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MIDAS DOCUMENTATION

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This document contains information of a preliminary nature prepared in the course of work under U.S. DOE Contract DE-AC14-76FF02170. This information is subject to corrections or modification upon the collection and evaluation of additional data.

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SEPTEMBER 1981

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MIDAS DOCUMENTATION

Abstract

MIDAS, the Master Information and Data Acquisition System, is a computerized system being implemented on FFTF to control the work released to the plant. The purpose of this system is to demonstrate the safety enhancement provided for LMFBRs when the operator has instant recall to the status of all work released to the plant, the interrelationships between functional equipment groups in the plant, and the relationships of equipment to safety functions.

HEDL has completed development of the MIDAS system in accordance with the milestone #HEDL 1.1-3. The documentation contained herein fully describes the MIDAS system and is submitted to fulfill the milestone obligation.

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MIDAS Test Scripts (Issue 1)	C
MIDAS Operations Procedures (Issue 1)	D

SECTION A

MIDAS
FUNCTIONAL SPECIFICATION

REV. C

MIDAS FUNCTIONAL SPECIFICATION

Rev. C

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1.0 INTRODUCTION

MIDAS (Master Information and Data Acquisition System) is a computerized system that:

- a. Maintains Work Document Status
- b. Maintains Component Status of Components affected by Work Documents
- c. Supplies Predesignated Technical Information Concerning Plant Components
- d. Enhances the Operations Engineer's (OE) Work Load
- e. Integrate components functionally

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The MIDAS objective is to increase the efficiency and safety of the work processed and controlled by the OE.

MIDAS is composed of two distinct and interrelated data bases, i.e., the Work Control Log (WCL) data base and the MIDAS Index data base. The WCL data base is designed to track Plant Work Requests (ICRS, PMP, O30, TPM, PTC). Work Requests are tracked as; released, non-released, waiting retest, delinquent and complete.

The MIDAS Index is a composite of equipment, instrument, valve, damper, and electrical component information. The indices that will provide technical data for MIDAS are the following:

- . Equipment Index Bechtel (EIB) - provide equipment data.
- . Instrument Calibration and Recall Index (ICR) - provide instrument data.
- . Valve Index Bechtel (VIB) - provide valve data
- . Damper Index Bechtel (DIB) - provide damper data
- . Electrical Load List (ELL) - provide breaker data

MIDAS transactions will be processed as online, online batch, or batch. The specific process used for a transaction depends on the complexity of the transaction and/or the data volume.

2.0 MIDAS OBJECTIVES

The MIDAS objective is to increase the efficiency and safety of the worked processed and controlled by the OE. MIDAS will accomplish the objectives by the development and implementation of the MIDAS Index and the Work Control Log (WCL).

The specific objectives of the WCL are:

- . Maintain work document status
- . Maintain component status of components affected by work documents
- . Provide variable query and sort capability
- . Provide a high level of control and visibility of processed work
- . Provide variable reporting capability

The specific objectives of the MIDAS Index are:

- . Supply predesignated technical information concerning plant components
- . Integrate the plant components as a function of Functional Equipment Groups (FEG).
- . Provide variable query and sort capability
- . Provide variable reporting capability

3.0 FUNCTIONAL REQUIREMENTS

3.1 Security

Security will be enforced by use of passwords. Each person authorized to use MIDAS will be assigned a unique password. MIDAS will maintain a table of passwords, associated user names and security levels. This list may be changed periodically in order to ensure proper security.

Each function will be available only to designated security levels. The initial assignment of security levels to functions is given below.

Each terminal will normally be in the idle state, for which no functions can be performed. A log-in procedure will be provided to accept user passwords, making the associated security level available to the system. It will also make the user name available to any function that requires it.

After successful log-in, a Master Menu of allowable functions, as determined by the security level returned at log-in, will be displayed. MIDAS will accept a menu selection from the user and perform the selected function.

During any function, the user will be allowed to return to the Master Menu for another selection or to return to the terminal idle state.

<u>Security Level</u>	<u>Operational Modes Allowed</u>
0 Queries	Search/Report WCL Search/Report Indices
1 Data Input	Search/Report WCL Search/Report Indices Input
2 Assign Status	All modes except File Editing and comprehensive WCL Report
3 Data Base Administrator	Search/Report WCL Search/Report Indices Special Reports File Editing

3.2 Data Base Structure

3.2.1 Work Control Log (WCL)

The Work Control Log will contain data for each document in the data base, with data for multiple components (valves, equipment, instruments, etc.) allowed for each document. The data in the WCL will be highly volatile, i.e., many documents will be input and processed and many old documents purged on a daily basis.

3.2.2 MIDAS Index Data

The MIDAS Index Data Base will contain two distinct data types: Functional Equipment Group (FEG) data and Component data. The FEG's are arranged in a hierarchy, with approximately 100 master FEG's, i.e., FEG's with no superior FEG. It is estimated that the FFTF can be broken down into a total of 500-800 FEG's including the master groups. An example of how some FFTF systems could be broken into a hierarchy of FEG's is shown in Figure 1. Each FEG would be described by a number and a descriptive name. Components from the engineering indices will be assigned to particular FEG's. MULTIPLE FEG/component relationships are allowed, i.e.:

- (1) One FEG may be related to more than one superior FEG (shown symbolically in Figure 2.)
- (2) One component may be related to more than one FEG (shown symbolically in Figure 3.)

3.2.3 Initial Load of the Indices

The following engineering indices shall be loaded into the data base prior to acceptance of MIDAS by FFTF Operations:

- (1) Equipment Index (UNIVAC)
- (2) Electrical Load List (OTS, PDP-15)
- (3) Instrument Index (ICRS, UNIVAC)
- (4) Valve Index (UNIVAC)
- (5) Damper Index (UNIVAC)

Immediately following the initial loading of the indices, no relationships will exist between the hierarchy of FEG records and the component records. The FEG/component relationships will have to be entered into the data base. Establishing the FEG/component relationships can be an ongoing effort; however, as more of these relationships are established, the usefulness of the MIDAS system, too, will increase. Any data fields provided in the MIDAS indices shall be initialized to blanks. These fields will be entered at a later date. The user shall be able to query the indices records with blank fields (using Search/Report Indices mode) in the same manner as any other query by entering blanks for a particular field.

3.2.4 The system requires that each FEG record have a unique number and that each component record have a unique number. However, a component record and an FEG record are allowed to have the same number. Therefore, it must always be made clear to the user which number is being displayed on the screen.

3.2.5 Future Expansion
To the extent that it is practical, the data base shall be designed to minimize the impact of adding other engineering indices in the future (e.g., the root valve index or the trace heater index.)

Figure 1: Example of Hierarchical FEG relationships

Figure 2: One FEG can be related to more than one superior FEG.

Figure 3: One component can be related to more than one FEG.

3.3 Minispecs

1. The minispecs follow the format given in DeMarco's Structured Analysis and System Specification (Yourdon Press, 1978.)
2. Underlining in the text of the minispecs indicates items that are referenced in the Data Dictionary.
3. The user shall be allowed to go to the master menu at any time and be allowed to select any of the operating modes.
4. MIDAS Operating Modes and Menu Choices
 1. Input
 2. Change
 3. Process
 4. Search/Report WCL
 5. Search/Report Indices
 6. Scratch Pad
 7. Tagout Change
 8. Special Reports:
 - 8.1 Daily Schedule
 - 8.2 Daily Delinquent Report
 - 8.3 Out-of-service Report
 - 8.4 Comprehensive WCL Report
 - 8.5 FEG Report
 - 8.6 Tech Spec Report
 9. File Editing
 - 9.1 Edit Shops
 - 9.2 Edit Components (Indices)
 - 9.3 Edit FEG's
 - 9.4 Edit Tech Specs
 - 9.5 Purge Document
 - 9.6 Semiautomatic Document Purge
5. Other MIDAS functions which are discussed in the minispecs are listed below. These functions are not operational modes; and their exact function will depend on the operational mode where they are used.
 1. Fetch
 2. Restore
 3. Page Forward
 4. Page Backward
 5. Save - User Scratch Pad
 6. Save - Master Scratch Pad
 7. Delete
 8. Transmit

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6. Switching Operating Modes

The user shall be able to abort what he is doing in any mode at any time, and switch to any other mode that is available to his security level (see Section 3.1 Security.) The user enters the new mode as if he has selected it from the main menu. However, other types of mode switches are allowed:

- a. Search/Report and Restore - In any mode (except the Edit Files modes) the user can place the cursor on a data field and switch to either one of the Search/Report modes and effectively input that data field to the Search/Report mode. When the Search screen is displayed, the data field will be automatically filled in. If the cursor was not on a valid input field to the Search/Report mode then the mode switch will be an abort and nothing will be automatically filled in; an informative message will indicate the abort. While in the Search/Report mode the user has the option to Restore to the point where he left off in the previous mode. However, if the user selects a third mode, the original mode is aborted and the third mode is entered as if it was entered from the main menu.
- b. Enter Document Number/Type - In any mode where Document Number/Type appears on the screen, the user can place the cursor on Document Number/Type and switch to any other mode. When the screen for the new mode appears, the Document Number/Type will be automatically filled in (if it appears on the screen for the new mode). Whatever the user has done in the old mode since the previous transmit to the data base is lost. No Restore is allowed.
- c. Enter Tagout and Restore - In any mode where Tagout appears on the screen, the user can place the cursor on Tagout and switch to Tagout Change mode. When the new screens appears, it will be completely filled in. While in the Tagout Change mode, the user can Restore to the original mode.

These types of mode switches will minimize the amount of manual data entry required to use the system and will significantly speed up the processing and release of documents by MIDAS. Any additional mode switches are described under each operating mode.

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7. In any mode, at any time, allow the user to re-enter the same mode, and display the screen for that mode with all fields blank.
8. In any mode, after data has been Transmitted to the data base and redisolayed on the screen, allow the user to continue to use the data on the screen (i.e., modify, add, or delete as permitted in that mode) and then Transmit again to the data base.
9. In any mode, if no change is made, then do not update the data base.

3.3.1 Input

1. Allow entry into Input mode through the main menu.
2. Display Document Screen with all fields blank.
3. Accept Document Number and Document Type (Document Type is optional).
4. Allow user to (1) continue to enter data or (2) fetch data for the given Document Number/Type.
5. If the user continues to enter data:
 - A. Allow input of the following fields:
 - Document Number
 - Document Type (Require when new document record transmitted).
 - Work Description
 - Priority
 - Shop
 - Document System S/U Code
 - Critical System
 - Related Maintenance Code
 - Requested?
 - Start Date
 - Component Number
 - Component CommentAll fields not entered should be blank.
 - B. Transmit data to the data base upon a positive response from the user. Once update is complete (changes are in the data base) display the same Document Screen with corresponding data. Indicate a successful update by filling in the Last Changed field with the current date/time flashing.
 - C. If the Document Number/Type already exists in the data base, do not change the data base, display an error message, and display the data that already existed in the data base. The data that had been entered on the screen will be lost.

