME X(10) IN 520)

530* MPTS MEASUREMENT INFO (RG IN 520)

531* MPTS MEAS NAME (NAME X(10) IN 530)

532* MPTS MEAS UNCORN MEAN (DECIMAL NUMBER 9(5).999 IN 530)

533* MPTS MEAS CORR MEAN (DECIMAL NUMBER 9(5).999 IN 530)

534* MPTS MEAS STD (DECIMAL NUMBER 9999.999 IN 530)

535* MPTS MEAS MAXIMUM (NON-KEY DECIMAL NUMBER 9(5).999 IN 530)

536* MPTS MEAS MINIMUM (NON-KEY DECIMAL NUMBER 9(5).999 IN 530)

550* MPTS SUPPORT EQUIPMENT INFO (RG IN 500)

551* MPTS EQUIP NAME (NAME X(10) IN 550)

552* MPTS EQUIP MODEL (NON-KEY NAME X(10) IN 550)

553* MPTS EQUIP LOT (NON-KEY NAME X(10) IN 550)

4001* AIDS (RG)

4002* ZZZZ (NON-KEY TEXT X(20) IN 4001)

1000* ILLP INFO (RG)

1010* CUPPAMU NAME (NAME X(10) IN 1000)

1020* CUPPAMU INFO (RG IN 1000)

1030* SUBCUPPAMU NAME (NAME X(10) IN 1020)

1031* SUBCUPPAMU SEQUENCE (NON-KEY INTEGER NUMBER 99 IN 1020)

1040* SUBCUPPAMU INFO (RG IN 1020)

1050* SUBCUPPAMU TEXT (NON-KEY TEXT X(70) IN 1040)

1051* SEQUENCE NUMBER (NON-KEY INTEGER NUMBER 999 IN 1040)

600* FUZE F116 TEST INFO (RG)

601* F116 PHASE (NAME X(16) IN 600)

602* F116 BIAS MASS TIME N (NON-KEY INTEGER NUMBER 99 IN 600)

603* F116 BIAS MASS TIME MEAN (DECIMAL NUMBER 999.99 IN 600)

604* F116 BIAS MASS TIME STD (DECIMAL NUMBER 999.99 IN 600)

605* F116 ROTOR DELAY TIME N (NON-KEY INTEGER NUMBER 99 IN 600)

606* F116 ROTOR DELAY TIME MEAN (DECIMAL NUMBER 9999.99 IN 600)

607* F116 ROTOR DELAY TIME STD (DECIMAL NUMBER 9999.99 IN 600)

608* F116 ROTOR DELAY TIME -2STD (DECIMAL NUMBER 9999.99 IN 600)

609* F116 ROTOR DELAY TIME +2STD (DECIMAL NUMBER 9999.99 IN 600)

610* F116 ROTOR RESISTANCE N (NON-KEY INTEGER NUMBER 99 IN 600)

611* F116 ROTOR RESISTANCE MEAN (DECIMAL NUMBER 99.99 IN 600)

612* F116 ROTOR RESISTANCE STD (DECIMAL NUMBER 99.99 IN 600)

613* F116 DEPT ULPTH N (NON-KEY INTEGER NUMBER 99 IN 600)

614* F116 DEPT DEPTH MEAN (DECIMAL NUMBER 9.999 IN 600)

615* F116 DEPT DEPTH STD (DECIMAL NUMBER 9.999 IN 600)

625* F116 BIAS MASS TIME LOW (INTEGER NUMBER 99 IN 600)

626* F116 BIAS MASS TIME HY (INTEGER NUMBER 99 IN 600)

627* F116 ROTOR DELAY TIME LOW (INTEGER NUMBER 99 IN 600)

628* F116 ROTOR RESISTANCE LOW (INTEGER NUMBER 99 IN 600)

629* F116 ROTOR RESISTANCE HY (INTEGER NUMBER 99 IN 600)

630* F116 DEPT DEPTH LOW (INTEGER NUMBER 99 IN 600)

616* FUZE F116 N BY R (RG IN 600)

617* F116 SERIAL NO (NON-KEY INTEGER NUMBER 99 IN 616)

618* F116 BIAS MASS TIME (NON-KEY DECIMAL NUMBER 999.99 IN 616)

619* F116 ROTOR DELAY TIME (NON-KEY DECIMAL NUMBER 9999.99 IN 616)

620* F116 ROTOR RESISTANCE (NON-KEY DECIMAL NUMBER 99.99 IN 616)

621* F116 DEPT DEPTH (NON-KEY DECIMAL NUMBER 9.999 IN 616)

622* F116 DEFECT (NAME X(10) IN 616)

623* F116 MFLAW (NAME X(10) IN 616)

624* F116 PRE-CONDITIONING (NAME X(10) IN 616)

4003* ZZZ1 (STRING (MESSAGE FILE IS OUTPUT%PRINT/NULL SUPPRESS,STUE S
UPPRESS/ZZZ2%))

4004* ARIES (STRING (MESSAGE FILE IS DUMP%CONTROL%DBM IS ARIES%MESSAG
E FILE IS OUTPUT%PRINT/NULL SUPPRESS,STUB SUPPRESS/ZZZ2%))

4000* SUMMARY (STRING (LIST/REPEAT,TITLE D(25) COMP LOT SUMMARY,
L(10)TYPE,L(12)LOT NUMBER,L(10)M NUMBER,L(10)DATE TEST,L(11)
TEST,L(11)DISPOSITION/L2,C3, C4,C10,C8,OB C2,C3,C4 WH C3 EXIST
S%PRINT/NAME/COUNT LOT%))

4050* TYPESUM (STRING (LIST/REPEAT,TITLE D(25)COMP LOT SUMMARY,L(10)T
YPE, L(12)LOT NUMBER,L(10)M NUMBER,L(10)DATE TEST,L(11)
DISPOSITION/L2,C3,C4,C10,C8, OB C3,C4 WH C3 EXISTS AND C2 EC *
1* %))

4030* TALLY (STRING (TALLY/EACH/C1%TALLY/EACH/C2%TALLY/EACH/C4%))

4040* PHOP (STRING (*LAB1* *1*% *LAB2* *PROP1* *PROP2* *PROP3* *PRCP4
* *PROP5* *PROP6* PRINT/NULL SUP.NAME,STUB/ C181 WH SAME%))

4041* LAB1 (STRING (LIST/NULL SUP.TITLE D(30)COMPONENT TEST1 SUMMARY,L
(12)+LOT NUMBER,L(7)+CALIBER,L(10)+TYPE,L(10)+M NUMBER,L(8)+EVA
NTIY,L(10)MANU+FACTURER,L(10)INITIAL+DISP,L(10)FINAL+DISP,L(1
0)PROVING+GROUND/C3,C1,C2,C4,C5,C6,C7,C8,C9 WH L01 F0))

4043* PROP1 (STRING (PRINT/GROUP/ C100 WH SAME%))

4044* PKOP2 (STRING (LIST/REPEAT SUP.TITLE D(30)PROPELLANT ACCEPTANCE
TEST SUPMARY,L(12)+LOT NUMBER,L(10)TEST+PHASE,L(4)+TEMP,L(5)N+
FIRE,L(4)N+CONS,L(7)CHARGE+WT,L(12)+MALFUNCTIONS,L(12)CALIBRA
TION/L01,L(12)SECONDARY+LOT/ *PROP2A%))

4045* PKOP2A (STRING (C3,C131,C132,C133,C134,C135,C136,C142,C146 WH S
AME%))

4046* PROP3 (STRING (LIST/TITLE B(15),L(10)TEST+PHASE,L(7)CHS VFL+
PEAN, L(8)CURR VEL+ MEAN,L(5)VEL+STD,L(8)CBS PRES+MEAN
,L(6)+PRES STL,L(10)VEL+CORRECTION,L(11)PRES+CORRECTION,L(10)WT
+CORRECTION/C131,C140,C141,C142,C143,C144,C147,C148,C149 WH SAM
%))

4047* PKOP4 (STRING (LIST/REPEAT SUP.TITLE D(20)PROPELLANT RECOMMEDE
L CHARGE DATA,L(12)+LOT NUMBER,L(13)+CONFIGURATION,L(11)+ZONE,L
(8)REC CHG+WT INCR,L(8)REC CHG+WT TOTAL,L(8)REC+VEL,L(8)REC
+PRESSURE/C3,C151,C152,C153,C154,C155,C156 WH SAME%))

4048* PKOP5 (STRING (LIST/REPEAT SUP.TITLE D(20)PROPELLANT DIMENSION
DATA,L(12)+LOT NUMBER,L(10)DIMENSION+NAME,L(10)DIMENSION+VAL/
C3,C161,C162 WH SAME%))

4049* PKOP6 (STRING (LIST/REPEAT SUP.TITLE D(20)PROPELLANT SUPPORT EQ
UIPMENT DATA,L(12)+LOT NUMBER,L(10)EQUIPMENT+NAME,L(10)EQUIPPEN
T+MODEL,L(10)EQUIPMENT+LOT/ C3,C171,C172,C173 WH SAME%))

4061* FUZE1 (STRING (PRINT/GROUP/ C200 WH SAME%))

4062* FUZE2 (STRING (LIST/REPEAT SUP.TITLE D(30)FUZE ACCEPTANCE TEST
SUMMARY,L(12)+LOT NUMBER,L(20)+TEST PHASE,L(10)+WEAPON,L(5)N+FI
RED,L(4)N+CONS,L(10)PROP+CHG, L(6)FUZE+SET,L(7)N+REVERSE,L(4)N+
ODS/C3,C221,C222,C223,C224,C225,C226,C227,C228 WH SAME%))

4063* FUZE3 (STRING (LIST/TITLE H(15),L(20)+TEST PHASE,L(20)FASUREMENT
N1+ NAME,L(10)+ MEAN,L(10)+ STD,L(10)+MAXIMUM,L(10)+MINIMUM/
C221,C241,C242,C243,C244,C245 WH SAME%))

4064* FUZE4 (STRING (LIST/REPEAT SUP.TITLE D(30)FUZE DATA LARD AND CO
MPONENT FAILURE SUMMARY,L(12)+LOT NUMBER,L(20)COMPONENT+NAME,L(1
2)COMPONENT+LOT,L(10)COMPONENT+QUANTITY,L(10)COMPONENT+DATE MA
NU,L(10)COMPONENT+TEST NAME,L(4)N+CONS,L(4)N+FAI/ *EL/F4A%))

4070* IGCART (STRING (*LAB1* *1* % *LAB2* *IGN1* *IGN2* PRINT C481 W
H SAME%))

4071* I6H1 (STRING (PRINT/NAME,GROUP,STUB, NULL SUP/ C400 WH SAME%))

4072* I6H2 (STRING (LIST/REPEAT SUP.TITLE D(30)IGNITION CHARACTERIS
TIC SUMMARY,L(12)+LOT NUMBER,L(20)+TEST PHASE,L(5)N+FAI,L(4)N+
CONS,L(12)+MALFUNCTIONS,L(10)UNCORR VEL+ MEAN,L(8)CURR VEL+ PEA
N,L(7)+VEL STD/C3,C421,C422,C423,C424,C425,C426,C427 WH SAM%))

1060* HELP (STRING (PRINT/NULL SUP,INDENT,REPEAT SUP,STUB SLP,TREE/C1
010,C1030,C1050,OB C1031,C1051 WHERE C1010 EQ HELP*PRINT/STUB,R
EPEAT/%))

1070* HELP1 (STRING (PRINT/NULL SUP,INDENT,REPEAT SUP,STLB SUP,TREE/
C1010,C1030,C1050,OB C1031,C1051 WHERE C1010 EQ *1% PRINT/STUB
*REPEAT/%))

1080* HELP2 (STRING (PRINT/NULL SUP,INDENT,REPEAT SUP,STLB SLP,GR0LP/
C1010, C1030,C1050,OB C1051 WHERE C1010 EQ *1% AND C1030
EQ *2%*PRINT/STUB,REPEAT,TREE/%))

1090* HELPPCCMMAND (STRING (LIST/NULL SUP,TITLE D(5)ARIES COMMAND SLM
AKY,L(12)+COMMAND NAME,B(20)/ C1010 WHERE C1 EQ HELP*))

2050* COMPO (STRING (DATA FILE IS TEMP% REPORT FILE IS S2KIN% PRINT/N
ULL,REPEAT SUP,BLOCK,STUB SUPPRESS,GR0LP/% QUEUE% REPEAT/PRINT
C3,C222,C224,C322,C324 WHERE C2 EQ *DATA* AND C3 EQ *DATA*%/% T
ERMINATE%))

2066* AG (STRING (RPORT FILE IS TEMP% UNLOAD/REPEAT,NULL/C901,C902,0
B C901 WHERE SAME AND C901 EQ PROJECTILE OR C901 EQ FLZE OR C90
1 EQ PRIFER OR C901 EQ TRACER))

4065* DISPLAY (STRING (PRINT/NAME,STUB,GROUP,ULL SUPPRESS,REPEAT SUP
PRESS/BY ENTRY,C2,C3,C4,C5,C6,C6,C9,C10,C11,C12,C13,C100,C16C,C
130,C200,C220,C240,C900,C910,C30,C320,C330,C400,C420,C500,C520,
C530 WH C3 EQ *1%*Z221%))

4065* FUZE4A (STRING (C3,C901,C911,C912,C913,C921,C922,C520 WH SAME%
))

4042* LAB2 (STRING (PRINT/NAME,STUB,INDENT,ULL SUP/C10,C11,C12,C13,
C14,C15,C16,C17,C16,C19 WH SAME%))

4060* FUZE (STRING (*LAB1* *1%*LAB2* *FUZE1* *FUZE2* *FLZ*3* *FUZE4*
PRINT/NULL SUP,NAME,STUB,INDENT/ C901 WH SAME%))

2001* FILE1 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE1
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2002* FILE2 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE2
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2003* FILE3 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE3
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2004* FILE4 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE4
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2005* FILE5 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILES
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2006* FILE6 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE6
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2007* FILE7 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE7
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2008* FILE8 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE8
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2009* FILE9 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE9
% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2010* FILE10 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE
10% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2011* FILE11 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE
11% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2012* FILE12 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE
12% DESCRIBE *1% PRINT/NULL/ *1*.OB C3 WHERE *2%))