6. If the user fetches data from the data base for the given Document Number and Document Type (optional):
 - A. If the user has entered Document Number and Document Type, display the Document Screen filled in.
 - B. If the user has entered Document Number only, display (1) the Document Screen if only one document is found, or (2) the Report WCL Screen if more than one is found. If the Report WCL Screen is displayed, allow the user to select one of the documents.
 - C. If the Document Number/Type does not exist in the data base, display the Document Screen with the Document Number/Type filled in with an error message, and allow the user to continue with part 3 or part 4.
 - D. Allow input to the following fields:
 - Work Description
 - Priority
 - Shop
 - Document System S/U Code
 - Critical System
 - Related Maintenance Code
 - Requested?
 - Start Date
 - Component Numbers (add only; cannot be changed or deleted)
 - Component Comment (add only; cannot be changed or deleted)All fields not entered should be left unchanged.
 - E. Transmit to the data base upon a positive response from the user. Once update is complete (changes are in the data base) display the same Document Screen with the data that has been input visually highlighted, and indicate a successful update by filling in the Last Changed field with the current date/time flashing. If

this document already had data that was visually highlighted, that data shall continue to be visually highlighted. Whenever this document is displayed using the Document Screen, in any mode, these fields shall be visually highlighted. They shall continue to be visually highlighted until the Processed? field is set to 'YES' in the Processing mode.

7. In either part 5 or part 6 above, after the transmit is completed, the Processed? field shall be set to 'No' and the Component Description, Tech Specs, and FEG's shall be filled in from the indices data base for each component entered. If a Component Number is not found in the indices data base (no component information can be automatically filled in), display a warning message at the bottom of the screen and within the Component Description field for each Component Number not found. Non-data base components must be acknowledged in a positive fashion in order that they remain as part of the Document Screen.
8. Allow temporary input (in part 6) of the following data in addition to data filled in from the indices data base for components already transmitted to the data base.

Component Description (allowed only for Component Numbers not found in the indices data base)
FEG/Component relationship (allowed for FEG's found in the indices).

NOTE: Temporary information supplied by the user will take precedence over the MCI supplied information. Temporary FEG's will have their actual Tech Spec relationships.

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This data shall be associated with the Document only and shall not become a permanent part of the indices data base. When the document is purged, this data is also purged. If FEG Numbers are not found in the indices data base, display an error message. The user is only allowed to temporarily establish relationships to FEG's that already exist in the indices data base. After the above (temporary) data has been transmitted to the data base, it shall be marked (with an asterisk, for example) to indicate that it is temporary whenever it is displayed with the Document Number.

9. When more than one page has been fetched or more than one page is required for input, allow successive paging of Document Continuation Screens through a page forward function. In addition, allow for paging back through a page back function. The user shall be able to transmit all pages to the data base at one time.

3.3.2 Change

1. Allow entry into Change mode through the main menu.
2. Display Document Number/Type and Tagout fields.
 - a. If Tagout is entered with a tagout number go to 3.3.7 step 1.
 - b. If Document Number or Document Number/Type is entered, go to step 3.
3. Accept Document Number and Document Type (Document Type is optional). Allow the user to fetch the document.
 - A. If the user has entered Document Number and Document Type, display the Document Screen filled in.
 - B. If the user has entered Document Number only, display (1) the Document Screen if only one document is found, or (2) the Report WCL Screen if more than one is found. If the Report WCL Screen is displayed, allow the user to select one of the documents.
4. If the document is not found in the data base, display the Document Screen with only the Document Number/Type filled in and display an error message. Return to 3 or go to 6 upon user response.
5. If the document is found in the data base, display the Document Screen filled in.
6. Allow changes to all fields except,
Document Number/Type
Last Changed
Initials
Processed?
If the Tagout Number is changed, the user shall be required to enter data in the Hung? field. Accept temporary data in addition to data filled in by indices data base. (See 3.3.1, part 8).
7. If the user enters Hung? = 'clear', then automatically and immediately switch to the Tagout Change for the Entire WCL mode with the Tagout Change Screen completely filled in. Allow the user to restore to Change mode.

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8. Transmit data to the data base upon a positive response from the user. If "C" is entered in HUNG then remove the tagout number from the case document and blank the HUNG field. Once update is complete (changes are in the data base) display the same Document Screen with the corresponding data. Indicate a successful update by filling in the Last Changed field with the current date/time flashing.
9. If the user has entered Work Status = 'complete', then display an error message if Hung? = 'Yes' or if any O.O.S. = 'yes'. Update the data base (set Hung? = blank and all O.O.S. = blank) only if the user re-enters Work Status = 'complete' and transmits a second time.
10. If the Work Status is changed set Initials equal to the initials of the user logged in.
11. If the Start Date field is not changed, then the Processed? field shall be unchanged. If the Start Date field is changed, then the Processed? field shall be set to 'No'.
12. When more than one page has been fetched or more than one page is required for change, allow successive pages of Document Continuation Screen through a page forward function. In addition, allow for paging back through a page back function. The user shall be able to transmit all pages to the data base at one time.
13. When a document is updated with Work Status = complete then set Processed? to "c".

3.3.3 Process

1. Allow entry into Process mode through the main menu.
2. Display the Processing Screen with no documents listed and accept one of the following:
 - A. Document Number and Document Type (Document Type is optional.)
 - B. Start Date
 - C. Shop
 - D. Start Date and Shop
3. Display the Processing Screen showing a list of all the documents satisfying the above requirements that have Processed? = 'No' or blank. If there are no documents satisfying the input requirements, display an informative message. If there is only one document satisfying the above requirements (e.g., part 2.A), display the Document Screen for that document.
4. Allow the user to place the cursor on any Document Number/Type and fetch it for processing. Display the Document Screen for the selected Document Number/Type.
5. Allow the user to enter data in all fields except the following fields.

Document Number/Type

Last Changed

Initials

Processed?

Also accept temporary data in addition to data filled in by the indices data base. (See 3.3.1, part 8).

Only accept Work Status = 'released' or 'nonreleased'.

6. Transmit data to the data base upon a positive response from the user. Once update is complete (changes are in the data base) display the same Document Screen with corresponding data. Indicate a successful update by filling in the Last Changed field with the current date/time flashing.

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7. Set Processed? = 'Yes' if all the following conditions are satisfied:
 - A. The user has physically entered Work Status = 'released' or 'nonreleased' (even if it is a repeat of the value already there.)
 - B. All FEG's have O.O.S. = nonblank
 - C. Hung? = nonblank

If the above conditions are not satisfied, set Processed? = 'No.'

8. If Work Status is changed, set Initials equal to the initials of the user logged in.
9. Allow the user to restore the Processing Screen. If the document has been successfully processed, i.e., if Processed? = 'Yes', then it should not reappear in the list of documents.
10. Go back to step 4 as long as there are more documents remaining on the Processing Screen list.
11. Go back to step 2 after all the documents on the Processing Screen list have been successfully processed.
12. When more than one page has been fetched, allow successive pages of Processing Screens (or Document Continuation Screens) through a page forward function. In addition, allow for paging back through a page back function. The user shall be able to transmit all pages to the data base at one time.

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3.3.4 Search/Report WCL

1. Allow entry into Search/Report WCL mode through the main menu.
2. Display the Search WCL Screen.
3. Accept the following:
 - A. One entry (required) in the "Search for all" column.
 - B. One entry (optional) in the "Limit list to" column.
 - C. "Search for all" and "Limit list to" cannot pertain to the same data element.
 - D. Three integers (optional) in the "Sort list by" column (the integers indicate the order of the sorting). If there is no entry in this column, default sort to document number.
 - E. Choice of screen or printer.
4. Search the data base upon a positive response from the user, and return either (depending on choice in 3.D):
 - A. Report WCL Screen (allow fetch and return of Document Screen), or
 - B. List all the data contained in the Document Screen on the printer for each document found.
5. When more than one page has been fetched allow successive pages of Report WCL Screens through a page forward function. In addition, allow for paging back through a page back function.
6. Allow the user to save any of the documents listed on the Report WCL Screen by placing the cursor on the Document Number and effectively adding it to the Scratchpad (See 3.3.6)
7. When Work Status value is not specified, then only retrieve documents that are "not complete".

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3.3.5 Search/Report Indices

1. Allow entry into Search/Report Indices mode through the main menu.
2. Accept Component Type (required, 'all' indicates all types) and display the Search Screen that corresponds to the given Component Type.
3. Allow input of the following:
 - A. One entry (required) in the "Search for all" column.
 - B. One entry (optional) in the "Limit list to" column.
 - C. One entry (optional) in the "Select" column.
 - D. Three integers (optional) in the "Sort list by" column (the integers indicate the order of the sorting). If there is no entry in this column then default sort will be used.
 - E. Choice of screen or printer.
4. Allow 'none' to be entered for FEG Number to select components that are not related to any FEG.
5. Search the data base upon a positive response from the user, and return:
 - A. Indices Record if only one component is found.
 - B. Report Indices Screen if more than one component is found.
 - C. Indices Record on the printer for each component found, if the printer was selected in 3.E.
6. When more than one page has been fetched, allow successive pages of Report Indices Screen through a page forward function. In addition, allow for paging back through a page back function.
7. Allow the user to place the cursor on any Component Number and to display the corresponding Indices Record. Return only to the Report Indices Screen upon positive response from the user.

3.3.6 Scratch Pad

1. A user scratch pad shall be provided for each user and one master scratch pad shall be provided for all users.
2. Users shall not have access to other user's scratch pads.
3. All scratch pad data shall be independent of the MIDAS data base and shall be stored on the terminal diskette.
4. Allow entry into Scratch Pad mode from the main menu.
5. Accept choice of master scratch pad or user scratch pad, and display the corresponding Scratch Pad Screen.
6. Allow the user to change, add, or delete Scratch Pad Records and save the data. After the data has been saved on the diskette, display the Scratch Pad Screen with Date = current date.
7. While in any other mode, allow the user to place the cursor on the following data fields and save the following data on either the user scratch pad or the master scratch pad.

<u>Cursor on</u>	<u>Data Saved on Scratch Pad</u>
<u>Document Number/Type</u>	<u>Document Number/Type</u> and <u>Tagout</u> if it appears on the screen.

<u>Tagout Number</u>	<u>Tagout Number</u> only
<u>Component Number</u>	<u>Component Number</u> only.

After the save is completed (with Date = current date), display an informative message. Do not switch modes or change screens.

8. When more than one page has been saved, allow successive pages of Scratch Pad Screens through a page forward function. In addition, allow for paging back through a page back function.

3.3.7 Tagout Change

1. Accept Tagout Number and display the Tagout CHANGE SCREEN that corresponds to the Tagout Number.
2. In addition to the above display a question: "Are all these documents to be cleared of this tagout? Accept 'Yes' or 'No'.
3. Allow the user to transmit to cause data base update.
 - A. If the user transmits 'Yes', change the Hung? field to blank, change the Tagout field to blank, and update the Last Changed field to the current date/time for all the documents on the list.
 - B. Return to Document Screen if Document Screen was the mechanism for entering Tagout CHANGE.
 - C. If the user transmits 'No', make no change to the data base and return to the Document Screen if Document Screen was the mechanism for entering Tagout Change.
4. Indicate a successful update (or no update) by displaying the complete Tagout Change Screen with the current data and an informative message.
5. When more than one page has been fetched, allow successive pages of Tagout Change Screen through a page forward function. In addition, allow for paging back through a page back function.

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3.3.8 Special Reports

Allow entry into Special Reports mode through the main menu. Display and allow the user to choose from the Special Reports submenu:

1. Daily Schedule
2. Daily Delinquent Report
3. Out-of-Service Report
4. Comprehensive WCL Report
5. FEG Report

3.3.8.1 Daily Schedule

1. Allow entry into Daily Schedule mode from the Special Reports submenu.
2. Print two copies of the following.
- 3.. Determine whether all document processing is done: Find all documents that have:

Start Date = current date

Processed? = 'No'

Work Status is active

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If any are found, then processing is not complete. Print the following:

A header indicating the following documents are not processed. The Document Number, Document Type, Document Description, and Shop Number for each nonprocessed document.

If the above report is printed, continue only at user request.

4. Print the required reports for documents with Processed? = 'Yes' and Start Date = current date for each shop in the shop file. For each shop print on a separate page.

A header indicating the Shop Number and Name, and the current date.

Document Number/Type

Priority

Work Status

Tagout Number

Hung?

7

0 [Critical System Code]

3

0 [Related Maintenance Code]

Work Description

Document System S/U Code

N

0 [Component Numbers]

Component Description

Sort By Priority, then Document Number.

If there are not processed documents for the shop, print:

"no scheduled documents."

3.3.8.2 Daily Delinquent Report

1. Allow entry into Daily Delinquent Report through the Special Reports submenu.
2. For each Shop Number in the data base, send 2 copies to the printer:
 - A. Print a header indicating delinquent jobs for the Shop Number Shop Name, and current date, and print a header of labels for the data in part E below. (Separate pages are not needed for each shop.)
 - B. Select all documents that meet the following condition:
Work Status = "released" and
Start Date is before current date.
 - C. If no documents are selected, print "no delinquents."
 - D. Sort the selected documents on Shop and Document Number.
 - E. For each selected document, print the following:

Document Number/Type

Work Description

Priority

Shop

Tagout Number

Hung

Work Status

Start Date

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3.3.8.3 Out-of-service (O.O.S.) Report

1. Allow entry into Out-of-service Report through the Special Report submenu.
2. Display Out-of-service Screen with all fields blank.
3. Accept System S/U Code or FEG. (Both fields blank indicates all out-of-service FEG's.)
4. Select all combinations of Document Number and FEG Number where the FEG Number has O.O.S. = 'Yes.'
5. List filled in Out-Of-Service Screen resultant from the above selection.
6. When more than one page has been fetched, allow for successive pages through a page forward function. Allow for paging back through a page back function.

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3.3.8.4 Comprehensive WCL Report

1. Allow the Comprehensive WCL Report to be selected from the Special Report submenu.
2. Display the Search WCL Screen.
3. Accept the following:
 - A. In the "Search for all" column, accept Work Status = 'all; or 'not complete.'
 - B. One entry in the "Sort list by" column (any nonblank character is acceptable.)
If there is no entry in this column, no sort is performed.
 - C. Choice of (1) local printer or (2) batch to central printer. If batch to central printer is selected, the list must be created immediately (so that the data base is not changed) but the print out can be done at a later time.)
4. Upon a positive response from the user, search the data base and list all the data contained in the Document Screen for each document found.

3.3.8.5 FEG Report

1. Allow entry into FEG Report mode from the Special Reports submenu.
2. Accept FEG Number and choice of:
 - A. All levels of FEG's below the given FEG, or
 - B. One level of FEG above and one level of FEG below the given FEG Number.
3. If the user has security level 3, also allow FEG Number = 'all.'
4. If FEG Number is not found, display an errors message.
5. If FEG Number is found, display on the screen either (see part 2):
 - A. The given FEG Record and an indented list of all Inferior FEG Records (all levels below the given FEG Number.)
 - B. The Superior FEG Record, the given FEG Record, and the Inferior FEG Record.
6. If 'all' is entered, route to the printer an indented list of all FEG Records in the data base.

3.3.8.6 Tech Spec Report

1. Allow entry into Tech Spec Report mode through the Special Report submenu.
2. Display the Tech Spec Screen with all fields blank.
3. Accept Tech Spec Number, or 'all' if the user has security level 3.
4. If Tech Spec Number is found, display the corresponding Technical Specification Record.
5. If Tech Spec Number is not found, display an error message.
6. If 'all' is entered, route to the printer the data on the Technical Specification Record for all Tech Specs in the data base.

3.3.9 File Editing

Allow entry into File Editing mode through the main menu.
Display and allow the user to choose from the File Editing submenu:

1. Edit Shops
2. Edit Comments (Indices)
3. Edit FEG's
4. Edit Tech Specs
5. Document Purge
6. Semiautomatic Document Purge

3.3.9.1 Edit Shops

1. Allow entry into Edit Shops mode through the File Editing submenu.
2. Display the Shop Screen.
3. Allow the user to delete, or add to the list.
4. Transmit changes to the data base upon a positive response from the user. If any of the following conditions exist, display an information error message:
 - A. Duplicate Shop Numbers.
 - B. If it is intended that a shop be deleted, the Shop Number cannot appear on any document.
5. Once the update is complete (changes are in the data base), display the same screen with an informative message.

3.3.9.2 Edit Components (Indices)

1. Allow entry into Edit components mode through the File Editing submenu.
 2. Display the Indices Common Data Screen with all fields blank.
 3. Accept Component Number and Component Type (Component Type is optional when modifying a component).
 4. If Component Number/Type is found,
 - A. Display the Indices Record.
 - B. Allow the following changes:
 - 1) Delete the Indices Record.
 - 2) Modify the Indices Record except do not allow changes to the Component Number (or Component Type).
 5. If the Component Number/Type is not found, allow user to input an Indices Record.
 6. Transmit changes to the data base upon a positive response from the user. If any of the following conditions exist display an error message:
 - A. Duplicate Component Numbers.
 - B. If FEG Numbers or Tech Spec Numbers have been entered, they must already exist in the data base.
 - C. If a document exists that is active (any WORK STATUS other than complete) and the O.O.S = yes then do not allow the component FEG Relationship to be deleted.
 - D. If a new FEG relationship is added, and the component appears on any document with an active Work Status then add the new FEG to the document.
- Once the update is complete (changes are in the data base) display the same screen with an informative message.

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7. If an FEG relationship is deleted and the component appears on any document with Work Status = "complete" and O.O.S. = "yes", then delete that FEG from the document.

3.3.9.3 Edit Functional Equipment Groups (FEG's)

1. Allow entry into Edit FEG's mode from the File editing submenu.
2. Display FEG Screen with all fields blank.
3. Accept FEG Number.
4. If FEG Number is found,
 - A. Display the given FEG Record, the FEG Superior List, and the FEG Inferior List (i.e. complete the FEG Screen).
 - B. Allow the following changes:
 - 1) Delete the relationship between any Superior or Inferior FEG Record and the given FEG Record.
 - 2) Add a superior or inferior relationship between the given FEG Record and another, existing FEG Record.
 - 3) Delete the given FEG Record. Only allow this deletion if all relationships (FEG, Tech Specs, and Component relationships) to this record have already been deleted, otherwise display an error message.
 - 4) Modify the given FEG Record.
5. If FEG Number is not found, allow user to input FEG Record, FEG Superior List and FEG Inferior List. (This is the only way a new FEG can be added.)
6. Transmit changes to the data base upon a positive response from the user. If the duplicate FEG Numbers have been entered, display an error message. Once update is complete (changes are in the data base) display the same screen with an informative message.

3.3.9.4 Edit Tech Specs

1. Allow entry into Edit Tech Specs mode through the File Editing submenu.
2. Accept Tech Spec Number.
3. If Tech Spec Number is found,
 - A. Display the corresponding Tech Spec Record.
 - B. Allow the following changes:
 - 1) Delete or add Component Numbers.
 - 2) Delete or add FEG Numbers.
 - 3) Delete or add System Compliance Procedure Numbers.
 - 4) Delete Tech Spec Record.
 - 5) Delete or add Tech Spec Description.
4. If Tech Spec Number is not found, allow the user to input a new Tech Spec Record.
5. Transmit changes to the data base upon a positive response from the user. If any of the following conditions exist, display an error message:
 - A. Duplicate Tech Spec Numbers.
 - B. If Component Numbers or FEG Numbers have been entered, they must already exist in the data base (Indices).

Once the update is complete (changes are in the data base) display the same screen with an informative message.

3.3.9.5 Purge Document

1. Allow entry into Purge document mode through the Edit Files submenu.
2. Display the Document Screen with all fields blank.
3. Accept Document Number and Document Type (Document Type is optional). (If the user has entered Document Number only, display (1) the Document Screen if only one document is found, or (2) the Report WCL Screen if more than one is found. If the Report WCL Screen is displayed, allow the user to select one of the documents.
4. If Document Number/Type is not found in the data base, display an error message, and go back to part 2.
5. If Document Number/Type is found, display the Document Screen filled in.
6. Upon a positive response from the user:
 - A. Display an error message if Hung? = "yes" or if any O.O.S. field = "yes", or if Work Status ≠ complete. Purge the document upon a second positive response from the user.
 - B. Otherwise, purge the document from the data base.