2013* FILE13 (STRING (PRINT/BLOCK,STUD SUPPRESS/% REPORT FILE IS FILE
 10% DESCRIBE *1% PRINT/NULL/ *1*.08 C3 WHERE *2%))
 2014* FILE14 (STRING (PRINT/BLOCK,STUD SUPPRESS/% REPORT FILE IS FILE
 14% DESCRIBE *1% PRINT/NULL/ *1*.08 C3 WHERE *2%))
 2015* FILE15 (STRING (PRINT/BLOCK,STUD SUPPRESS/% REPORT FILE IS FILE
 15% DESCRIBE *1% PRINT/NULL/ *1*.08 C3 WHERE *2%))
 2016* FILE16 (STRING (PRINT/BLOCK,STUD SUPPRESS/% REPORT FILE IS FILE
 16% DESCRIBE *1% PRINT/NULL/ *1*.08 C3 WHERE *2%))
 2017* FILE17 (STRING (PRINT/BLOCK,STUD SUPPRESS/% REPORT FILE IS FILE
 17% DESCRIBE *1% PRINT/NULL/ *1*.08 C3 WHERE *2%))
 2018* FILE18 (STRING (PRINT/BLOCK,STUD SUPPRESS/% REPORT FILE IS FILE
 18% DESCRIBE *1% PRINT/NULL/ *1*.08 C3 WHERE *2%))
 2019* FILE19 (STRING (PRINT/BLOCK,STUD SUPPRESS/% REPORT FILE IS FILE
 19% DESCRIBE *1% PRINT/NULL/ *1*.08 C3 WHERE *2%))
 2020* FILE20 (STRING (PRINT/BLOCK,STUD SUPPRESS/% REPORT FILE IS FILE
 20% DESCRIBE *1% PRINT/NULL/ *1*.08 C3 WHERE *2%))

SYSTEM RELEASE NUMBER 2-30S

DATA BASE NAME IS LAW

DEFINITION NUMBER 26

DATA BASE CYCLE 215

- 1* CALLER (NAME X(10) WITH SOME FUTURE ADDITIONS)
- 2* TYPE (NAME X(10) WITH SOME FUTURE ADDITIONS)
- 3* LOT (NAME X(12))
- 4* P NUMBER (NAME X(10) WITH SOME FUTURE ADDITIONS)
- 5* QUANTITY (NON-KEY INTEGER NUMBER 9(6))
- 6* MANUFACTURER (NAME X(10) WITH SOME FUTURE ADDITIONS)
- 7* INITIAL DISP (NAME X(10) WITH SOME FUTURE ADDITIONS)
- 8* FINAL DISP (NAME X(10) WITH SOME FUTURE ADDITIONS)
- 9* FIRING RECORD NUMBER (NON-KEY NAME X(10))
- 10* TEST DATE (DATE)
- 11* ASSEMBLY DATE (DATE)
- 12* TEST SERIES (NON-KEY NAME X(10))
- 13* TOTAL SAMPLES (NON-KEY INTEGER NUMBER 9(5))
- 14* ITEM NOMENCLATURE (NON-KEY TEXT X(80))
- 15* CAUSE OF REJECTION (NON-KEY NAME X(10))
- 16* LOT COMMENTS (NON-KEY TEXT X(80))
- 18* SPECIFICATION (NAME X(13))
- 19* DRAWING (NAME X(10))
- 100* BALLISTIC TEST INFO (RG)
 - 110* PHASE (NAME X(10) IN 100)
 - 111* FLAG (INTEGER NUMBER 9 IN 100)
 - 112* AMBIENT TEMP (INTEGER NUMBER 9999 IN 100)
 - 113* NUMBER FIRED (INTEGER NUMBER 999 IN 100)
 - 114* DATE FIRED (DATE IN 100)
 - 115* APPROX TIME FIRED (NON-KEY INTEGER NUMBER 9999 IN 100)
 - 116* QE (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 - 117* TARGET DISTANCE (NON-KEY INTEGER NUMBER 9(5) IN 100)
 - 118* TEST REMARKS (NON-KEY TEXT X(80) IN 100)
 - 121* VEL W (NON-KEY INTEGER NUMBER 999 IN 100)
 - 122* VEL MEAN (DECIMAL NUMBER 9(6).999 IN 100)
 - 123* VEL STL (DECIMAL NUMBER 9(6).999 IN 100)
 - 124* VEL MAX (DECIMAL NUMBER 9(6).999 IN 100)
 - 125* VEL MIN (DECIMAL NUMBER 9(6).999 IN 100)
 - 130* N HORZ IMPACT COORD (INTEGER NUMBER 999 IN 100)
 - 131* MEAN HGRZ IMPACT COORD (DECIMAL NUMBER 9(6).999 IN 100)
 - 132* STD HGRZ IMPACT COORD (DECIMAL NUMBER 9(6).999 IN 100)
 - 133* N VERT IMPACT COORD (INTEGER NUMBER 999 IN 100)
 - 134* MEAN VERT IMPACT COORD (DECIMAL NUMBER 9(6).999 IN 100)
 - 135* STD VERT IMPACT COORD (DECIMAL NUMBER 9(6).999 IN 100)
 - 136* MAX HGRZ DISPLACEMENT (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 - 137* MAX VERT DISPLACEMENT (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
- 140* DEFECT SUMMARY (RG IN 100)
 - 141* DEFECT NAME (NAME X(10) IN 140)
 - 142* NO OF OCC (INTEGER NUMBER 99 IN 140)
 - 143* DEFECT NOTE (NON-KEY NAME X(10) IN 140)

150* K BY R INFO-LAK (RG IN 100)
 151* ROUND NUMBER (NON-KEY INTEGER NUMBER 9999 IN 150)
 152* HANGFIRE TIME (NON-KEY DECIMAL NUMBER 9(6).999 IN 150)
 153* VLL (NON-KEY DECIMAL NUMBER 9(6).999 IN 150)
 154* HO COUNT (NON-KEY DECIMAL NUMBER 9(6).999 IN 150)
 155* VERT COURL (NON-KEY DECIMAL NUMBER 9(6).999 IN 150)
 156* IMPACT FUNCTION (NAME X(10) IN 150)
 157* WIND VELOCITY (NON-KEY INTEGER NUMBER 9999 IN 150)
 158* WIND DIRECTION (NON-KEY INTEGER NUMBER 9999 IN 150)
 159* PENEetration (NAME X(15) IN 150)
 160* EXIT HOLE AREA (NON-KEY DECIMAL NUMBER 9(6).999 IN 150)
 161* WALK CONTENT (NON-KEY INTEGER NUMBER 9999 IN 150)
 162* DEFECT (NAME X(10) IN 150)
 163* FLAG (INTEGER NUMBER 9 IN 150)
 900* DATA CARD INFO (RG)
 901* COMPONENT NAME (NAME X(10) IN 900)
 902* COMPONENT R NUMBER (NAME X(10) IN 900)
 910* COMPONENT LOT INFO (RG IN 900)
 911* COMPONENT LOT (NAME X(12) IN 910)
 912* COMPONENT QUANTITY (NON-KEY INTEGER NUMBER 9(6) IN 910)
 913* COMPONENT DATE (DATE IN 910)
 920* CURRENT INFO (RG)
 921* COMMENTS (NON-KEY TEXT X(80) IN 920)
 4001* AIDS (RG)
 4002* ZZZZ (NON-KEY TEXT X(20) IN 4001)
 200* STATIC TEST INFO-PEN (RG)
 201* H-SP (NON-KEY INTEGER NUMBER 9(7) IN 200)
 202* FLAG-SE (DECIMAL NUMBER 99.99 IN 200)
 203* STD-SP (DECIMAL NUMBER 99.99 IN 200)
 204* MIN-SP (DECIMAL NUMBER 99.99 IN 200)
 205* MAX-SP (DECIMAL NUMBER 99.99 IN 200)
 206* K8-SP (DECIMAL NUMBER 99.99 IN 200)
 207* K24-SP (DECIMAL NUMBER 99.99 IN 200)
 210* K BY R INFO-STATIC PEN (RG IN 200)
 211* PEN-SP (NON-KEY DECIMAL NUMBER 99.99 IN 210)
 212* FLAG-SE (NAME X IN 210)
 4003* ZZZ1 (STRING (MESSAGE FILE IS OUTPUT\$PRINT/NULL SUPPRESS,STUE S
 UPRESS/ZZZZ))
 4004* ARIES (STRING (MESSAGE FILE IS DUMP\$CONTROL\$DOWN IS ARIES\$MESSAG
 E FILE IS OUTPUT\$PRINT/NULL SUPPRESS,STUE SUPPRESS/ZZZZ))
 4005* DISPLAY (STRING (PRINT/NAME,STUE,GROUP, NULL SUPPRESS, REPEAT SUP
 PRESS/BY ENTRY, C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C12, C13, C14, C15 W C
 3 LG *1*2*ZZZ1*))
 4006* COMPLUI (STRING (PRINT/NAME,STUE,GROUP, NULL SUPPRESS, REPEAT SUP
 PRESS/BY ENTRY, C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C12, C13, C14, C15, C170
 , C172 W: C3 LG *1*2*ZZZ1*))
 4007* CRLUTS (STRING (PRINT/NAME,STUE,GROUP, NULL SUPPRESS, REPEAT SUPP
 PRESS/BY ENTRY, C2, C3, C5, C7, C10 W: C173 LG *1*2*ZZZ1*))
 4008* CSEARCH (STRING (LIST/REPEAT SUP, TITLE U(20)*1*CR*LOT NUMBER, B
 (3), L(6)CR*U(40), B(3), L(10)CR DISP, B(3), L(10)CR TEST, DATE, B(3),
 L(10), COMPONENT+QUANT, C3, C5, C7, C10, C173, OB C3, C10 W: C173 LG *1
 *2*ZZZ1*))

4005* SUMMARY (STRING (PRINT/MARE,STOE,GROUP, NULL SUPPRESS,REPEAT SUP
PRESS,SY EN(MY,C1,C2,C3,C4,C5,C6,C7,C9,C10,C12,C13,C14,C15,C100
C130 WH C3 EQ *1*%ZZZ1*%))

3000* F72LIST (STRING (LIST/REPEAT SUP,TITLE D(20)*1*F(60),*H1**H2*
/C3,C10,C7,C6,C110,C141,C142,C121,C122,C123,C130,C131,C132,C133
C134,C135,OB C3,C110 WH C4 EQ M72*M72XX AND *1*%))

3003* F73LIST (STRING (LIST/REPEAT SUP,TITLE D(20)*1*F(60),*H1**H2*
/C3,C10,C7,C6,C110,C141,C142,C121,C122,C123,C130,C131,C132,C133
C134,C135,OB C3,C110 WH C4 EQ M73*M73XX AND *1*%))

5001* M1 (STRING (L(11)LOT,B(1),L(10)TEST+DATE,B(1),L(3)IN,SP,B(1),
L(8)FINAL+DISP,B(1),L(10)TEST+PHASE,L(1),L(10)DEFECT+TYPE,B(1),
L(2)NO+CF,B(2),))

5002* H2 (STRING (R(2)+N,B(1),R(9)VEL+FEAN,B(1),R(9)+SL-B(2),R
(2)+R,B(1), R(9)NOM+FEAN,B(1),R(9)+SL-B(2),R(2)+N,B(1),R(9)
VERT+MEAN,B(1),R(9)+STD-))

5005* F18LIST (STRING (LIST/REPEAT SUP,TITLE D(20)*1*F(60), L(10)
LOT,L(14)DISP, R(3)N,R(5)MEAN,R(5)STD,R(5)MIN,R(5)MAX,R(5)K-B,R(
5)K-24/C3,C7,C201,C202,C203, C204,C205,C206,C207,OB C3 WH C4
EQ M18 AND *1*%))

3010* F72LOT (STRING (LIST/REPEAT SUP,TITLE D(20)*1*F(60),L(10)SUA
NITY,L(4)INIT+DISP,B(3),L(10)FINAL DISP,L(10)ASSEMBLY+DATE,L(1
0)TEST DATE,L(10)TEST+SERIES, L(20)CAUSE OF REJECTION,L(20)CCM
ENTS/C3,C5,C7,C6,C11,C10,C12,C15,C16 WH C4 EQ M72*M72AC AND C3
EQ *1*%*6PAP*))

5011* GPAP (STRING (*GPAPA**GPAPB**GPAPC**GPAPD**))

3012* GPAPA (STRING (LIST/REPEAT SUP,TITLE L(10)+PHASE,R(7)+SAMPLES,R
(3)+VEL+N, B(1),R(9)+VEL+ MEAN,B(1),R(9)+VEL +STD,R(5)+HOR+ N,B
(1),R(9)+HOR+MEAN,B(1),R(9)+HOR+ STD,R(2),R(9)+HOR +MAX DISP,R
(4)+VERT+ N,B(1),R(9)+VERT+ MEAN,B(1),R(9)+VERT +STD,*6PAPA1*))

3016* GPAPA1 (STRING (B(2),R(9)+VERT+ MAX DISP/
C110,C113,C121,C122,C123,C131,C131,C132,C1
33,C133,C134,C135,C137,OB C110 WH SA%))

3013* GPAPB (STRING (LIST/REPEAT SUP,TITLE L(10)+PHASE,L(10)+DEFECT,
(3)+K0 +GCC,L(10)+COMMENTS/C110,C141,C142,C143,OB C110,C141 WH
SA%))

3014* GPAPC (STRING (LIST/REPEAT SUP,TITLE L(13)+LOT,L(10)+COMPONENT
L(20)+COMPONENT+ LOT,R(5)+QUANTITY,L(10)+DATE OF MANUFACTURE/
C3,C171,C173,C174,C175,OB C171,C173 WH SA%))

3015* GPAPD (STRING (LIST/REPEAT SUP,TITLE L(20)ROUND BY NGLMD,F(60)
L(13)LOT,L(10)PHASE,R(5)ROUND,R(10)HANGFIRE+TIME,R(10)VELOCIT
Y,R(10)HUR+IMPACT,L(10)VERT+IMPACT,L(10)IMPACT+FUNC,C3,L(10)PE
REHATICN, L(10)DEFECT/*GPAPD1*))

3017* GPAPD1 (STRING (L(3),C110,C15
1,C152,C153,C154,C155,C156,C159,C162,OB C110 WH SA%))

2001* FILE1 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE1
 % DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2002* FILE2 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE2
 % DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2003* FILE3 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE3
 % DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2004* FILE4 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE4
 % DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2005* FILE5 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE5
 % DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2006* FILE6 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE6
 % DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2007* FILE7 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE7
 % DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2008* FILE8 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE8
 % DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2009* FILE9 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE9
 % DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2010* FILE10 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE
 10% DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2011* FILE11 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE
 11% DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2012* FILE12 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE
 12% DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2013* FILE13 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE
 13% DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2014* FILE14 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE
 14% DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2015* FILE15 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE
 15% DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2016* FILE16 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE
 16% DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2017* FILE17 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE
 17% DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2018* FILE18 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE
 18% DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2019* FILE19 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE
 19% DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))
 2020* FILE20 (STRING (PRINT/BLOCK,STOB SUPPRESS/% REPORT FILE IS FILE
 20% DESCRIBE *1% PRINT/NULL/ *1*.0B C3 WHENE *2%))