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3.3.9.6 Semiautomatic Documents Purge

1. Allow entry into Semiautomatic Document Purge through the Edit Files submenu.
2. Display the SAD Purge Screen.
 - A. Allow the user to enter values for the SAD Purge Screen elements.
 - B. Purge Date must be less than Current Date. (Compare Purge Date to the Start Date).
 - C. Days Less Than Current Date and Purge Day must have logical agreement.
 - D. Work Status can only be "complete" or "non-released".
 - E. Values must be entered for O.O.S. and Hung?.
3. Upon a positive response from the user select and display using Purge Screen all documents with the criteria described in Paragraph 2.
4. Allow purge abort.
5. Upon a positive response from the user purge the selected documents and print the Purge Screen.

3.4 DATA DEFINITIONS

3.4.1 Data Dictionary (All Screens shall have the current date/time and the operational mode filled in at the top of the screen.)

Document Continuation Screen

- = Document Number/Type
- + Work Description
- + N
0 [Component Summary]

Document Screen

- = Document Number/Type
- + Work Description
- + Priority
- + Shop
- + Document System S/U Code
- + 7
0 [Critical System Code]
- + 3
0 [Related Maintenance Code]
- + Tagout Number
- + Hung? (Tagout Status)
- + Requested? (Tagout requested?)
- + Last Changed
- + Work Control Comments
- + Work Status
- + Initials
- + Start Date
- + Processed?
- + N
0 [Component Summary]

Document System Startup Code

- = Document System
- + Document Startup Code

Document Number/Type

- = Document Number
- + Document Type

3.4 DATA DEFINITIONS (Cont'd)

3.4.1 Data Dictionary (Cont'd)

Component Summary

- = Component Number
- + Component Description
- + OE Comment
- + Tech Spec Number + More
- + $\frac{3}{0}$ [FEG Number + O.O.S. + Tech Spec Number + More]

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Component Number

- = Prefix
- + Number
- + Suffix

Related Maintenance Code

- = RM Code
- + System
- + S/U Code

FEG Inferior List

- = $\frac{7}{0}$ [FEG records] that directly link to a given FEG record.

FEG Record (Functional Equipment Group Record)

- = FEG Number
- + FEG Description

FEG Screen

- = FEG Record
- + FEG Superior List
- + FEG Inferior List

3.4 DATA DEFINITIONS (Cont'd)

3.4.1 Data Dictionary (Cont'd)

FEG Superior List

= $\frac{7}{0}$ [FEG records] that a given FEG record is directly linked to.

Out-of-Service Screen

= System S/U Code

+ FEG Number

+ $\frac{N}{0}$ [O.O.S. Summary]

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Out-of-Service Summary

= FEG Number

+ Document Number/Type

+ Tagout Number

+ Hung

+ Work Status

+ Document System S/U Code

Processing Screen

+ Start Date

+ Shop

+ $\frac{N}{0}$ [Processing Summary]

Processing Summary

= Document Number/Type

+ Tagout Number

+ Hung

+ Work Status

+ Priority

Scratchpad Screen

+ $\frac{N}{0}$ [Scratchpad Records]

3.4 DATA DEFINITIONS (Cont'd)

3.4.1 Data Dictionary (Cont'd)

Scratchpad Records

- = Document Number/Type
- + Tagout Number
- + Component Number
- + Scratchpad Comment
- + Date

Search WCL Screen

= Three columns of the following data fields labeled "Search for all", "Limit list to", and "Sort list by"

- + Document Number/Type (Note: Combination of two fields, therefore, must be able to input Document or Document and type).

- + Tagout Number (Note: Allow for "Any Value Concept". If this data element is selected for "Search FOR ALL" or "Limit List To" a specific value is not required. a special character can be input that indicates select any record that has a value in this data element, excluding blanks.)

- + Component Number (Note: Combination of three fields, therefore, for this case must be able to input Prefix or number or Prefix and Number or Prefix and Number and Suffix.)

+ Work Status

+ Start Date

+ FEG Number

+ Priority

- + Shop (Note: Combination of two fields therefore, must be able to input Shop or Shop & Suffix.) (Blank is a valid suffix.)

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- + System S/U Code (Note: Combination of two fields, therefore, for this case must be able to input one or two fields. Either "Document System" or "Document System + S/U Code".)
- + Critical System Code (Note: input only one value)
- + Related Maintenance Code (Note: Combination of three fields, therefore, this case must be able to input RM Code or RM code
 - + System or RM Code + System
 - + S/U Code.)
- + Tech Spec
- + Last Changed (Note: Allow for logical value operation. If this data element is selected for "Search For All" or "Limit List To" a logical value can be included with the specific value input. Logic values are:)
 - GE (greater than or equal to)
 - GT (greater than)
 - LE (less than or equal to)
 - LT (less than)(Note: The time part of the "Last Changed" data element is optional.)

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3.4 DATA DEFINITIONS (Cont'd)

3.4.1 Data Dictionary (Cont'd)

Report WCL Screen

- = Search for all
- + Limit List To
- + Sort List By
- + N
0 [Report WCL Summary]

Report WCL Summary

- = Document Number/Type
- + Tagout Number
- + Hung
- + Work Status
- + Start Date
- + Shop
- + Priority

All Indices Search Screen

- = Four columns of the following data fields labeled
"Search for All", "Limit List To", "Select On", and
"Sort List"
- = Component Type
- + Component Number (Note: Combination of three fields,
therefore, for this case must be able
to input Prefix or Number or Prefix +
Number or Prefix + Number + Suffix.)
- + System S/U Code
- + FEG
- + P&ID
- + Cell
- + Schematic
- + Critical System Code (Note: Cannot enter in Search
for All Column)
- + Technical Specification Number

Equipment Record Search Screen

- = All Indices Search Screen

3.4 DATA DEFINITIONS (Cont'd)

3.4.1 Data Dictionary (Cont'd)

Electrical Load Record Search Screen

- = All Indices Search Screen
- + Equipment Number
- + Volts* or NPHP*
- + KW*

Instrument Record Search Screen

- = All Indices Search Screen
- + Loop/Logic Diagram Number
- + Panel
- + Equipment Number
- + Position-Electrical Failure*
- + Position-Pneumatic Failure*
- + Loop Number

Valve Record Search Screen

- = All Indices Search Screen
- + Loop/Logic Diagram Number
- + Size*
- + Type*
- + Position-Electrical Failure*
- + Position-Pneumatic Failure*
- + Operator Type*
- + Limit Switch Number*
- + Solinoid/Pneumatic Drawing*

Damper Record Search Screen

- = All Indices Search Screen
- + Position-Electrical Search Screen*
- + Position-Pneumatic Failure*
- + Operator Type*
- + Loop/Logic Diagram Numbers

* Able to select on this data elements when using batch processing.

3.4 DATA DEFINITIONS (Cont'd)

3.4.1 Data Dictionary (Cont'd)

Report Indices Screen

- = Search For All
- + Limit List To
- + Select On
- + Sort List By
- + N
0 [Report Indices Summary]

Report Indices Summary

- = Component Number
- + Component Description
- + System S/U Code
- + Power Interrupt
- + Cell
- + P&ID

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Shop Screen

- + N
0 [Shop Number + Shop Name]

System Startup Code

- = System Code
- + Startup Code

Tagout Change Screen

- = Tagout Number
- + N
0 [Tagout Summary]

Tagout Summary

- = Document Number/Type
- + Work Description
- + Document System S/U Code
- + Work Status
- + Start Date
- + Shop

3.4 DATA DEFINITIONS (Cont'd)

3.4.1 Data Dictionary (Cont'd)

Technical Specification Record

= Technical Specification Description

+ Technical Specification Number

+ N
0 [FEG]

+ N
0 [Component Numbers]

+ N
0 [System Compliance Procedure Number]

Technical Specification Screen

= Technical Specification Record

SAD Purge Screen

= Purge Date

= Days Less Than Current Date

= Work Status

= O.O.S.

= Hung

Purge Screen

= SAD Purge Screen

+ N
0 [Purged Documents]

Purge Documents

= Document Number/Type

+ Work Description

3.4 DATA DEFINITIONS (Cont'd)

3.4.1 Data Dictionary (Cont'd)

INDICES DATA

Indices Screen

= Indices Record

Indices Record

= Indices Common Data Record

+ Equipment Record

or Electrical Load Record

or Instrument Record

or Value Record

or Damper Record

Indices Common Data Screen

= Indices Common Data Record

Indices Common Data Record

= Component Number (For the Electrical Loads, Component
Number = Bus Number + Breaker Number)

+ Component Type

+ Component Description

+ System Startup Code (System Code + Startup Code)

+ N
0 [Critical System Code]

+ Building

+ Cable Number

+ Cell

+ Location

+ P&ID Number

+ 3
0 [Tech Spec Number]

+ 3
0 [FEG]

+ Power Interrupt

+ Schematic Number

3.4 DATA DEFINITIONS (Cont'd)

3.4.1 Data Dictionary (Cont'd)

INDICES DATA Cont'd)

Equipment Record

= Indices Common Data Record

Electrical Load Record

= Equipment Number

+ Volts/NPHP

+ KW

Instrument Record

= Loop/Logic Diag. Number

+ Loop Number

+ Panel

+ Equipment Number

+ Position-Electrical Failure

+ Position-Pneumatic Failure

Valve Record

= Loop/Logic Diag. Number

+ Solenoid/Pneumatic Diag.

+ Valve Size

+ Operator Type

+ Limit Switch Number

+ Position-Electrical Failure

+ Position-Pneumatic Failure

+ Valve Type

3.4 DATA DEFINITIONS (Cont'd)

3.4.1 Data Dictionary (Cont'd)

INDICES DATA Cont'd)

Damper Record

- = Loop/Logic Diag. Number
- + Position-Electrical Failure
- + Position-Pneumatic Failure
- + Operator Type

3.4.2 Edit Criteria

Blank is an allowable value for all data elements except Document Number.

X - Alphanumeric
A - Alphabetic
N - Numeric
- Blank

BREAKER NUMBER

Data type and size: X(12), X X X X X - X X X X X - X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component number

Definition: Breaker that provides power to the component.

BUILDING

Data type and size: N(4) + A(1), N N N N A

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Building in which the component is located.

CABLE NUMBER

Data type and size: X(13), X X X X - X X - X X X X X X X

1. Normal (7 characters)
2. Emergency (W, X, or Y + 7 characters)
3. PPS AA-NNNNNNN
4. IEM AAA-AA-7X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Cable(s) providing power or current path to a component.

CELL (ROOM)

Data type and size: X(4), X X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Cell (or Room) in which the component is located.

COMPONENT DESCRIPTION

Data type and size: X (30) including any special characters

Allowable values: Free Format

Data input default value: Blank

occurrences in this element: One (both)

Data it depends on: Component Number (both)

Definition: Alphanumeric description of a component.