SYSTEM RELEASE NUMBER 2.305

DATA BASE NAME IS WEAPON

DEFINITION NUMBER 3

DATA BASE CYCLE 1

1* CALIBER (NAME X(10) WITH SOME FUTURE ADDITIONS)

2* MODEL NUMBER (NAME X(10) WITH SOME FUTURE ADDITIONS)

3* TUBE NUMBER (NAME X(10) WITH SOME FUTURE ADDITIONS)

4* GUN NUMBER (NAME X(10))

5* ROUNDS FIRED (INTEGER NUMBER 9(6))

6* MANUFACTURER (NAME X(10) WITH SOME FUTURE ADDITIONS)

7* PAIR BORE START (NON-KEY DECIMAL NUMBER 9(6).999)

8* PAIR BORE FINISH (NON-KEY DECIMAL NUMBER 9(6).999)

9* STAR GAGE ALGEBRA (NAME X(10))

10* PROVING GROUP (NAME X(10))

11* TEST DATE (DATE)

100* RIFLED WEAPON INFO (RG)

101* CHAMBER START (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)

102* CHAMBER FINISH (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)

103* DEPTH OF BREECH RECESS (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)

104* NUMBER OF LANDS GROOVES (INTEGER NUMBER 999 IN 100)

105* LENGTH OF TUBE (DECIMAL NUMBER 9(6).999 IN 100)

106* BASIC LANDS DIAMETER (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)

107* BASIC GROOVES DIAMETER (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)

120* TUBE MEASUREMENT INFO (RG IN 100)

121* DISTANCE FROM REAR FACE OF BREECH (NON-KEY DECIMAL NUMBER 9(6).999 IN 120)

122* DISTANCE FROM MUZZLE FACE (NON-KEY DECIMAL NUMBER 9(6).999 IN 120)

123* DISTANCE FROM REAR FACE OF TUBE (NON-KEY DECIMAL NUMBER 9(6).999 IN 120)

124* VERTICAL LANDS DIAMETER (NON-KEY DECIMAL NUMBER 9(6).999 IN 120)

125* HORIZ LANDS DIAMETER (NON-KEY DECIMAL NUMBER 9(6).999 IN 120)

126* VERTICAL GROOVES DIAMETER (NON-KEY DECIMAL NUMBER 9(6).999 IN 120)

127* HORIZ GROOVES DIAMETER (NON-KEY DECIMAL NUMBER 9(6).999 IN 120)

140* FOLLOWER MEASUREMENT INFO (RG IN 100)

141* PU DISTANCE FROM REAR FACE OF BREECH (NON-KEY DECIMAL NUMBER 9(6).999 IN 140)

142* PU DISTANCE FROM REAR FACE OF TUBE (NON-KEY DECIMAL NUMBER 9(6).999 IN 140)

143* PU VERTICAL LANDS DIAMETER (NON-KEY DECIMAL NUMBER 9(6).999 IN 140)

144* PU HORIZ LANDS DIAMETER (NON-KEY DECIMAL NUMBER 9(6).999 IN 140)

145* PU VERTICAL GROOVES DIAMETER (NON-KEY DECIMAL NUMBER 9(6).999 IN 140)

146* PU HORIZ GROOVES DIAMETER (NON-KEY DECIMAL NUMBER 9(6).999 IN 140)

136

4016* CHAMBER (STRING (LIST/REPEAT SUP.TITLE U(30)CHAMBER MEASUREMENT
DATA,L(10)TUBE+NUMBER,L(10)RHUS+FIELD,L(16)CHAMBER LIST+REAR F
ACE BKEEHL(12)CHAMBER DIST+PUZZLE FACE,L(14)CHAMBER LIST+REAR
FACE TUBE,L(10)CHAMBER+BASIC DIAM,L(10)CHAMBER+ ZERO,CHAMBERA
*)

4017* CHAMBERA (STRING (L(10)CHAMBER+VERT GAUGE,L(11)CHAMBER+HORIZ GA
UGE/ C3,C5, C161,C162,C163,C164,C165,C166,C167 WH SAME*))

4020* SMOOTH (STRING (PRINT/NULL SUP.% *WEAPON1* *1* AND C4 EQ *2* *
SMOOTH1* *SMOOTH2* PRINT/NAME, NULL SUP.STUB/ C301 WH SAME*))

4021* SMOOTH1 (STRING (PRINT/NAME, NULL SUP.IDENT, STUB, GOLF/ C201 WH
SAME*))

4022* SMOOTH2 (STRING (LIST/REPEAT SUP.TITLE D(20)SMOOTH HOLE PUZZLE
DATA,L(10)TUBE+NUMBER,L(10)RHUS+FIELD,L(11)DIST FRCH+PUZZLE FAC
E,L(10)VERTICAL+DIAMETER,L(10)HORIZ+DIAMETER/ C3,C5,C21,C22,C2
23 WH SAME*))

2001* FILE1 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE1
% DESCRIBE *1*PRINT *1* WHERE *2*%))

2002* FILE2 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE2
% DESCRIBE *1*PRINT *1* WHERE *2*%))

2003* FILE3 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE3
% DESCRIBE *1*PRINT *1* WHERE *2*%))

2004* FILE4 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE4
% DESCRIBE *1*PRINT *1* WHERE *2*%))

2005* FILE5 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE5
% DESCRIBE *1*PRINT *1* WHERE *2*%))

2006* FILE6 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE6
% DESCRIBE *1*PRINT *1* WHERE *2*%))

2007* FILE7 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE7
% DESCRIBE *1*PRINT *1* WHERE *2*%))

2008* FILE8 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE8
% DESCRIBE *1*PRINT *1* WHERE *2*%))

2009* FILE9 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE9
% DESCRIBE *1*PRINT *1* WHERE *2*%))

2010* FILE10 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
10% DESCRIBE *1*PRINT *1* WHERE *2*%))

2011* FILE11 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
11% DESCRIBE *1*PRINT *1* WHERE *2*%))

2012* FILE12 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
12% DESCRIBE *1*PRINT *1* WHERE *2*%))

2013* FILE13 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
13% DESCRIBE *1*PRINT *1* WHERE *2*%))

2014* FILE14 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
14% DESCRIBE *1*PRINT *1* WHERE *2*%))

2015* FILE15 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
15% DESCRIBE *1*PRINT *1* WHERE *2*%))

2016* FILE16 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
16% DESCRIBE *1*PRINT *1* WHERE *2*%))

2017* FILE17 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
17% DESCRIBE *1*PRINT *1* WHERE *2*%))

2018* FILE18 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
18% DESCRIBE *1*PRINT *1* WHERE *2*%))

2019* FILE19 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
19% DESCRIBE *1*PRINT *1* WHERE *2*%))

2020* FILE20 (STRING (PRINT/BLCK,STUB SUPPRESS/% REPORT FILE IS FILE
20% DESCRIBE *1*PRINT *1* WHERE *2*%))

1060* HELP (STRING (PRINT/NULL SUP.IDENT,REPEAT SUP.STUB SLF, TREE/ C1
010,C1030,C1050,OB C1051,C1051 WHERE C1010 EQ HELP/PRINT/STUB,R
PEAT/21))

1070* HELP1 (STRING (PRINT/NULL SUP.IDENT,REPEAT SUP.STUB SUP, TREE/
C1010,C1030,C1050,OB C1051 WHERE C1010 EQ *1* PRINT/STUB
+PEAT/31))

1080* HELP2 (STRING (PRINT/NULL SUP.IDENT,HELP,AT SUP,STUB SUP, GROUP/
C1010, C1030,C1050,OB C1051 WHERE C1010 EQ *1* AND C1020
EQ *2*PRINT/STUB,HEPEAT, TREE/31))

1090* HELPCOMAND (STRING (LIST/NULL SUP.TITLE U(5)ARIES COMMAND SLRM
ANY, (12)+COMMAND NAME,B(20)/ C1010 WHERE C1 EQ HELP/31))

DATA BASE NAME IS T-075

DEFINITION NUMBER 25

DATA BASE CYCLE 844

1* CALIBER (NAME X(10) WITH SOME FUTURE ADDITIONS)
2* TYPE (NAME X(10) WITH SOME FUTURE ADDITIONS)
3* LOT (NAME X(12))
4* P NUMBER (NAME X(10) WITH SOME FUTURE ADDITIONS)
5* QUANTITY (NON-KEY INTEGER NUMBER 9(6))
6* MANUFACTURER (NAME X(10) WITH SOME FUTURE ADDITIONS)
7* INITIAL DISP (NAME X(10) WITH SOME FUTURE ADDITIONS)
8* FINAL DISP (NAME X(10) WITH SOME FUTURE ADDITIONS)
11* ASSEMBLY DATE (DATE)
10* TYPE TEST (NON-KEY NAME X(10))
9* PROVING GROUND (NAME X(10) WITH SOME FUTURE ADDITIONS)
12* ITEM NOMENCLATURE (NON-KEY TEXT X(80))
13* BIN-REEL (NON-KEY NAME X(10))
14* FIRING RECORD NUMBER (NON-KEY NAME X(10))
15* CAUSE OF REJECTION (NON-KEY TEXT X(80))
19* DRAWING (NAME X(10))
18* SPECIFICATION (NAME X(13))
100* BALLISTIC TEST INFO-NUMBER (RG)
101* PHASE (NAME X(10) IN 100)
102* DATE FIRED (DATE IN 100)
103* WE (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
106* TIME R (NON-KEY INTEGER NUMBER 999 IN 100)
107* TIME REAR (DECIMAL NUMBER 9(6).999 IN 100)
108* TIME STD (DECIMAL NUMBER 9(6).999 IN 100)
109* IR POSITION (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
110* TIME N (NON-KEY INTEGER NUMBER 999 IN 100)
111* TIME REAR (DECIMAL NUMBER 9(6).999 IN 100)
112* TIME STD (DECIMAL NUMBER 9(6).999 IN 100)
113* IR VELOCITY N (NON-KEY INTEGER NUMBER 999 IN 100)
114* IR VELOCITY REAR (DECIMAL NUMBER 9(6).999 IN 100)
115* IR VELOCITY STD (DECIMAL NUMBER 9(6).999 IN 100)
116* TIME TO GO R (NON-KEY INTEGER NUMBER 999 IN 100)
117* TIME TO GO REAR (DECIMAL NUMBER 9(6).999 IN 100)
118* TIME TO GO STD (DECIMAL NUMBER 9(6).999 IN 100)
119* GO RANGE R (NON-KEY INTEGER NUMBER 999 IN 100)
120* GO RANGE REAR (DECIMAL NUMBER 9(6).999 IN 100)
121* GO RANGE STD (DECIMAL NUMBER 9(6).999 IN 100)
122* GO EL R (NON-KEY INTEGER NUMBER 999 IN 100)
123* GO EL REAR (DECIMAL NUMBER 9(6).999 IN 100)
124* GO EL STD (DECIMAL NUMBER 9(6).999 IN 100)
125* GO LAT DEFL R (NON-KEY INTEGER NUMBER 999 IN 100)
126* GO LAT DEFL REAR (DECIMAL NUMBER 9(6).999 IN 100)
127* GO LAT DEFL STD (DECIMAL NUMBER 9(6).999 IN 100)
128* GO VELOCITY R (NON-KEY INTEGER NUMBER 999 IN 100)
129* GO VELOCITY REAR (DECIMAL NUMBER 9(6).999 IN 100)
130* GO VELOCITY STD (DECIMAL NUMBER 9(6).999 IN 100)

140* 500M EL N (NON-KEY INTEGER NUMBER 999 IN 100)
 141* 500M EL MEAN (DECIMAL NUMBER 9(6).999 IN 100)
 142* 500M EL STD (DECIMAL NUMBER 9(6).999 IN 100)
 143* 500M LAT DEFL N (NON-KEY INTEGER NUMBER 999 IN 100)
 144* 500M LAT DEFL MEAN (DECIMAL NUMBER 9(6).999 IN 100)
 145* 500M LAT DEFL STD (DECIMAL NUMBER 9(6).999 IN 100)
 146* 500M VELOCITY N (NON-KEY INTEGER NUMBER 999 IN 100)
 147* 500M VELOCITY MEAN (DECIMAL NUMBER 9(6).999 IN 100)
 148* 500M VELOCITY STD (DECIMAL NUMBER 9(6).999 IN 100)
 149* 500M ELAPSED TIME N (NON-KEY INTEGER NUMBER 999 IN 100)
 150* 500M ELAPSED TIME MEAN (DECIMAL NUMBER 9(6).999 IN 100)
 151* 500M ELAPSED TIME STD (DECIMAL NUMBER 9(6).999 IN 100)
 152* 500M CPE (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 153* 500M PERCENT WITHIN (DECIMAL NUMBER 9(6).999 IN 100)
 154* 500M TARGET WIDTH (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 155* 500M TARGET HEIGHT (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 156* 500M VERT TARGET CENTER (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 160* 800M EL N (NON-KEY INTEGER NUMBER 999 IN 100)
 161* 800M EL MEAN (DECIMAL NUMBER 9(6).999 IN 100)
 162* 800M EL STD (DECIMAL NUMBER 9(6).999 IN 100)
 163* 800M LAT DEFL N (NON-KEY INTEGER NUMBER 999 IN 100)
 164* 800M LAT DEFL MEAN (DECIMAL NUMBER 9(6).999 IN 100)
 165* 800M LAT DEFL STD (DECIMAL NUMBER 9(6).999 IN 100)
 166* 800M VELOCITY N (NON-KEY INTEGER NUMBER 999 IN 100)
 167* 800M VELOCITY MEAN (DECIMAL NUMBER 9(6).999 IN 100)
 168* 800M VELOCITY STD (DECIMAL NUMBER 9(6).999 IN 100)
 169* 800M ELAPSED TIME N (NON-KEY INTEGER NUMBER 999 IN 100)
 170* 800M ELAPSED TIME MEAN (DECIMAL NUMBER 9(6).999 IN 100)
 171* 800M ELAPSED TIME STD (DECIMAL NUMBER 9(6).999 IN 100)
 172* 800M CPE (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 173* 800M PERCENT WITHIN (DECIMAL NUMBER 9(6).999 IN 100)
 174* 800M TARGET WIDTH (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 175* 800M TARGET HEIGHT (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 176* 800M VERT TARGET CENTER (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 179* IMPACT EL N (NON-KEY INTEGER NUMBER 999 IN 100)
 180* IMPACT EL MEAN (DECIMAL NUMBER 9(6).999 IN 100)
 181* IMPACT EL STD (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 182* IMPACT LAT DEFL N (NON-KEY INTEGER NUMBER 999 IN 100)
 183* IMPACT LAT DEFL MEAN (DECIMAL NUMBER 9(6).999 IN 100)
 184* IMPACT LAT DEFL STD (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 185* IMPACT VELOCITY N (NON-KEY INTEGER NUMBER 999 IN 100)
 186* IMPACT VELOCITY MEAN (DECIMAL NUMBER 9(6).999 IN 100)
 187* IMPACT VELOCITY STD (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 188* IMPACT RANGE N (NON-KEY INTEGER NUMBER 999 IN 100)
 189* IMPACT RANGE MEAN (DECIMAL NUMBER 9(6).999 IN 100)
 190* IMPACT RANGE STD (DECIMAL NUMBER 9(6).999 IN 100)
 191* TIME TO IMPACT N (NON-KEY INTEGER NUMBER 999 IN 100)
 192* TIME TO IMPACT MEAN (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 193* TIME TO IMPACT STD (NON-KEY DECIMAL NUMBER 9(6).999 IN 100)
 198* DATA SLI NUMBER (NON-KEY INTEGER NUMBER 999 IN 100)
 199* NUMBER INVALID RDS (NON-KEY INTEGER NUMBER 999 IN 100)

200* K B) K INFO-RADAR (RG IN 100)

201*	ROUND NUMBER (INTEGER NUMBER 999 IN 200)
202*	TIME (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
203*	TIME (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
205*	IK VELOCITY (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
206*	TIME (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
207*	BO RANGE (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
208*	BO ELEV (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
209*	BO DEFL (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
210*	BO VEL (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
211*	ROCKET WEIGHT (DECIMAL NUMBER 9(6).999 IN 200)
212*	WIND VEL (NON-KEY INTEGER NUMBER 999 IN 200)
213*	WIND DIR (NON-KEY INTEGER NUMBER 9999 IN 200)
214*	ROCKET MOTOR RESISTANCE (DECIMAL NUMBER 9(6).999 IN 200)
215*	FUZE ACTION (NON-KEY NAME X(5) IN 200)
220*	500F EL (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
222*	500M LAT DEFL (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
224*	500M ELAPSED TIME (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
225*	500M VELOCITY (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
230*	800M EL (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
232*	800M LAT DEFL (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
233*	800M ELAPSED TIME (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
234*	800M VELOCITY (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
235*	TIME TO IMPACT (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
236*	IMPACT RANGE (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
237*	IMPACT EL (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
238*	IMPACT LAT DEFL (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
239*	IMPACT VELOCITY (NON-KEY DECIMAL NUMBER 9(6).999 IN 200)
216*	FUZE LGT (NAME X(12) IN 200)
217*	RFLAG (NAME X IN 200)
240*	K BY K TIME HISTORY-RADAR (RG IN 200)
241*	ELAPSED TIME (NON-KEY DECIMAL NUMBER 9(6).999 IN 240)
242*	RANGE (NON-KEY DECIMAL NUMBER 9(6).999 IN 240)
243*	VELOCITY (NON-KEY DECIMAL NUMBER 9(6).999 IN 240)
244*	DEFL (NON-KEY DECIMAL NUMBER 9(6).999 IN 240)
245*	ELEV (NON-KEY DECIMAL NUMBER 9(6).999 IN 240)

300* PROP TEST INFO (RG)

301* FIRAL INHIBITING DATE (DATE IN 300)
 302* APPROX TEST DATE (DATE IN 300)
 303* LOT RECOMMENDATION (NAME X(10) IN 300)
 304* TALIANT LOT VALUE (NON-KEY DECIMAL NUMBER 9(6).999 IN 300)
 306* MOTOR TUBE LOT (NON-KEY NAME X(12) IN 300)
 307* IGNITER LOT (NON-KEY NAME X(12) IN 300)
 308* NOZZLE FIN LOT (NON-KEY NAME X(12) IN 300)
 309* TALIANT STATUS (NAME X(6) IN 350)
 320* STATIC TEST INFO-PROPELLANT (RG IN 300)
 321* EARLY MAXIMUM 165 N (NON-KEY INTEGER NUMBER 999 IN 320)
 322* EARLY MAXIMUM 165 MEAN (DECIMAL NUMBER 9(6).999 IN 320)
 323* EARLY MAXIMUM 165 STD (DECIMAL NUMBER 9(6).999 IN 320)
 324* EARLY MAXIMUM 165 STATUS (NAME X(6) IN 320)
 325* LATE MAXIMUM 165 N (NON-KEY INTEGER NUMBER 999 IN 320)
 326* LATE MAXIMUM 165 MEAN (DECIMAL NUMBER 9(6).999 IN 320)
 327* LATE MAXIMUM 165 STD (DECIMAL NUMBER 9(6).999 IN 320)
 328* LATE MAXIMUM 165 STATUS (NAME X(6) IN 320)
 329* FORMULA TIME 130 N (NON-KEY INTEGER NUMBER 9(7) IN 320)
 330* FORMULA TIME 130 MEAN (DECIMAL NUMBER 9(6).999 IN 320)
 331* FORMULA TIME 130 STD (DECIMAL NUMBER 9(6).999 IN 320)
 332* FORMULA TIME 130 STATUS (NAME X(6) IN 320)
 333* FORMULA TIME MINUS 10 N (NON-KEY INTEGER NUMBER 9(7) IN 320)
 334* FORMULA TIME MINUS 10 MEAN (DECIMAL NUMBER 9(6).999 IN 320)
 335* FORMULA TIME MINUS 10 STD (DECIMAL NUMBER 9(6).999 IN 320)
 336* FORMULA TIME MINUS 10 STATUS (NAME X(6) IN 320)
 350* PROP ATTRIBUTE INFO (RG IN 300)
 351* PROP SPECIFICATION (NON-KEY NAME X(15) IN 350)
 352* PERCENT DEFECTIVE CRITICAL (DECIMAL NUMBER 9(6).999 IN 350)
 353* PERCENT DEFECTIVE MAJOR ASSEMBLY (DECIMAL NUMBER 9(6).999 IN 350)
 354* PERCENT DEFECTIVE MINOR ASSEMBLY (DECIMAL NUMBER 9(6).999 IN 350)
 355* PERCENT DEFECTIVE XRAY (DECIMAL NUMBER 9(6).999 IN 350)
 360* PROP ATTRIBUTE FAILURE INFO (RG IN 350)
 361* PROP ATTRIBUTE NAME (NAME X(20) IN 360)
 362* PROP FAILURES +165 (INTEGER NUMBER 99 IN 360)
 363* PROP FAILURES +150 (INTEGER NUMBER 99 IN 360)
 364* PROP FAILURES -10 (INTEGER NUMBER 99 IN 360)
 365* PROP FAILURES -65 (INTEGER NUMBER 99 IN 360)
 366* PROP FAILURES TOTAL (INTEGER NUMBER 99 IN 360)
 367* PROP ATTRIBUTE EVALUATION (NAME X(6) IN 360)

4001* AIDS (RG)
 4002* ZZZZ (NON-KEY TEXT X(20) IN 4001)
 500* STATIC TEST INFO-MOTOR (RG)
 501* MOTOR STATIC DISPOSITION (NAME X(6) IN 500)
 520* MOTOR STATIC TEST (RG IN 500)
 521* CONDITIONING TEMP (NAME X(6) IN 520)
 523* MOTOR TEST DATE (DATE IN 520)
 530* MOTOR R BY R STATIC TEST INFO (RG IN 520)
 531* MOTOR NUMBER (INTEGER NUMBER 99 IN 530)
 532* MOTOR RESISTANCE (DECIMAL NUMBER 99.99 IN 530)
 533* MOTOR EARLY MAXIMUM THRUST (DECIMAL NUMBER 9(6).99 IN 530)
 534* MOTOR LATE MAXIMUM THRUST (DECIMAL NUMBER 9(6).99 IN 530)
 535* MOTOR IGNITION DELAY (DECIMAL NUMBER 9.999 IN 530)
 900* DATA CARD INFO (RG)
 901* COMPONENT NAME (NAME X(10) IN 900)
 902* COMPONENT NUMBER (NAME X(10) IN 900)
 910* COMPONENT LOT INFO (RG IN 900)
 911* COMPONENT LOT (NAME X(12) IN 910)
 912* COMPONENT QUANTITY (NON-KEY INTEGER NUMBER 9(6) IN 910)
 913* COMPONENT DATE (NON-KEY DATE IN 910)
 920* COMMENT INFO (RG)
 921* COMMENTS (NON-KEY TEXT X(80) IN 920)
 600* FALLISTIC TEST INFO-WARHEAD FUZE (RG)
 601* WHD TEST PHASE (NAME X(10) IN 600)
 602* WHD SAMPLES (NON-KEY INTEGER NUMBER 999 IN 600)
 603* WHD BULS (INTEGER NUMBER 999 IN 600)
 604* MOTOR LOT FIRED ON (NAME X(13) IN 600)
 605* LOT RELATED RALAR DATA (RG IN 600)
 606* MOTOR ROUND OF BOD (NON-KEY INTEGER NUMBER 999 IN 605)

4009* FUZE (STRING (PRINT/NAME,STUB,GROUP,NULL SUPPRESS,REPEAT SUPPRESS/ BY ENTRY,C1,C2,C3,C4,C5,C6,C7,C9,C10,C11,C12,C14,C15,C400,C450,C452,C480 WH C3 EQ *1**Z221*))

4010* FUDOR (STRING (PRINT/NAME,STUB,GROUP,NULL SUPPRESS,REPEAT SUPPRESS/ BY ENTRY,C1,C2,C3,C4,C5,C6,C7,C9,C10,C11,C12,C14,C15,C500,C520,C560,C562 WH C3 EQ *1**Z221*))

4003* Z221 (STRING (MESSAGE FILE IS OUTPUT*PRINT/NULL SUPPRESS,STUB SUPPRESS/Z222*))

4004* AKIES (STRING (MESSAGE FILE IS DUM,CONTROL*DBN IS AND*MESSAGE FILE IS OUTPUT*PRINT/NULL SUPPRESS,STUB SUPPRESS/Z222*))

4005* DISPLAY (STRING (PRINT/NAME,STUB,GROUP, NULL SUPPRESS,REPEAT SUPPRESS/ BY ENTRY,C1,C2,C3,C4,C5,C6,C7,C9,C10,C11,C12,C14,C15 WH C3 EQ *1**Z221*))

4006* SUMMARY (STRING (PRINT/NAME,STUB,GROUP, NULL SUPPRESS,REPEAT SUPPRESS/ BY ENTRY,C1,C2,C3,C4,C5,C6,C7,C9,C10,C11,C12,C14,C15,C100 WH C3 EQ *1**Z221*))

4007* CORRECT (STRING (PRINT/NAME,STUB,GROUP, NULL SUPPRESS,REPEAT SUPPRESS/ BY ENTRY,C1,C2,C3,C4,C5,C6,C7,C9,C10,C11,C12,C14,C15,C260,C262 WH C3 EQ *1**Z221*))

4008* FROM (STRING (PRINT/NAME,STUB,GROUP, NULL SUPPRESS,REPEAT SUPPRESS/ BY ENTRY,C1,C2,C3,C4,C5,C6,C7,C9,C10,C11,C12,C14,C15,C300,C350,C360 WH C3 EQ *1**Z221*))

3002* CLEAR KF (STRING (REMOVE C214 WH C214 EXISTS*CLEAR*))

3001* SET RF (STRING (GZIF *1** THEN ADD C214 EQ *2** WHERE *3**%CLF AN AUTOMATICALLY*))

2001* FILE1 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE1
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2002* FILE2 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE2
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2003* FILE3 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE3
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2004* FILE4 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE4
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2005* FILE5 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE5
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2006* FILE6 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE6
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2007* FILE7 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE7
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2008* FILE8 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE8
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2009* FILE9 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE9
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2010* FILE10 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE10
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2011* FILE11 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE11
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2012* FILE12 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE12
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2013* FILE13 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE13
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2014* FILE14 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE14
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2015* FILE15 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE15
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2016* FILE16 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE16
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2017* FILE17 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE17
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2018* FILE18 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE18
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2019* FILE19 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE19
% DESCRIBE *1*%PRINT *1* WHERE *2%))

2020* FILE20 (STRING (PRINT/BLOCK,STUB SUPPRESS/% REPORT FILE IS FILE20
% DESCRIBE *1*%PRINT *1* WHERE *2%))

EXAMPLE

No. 1

ARTIL DATA BASE

DBN IS ARTIL
 ASSIGNED ARTIL 58 626 10/22/75 11.16.47.
 FILE1(C4,C4 EQ M490 AND C112 EQ TEST AND C931 EXIST)
 FILE2(C412,C4 EQ M490 AND C112 EQ TEST)
 FILE4(C931,C4 EQ M490 AND C112 EQ TEST)
 FILE5(C432,C4 EQ M490 AND C112 EQ TEST)
 EXITS
 END SYSLP 2000

INPUT CARD SUMMARY FOR THIS RUN

INPUT DATA DISTRIBUTION, MEAN AND VARIANCE ANALYSIS USING BASIC
 IOVER=6 DO NOT PERFORM DATA CHECK
 IOVER=1 F-TESTING OVERRIDE) 2 INPUT GROUPS
 IOVER=2 BARTLETT'S TEST (NO OVERRIDE) 2 OR MORE INPUT GROUPS
 IOVER=3 T-TESTING OVERRIDE) 2 INPUT GROUPS
 IOVER=4 POOLED MEAN AND VARIANCE (NO OVERRIDE) 2 OR MORE INPUT GROUPS
 IOVER=5 T-TESTING OVERRIDE) 2 OR MORE INPUT GROUPS
 IO OVERRIDE FAILSAFE CHECKS ADD 10 TO IOVER
 EG. IOVER=11 PERFORMS F-TEST WITH OVERRIDE
 SBASIC I1=1,I2=4,I3=5
 SBASIC I1=4,I2=5,I3=11
 SBASIC I1=4,I2=5,I3=11
 PLOT PR FOR ABW PL VENT VENT
 SELECT I1=1,I2=4,I3=5, YMAX=0.50
 PLOT HISTOGRAMS OF PR FOR ABW PL VENT AND VENT CURR MEAN
 HIST I1=4,MEAN=10,MODE=0.50,LOW=0.3
 HIST I1=5,MEAN=10,MODE=0.50,LOW=0.3
 HIST I1=2,MEAN=10,MODE=0.50,LOW=0.3

--- FILE CONTENT SUMMARY FOR THIS RUN ---

FILE NUMBER	ELEMENT NUMBER	ELEMENT TYPE	ELEMENT NAME
1	3	NAME	LOT
2	412	INTEGER	VEL CORR MEAN-HEP
3	---	EMPTY FILE	---
4	431	DECIMAL	PE HOR
5	432	DECIMAL	PE VERT
6	---	EMPTY FILE	---
7	---	EMPTY FILE	---
8	---	EMPTY FILE	---
9	---	EMPTY FILE	---
10	---	EMPTY FILE	---
11	---	EMPTY FILE	---
12	---	EMPTY FILE	---
13	---	EMPTY FILE	---
14	---	EMPTY FILE	---
15	---	EMPTY FILE	---
16	---	EMPTY FILE	---
17	---	EMPTY FILE	---
18	---	EMPTY FILE	---
19	---	EMPTY FILE	---
20	---	EMPTY FILE	---

--- BASIC ---

LIST = 1.