COMPONENT NUMBER

Data type and size: X(12), X X X X X - X X X X X - X X
occurrences in this element: Unlimited (WCL), one (Indices)
Data it depends on: Document Number/Type (WCL)
Definition: A unique code number for each component.
Component number is the composit of three
fields: Prefix - first 5 characters, Number -
second 5 characters, Suffix - last 2
characters, P R E F I X - N U M B E R - S U F F
I X.

COMPONENT TYPE

Data type and size: A(1)
Allowable values:

<u>Value</u>	<u>Meaning</u>
I	ICR (Instrument Calibration and Recall)
E	EIB (Equipment Index Bechtel)
L	ELL (Electrical Load List)
D	DIB (Damper Index Bechtel)
V	VIB (Valve Index Bechtel)

Data input default value: Blank
occurrences in this element: N/A (WCL); one (Indices)
Data depends on: Component Number
Definition: Alpha description of component type

CRITICAL SYSTEM CODE

Data type and size: X(4)/or X(1)
X(1) when one the Document Screen
X(4) when on the Indices Screen
Allowable values: SEISMIC I = SESI = 1
Class 1E = CLIE = E
PPS = PPS = P
FIRE PROTECTION = FIRE = F
ASME = ASME = A
SEISMIC 3/1 = S3/1 = 3
A28 = A28 = 8

Data input default value: Blank
occurrences in this element: Up to 7 (WCL); up to 4
(Indices)
Data it depends on: Document Number/Type and Component Number
Definition: Critical system identification applicable to
components and current requested work on a
document.

CURRENT DATE/TIME

Data type and size: N(10), N N - N N - N N/N N N N
occurrences in this element: Appears on all screens
Data it depends on: Screens
Definition: Date and 24 hour time supplied by UNIVAC operating system.

DOCUMENT NUMBER

Data type and size: N(7), N N - N N N N N
Data input default value: First 2 characters default to present year.
occurrences in this element: One (WCL)
Data it depends on: N/A
Definition: Identification on each document.

DOCUMENT STARTUP CODE

Data type and size: A(1), A
occurrences in this element: One (WCL), N/A (Indices)
Data it depends on: Document System S/U Code
Definition: Alpha code used to subdivide a system into subsystems.

DOCUMENT SYSTEM

Data type and size: N(2), N N
occurrences in this element: One (WCL), N/A (Indices)
Data it depends on: Document System Code
Definition: Plant system to which the document is a function of.

DOCUMENT SYSTEM STARTUP CODE

Data type and size: N(2) + A(1), N N A
Data input default value: Blank
occurrences in this element: One (WCL), N/A (Indices)
Data it depends on: Document Number/Type
Definition: System Startup Code for a document.

DOCUMENT TYPE

Data type and size: A(1)

Allowable values: I = ICRS

P = PMP

T = TPM

W = Work Requests (030)

R = ICRS/PMP

occurrences in this element: One (WCL)

Data it depends on: Document Number

Definition: Document Type used to perform maintenance

EQUIPMENT NUMBER

Data type and size: X(12), X X X X X - X X X X X - X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Equipment that an instrument or breaker services.

FEG DESCRIPTION

Data type and size: X(30) including any special character

Allowable values: Free Format

occurrences in this element: One (both)

Data it depends on: FEG Number (both)

Definition: Alphanumeric description of a Functional Equipment Group.

FEG NUMBER

Data type and size: X(10), X X X - X X X - X X X X

occurrences in this element: Three (WCL), six (Indices)

Data it depends on: Component Number

Definition: Identification number for each functional equipment grouping.

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HUNG?

Data type and size: A(1)

Allowable values: Value Definition

Y Yes

N No

C Clear

Data input default value: Blank

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Tagout, Document Number/Type

Definition: Status of tagout.

INITIALS

Data type and size: A(3), A A A

Allowable values: Initials from the list of authorized users.

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: User's initials, automatically supplied by
MIDAS. Not entered by user except at log in.

KW (KILO WATTS)

Data type and size: X(11), X X X X X X X X X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Power rating of the component.

LAST CHANGED

Data type and size: N(10), N N - N N - N N/N N N N

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Date/time when the document was last changed,
automatically supplied by MIDAS, not entered by
user.

LIMIT SWITCH NUMBER

Data type and size: X(7), X X X X X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Valve limit switch number.

LOCATION

Data type and size: X(10), X X X X X X X X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Location of the component within the cell,
room, building, panel, etc.

LOOP/LOGIC DIAGRAM NUMBER

Data type and size: N(5), N N N N N

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Loop diagram or Logic diagram associated with
the component.

LOOP NUMBER

Data type and size: X(10), X X X X X X X X X X
occurrences in this element: N/A (WCL), one (Indices)
Data it depends on: Component Number
Definition: Loop number associated with the component.

MORE

Data type and size: A(4), A A A A
Allowable values: "More", Blank
Data input default value: Blank
occurrences in this element: One (WCL), N/A (Indices)
Data it depends on: One for component No., Document No., Type
One for FEG No., Document No./ Type
Definition: Indicates if more than one Tech Spec No.
applies to the component or FEG

OE COMMENT

Data type and size: X(40) including any special characters
Allowable values: Free Format
Data input default value: Blank
occurrences in this element: one (WCL).
Data it depends on: Component Number N/A (Indices)
Definition: A free format section to allow entering
pertinent component related information.

O.O.S (OUT-OF-SERVICE)

Data type and size: A(1)
Allowable values:

<u>Value</u>	<u>Definition</u>
Y	Yes
N	No

Data input default value: Blank
occurrences in this element: Up to three (WCL), N/A
(Indices)
Data it depends on: FEG, Component Number, Document
Number/Type.
Definition: Status of FEG with respect to a component and
document combination.

OPERATOR TYPE

Data type and size: A(4), A A A A

Allowable values: Value Definition

MAN	Manual
RMAN	Remote Manual
PNEU	Pneumatic
SOL	Solenoid
ELEC	"Pre Con" Electric Rotating Gear Operator

Valve Definition

MOT	Motor (Electric but not Pre Con")
ETA	Electro-Thermal Actuator
FL	Fusibly Link with Spring or Gravity Closure

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Type of operator for valve or damper.

PANEL OR LOCAL RACK

Data type and size: A(4) + N(4), A A - N N N N - A A

occurrences in this element: None (WCL), one (Indices)

Data it depends on: Component Number

Definition: Electrical panel or local rack associated with a component.

P&ID NUMBER

Data type and size: N(5), N N N N N

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Piping and Instrument Diagram drawing number.

Westinghouse H4 drawing number.

POSITION-ELECTRIC FAILURE

Data type and size: A(2), A A

Allowable values: Value Definition

FO	Fail Open
FC	Fail Closed
FA	Fail in Place
FI	Fail Indeterminant

POSITION-ELECTRIC FAILURE continued

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Valve failure position on loss of electrical power supply.

POSITION-PNEUMATIC FAILURE

Data type and size: A(2), A A

Allowable values: Value Definition

FO Fail Open

FC Fail Closed

FI Fail Indeterminant

FA Fail in Place -

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Valve fail position on loss of pneumatic supply on pneumatic signal.

POWER INTERRUPT

Data type and size: X(12), X X X X X - X X X X X - X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Fuse supplying power to the component.

PRIORITY

Data type and size: X(?), X X

Allowable values: 1, 2A, 2, 3, 4

Data input default values: Blank

occurred in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: A weighting function used to determine the urgency of a activity performance for plant operation.

PROCESSED?

Data type and size: A(1)

Allowable values: Y (Yes), N (No), C (Complete)

Data input default value: Blank

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Processing status of a document. If "yes", the document will appear on a shop schedule. Automatically supplied by MIDAS. Not entered by user.

RELATED MAINTENANCE CODE

Data type and size: X(5), X X X X X

Data input default value: Blank

occurrences in this element: Up to three

Data it depends on: Component and Document Number/Type

Definition: Maintenance Grouping Code. Related Maintenance Code is the composite of three fields. RM Code (first two characters), System (second two characters) S/U Code (last character). To the user related maintenance code will function as one (RM Code), two (RM Code + System) or three (RM Code + System + S/U Code) fields.

REQUESTED?

Data type and size: A(1), A

Allowable values: Y (Yes), N (No)

Data input default value: Blank

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Indicates if a tagout is requested for a document

SCHEME

Data type and size: X(13), X X X X - X X - X X X X X X X

1. Normal (7 characters)
2. Emergency (W, X, or Y + 7 characters)
3. PPS AA-NNNNNNN
4. IEM AAA-AA-7X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Cable(s) providing power or current path to a component.

SCHEMATIC NUMBER

Data type and size: X(20), X
X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Schematic drawing number on which the schematic of the component is found.

SCRATCHPAD DATE

Data type and size: N(6), N N - N N - N N

Allowable values: Any value on calendar

occurrences in this element: one (WCL), N/A (Indices)

Data it depends on: Scratchpad Record

Definition: Date when the scratchpad record was last changed. Automatically supplied by MIDAS not entered by user.

SHOP

Data type and size: N(2) + A(1), X - N N A

Allowable values: Those values contained in the shop file

Data input default value: Blank

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Code designation for shop.

NOTE: the A, alpha is the suffix of the shop and blank is a valid value.

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SHOP NAME

Data type and size: X(35), including special characters

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Shop

Definition: Name of shop with lead responsibility for the work performance.

SOLENOID/PNEUMATIC DIAGRAM

Data type and size: N(5), N N N N N

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Solenoid/Pneumatic Diagram drawing number.

START DATE

Data type and size: N(6), N N - N N - N N

Allowable values: Any value allowed by calendar but no date in the past.

Data input default value: YR defaults to current year

occurrences in this element: One (WCL), N/A
(Indices)

Data it depends on: Document Number/Type

Definition: The date the document is scheduled to be worked.

STARTUP CODE

Data type and size: A(1), A

occurrences in this element: N/A (WCL), one
(Indices)

Data it depends on: System Startup Code

Definition: Alpha code used to subdivide a system into subsystems.

SYSTEM CODE

Data type and size: N(2), N N

occurrences in this element: N/A (WCL), one
(Indices)

Data it depends on: System Startup Code

Definition: System to which the component belongs.

SYSTEM COMPLIANCE PROCEDURE NUMBER

Data type and size: A(2), N(12); A A - N N N N N N - N N N N N N

Data input default value: Blank

occurrences in this element: N/A (WCL), 1 to 12
(Indices)

Data it depends on: Tech Spec number

Definition: Procedure to perform the Tech Spec surveillance requirement.

SYSTEM STARTUP CODE

Data type and size: N(2) + A(1), N N A

Data input default value: Blank

occurrences in this element: N/A (WCL), one
(Indices)

Data it depends on: Component Number

Definition: System and sub-system that the component belongs to.