LOWER = 0. VARIANCE-COVARIANCE MATRIX:

11 = 4. .6133E-02 .1344E-02

12 = 5. .1344E-02 .4164E-02

13 = 0. CORRELATION MATRIX:

14 = 0. 1.000 .2659

15 = 0. .2659 1.000

16 = 0. MEANS: .2277 .2050

17 = 0. STANDARD DEVIATIONS: .0763 .0643

18 = 0. NUMBER OBSERVATIONS: 6

110 = 0.

END

LISTING OF INPUT DATA

1	2
PE HOM	PE VERT
.260	.110
.150	.290
.090	.210
.170	.170
.160	.220
.190	.190
.280	.120
.250	.140
.250	.270
.210	.250
.160	.120
.250	.160
.260	.210
.220	.240
.210	.130
.220	.220
.160	.210
.320	.290
.310	.220
.230	.200
.170	.210
.250	.140
.220	.160
.250	.230
.250	.210
.120	.120
.220	.230
.120	.370
.120	.170
.190	.160
.260	.170
.360	.220
.170	.260
.120	.120
.150	.260
.140	.200
.140	.200
.240	.150
.160	.120
.350	.310
.400	.260
.260	.110
.310	.170
.370	.130
.150	.160
.220	.170
.200	.220
.440	.270
.450	.420
.280	.210
.220	.160
.270	.260
.170	.230
.220	.160
.150	.160
.130	.150
.100	.270
.180	.310
.150	.220
.310	.160

BASIC
LIST = 0.
LOWER = 1.
11 = 4.
12 = 5.
13 = 0.
14 = 0.
15 = 0.
16 = 0.
17 = 0.
18 = 0.
19 = 0.
110 = 0.
END

VARIANCE-COVARIANCE MATRIX:

.6133E-02 .334E-02
.134E-02 .416E-02

CORRELATION MATRIX:

1.000 .2659
.2659 1.0000

MEANS:
.2277 .2050

STANDARD DEVIATIONS:

.0723 .0645

NUMBER OBSERVATIONS: 60

TEST CHI-SQUARED= 24.517 VARIABLE NUMBER 2
SINCE CHI-SQUARED(CH=14)=23.685 AT 5 PERCENT LEVEL OF SIGNIFICANCE,
TEST LIST IS NOT ASSUMED NORMAL AT THIS SIGNIFICANCE LEVEL
IN ABOVE TEST DATA FROM XBAR+-3 SIGMA DIVIDED INTO 17 INTERVALS
10 TEST FOR NORMALITY 17=3 DEGREES OF FREEDOM USED

USER REQUESTED TEST NOT PERFORMED DUE TO NON-NORMAL INPUT DATA
REPLN WITH LOWER = 11 TO OVERRIDE NORMALITY CHECKS.

CHI-SQUARE DISTRIBUTION						
VALUES OF CHI SQUARE AT SPECIFIED LEVELS OF SIGNIFICANCE - SINGLE TAIL						
DF	.001	.005	.010	.025	.050	.100
1	10.63	7.88	6.63	5.02	3.84	2.71
2	13.82	10.60	9.21	7.38	5.99	4.61
3	16.27	12.84	11.34	9.35	7.81	6.25
4	18.47	14.86	13.28	11.14	9.49	7.78
5	20.52	16.75	15.09	12.84	11.15	9.24
6	22.46	18.55	16.81	14.45	12.59	10.60
7	24.32	20.28	18.48	16.01	14.07	12.02
8	26.13	22.00	20.09	17.53	15.51	13.36
9	27.68	23.59	21.67	19.02	16.92	14.69
10	29.59	25.19	23.21	20.48	18.31	16.01
11	31.26	26.66	24.72	21.90	19.68	17.33
12	32.91	28.30	26.22	23.34	21.03	18.55
13	34.53	29.80	27.71	24.76	22.40	19.80
14	36.12	31.30	29.14	26.15	23.68	21.07
15	37.70	32.80	30.58	27.50	25.00	22.31
16	39.25	34.29	32.00	28.85	26.30	23.55
17	40.79	35.70	33.40	30.19	27.60	24.80
18	42.31	37.16	34.80	31.53	28.90	26.00
19	43.82	38.58	36.19	32.90	30.19	27.20
20	45.32	40.00	37.57	34.20	31.41	28.40
21	46.80	41.40	38.93	35.56	32.67	29.60
22	48.27	42.79	40.29	36.78	33.90	30.80
23	49.73	44.18	41.64	38.00	35.17	32.00
24	51.18	45.56	43.00	39.19	36.42	33.20
25	52.62	46.93	44.35	40.60	37.65	34.40
26	54.05	48.29	45.69	41.90	38.89	35.60
27	55.48	49.64	47.00	43.20	40.11	36.79
28	56.89	51.00	48.29	44.50	41.33	37.90
29	58.30	52.34	49.58	45.70	42.56	39.10
30	59.70	53.67	50.89	47.00	43.78	40.30

VARIANCE-COVARIANCE MATRIX

6130E-02 .1349E-02
.1349E-02 .4169E-06

CORRELATION MATRIX

1.000 .2659
.2659 1.000

MEANS: .2277 .2050

STANDARD DEVIATIONS:

.0725 .0645

NUMBER OBSERVATIONS: 60

TEST CHI-SQUARE = 24.17 VARIABLE NUMBER 2
SINCE CHI-SQUARE (DF=14) = 23.685 AT 5 PERCENT LEVEL OF SIGNIFICANCE,
TEST DATA IS NOT ASSUMED NORMAL AT THIS SIGNIFICANCE LEVEL

IN ABOVE TEST DATA FROM ADAMS-3 SIGMA DIVIDED INTO 17 INTERVALS
IN TEST FOR NORMALITY 17 = 3 DEGREES OF FREEDOM USED

CALCULATED VARIANCE F-RATIO FOR ABOVE DATA = 1.473

DEGREES OF FREEDOM FOR NUMERATOR = 59

DEGREES OF FREEDOM FOR DENOMINATOR = 59

IF F-RATIO IS GREATER THAN F-THEORETICAL, REJECT HYPOTHESIS OF EQUALITY OF VARIANCES... OTHERWISE ACCEPT

STATISTICS
1157 F 0.
10018 F 11.
11 F 0.
12 F 5.
13 F 0.
14 F 0.
15 F 0.
16 F 0.
17 F 0.
18 F 0.
19 F 0.
110 F 0.
END

LISTING OF INPUT DATA

NUM	LUT	PE HOR	PE VERT
1	MA-100-028	.260	.110
2	MA-100-029	.150	.290
3	MA-100-030	.090	.210
4	MA-100-031	.170	.170
5	MA-100-032	.160	.220
6	MA-100-033	.190	.190
7	MA-100-034	.280	.120
8	MA-101-001	.250	.140
9	MA-101-002	.250	.270
10	MA-101-003	.210	.250
11	MA-101-004	.160	.120
12	MA-101-005	.250	.180
13	MA-101-006	.260	.210
14	MA-101-007	.220	.240
15	MA-101-008	.210	.130
16	MA-101-009	.220	.220
17	MA-101-010	.160	.210
18	MA-101-011	.320	.290
19	MA-101-012	.310	.220
20	MA-101-013	.230	.200
21	MA-101-014	.170	.210
22	MA-101-015	.250	.140
23	MA-101-016	.220	.180
24	MA-101-017	.250	.230
25	MA-101-018	.250	.210
26	MA-101-019	.120	.120
27	MA-101-020	.250	.230
28	MA-101-021	.220	.370
29	MA-101-022	.190	.170
30	MA-101-023	.190	.160
31	MA-102-001	.280	.170
32	MA-102-003	.360	.220
33	MA-102-005	.170	.200
34	MA-102-006	.120	.120
35	MA-102-007	.190	.260
36	MA-102-008	.140	.200
37	MA-102-009	.140	.260
38	MA-102-010	.240	.150
39	MA-102-011	.160	.120
40	MA-102-012	.350	.310
41	MA-102-013	.400	.260
42	MA-102-014	.260	.110
43	MA-102-015	.310	.170
44	MA-102-016	.370	.130
45	MA-102-017	.150	.180
46	MA-102-018	.220	.170
47	MA-102-019	.200	.220
48	MA-102-020	.440	.270
49	MA-102-021	.440	.430
50	MA-102-024	.200	.210
51	MA-102-025	.220	.160
52	MA-102-026	.270	.260
53	MA-102-027	.170	.230
54	MA-102-028	.220	.180
55	MA-102-029	.150	.180
56	MA-102-030	.150	.130
57	MA-102-031	.100	.270
58	MA-102-032	.160	.310
59	MA-102-033	.190	.250
60	MA-102-034	.310	.160

SLUTPL1

IMPF = 1.

IMU1 = 4.

IMU2 = 5.

IMU3 = 0.

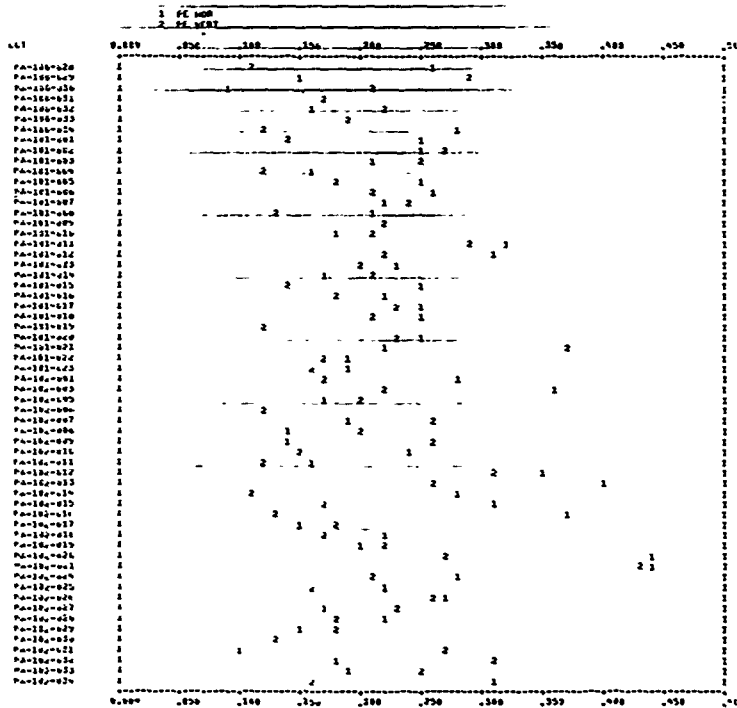
YMPF = 0.0.

YPA1 = 0.5E+00.

YBA1 = -0.95E+02.

YBA2 = -0.95E+02.

SLND



RELQUENCY	1	2	3	4	5	6	7	8	9	10	11	12
17 *					1							*
16 *					1							*
15 *					1							*
14 *					1							*
13 *					1							*
12 *					1							*
11 *					1							*
10 *					1							*
9 *					1							*
8 *					1							*
7 *					1							*
6 *					1							*
5 *					1							*
4 *					1							*
3 *					1							*
2 *					1							*
1 *					1							*
CLASS	1	2	3	4	5	6	7	8	9	10	11	12

PE HOR

HISTOGRAM SUMMARY

INTERVAL	LOWER BOUND	UPPER BOUND	FREQUENCY	PERCENT	CUMULATIVE FREQ	CUMULATIVE PERCENT
1	*****	.001	0	0.00	0	0.00
2	.000	.009	0	0.00	0	0.00
3	.050	.099	1	1.67	1	1.67
4	.100	.149	6	10.00	7	11.67
5	.150	.199	17	28.33	24	40.00
6	.200	.249	12	20.00	36	60.00
7	.250	.299	14	23.33	50	83.33
8	.300	.349	5	8.33	55	91.67
9	.350	.399	2	3.33	57	95.00
10	.400	.449	3	5.00	60	100.00
11	.450	.499	0	0.00	60	100.00
12	.500	.549	0	0.00	60	100.00

PE HOR

MEAN = 5.1
 MEDIAN = 10.1
 MODE = 4.1
 RANGE = 0.5E+001
 MIN = 0.0
 MAX = 12.0

CLASS	1	2	3	4	5	6	7	8	9	10	11	12
FREQUENCY	18	17	16	15	14	12	11	10	9	6	4	2
PERCENT	18.0	17.0	16.0	15.0	14.0	12.0	11.0	10.0	9.0	6.0	4.0	2.0
CUMULATIVE PERCENT	18.0	35.0	51.0	66.0	80.0	92.0	103.0	113.0	122.0	128.0	132.0	134.0

HISTOGRAM SUMMARY

INTERVAL	LOWER BOUND	UPPER BOUND	FREQUENCY	PERCENT	CUMULATIVE FREQ	CUMULATIVE PERCENT
1	0.000	0.000	0	0.00	0	0.00
2	0.000	0.000	0	0.00	0	0.00
3	0.000	0.000	0	0.00	0	0.00
4	0.000	0.000	12	20.00	12	20.00
5	0.000	0.000	15	25.00	27	45.00
6	0.000	0.000	14	30.00	41	75.00
7	0.000	0.000	11	18.33	52	93.33
8	0.000	0.000	2	3.33	54	96.67
9	0.000	0.000	1	1.67	55	98.33
10	0.000	0.000	1	1.67	56	100.00
11	0.000	0.000	0	0.00	56	100.00
12	0.000	0.000	0	0.00	56	100.00

PR. VEH1

[illegible]

RESIDUAL SUMMARY						
INTERVAL	LEAFR. COUNT	LEAFR. COUNT	FREQUENCY	PERCENT	CUMULATIVE FREQ.	CUMULATIVE PERCENT
1	*****	5799.999	0	0.00	0	0.00
2	5800.000	5802.999	0	0.00	0	0.00
3	5816.000	5819.999	0	0.00	0	0.00
4	5820.000	5829.999	2	4.33	2	3.33
5	5836.000	5859.999	11	10.33	13	21.67
6	5840.000	5859.999	12	20.00	25	41.67
7	5850.000	5859.999	19	51.67	44	73.33
8	5860.000	5859.999	12	20.00	56	93.33
9	5870.000	5879.999	3	5.00	59	98.33
10	5880.000	5889.999	1	1.67	60	100.00
11	5890.000	5899.999	0	0.00	60	100.00
12	5900.000	*****	0	0.00	60	100.00
VEL CORR. BEAM=HELP						

EXAMPLE

No. 2

LAW DATA BASE

LUN IS LAW
ASSIGNED LAW

```
*FILE1(LUT, CALIBER EQ 66 MM AND INITIAL DISP EQ P .A. PHASE EQ ACC+701%
*FILE2(YESI DATE, CALIBER EQ 66 MM AND INITIAL DISP EQ A)%
*FILE3(QUANTITY, CALIBER EQ 66 MM AND INITIAL DISP EQ A)%
*FILE4(LUT, CALIBER EQ 66 MM AND INITIAL DISP EQ A)%
*FILE5(VEL FLAK, CALIBER EQ 66 MM AND INITIAL DISP EQ A AND PHASE EQ ACC+701%
*FILE6(C136, CALIBER EQ 66 MM AND INITIAL DISP EQ A AND PHASE EQ ACC+701%
*FILE7(C137, CALIBER EQ 66 MM AND INITIAL DISP EQ A AND PHASE EQ ACC+701%
*FILE8(C112, CALIBER EQ 66 MM AND INITIAL DISP EQ A AND PHASE EQ ACC+701%
*FILE9(VEL MEAN, CALIBER EQ 66 MM AND INITIAL DISP EQ A AND PHASE EQ ACC+1401%
*FILE10(VEL MEAN, CALIBER EQ 66 MM AND INITIAL DISP EQ A AND PHASE EQ ACC+401%
*FILE11(VEL MEAN, CALIBER EQ 66 MM AND INITIAL DISP EQ A AND PHASE EQ DROP+701%
*FILE12(VEL MEAN, CALIBER EQ 66 MM AND INITIAL DISP EQ A AND PHASE EQ W-PEN)%
LXIT%
END SYSTEM 2000
```

--- INPUT CARD SUMMARY FOR THIS RUN ---

```
C
C SAMPLE ARIS INPUT DECK STRUCTURE
C
COMMENT HERE IS A SAMPLE OF THE ARIS SYSTEM IN ACTION FOR LUN IS LAW
FOUTPUT LIST=13
IBASIC LIST=1,11=9,12=10,13=11,14=12%
IBASIC LIST=1,11=5,12=6,13=7%
$PLOT IDLP=6,IND1=5%
$PLOT IDLP=7,IND1=5%
$NREG IDLP=5, IND1=6, IND2=7%
$NREG IDLP=5, IND1=6, IND2=7, IIRAN1=10, INES=1, LIST=13
$TIME IDLP=5, IND1=2, IND2=4%
$TIME IDLP=5, IND1=2, IND2=4, YMAX=1000.%
$TIME IDLP=5, IND1=2, IND2=4, YMAX1=475., YMAX2=525., YMIN=400., YMAX=600.%
$LOUTPL IDLP=1, IND1=6, IND2=7%
$HIST IDLP=5%
$TABLE ITABLE=13
```

--- FILE CONTENT SUMMARY FOR THIS RUN ---

FILE NUMBER	ELEMENT NUMBER	ELEMENT TYPE	ELEMENT NAME
1	3	NAME	LOT
2	10	DATE	TEST DATE
3	5	INTEGER	QUANTITY
4	3	NAME	LOT
5	122	DECIMAL	VEL MEAN
6	136	DECIMAL	MAX HORIZ DISPLACEMENT
7	137	DECIMAL	MAX VERT DISPLACEMENT
8	112	INTEGER	AMBIENT TEMP
9	122	DECIMAL	VEL MEAN
10	122	DECIMAL	VEL MEAN
11	122	DECIMAL	VEL MEAN
12	122	DECIMAL	VEL MEAN
13	---	EMPTY FILE	---
14	---	EMPTY FILE	---
15	---	EMPTY FILE	---
16	---	EMPTY FILE	---
17	---	EMPTY FILE	---
18	---	EMPTY FILE	---
19	---	EMPTY FILE	---
20	---	EMPTY FILE	---

\$OUTPUT

LIST = 1.

\$END

30

[illegible]

== 507104...107104 MATRIS DE CORRELATIONS IN 507109 61.0. ==

Year	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
1950	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000

SBASIC

LIST = 1,
11 = 9,
12 = 10,
13 = 11,
14 = 12,
15 = 0,
16 = 0,
17 = 0,
18 = 0,
19 = 0,
110 = 0,

SEND

LISTING OF INPUT DATA

1	2	3	4	5	6
VEL MEAN	VEL MEAN	VEL MEAN	VEL MEAN		
498.222	429.200	479.500	473.700		
495.629	429.667	476.100	480.100		
496.600	434.300	480.500	484.300		
496.200	432.400	478.700	480.600		
497.900	434.333	479.000	480.800		
498.100	433.200	481.500	479.500		
500.600	434.400	479.800	478.900		
499.800	434.800	480.200	482.000		
495.800	435.500	479.100	481.100		
498.300	435.300	477.800	477.500		
499.300	431.300	465.500	478.500		
500.400	435.100	484.400	478.776		
501.333	435.600	479.000	479.000		
499.800	436.100	483.500	*****		
498.100	434.500	479.800	*****		
498.300	440.300	484.100	*****		
495.100	442.000	483.600	*****		
498.200	447.800	482.667	*****		
498.900	441.343	484.800	*****		
495.100	434.700	483.800	*****		
494.600	435.500	481.700	*****		
497.700	441.700	475.800	*****		
496.400	437.600	480.700	*****		
498.700	439.100	482.500	*****		
498.600	443.200	481.900	*****		
496.000	435.125	482.000	*****		
497.000	434.200	479.333	*****		
496.400	435.800	481.900	*****		
494.556	435.600	478.300	*****		
496.800	435.200	479.000	*****		
496.100	432.500	479.200	*****		
497.300	430.600	470.500	*****		
495.400	434.000	480.444	*****		
495.667	437.200	483.600	*****		
494.800	437.900	481.000	*****		

--- CAUTION...UNEQUAL NUMBER OF OBSERVATIONS IN ANALYSIS FILES ---

FILE NO.	NUMBER OBS
9	35
10	35
11	35
12	13

NUMBER OF OBSERVATIONS
35

35

13

MEAN VALUES

497.617

436.031

460.858

479.644

STANDARD DEVIATION

1.7352

3.8775

2.2060

2.5490

\$BASIC

LIST = 1,

11 = 5,

12 = 6,

13 = 7,

14 = 0,

15 = 0,

16 = 0,

17 = 0,

18 = 0,

19 = 0,

110 = 0,

\$END

LISTING OF INPUT DATA

1	2	3	4	5	6
VEL FEAT	MAX HORIZ D ISPLACEMENT	MAX VERT D ISPLACEMENT			
480.375	-21.020	46.182			
473.875	-18.366	28.560			
480.500	14.755	38.027			
481.250	21.596	40.931			
482.250	-11.191	44.827			
481.000	16.716	48.031			
478.125	-15.100	63.216			
480.000	-19.117	43.882			
477.500	38.470	54.348			
479.500	21.757	43.167			
481.500	-29.290	46.292			
482.750	46.794	50.443			
483.500	32.630	44.428			
482.145	-12.694	34.579			
480.667	26.565	44.920			
485.835	24.476	58.815			
484.875	24.050	61.059			
482.835	25.565	53.291			
462.714	10.595	57.009			
480.625	20.401	44.158			
476.571	38.405	47.969			
485.857	-12.364	65.205			
484.250	37.009	46.868			
481.000	-23.755	46.277			
483.625	32.135	56.558			
481.000	-30.041	33.668			
480.167	31.251	37.233			
480.875	35.960	35.596			
479.375	25.280	-44.601			
480.375	31.440	30.457			
479.500	-16.862	41.292			
477.875	-28.890	43.100			
480.145	20.627	-15.268			
478.250	21.661	-25.461			
480.425	-33.235	-22.905			
482.026	-20.100	26.227			
483.450	-32.031	24.047			
483.391	25.065	33.672			
488.225	19.392	37.056			
487.041	21.245	32.983			
491.410	10.376	41.656			
489.625	-20.045	37.493			
488.775	20.065	30.984			
490.275	21.577	41.069			

VARIANCE-COVARIANCE MATRIX:

13.83	12.16	16.65
12.16	626.1	34.09
16.65	34.08	524.2

CORRELATION MATRIX:

1.000	.1307	.1956
.1307	1.000	.5948E-01
.1956	.5948E-01	1.000

MEANS:

482.1602	8.5521	37.0878
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STANDARD DEVIATIONS:

3.7166	25.0226	22.6957
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NUMBER OBSERVATIONS: 44

\$PLOT

IDLP = 6,
 IND1 = 5,
 IND2 = 0,
 IND3 = 0,
 IND4 = 0,
 IND5 = 0,
 LENX = 120,
 LENY = 120,
 XMIN = -0.99E+02,
 XMAX = -0.99E+02,
 YMIN1 = -0.99E+02,
 YMIN2 = -0.99E+02,

YMIN3 = -0.99E+02.

YMIN4 = -0.99E+02.

YMIN5 = -0.99E+02.

YMAX1 = -0.99E+02.

YMAX2 = -0.99E+02.

YMAX3 = -0.99E+02.

YMAX4 = -0.99E+02.

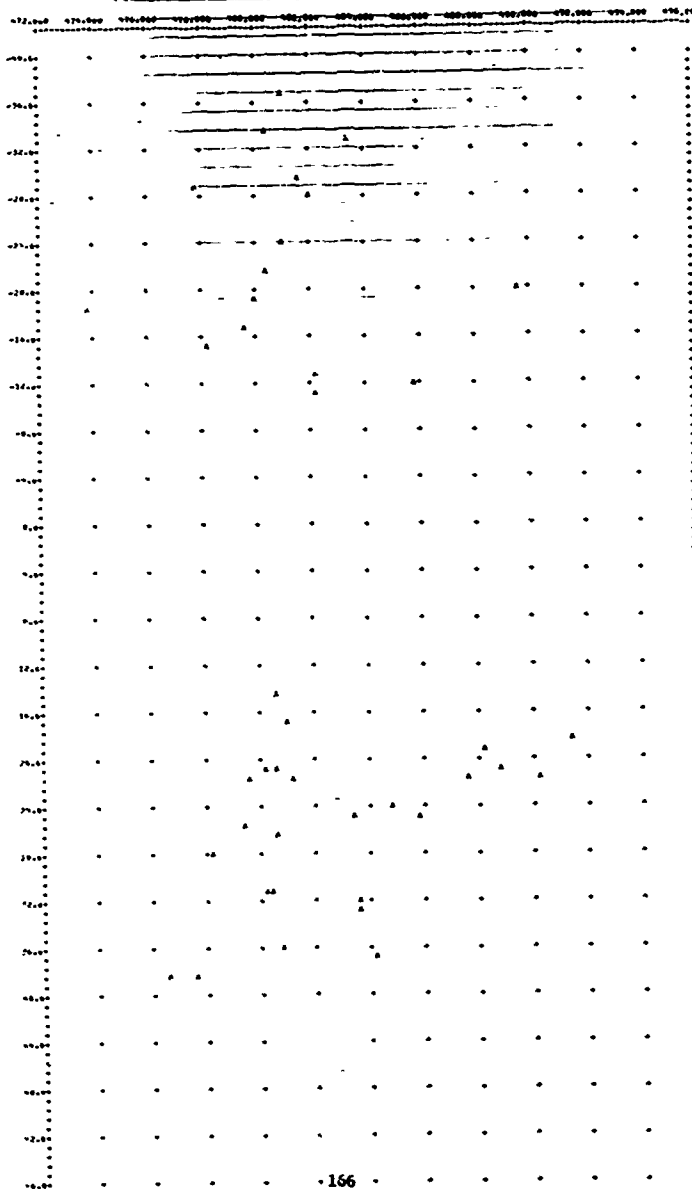
YMAX5 = -0.99E+02.

SEND

DESCRIPTION OF FLOI VARIABLES

X	MAX HORIZ DISPLACEMENT
A	VEL REAR

ALLES PRINTER PLOT



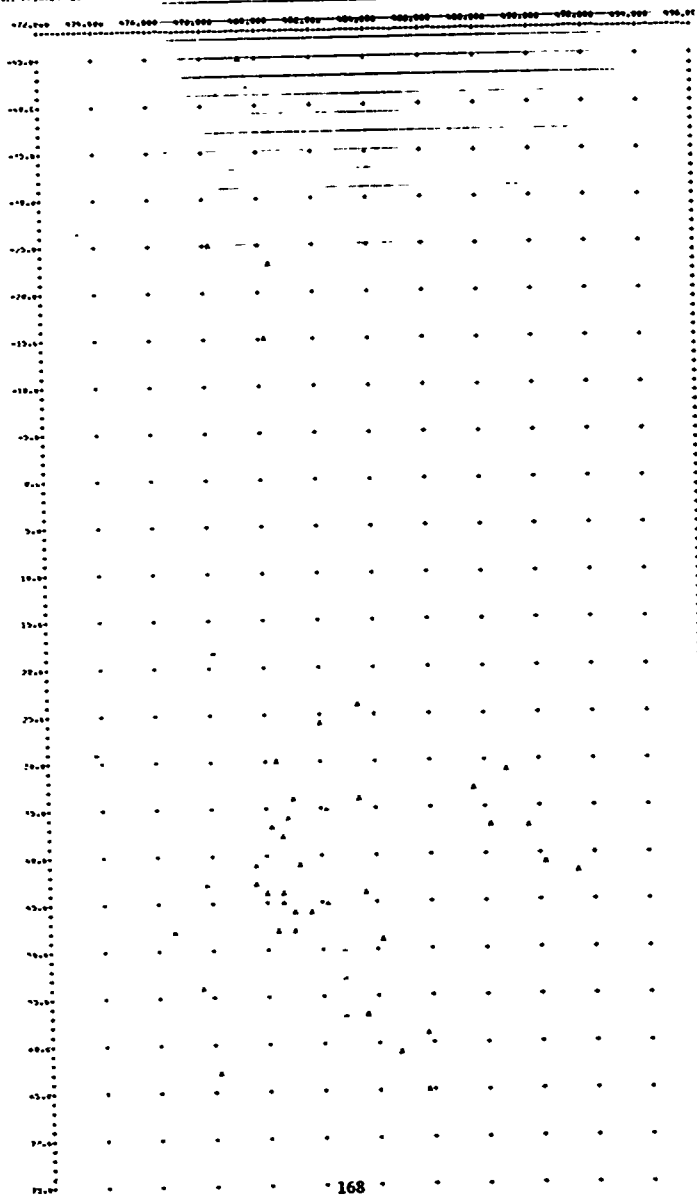
S P L O T

IDEP = 7,
 IND1 = 5,
 IND2 = 0,
 IND3 = 0,
 IND4 = 0,
 IND5 = 0,
 LENX = 120,
 LENY = 120,
 XMIN = -0.99E+02,
 XMAX = -0.99E+02,
 YMIN1 = -0.99E+02,
 YMIN2 = -0.99E+02,
 YMIN3 = -0.99E+02,
 YMIN4 = -0.99E+02,
 YMIN5 = -0.99E+02,
 YMAX1 = -0.99E+02,
 YMAX2 = -0.99E+02,
 YMAX3 = -0.99E+02,
 YMAX4 = -0.99E+02,
 YMAX5 = -0.99E+02,
 SEND

DESCRIPTION OF PLOT VARIABLES

X MAX VERT DISPLACEMENT
 A VEL MEAN

Small printer Plot



SPREG

LIST = 0.