TAGOUT NUMBER

Data type and size: N(2) + N(5), N N - N N N N N

Allowable values: First two N's designate year.

Data input default value: Blank, first two N's default to current YR when value to be entered.

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Identification code of a tagout. Not always unique for each document.

TECH SPEC DESCRIPTION

Data type and size: X(30)

Allowable Values: Free Format

Data input default value: Blank

occurrences in this element: N/A (WCL): one (Indices)

Data it depends on: Tech. Spec. Number

Definition: Description of the Tech. Spec.

TECH SPEC NUMBER

Data type and size: X(13), including (.), 17.XXXXXXXXXX

Allowable values: 17. + the remaining characters

Data input default value: Blank

occurrences in this element: One (WCL), 0 to N (Indices)

Data it depends on: Component Number, FEG Number

Definition: Limiting condition for operation and surveillance requirements defined by Chapter 17 of the FSAR.

VALVE SIZE

Data type and size: X(6), X X X X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Valve body end connection size in inches, except for pressure relief valves as follows:

Relief Valves:

- 1) Inlet and outlet sizes will both be given, since in most cases the inlet and outlet sizes are different.
- 2) For fractional size inlet, decimal (i.e., 1.5 = 1-1/2) notation will be used.

VALVE SIZE (CONTINUED)

Definition (Continued):

Relief Valves (Continued)

- 3) For fractional size outlet, a code letter "A" will be used to designate the 1/2" (i.e., 2A = 2-1/2").

Typical Sizes Are:

01 x 02 = 1 inch inlet by 2 inch outlet

1.5 x 2A = 1-1/2 inch inlet by 2-1/2 inch outlet

VALVE TYPE

Data type and size: X(4), X X X X

Allowable values: Valve Type (Listed in alpha-numeric order, same as computer sort by valve type), where:

BF = Butterfly
BL3W = Ball, 3-way pattern
BL4W = Ball, 4-way pattern
BL = Ball
CK = Swing check
CYL = Compressed gas cylinder valve
GBA = Globe, angle pattern
GBC = Globe, cryogenic service
GBN = Globe, needle plug
GB3W = Globe, 3-way pattern
GB = Globe
GT = Gate
LMA = Liquid metal (angle pattern)
LMCK = Liquid metal check
LMS = Liquid metal (straight pattern)
LMY = Liquid metal (WYE pattern)
PL = Plug
PR = Pressure relief valve
FREG = Pressure regulator
(self-actuated)
RD = Rupture disk
SCK = Stop check
SLCK = Spring loaded check
VB = Vacuum breaker

VALVE TYPE (CONTINUED)

Allowable Values (Continued):

2WAY = 2-way in-line process solenoid
valve

3WAY = 3-way pilot solenoid valve

4WAY = 4-way pilot solenoid valve

5WAY = 5-way pilot solenoid valve

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Type of valve.

VOLTS (NPHP)

Data type and size: X(11), X X X X X X X X X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Voltage Rating or Name Plate Horse Power
Rating of the component.

WORK CONTROL COMMENTS

Data type and size: X(110) including special characters,
free format.

Data input default value: Blank

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Comments relative to the evolution
performed by the work document.

WORK DESCRIPTION

Data type and size: X(70), including special characters

Data input default value: Blank

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Description of work on a document.

WORK STATUS

Data type and size: A(6), A A A A A A

Allowable values: Retest, Comp., REL, NON REL

Data input default value: Blank

occurrences in this element: One (WCL), N/A
(Indices)

Data it depends on: Document Number/Type

Definition: Status of document as a whole

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←————→ Clerk inputs work packages

←-----→ OE processes work packages

■ Daily list of released work is printed

←+++++→ Shop works on package; OE changes work-statuses and initiates walkthroughs

▼ List of delinquent work-packages is printed

5.0 TRANSACTION SUMMARY
AND RESPONSE TIME REQUIREMENTS

<u>SHIFT</u>	<u>DATA ENTRY¹</u>	<u>STATUS CHANGES²</u>	<u>QUERIES</u>
Day	5	75	90
Swing	40	70	90
Mid	50	75	90
required	15 sec	15 sec	15 sec for single key
response times			20 sec for multiple key

- 1 This refelects new work packages, not ones "held over" from a previous day, which are covered in status changes statistics.
- 2 Status changes include the initial release status for the given 24 hour period, and all subsequent complete, suspend, retest status changes.

6.0 ASSUMPTIONS

It is assumed that all members of each OE crew will be trained to use MIDAS (hardware and software).

It is assumed that the MIDAS data base will be kept up to date. The only way MIDAS can be relied upon is if the data is current. A rough estimate of staff support to do this is 5 hours per shift, based on information in the Transaction Summary and Response Time Requirements (5.0). An additional 3.5 hours would be spent with queries. With the hardware configuration and personnel, this work will be split among two terminals and several people.

It is assumed that personnel from FFTF will be available to generate the initial data to the MIDAS data base for the FEG's, the tech spec/FEG relationships, and the tech spec/component relationships. The FEG/component relationships can be input over a long term basis. The implementor provides the tools and loads the engineering indices into the data base.

7.0 BACK-UP / RECOVERY REQUIREMENTS

There are two failure situations for which back-up procedures must be defined.

1. The terminal loses communications with the host computer, the host goes down or the telecommunications link fails. With the specified local intelligence and mass storage (refer to Appendix E), the capability to go to a restricted mode of operation is needed. For example, data entry may only be allowed. When communication is restored, the data stored on the diskettes would then be transmitted and update the data base on the host.
2. The terminals fail. A manual system needs to be defined so as not to prohibit the work package processing required of the OE's. Since MIDAS WCL is not replacing current paper flows, the current procedure may suffice. The speed of MIDAS queries can not be expected to be backed up.

Backing up the MIDAS WCL data base and maintaining audit files should be done in a timely manner. Since this is a 24 hour per day, 7 days per week operation, an efficient and quick recovery procedure is required.

A maintenance agreement needs to be drawn up by the servicing organization and the end user to define reasonable response times for recovery from down times and general maintenance on the UTS400 local hardware.

8.0 ACCEPTANCE CRITERIA

The minimum hardware required to support the mandatory functions of MIDAS would be one UTS400 terminal, a diskette drive for local mass storage, a printer, and the supporting interface and communication links to interface with the Univac. This local hardware would have to be installed and running at the OE's work area. The MIDAS system must be able to store, maintain, and retrieve data elements from the OE's work packages.

A restricted selection of functions need to be supported at the local UTS400 in case of system down periods (scheduled or non-scheduled). This support would better the chances of keeping the MIDAS data base up to date.

Other related items that need to be considered is that the end users would need to receive training on the system before acceptance could be considered. Written procedures covering available functions, screen format descriptions, backup/recovery procedures must also be supplied. Helpful informative error messages are required for the mandatory functions and queries.

Response times to data entry, status changes, and queries are specified in the Transaction Summary and Response Time Requirements (5.0). These must be met for mandatory functions to consider acceptance of MIDAS.

MIDAS performs as described in this specification requirements package. Performance is verified and accepted via test scripts.

SECTION B

MIDAS
SYSTEM DOCUMENT

(ISSUE 1)

DOCUMENT NO: BCSR-ADS-0272

TITLE: MIDAS SYSTEM DOCUMENT

CONTROLLED BY: Systems Department

ORIGINAL RELEASE DATE: _____

ISSUE NO: 1R1 TO: _____ DATE: _____

PREPARED BY: M. McKagan

APPROVAL: _____

5341A/211
9/28/81

(DATE)

ABSTRACT

The primary function of this document is to serve as a tool to assist the Hanford ADP services contractor in maintaining and modifying the MIDAS application software during its useful lifetime.

It is assumed that the reader has a basic understanding of the functions performed by the system. The functions performed by MIDAS are described in the MIDAS Functional Specifications. The use of those functions are described in the MIDAS User's Guide. Both documents should be read and understood.

It is also assumed that the reader has a basic understanding of the UNIVAC 1100/44 computer and its hardware/software on-line transaction environment. This document describes the MIDAS system design and is therefore very technical.

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1.0 INTRODUCTION

1.1 DOCUMENT FUNCTION

The primary function of the MIDAS System Document is to serve as a tool to assist the Hanford ADP services contractor in maintaining and modifying the MIDAS application software during its useful lifetime.

Although this document concentrates on the design of the application software, Section 2.0 addresses the UNIVAC hardware/software/on-line environment within which MIDAS was designed and heavily depended upon.

1.2 FORMAT

For ease of use and ease of updating, this document is formatted by function as opposed to category. That is, instead of organizing the document by addressing inputs, outputs, and processes as separate sections, the sections in this document will address the input, process, change, S/R WCL functions, etc. Each section will address the inputs, process and outputs pertinent to that function.

1.3 SCOPE

This document describes the MIDAS software design as it relates to the Work Control Log (WCL) and the MIDAS Component Index (MCI) as defined by the Midas Functional Specifications authored and maintained by the Westinghouse Hanford Company.

1.4 DEVELOPMENT HISTORY AND APPROACH

The MIDAS system is constructed of two distinct parts. They are:

- MCI (MIDAS Component Index)
- WCL (MIDAS Work Control Log)

Because the WCL is heavily dependent upon data provided by the MCI, and because much of the data in the WCL is provided by the MCI, it was recommended by BCSR and accepted by HEDL that the MCI be developed first.

The Development of the MCI was initiated in September of 1980 and was completed in January of 1981. It was then released to FFTF operations and engineering for unlimited use in May of 1981.

The WCL development effort began in January of 1981 and is scheduled to be released to FFTF operations for unlimited use in November of 1981.

Beta testing and training using the entire system began in mid-September of 1981.

The system was developed using the Systematic Software Development and Maintenance (SSDM) methodology which is a DOE-RL standard for all ADP development and maintenance activities. This approach calls for the following development phases:

- Requirements Definition
- Requirements Analysis
- Preliminary Design
- Detail Design
- Software Construction
- Testing
- Implementation

Since the development of MIDAS was a joint effort between BCSR and HEDL, the responsibility of each of the phases described above were adhered to during the project. These are shown on page 1-4. This shows that a very heavy involvement of both BCSR and HEDL was conducted throughout the entire project.

In particular, it is unusual for a non-ADP contractor to be primarily responsible for alpha testing of software along with the ADP contractor. However, because the WCL portion of MIDAS is a tool used to enhance safe operation of the FFTF, it was decided that HEDL would be heavily involved in all testing phases of the WCL to further insure that, upon implementation, the system performed as specified.