IDEP = 5.

IND1 = 6.

ITRAN1 = 0.

RTRAN1 = 0.0.

IND2 = 7.

ITRAN2 = 0.

RTRAN2 = 0.0.

IND3 = 0.

ITRAN3 = 0.

RTRAN3 = 0.0.

IND4 = 0.

ITRAN4 = 0.

RTRAN4 = 0.0.

IND5 = 0.

ITRAN5 = 0.

RTRAN5 = 0.0.

INES = 0.

IPLT = 0.

SEND

VARIANCE-COVARIANCE MATRIX:

626.1	34.00	12.10
34.08	524.2	16.65
12.16	16.65	13.83

CORRELATION MATRIX:

1.000	.5948E-01	.1307
.5948E-01	1.000	.1956
.1307	.1956	1.000

MEANS:

8.5521	37.0676	482.1802
--------	---------	----------

STANDARD DEVIATIONS:

25.0220	22.8957	3.7168
---------	---------	--------

NUMBER OBSERVATIONS: 44

ARIES MULTIPLE REGRESSION ANALYSIS

NUMBER IND VARIABLES= 2 ,NUMBER OBS= 44
 DETERMINANT OF CORRELATION MATRIX= .99646
 MULTIPLE R= .229 ,MULTIPLE R²= .052
 F RATIO FOR ANOVA ON R= 1.135
 DF1= 2 ,DF2= 41

IND VAR NO.	B	BSQ	KXY	B*KXY	KXY/R
1	.1195	.0143	.1307	.0156	.5704
2	.1865	.0355	.1956	.0369	.8538

IND VAR NO.	MEAN	STU DEV	RAW WEIGHT
1	8.5521	25.0226	.01776
2	37.0878	22.8957	.03062

CONSTANT= 480.8929

IDEP = CONSTANT + RW1XIND1 + RW2XIND2 + ...

DEPENDENT VARIABLE-IDEP ON FILE 5 VEL MEAN
 INDEPENDENT VARIABLE-IND1 ON FILE 6 MAX HORIZ DISPLACEMENT
 INDEPENDENT VARIABLE-IND2 ON FILE 7 MAX VERT DISPLACEMENT

SSREG

LIST = 1,
 IDEP = 5,
 IND1 = 6,
 ITRAK1 = 13,
 KTRAK1 = 0.0,
 IND2 = 7,
 ITRAK2 = 0,
 KTRAK2 = 0.0,

IND3 = 0.
 ITRANS = 0.
 RTRANS = 0.0.
 IND4 = 0.
 ITRANS = 0.
 RTRANS = 0.0.
 IND5 = 0.
 ITRANS = 0.
 RTRANS = 0.0.
 FLEV = 0.1E-04.
 IRLS = 1.
 IPLT = 0.
 SEND

VARIANCE-COVARIANCE MATRIX:

13.83	-315.1	16.65
-315.1	.1953E+06	-407.9
16.65	-407.9	524.2

CORRELATION MATRIX:

1.000	-.1917	.1956
-.1917	1.000	-.4031E-01
.1956	-.4031E-01	1.000

MEANS:
 482.1802 685.0388 57.0878

STANDARD DEVIATIONS:
 3.7166 441.9465 22.8957

NUMBER OBSERVATIONS: 44

LISTING OF INPUT DATA

1	2	3	4	5	6
VEL FEAR	MAX HORIZ D ISPLACEMENT	MAX VERT D ISPLACEMENT			
480.375	476.462	48.162			
473.875	337.310	28.560			
480.500	217.710	38.027			
481.250	457.703	40.931			
482.250	125.236	44.027			
481.000	279.425	48.031			
478.125	228.015	63.218			
480.060	365.466	43.862			
477.500	1475.541	54.348			
479.500	473.367	43.167			
461.500	858.250	46.292			
482.750	2183.678	50.443			
483.500	1065.233	44.428			
482.145	161.138	34.579			
480.667	705.512	44.920			
485.835	593.075	58.615			
484.875	578.767	61.059			
482.635	555.498	53.291			
482.714	345.774	57.005			
480.625	416.201	44.138			
476.571	1474.344	47.989			
485.857	153.365	65.205			
484.250	1363.666	48.868			
481.000	568.107	46.277			
483.625	1032.658	56.598			
483.000	1357.253	33.868			
480.167	576.625	37.233			
480.875	1233.122	35.596			
479.375	633.076	-44.601			
480.375	958.377	30.457			
479.500	284.327	41.232			
477.875	834.373	43.100			
480.145	425.475	-15.206			
478.250	766.238	-25.461			
480.425	1104.565	-22.565			
482.026	769.611	26.227			
483.450	1064.782	24.047			
483.355	629.157	33.672			
488.225	376.050	37.056			
487.641	451.350	32.963			
491."	337.751	41.656			
489.00	401.802	37.453			
488 "	424.566	30.964			
490.275	462.989	41.059			

ARIES STEPWISE REGRESSION ANALYSIS
 NUMBER IND VARIABLES= 2 ,NUMBER OBS= 44 ,F-LEVEL= .000010
 MEAN VALLS

482.16020 665.03677 37.06777
 STANDARD DEVIATIONS

3.71681 441.94694 22.89571
 STANDARD ERROR OF Y= 3.71681

STEP NUMBER 1

VARIABLE ENTERING 2

F-VALUE CALCULATED 1.6706

DEGREES OF FREEDOM 42

STANDARD ERROR OF Y 3.69014

REG CONSTANT= 461.00193

COEFFICIENT OF X(2)= .03177 ,STANDARD ERROR=

.2458

PERCENT VARIATION EXPLAINED= 3.83

STEP NUMBER 2

VARIABLE ENTERING 1

F-VALUE CALCULATED 1.4960

DEGREES OF FREEDOM 41

STANDARD ERROR OF Y 3.66854

REG CONSTANT= 482.10815

COEFFICIENT OF X(1)= -.00155 ,STANDARD ERROR=

.0127

COEFFICIENT OF X(2)= .03056 ,STANDARD ERROR=

.2445

PERCENT VARIATION EXPLAINED= 7.21

STEPWISE REGRESSION FINISHED

IDEP = CONSTANT + RW1XIND1 + RW2XIND2 + ...

DEPENDENT VARIABLE-IDEP ON FILE 5

VEL MEAN

INDEPENDENT VARIABLE-IND1 ON FILE 6

MAX HORIZ DISPLACEMENT

INDEPENDENT VARIABLE-IND2 ON FILE 7

MAX VERT DISPLACEMENT

ACTUAL VS. PREDICTED RESULTS

ACTUAL VS. PREDICTED RESULTS							
RUN NO.	ACTUAL	PREDICTED	DEVIATION	PERCENT	X(1)	X(2)	
1	480.375	482.842	2.467	.51	476.462	48.162	
2	473.675	482.458	8.583	1.78	337.311	28.560	
3	480.500	482.933	2.433	.50	217.711	38.027	
4	481.250	482.650	1.400	.29	457.702	40.931	
5	482.250	483.284	1.034	.21	125.222	44.827	
6	481.000	483.143	2.143	.44	279.422	48.031	
7	478.125	483.687	5.562	1.15	228.011	63.218	
8	480.000	482.883	2.883	.60	365.462	42.862	
9	477.500	481.476	3.976	.83	1475.341	54.346	
10	479.500	482.694	3.194	.66	472.361	42.167	
11	481.500	482.193	.693	.14	858.222	46.292	
12	482.750	480.257	-2.493	-.52	2185.671	50.443	
13	483.500	481.815	-1.685	-.35	1865.222	44.428	
14	482.143	482.715	.772	.16	161.122	34.579	
15	480.667	482.387	1.720	.36	705.411	44.920	
16	485.833	482.977	-2.856	-.59	595.071	58.815	
17	484.675	483.078	-1.797	-.37	578.702	61.059	
18	482.833	482.876	.043	.01	555.491	53.291	
19	482.714	483.313	.601	.12	345.771	57.009	
20	480.625	482.612	2.167	.45	416.201	44.138	
21	478.571	481.289	4.718	.98	1474.341	47.969	
22	485.857	483.866	-1.991	-.41	153.362	65.285	
23	484.250	481.479	-2.771	-.58	1365.222	48.868	
24	481.000	482.043	1.043	.22	566.101	46.277	
25	483.625	482.238	-1.387	-.29	1032.022	56.598	
26	481.000	481.040	.040	.01	1357.222	32.868	
27	480.167	481.733	1.566	.33	976.022	37.233	
28	486.675	481.192	-.517	-.07	1293.122	35.596	
29	479.375	479.755	.380	.08	635.071	-44.601	
30	480.375	481.507	1.132	.24	988.371	30.457	
31	479.500	482.330	3.430	.71	284.322	41.292	
32	477.875	482.132	4.257	.88	834.371	43.100	
33	480.143	480.982	.839	.17	425.471	-15.268	
34	478.250	480.142	1.892	.39	766.222	-25.481	
35	480.429	479.636	-.793	-.15	1104.022	-22.905	
36	482.026	481.088	-.938	-.07	789.311	26.227	
37	483.450	481.193	-2.257	-.47	1064.122	24.047	
38	483.395	482.169	-1.226	-.25	625.122	32.872	
39	480.225	482.058	1.833	-.38	376.022	37.056	
40	487.641	482.417	-5.224	-1.08	471.322	32.983	
41	491.410	482.858	-8.552	-1.77	337.122	41.656	
42	489.625	482.631	-6.994	-1.43	401.022	37.493	
43	488.775	482.597	-6.178	-1.26	424.422	30.984	
44	490.275	482.518	-7.757	-1.59	482.422	41.069	

STIPE

IOEP = 5.

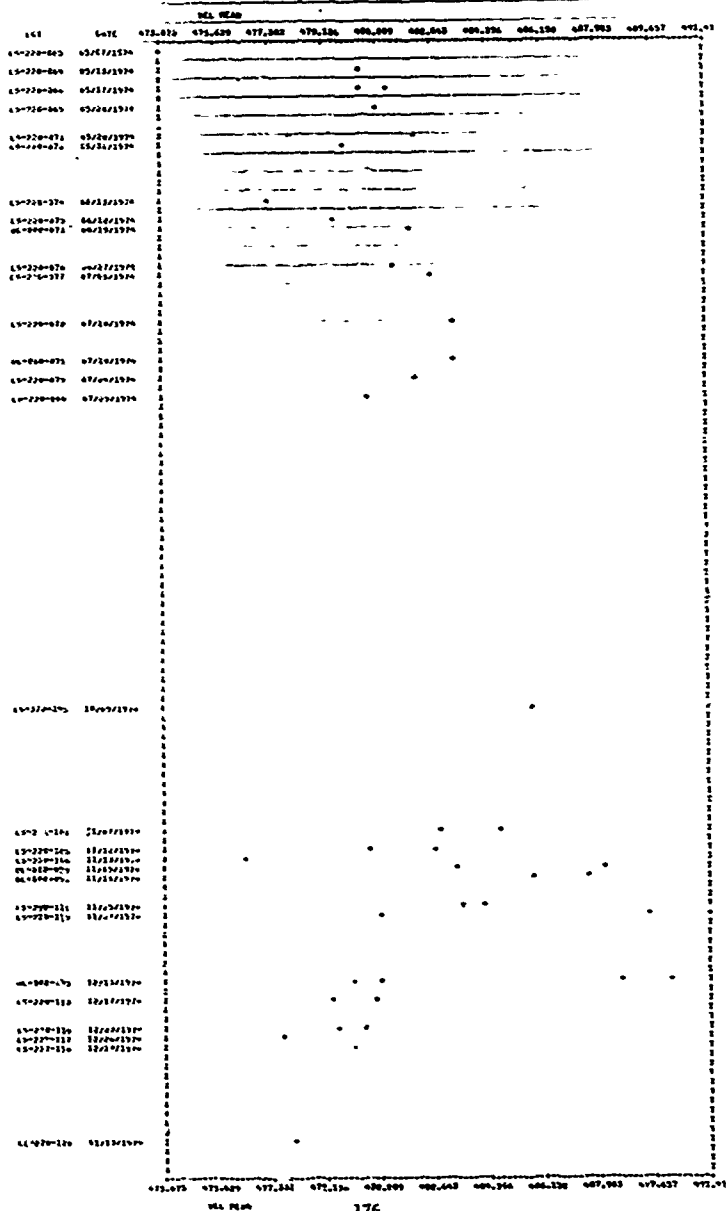
IND1 = 2.

IND2 = 4.

XMIN = -0.99E+02.