To assist in developing programs with a high degree of maintainability, Warnier Charts were used as the primary detail design tool. This approach to detail design helps significantly in forcing a "top down" structured programs.

System Certification is carried out by the use of a comprehensive set of Certification procedures. These procedures are authored by BCSR and utilize the "Path method" of software certification, i.e., if followed, these procedures will force every program in the system and every process within these programs to be executed. These procedures are executed immediately after software implementation.

	MCI		WCL	
	BCSR	HEDL	BCSR	HEDL
REQUIREMENTS	C	P	C	P
REQUIREMENTS ANAL.	P	MC	P	MC
PRELIMINARY DES.	P	MC	P	MC
DETAIL DES.	P	MC	P	MC
TESTING:				
ALPHA	P	MC	P	P
BETA	MC	P	MC	P
IMPLEMENTATION:				
SOFTWARE	P	MC	P	MC
SYSTEM	C	P	C	P

C = CONSULT
 P = PRIME
 MC = MUST CONSULT

System Certification is carried out by the use of a comprehensive set of Certification procedures. These procedures are authored by BCSR and utilize the "Path method" of software certification, i.e., if followed, these procedures will force every program in the system and every process within these programs to be executed. These procedures are executed immediately after software implementation.

2.0 MIDAS HARDWARE/SOFTWARE/ON-LINE ENVIRONMENT

2.1 INTRODUCTION

This section describes the UNIVAC 1100/44 and UTS400 hardware/software/on-line environment within which the MIDAS system was designed and heavily depended upon.

2.2 UNIVAC 1100/44 (HOST)

The MIDAS system utilizes the on-line hardware/software configuration provided by UNIVAC. Software includes the DMS1100 data base management system, Transaction Interface Program (TIP), Communications Management System (CMS) and ANSI COBOL application programs. In addition, as a BCSR standard for on-line systems, the Post Transaction Interface Program (PTIP) is used in order to capture accounting information and to process most of the MIDAS on-line paging requirements.

The MIDAS data base is held on DMS1100 data base files. These files contain the document, technical specification, functional equipment group, shop, security and component information necessary to satisfy the MIDAS requirement. This software configuration is shown in graphical form in illustration 2.2.a.

TRANSACTION ENVIRONMENT

Illustration 2.2.a

2.3 UTS400 TERMINAL (REMOTE SITE)

UTS400 intelligent terminals are located at the user's site. Two clusters in all are currently provided. One cluster is provided in the FFTF containment building; the other is used by engineering for testing, training and indices data validation and update purposes. Illustration 2.3.a shows the configuration of the two clusters.

The primary software tool used on the UTS400 is the SMS400 operating system which supports the MAC80 assembler language. The Screen Command Processor (SCOP) is used as the primary screen formatting tool.

The key to the utility of the UTS400 is the programmability and core storage. Both clusters contain 24K of programmable memory.

2.4 ON-LINE OPERATING ENVIRONMENT

Successful development and implementation of the MIDAS software was highly dependent upon the interaction of the various pieces of the host and remote software. Illustration 2.4.a shows the interface points of the object time programs during actual execution of the application programs within the on-line environment. Illustration 2.4.b shows the interface points of the source elements for the development process.

Illustration 2.3.a

Illustration 2.4.a

2.5 MIDAS INPUTS/OUTPUTS

The only mode of input to the MIDAS data base is through the UTS400/UNIVAC on-line environment. Inputs such as documents, components, FEGs, shops and technical specifications are all entered through screen on the UTS400 as well as inputs defining the relationships between these data elements.

The outputs, however, have three modes; screen, local printer and RJE unit. The primary mode of output is to the UTS400 screen. The Component Summary Report, which is described in another section of this document, is printed on the UTS400 remote printer. Reports which are too large to fit within the on-line system limitation (either because of processing requirements or data volume) are run in the UNIVAC batch environment and are printed at the Data 100 RJE unit located in the 4702 Building.

Illustration 2.5.a depicts the hardware/software/communications environment within which MIDAS operates along with the printed report outputs and their associated destinations.

2.6 DMS1100/CMS/PTIP SECURITY AND AUTHORITY

Behind the MIDAS application level of security lies all of the security resources of the system software routine of DMS1100, CMS and PTIP.

2.6.1 PTIP

There are checks against every transaction transmitted to the host by PTIP to ensure that the proper user is using any particular transaction. This security is implemented by means of a special user-ID that is under control of the user. This user-ID/password combination is under control of the Technology Department within the ADP services contractor. Besides security this user-ID/password combination is tied to an account for billing of transaction activity.

Illustration 2.5.a

Implementation of this level of security is through the utility transaction "SIGNIN". In the MIDAS application, PTIP "SIGNIN" is accomplished at sign-on time for each operator and is wholly contained in and controlled by the UTS400 control program. The user has no knowledge of or control of PTIP "SIGNIN".

2.6.2 CMS

In the event that a possible security violation is anticipated, terminals and lines can be 'downed' to CMS, making it impossible for the terminal or terminals (cluster) to send or receive transmission. This becomes important if a cluster is staffed during prime shift and left unattended during mid and grave shifts.

2.6.3 DMS1100

As all production systems must do, because of BCSR (the ADP services contractor) production standards, all schemas and sub-schemas are password protected by the data base administrator (DBA) prior to installation on the production account. This protection means that only programs compiled using the production password are allowed to access the production data base. Therefore, only the approved programs may run against the data base. In addition, any use of the Query Language Processor (QLP) against the production data base will require knowledge of the production password. This password is known only to the DBA. It is not available to application analysts, programmers or users.

3.0 SYSTEM DESIGN

3.1 INTRODUCTION

This section of the MIDAS System Document describes the design of the MIDAS system.

All functions of MIDAS are accessed through the three MIDAS menus. These menus consist of the mainmenu, the special report submenu and the file editing submenu. These menus are shown in Illustrations 3.a, 3.b, 3.c, and 3.d.

This section includes:

- General Function Descriptions (where appropriate)
- Program Narratives
- Transaction/Program Flow Diagrams

for every function in MIDAS.

The highest level flow diagram (level 1) of the system transaction/program flow is shown in illustration 3 1.a. Subsequent flows are available in appropriate sections of this document.

Illustration 3.1.a

Illustration 3.1.a (continued)

Illustration 3.1.a. (continued)

MDSXXX

M I D A S MAIN-MENU

F5 -- SEARCH/REPORT WCL
F6 -- SEARCH/REPORT INDICES

F7 -- SPECIAL REPORTS
F8 -- FILE EDITING

F9 -- W C L INPUT
F10 -- W C L CHANGE
F11 -- W C L PROCESS
F12 -- PURGE

F18 -- KEY DEFINITION

CLR CHG -- TERMINATE UTS400 PROGRAM

Illustration 3a

MIDAS MAIN MENU

SPECIAL REPORTS

F5 -- DAILY SCHEDULE
F6 -- DAILY DELINQUENT REPORT
F7 -- OUT OF SERVICE REPORT
F8 -- COMPREHENSIVE WCL REPORT

F9 -- FEG REPORT
F10 -- TECH SPEC REPORT

Illustration 3b MIDAS

Special Report Submenus

FILE EDITING

F5 -- EDIT FEG

F6 -- EDIT COMPONENTS [INDICES]

F7 -- EDIT SHOP

F8 -- EDIT TECH SPECS

F9 -- EDIT SECURITY

Illustration 3c

MIDAS FILE EDITING SUB MENU

KEY DEFINITION

BIG TAB	PREDEFINED CURSOR TRAVEL RESPECTIVE TO SPECIFIC SCREEN
SCN B	SCREEN B OF A DOCUMENT/TYPE RECORD
WCL	DATA ELEMENT TRANSFER TO THE S/R WCL SCREEN
MCI	DATA ELEMENT TRANSFER TO THE S/R MCI SCREEN
TERM	TERMINATE THE MIDAS PROGRAM
MENU	LISTING OF THE MAIN MENU
SIGOFF	SIGN THE USER OFF OF THE TERMINAL
MCI SUM RTN	RETURN TO THE MCI SUMMARY SCREEN
DOC/CMPNT EXPAND	EXPAND OF A DOCUMENT/TYPE OR COMPONENT RECORD
STACK STATUS	RETRIEVE STACKED SCREENS IN FIRST IN LAST OUT ORDER

Illustration 3d

KEY DEFINITION MENU

Obtained from the MIDAS MAIN MENU

via the F18 attention key

3.2 INPUT, PROCESS, CHANGE

The Input, Process and Change (ICP) functions of MIDAS are all very similar in that they all process exactly the same screens. The only difference is the edit specifications differ from function to function. Because of their similarity, all five programs which are described in this section perform all ICP functions. The screen specification section of 3.2 notes the differences in the three modes.

3.2.1 Insert Methodology for Documents, Input, Process, Change

When initially inserting a document into the data base either in Input, Process, or Change mode, the user may use one of two methods. They are:

1. Call out the document using the document number and type and fetch the document using the XMIT key via the document screen "A" in input mode, the change mode screen or process mode screen. In any mode, the response will be a document screen "A" with the document number and type with an informative message. At this point, nameplate data and up to four component numbers may be added before re-XMITting.
2. Enter a document number, document type, nameplate data and up to four component numbers on the document screen "A" in the input mode. Once entered, the screen can be XMITted.

3.2.1.1 MDS01I

The transaction code for this screen is MDS01I and will load and execute program MDS01I. This is the validation program and performs edits on nameplate data and component data. If errors occur, MDS01I will identify the error and send the screen back to the UTS400 for correction. When no errors exist, MDS01I will send the screen back for initial insert.

After validation is complete, the user places a "y" in the update field at the bottom of the document screen "A." This indicates the initial insert is to be performed.

The transaction code remains MDS01I and will load and execute program MDS01I. If errors still exist, MDS01I will ignore the update request and send the screen back. If the document data is error free, MDS01I will schedule MDS01J who performs the initial insert function. Before transferring to MDS01J, MDS01I places the following information in the buffer for use by MDS01J.

Document Screen "A"

Transaction Code MDS01J.

Once done, control is transferred to MDS01J.

3.2.1.2 MDS01J

The sole purpose of MDS01J is to collect the component's technical specifications, the component's FEGs and the FEGs technical specifications and place them into the WCL portion of the data base along with all nameplate data. Once the initial update is complete, MDS01J will schedule MDS01D to re-display the document on document screen "A." Before transferring to MDS01D, MDS01J will place the following information in the terminal table, for MDS01D.

Document's data base key

Display Mode = 1

Once done, control is transferred to MDS01D.