XMAX = -0.99E+02. LISTING OF INPUT DATA

TIME	NUM	LOT	DATE	VEL MEAN
YMIN = -0.99E+02.	1	LS-220-065	05/07/1974	473.675
YMAX = -0.99E+02.	2	LS-220-064	05/13/1974	468.375
YBAR1 = -0.99E+02.	3	LS-220-067	05/17/1974	461.250
YBAR2 = -0.99E+02.	4	LS-220-066	05/17/1974	480.500
SEND	5	LS-220-069	05/20/1974	481.000
	6	LS-220-068	05/26/1974	482.250
	7	LS-220-071	05/26/1974	476.125
	8	LS-220-072	05/30/1974	480.000
	9	LS-220-074	06/13/1974	477.500
	10	LS-220-075	06/18/1974	479.500
	11	UL-008-071	06/19/1974	482.026
	12	LS-220-076	06/27/1974	481.500
	13	LS-220-077	07/01/1974	482.750
	14	LS-220-075	07/10/1974	483.500
	15	UL-008-075	07/19/1974	483.450
	16	LS-220-079	07/24/1974	482.143
	17	LS-220-080	07/29/1974	480.667
	18	LS-220-095	10/09/1974	485.833
	19	LS-220-102	11/07/1974	482.833
	20	LS-220-101	11/07/1974	484.875
	21	LS-220-103	11/12/1974	482.714
	22	LS-220-105	11/12/1974	480.625
	23	LS-220-106	11/13/1974	476.571
	24	UL-008-090	11/15/1974	486.225
	25	UL-008-089	11/15/1974	483.395
	26	LS-220-107	11/16/1974	485.857
	27	UL-008-091	11/19/1974	487.641
	28	LS-220-108	11/25/1974	484.250
	29	LS-220-110	11/25/1974	483.625
	30	UL-008-092	11/26/1974	491.410
	31	UL-008-093	11/26/1974	489.625
	32	LS-220-109	11/27/1974	481.000
	33	LS-220-111	12/11/1974	481.000
	34	LS-220-112	12/12/1974	480.167
	35	UL-008-094	12/13/1974	488.775
	36	UL-008-095	12/13/1974	490.275
	37	LS-220-114	12/17/1974	479.375
	38	LS-220-113	12/17/1974	480.875
	39	LS-220-115	12/23/1974	480.375
	40	LS-220-116	12/23/1974	479.500
	41	LS-220-117	12/26/1974	477.875
	42	LS-220-118	12/27/1974	480.143
	43	LS-220-120	01/13/1975	476.250
	44	LS-220-123	01/21/1975	480.429



STIME

IOEP = 5.

IND1 = 2.

IND2 = 4.

XMIN = -0.99E+02.

LISTING OF INPUT DATA

XMAX = -0.99E+02.

YMIN = 0.0.

YMAX = 0.1E+04.

YBAN1 = -0.99E+02.

YBAN2 = -0.99E+02.

SENG

NUP	LOT	DATE	VEL MEAN
1	LS-220-065	05/07/1974	475.875
2	LS-220-064	05/13/1974	480.375
3	LS-220-067	05/17/1974	481.250
4	LS-220-066	05/17/1974	480.500
5	LS-220-069	05/20/1974	481.000
6	LS-220-068	05/28/1974	482.250
7	LS-220-071	05/28/1974	478.125
8	LS-220-072	05/30/1974	480.000
9	LS-220-074	06/13/1974	477.500
10	LS-220-075	06/16/1974	479.500
11	OL-008-071	06/19/1974	482.026
12	LS-220-076	06/27/1974	481.500
13	LS-220-077	07/01/1974	482.750
14	LS-220-076	07/10/1974	483.500
15	OL-008-075	07/19/1974	483.450
16	LS-220-079	07/24/1974	482.143
17	LS-220-080	07/29/1974	486.667
18	LS-220-095	10/09/1974	485.83.
19	LS-220-102	11/07/1974	482.833
20	LS-220-101	11/07/1974	484.875
21	LS-220-103	11/12/1974	482.714
22	LS-220-105	11/12/1974	480.625
23	LS-220-106	11/13/1974	476.571
24	OL-008-090	11/15/1974	486.225
25	OL-008-089	11/15/1974	483.395
26	LS-220-107	11/18/1974	485.657
27	OL-008-091	11/19/1974	487.641
28	LS-220-108	11/25/1974	484.250
29	LS-220-110	11/25/1974	483.625
30	OL-008-092	11/26/1974	491.410
31	OL-008-093	11/26/1974	489.625
32	LS-220-109	11/27/1974	461.000
33	LS-220-111	12/11/1974	481.000
34	LS-220-112	12/12/1974	486.167
35	OL-008-094	12/13/1974	486.775
36	OL-008-095	12/13/1974	490.275
37	LS-220-114	12/17/1974	479.375
38	LS-220-113	12/17/1974	480.875
39	LS-220-115	12/23/1974	486.375
40	LS-220-116	12/23/1974	479.500
41	LS-220-117	12/26/1974	477.875
42	LS-220-116	12/27/1974	486.143
43	LS-220-120	01/13/1975	476.250
44	LS-220-123	01/21/1975	480.429

[illegible]

STIME

IDEP = 5.

IND1 = 2.

IND2 = 4.

XMIN = -0.99E+02.

XMAX = -0.99E+02.

YMIN = 0.4E+03. LISTING OF INPUT DATA

YMAX = 0.6E+03.	NUM	LUT	DATE	VEL MEAN
YBAR1 = 0.475E+03.	1	LS-220-065	05/07/1974	473.275
	2	LS-220-064	05/13/1974	480.375
	3	LS-220-067	05/17/1974	481.250
YBAR2 = 0.525E+03.	4	LS-220-066	05/17/1974	480.500
	5	LS-220-069	05/20/1974	481.000
SEND	6	LS-220-068	05/28/1974	482.250
	7	LS-220-071	05/28/1974	478.125
	8	LS-220-072	05/30/1974	480.000
	9	LS-220-074	06/13/1974	477.500
	10	LS-220-075	06/18/1974	479.500
	11	OL-008-071	06/19/1974	462.026
	12	LS-220-076	06/27/1974	481.500
	13	LS-220-077	07/01/1974	482.750
	14	LS-220-078	07/10/1974	483.500
	15	OL-008-075	07/19/1974	483.450
	16	LS-220-079	07/24/1974	482.143
	17	LS-220-080	07/29/1974	480.667
	18	LS-220-095	10/09/1974	485.833
	19	LS-220-102	11/07/1974	482.833
	20	LS-220-101	11/07/1974	484.875
	21	LS-220-103	11/12/1974	482.714
	22	LS-220-105	11/12/1974	469.625
	23	LS-220-106	11/13/1974	476.571
	24	OL-008-090	11/15/1974	486.225
	25	OL-008-089	11/15/1974	463.395
	26	LS-220-107	11/18/1974	485.857
	27	OL-008-091	11/19/1974	487.641
	28	LS-220-108	11/23/1974	484.250
	29	LS-220-110	11/25/1974	485.625
	30	OL-008-092	11/26/1974	491.416
	31	OL-008-093	11/26/1974	489.625
	32	LS-220-109	11/27/1974	461.000
	33	LS-220-111	12/11/1974	481.000
	34	LS-220-112	12/12/1974	480.167
	35	OL-008-094	12/13/1974	488.775
	36	OL-008-095	12/13/1974	490.275
	37	LS-220-114	12/17/1974	479.375
	38	LS-220-113	12/17/1974	480.875
	39	LS-220-115	12/23/1974	480.375
	40	LS-220-115	12/23/1974	479.500
	41	LS-220-117	12/26/1974	477.875
	42	LS-220-118	12/27/1974	480.143
	43	LS-220-120	01/13/1975	478.250
	44	LS-220-123	01/21/1975	480.429

SEUTPL1

IDLP = 1.

IND1 = 6.

IND2 = 7.

IND3 = 0.

YMIN = -0.99E+02.

YMAX = -0.99E+02.

YBAR1 = -0.99E+02.

YBAR2 = -0.99E+02.

SLMP

LISTING OF INPUT DATA

NO	LOT	HORIZ DISPLACEMENT	VERT DISPLACEMENT
1	LS-220-064h	-21.840	48.172
2	LS-220-065h	-10.566	28.560
3	LS-220-066h	14.755	38.027
4	LS-220-067h	21.590	40.921
5	LS-220-068h	-11.191	44.827
6	LS-220-069h	10.716	48.031
7	LS-220-071h	-15.100	63.218
8	LS-220-072h	-15.117	43.882
9	LS-220-074h	50.470	54.306
10	LS-220-075h	21.757	43.167
11	LS-220-076h	-25.296	46.292
12	LS-220-077h	40.724	50.443
13	LS-220-078h	50.650	44.428
14	LS-220-079h	-12.694	34.579
15	LS-220-080h	20.569	44.920
16	LS-220-091h	24.470	40.815
17	LS-220-101h	24.050	61.055
18	LS-220-102h	25.569	53.291
19	LS-220-103h	16.595	47.009
20	LS-220-105h	20.401	44.138
21	LS-220-106h	50.405	47.989
22	LS-220-107	-12.304	65.205
23	LS-220-108h	57.009	48.868
24	LS-220-109h	-25.793	46.277
25	LS-220-110h	50.135	56.598
26	LS-220-111h	-30.041	33.868
27	LS-220-112h	51.251	37.233
28	LS-220-113h	55.960	35.596
29	LS-220-114h	25.200	-44.601
30	LS-220-115h	51.440	30.457
31	LS-220-116h	-10.862	41.222
32	LS-220-117h	-20.890	43.100
33	LS-220-118h	20.627	-15.268
34	LS-220-120h	27.661	-25.481
35	LS-220-123h	-35.235	-22.905
36	UL-000-071	-20.100	25.227
37	UL-000-075	-32.051	24.007
38	UL-000-085	25.083	33.072
39	UL-000-090	15.352	37.056
40	UL-000-091	21.245	52.983
41	UL-000-092	18.370	41.056
42	UL-000-093	-20.045	37.493
43	UL-000-094	26.005	40.984
44	UL-000-095	21.977	41.045

2 MAX VERT. DISPLACEMENT

44,461	33,022	22,583	12,144	1,707	19,842	21,331	22,319	48,342	34,296	63,741
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SHIST

IDEP = 5.

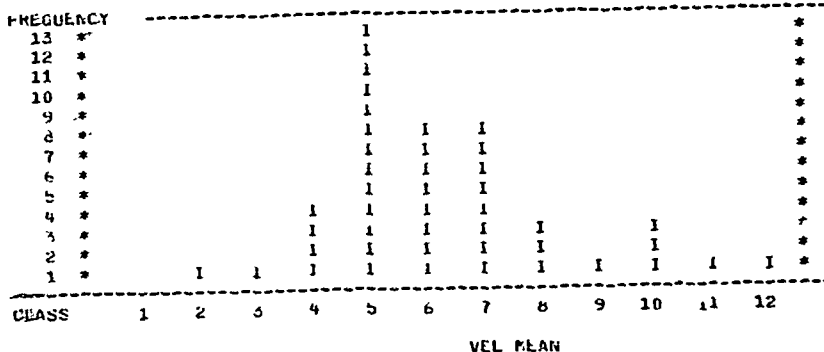
NBAR = 10.

NSP = 4.

RUP = -0.99E+02.

RLOW = -0.99E+02.

SEND



HISTOGRAM SUMMARY

INTERVAL	LOWER BOUND	UPPER BOUND	FREQUENCY	PERCENT	CUMULATIVE FREQ	CUMULATIVE %
1	*****	473.874	0	0.00	0	0.00
2	473.875	475.626	1	2.27	1	2.27
3	475.627	477.381	1	2.27	2	4.55
4	477.382	479.135	4	9.09	6	13.64
5	479.136	480.888	13	29.55	19	43.19
6	480.889	482.642	8	18.18	27	61.36
7	482.643	484.395	6	13.64	33	75.00
8	484.396	486.149	3	6.82	36	81.82
9	486.150	487.902	1	2.27	37	84.09
10	487.903	489.656	3	6.82	40	90.91
11	489.657	491.409	1	2.27	41	93.18
12	491.410	*****	1	2.27	42	100.00

VEL MEAN

183

STABLE

ITABLE = 1.

SEND

NORMAL DISTRIBUTION

A1 = AREA UNDER CURVE FROM U TO $(X-U)/S$

A2 = AREA IN BOTH TAILS FROM $-\infty$ TO $(X-U)/S$ AND $(X-U)/S$ TO $+\infty$

X = RANDOM VARIABLE

U = MEAN VALUE OF X

S = STANDARD DEVIATION OF X

H0 = RELATIVE FREQUENCY IN TERMS OF MEAN FREQUENCY

$(X-U)/S$	A1	A2	H0
0.00	0.0000	1.0000	1.0000
.05	.0199	.9602	.9986
.10	.0398	.9203	.9950
.15	.0598	.8808	.9888
.20	.0793	.8415	.9802
.25	.0967	.8026	.9692
.30	.1175	.7642	.9560
.35	.1360	.7263	.9405
.40	.1554	.6892	.9231
.45	.1736	.6527	.9037
.50	.1915	.6171	.8825
.55	.2088	.5823	.8596
.60	.2257	.5485	.8353
.65	.2422	.5157	.8096
.70	.2580	.4839	.7827
.75	.2734	.4533	.7548
.80	.2861	.4237	.7262
.85	.3023	.3953	.6968
.90	.3157	.3681	.6670
.95	.3289	.3421	.6368
1.00	.3413	.3173	.6065
1.05	.3531	.2938	.5762
1.10	.3643	.2714	.5461
1.15	.3749	.2502	.5162
1.20	.3849	.2302	.4868
1.25	.3944	.2113	.4578
1.30	.4032	.1936	.4296

1.35	.4115	.1771	.4020
1.40	.4192	.1616	.3753
1.45	.4265	.1470	.3495
1.50	.4332	.1336	.3247
1.55	.4394	.1212	.3008
1.60	.4452	.1096	.2780
1.65	.4505	.0990	.2563
1.70	.4554	.0892	.2376
1.75	.4599	.0802	.2163
1.80	.4641	.0720	.1979
1.85	.4678	.0644	.1806
1.90	.4713	.0574	.1645
1.95	.4744	.0512	.1494
2.00	.4772	.0455	.1353
2.05	.4798	.0404	.1223
2.10	.4821	.0358	.1040
2.15	.4842	.0316	.0992
2.20	.4861	.0278	.0890
2.25	.4878	.0244	.0796
2.30	.4893	.0214	.0709
2.35	.4906	.0186	.0632
2.40	.4918	.0164	.0561
2.45	.4927	.0143	.0497
2.50	.4936	.0124	.0439
2.55	.4946	.0108	.0387
2.60	.4953	.0093	.0341
2.65	.4960	.0080	.0299
2.70	.4965	.0070	.0261
2.75	.4970	.0060	.0228
2.80	.4974	.0051	.0196
2.85	.4978	.0044	.0172
2.90	.4981	.0037	.0150
2.95	.4984	.0032	.0129
3.00	.4987	.0027	.0111

 PROGRAM FINISHED