3.2.1.3 MDS01D

The sole function performed by MDS10D is to fetch and display all nameplate and component data for a given document number and type. MDS01D will recall the newly inserted document and send back to the UTS400 for final inspection. At this point, the document/component screen "B" is available for inspection. The document is now ready for the update mode. The returning document screen "A" has a transaction code of MDS01U.

This document will never be processed by MDS01I or MDS01J after the initial insert.

INSERT METHODOLOGY

INPUT
PROCESS
CHANGE

1. When a "U" is entered in the update field and no errors exist, MDS01I will place the document screen "A" in a buffer and schedule MDS01J.
2. MDS01J will fetch all tech specs for the listed components, the components, the component's fegs, and the feg's tech specs
3. MDS01J will update the WCL with all data gathered in 2 above along with nameplate data.
4. Before scheduling MDS01D, MDS01J will place the doc no, doc type, 1st component and display type = 1. This data is used by MDS01D for display purposes.

(W)

3.2.2 Display and Update Methodology for DOC/COMP Screen "B" Input, Process, Change

Once a document has been processed through MDS01I and MDS01J, processing of DOC/COMP screen "B" may be performed.

In order to obtain screen "B", a document screen "A" must be displayed on the UTS400 CRT. To call out a DOC/COMP screen "B", the cursor is placed in front of the subject component. By suppressing the F14 function key, the document screen "A" is stored on the 400 diskette for later recall and the document number, document type, and component number are XMITted to the host along with transaction code MDS02D.

3.2.2.1 MDS02D

The code MDS02D will load and execute program MDS02D. The sole function of MDS02D is to fetch all technical specifications for this component, all FEGs for the subject component and all technical specifications for the FEGs and place them on screen "B". Because of the limited space on the screen, all data mentioned above may not fit. In these cases, MDS02D will indicate so by using the word "MORE" where there is more data available for display.

Once the screen is completed, MDS02D will return the DOC/COMP screen "B" with a transaction code of MDS02U.

3.2.2.2 MDS02U

The DOC/COMP screen "B" is now being displayed on the UTS400 CRT. Updates to screen "B" may now be performed. In concept, the screen "B" is a child of the DOC/COMP on Screen "A" and certain changes to screen "B" can cause changes to screen "A". These changes are:

1. Placing on FEG OOS.
2. Changes on FEGs OOS flag from "yes" to "no".
3. Placing a temporary FEG on the screen and marking it OOS.
4. Deleting an FEG whose OOS flag = "yes".

Since all FEGs whose OOS flag = "yes" are automatically placed on the parent document screen "A", any one of the four changes made on screen "B" will require MIDAS to recreate screen "A".

When updates are ready, a "Y" is placed in the update field at the bottom of screen "B" and transmitted to the host.

The transaction code is MDS02U and loads and executes program MDS02U. The sole function of MDS02U is to except screen "B" and update the WCL portion of the data base. If any errors occur or any changes except one of the four changes above are made, MDS02U will schedule MDS02D for redisplay of screen "B". Before transferring, MDS02U will place the following data in the terminal table:

Document Number
Document Type
Component Number

Once done, control is transferred to MDS02D to redisplay the DOC/COMP screen "B".

If any one of the four changes above is made, screen "A" must be recreated. Upon XMITting, the UTS400 will clear the document screen "A" stored by the F14 key. After MDS02U makes all required updates, it will schedule MDS01D to redisplay screen "A". Before transferring, MDS02U will place the following data in the terminal table:

Document data base key
Display Mode = "R" for redisplay
Component data base key for the 1st COMP on "A"

Once completed, control is transferred to MDS01D.

If the DOC/COMP screen "B" is being displayed on the UTS400 CRT, a direct transfer to the parent screen "A" can be accomplished by suppressing the "STATUS" key.

DOCUMENT/COMPONENT
SCREEN "B"
DISPLAY AND UPDATE
METHODOLOGY:

or if an FEG was deleted whose O.O.S. flag = yes, MDS02U will call out MDS01D to redisplay the document screen "A". In doing so, the 400 root clears the last entry on the stack.

3.2.3 Adding Components to a Document

When adding components to a document, a document screen "A" must first be displayed. To add components to the document, a "Y" is placed in the add component field. The UTS400 will automatically XMIT the data to program MDS01D. When MDS01D receives the screen, it recognizes that the add component field contains a "Y" and will create and return a document screen "A" with the nameplate data filled in, but will return the component section of the screen free of data. The transaction code for this screen is MDS01I.

Once the components have been added, a "Y" is placed in the update field which forces an automatic XMIT. MDS01I receives the screen, passes to MDS01J which physically adds the component to this document in the WCL data base, and finally passes to MDS01D. Since components are stored as sorted sets, MDS01J passes display code = I for initial display. This will instruct MDS01D to display the case document with its first four components, some of which may have just been added.

The user may wish to edit (determine if the components to be added) the components prior to update. He does this by adding the components to the add component screen and XMITs the screen with the add component field set to "Y" but with the update field blank. In this case, MDS01I will "look up" the components in the indices data base and will return to the user the following information:

1. If the component exists in the data base, will return the component description.
2. If the component exists in the indices but has no FEGs, will return the component description and, in the OOS section for that component as message indicating that no FEGs exist.
3. If the component doesn't exist it returns, in the component description field the message "NOT IN MCI". If the user leaves this message untouched, it will be carried along into the WCL as the description.

ADDING COMPONENTS TO A DOCUMENT
INPUT, PROCESS, CHANGE

When MDS01I is finished, it returns the add component screen with a transaction code of MDS01I for updating.

3.2.4 Input, Process, Change Update Methodology

3.2.4.1 MDS01U

Once a document and its components have been inserted into the WCL portion of the data base, the modifying of this data is the primary function of the program MDS01U.

As noted before, all displayed documents were being created by program MDS01D with the exception of the add component edit screen which was returned by program MDS01I. All screens returned by program MDS01D have a transaction code of MDS01U. Program MDS01U is able to perform the following:

1. Modify all nameplate data with the exception of the document number and type.
2. Modify temporary component descriptions.
3. Modify OE comments.
4. Delete components.
5. Set FEGs OOS for components via the OOS field.
6. Processes the special "Change" edits.*
7. Processes the special "Process" edits.*
8. Check for valid shops against the WCL shop file.
9. Document paging.

*NOTE: These edits are addressed later in this section.

With the exception of the special "CHANGE and PROCESS" edits, MDS01U will either return the same screen if an error occurs, or in the event of a successful update, will pass-off to MDS01D.

3.2.4.2 Deleting Components

A user specifies that a component is to be deleted by entering a "D" in the disposition field of the case component. MDS01U will, in turn, delete the component record from the WCL data base along with all technical specification data for that component, all FEGs for that component and all technical specifications for those FEGs. It should be noted here that those components that have FEGs out of service will not be allowed to be deleted until all the OOS fields are set to "NO". This must be done by the user after MDS01U returns an error pointing out the error.

3.2.4.3 Setting FEGs In or Out of Service

MDS01U will also set all FEG OOS flags to YES or NO for a given component. This is accomplished by the user placing either a "Y" in the OOS field for that component or an "N" in the OOS field. When these flags are set, MDS01U will set all FEG OOS if the flag is a "Y", or will set the OOS fields all to no if the flag is an "N". If there are no FEGs for this component, MDS01U ignores the flag. When the update is complete, MDS01U passes to MDS01D. Prior to passing, MDS01U places the following information in the terminal table.

Display Code = R (redisplay)

Document Record Key

Component Number Key (1st component on this page)

UPDATE A DOCUMENT
INPUT, PROCESS, CHANGE

WORK DESCRIPTION

SHOP: X-

WORK CONTROL COMMENTS

```

PROCESSED:  _  LAST CHANGED: ___-___-___/

```

OF COMMENTS

NONE

NONE

..NONE..

NONE

ADD COMPONENT: _

DOCUMENT DETAIL SCREEN

```

-----/----- DOCUMENT/TYPE          S/U SYS:----- WORK DESCRIPTION
                                PRI:-----
-----/----- TAGOUT/HUNG? REQ?  SHOP: X-----
                                CRIT.SYS.CODE: - - - - - WORK CONTROL COMMENTS
STATUS:----- REL.MAINT:-----
INITIALS:----- START DATE:-----
PROCESSED: - LAST CHANGED:-----/-----
=====
COMPONENT          DESCRIPTION          OE COMMENTS

```

-----NONE:-----
-----NONE:-----
-----NONE:-----
-----NONE:-----
-----NONE:-----
EDIT OR UPDATE _ CONTINUATION PAGE _ ADD COMPONENT: _

SCREEN "A"

1. Following fields are not accessible through cursor movement in the INPUT mode.
 - a. TAGOUT/HUNG? field
 - b. Work Control Comments
 - c. Status
 - d. Component number
 - e. Component disposition field for MCI resident components
 - f. Component description field if disposition field is blank
 - g. O.E. comment field
 - h. Initials
 - i. Processed
2. Field edits (Standard for Input, Process, Change)
 - a. REQ? must be "Y" or "N"
 - b. PRI: described in data dictionary
 - c. SHOP: must be resident in the MIDAS SHOP FILE. This edit is conducted at the host.
 - d. CRIT. SYS. CODE: see data dictionary
 - e. START DATE: -must be a valid date (UTS400 edit)
-must be greater than or equal to the current date (Host edit)

MODE: INPUT

TDS04I MODE : INPUT

-----/----- DOCUMENT/TYPE S/O SYS:----- WORK DESCRIPTION

-----/----- TAGOUT/HUNG? REQ? PRT: -- -----

-----/----- CRIT.SYS.CODE: -- -- -- -- SHOP: X-----

-----/----- REL.MAINT: ----- WORK CONTROL COMMENTS

STATUS:----- START DATE: -----

INITIALS: -- LAST CHANGED: -----/-----

PROCESSED: -- -----

=====

COMPONENT	DESCRIPTION	OE COMMENTS
-----------	-------------	-------------

-----	-----	NONE: --
-------	-------	-------------

-----	-----	NONE: --
-------	-------	-------------

-----	-----	NONE: --
-------	-------	-------------

-----	-----	NONE: --
-------	-------	-------------

EDIT OR UPDATE --	CONTINUATION PAGE --	ADD COMPONENT: --
----------------------	-------------------------	----------------------

DOCUMENT DETAIL SCREEN

SCREEN "A"

- Fields not accessible through cursor movement in CHANGE mode.
 - Initials
 - Processed
 - Last changed
 - Component Description if component in MCI resident.
- Field edits pertaining to CHANGE mode (see INPUT mode edits for standard ICP edits)
 - HUNG?: switches to TAGOUT CHANGE FOR NCL edit automatically if "C" is entered.
 - STATUS:
 - see data dictionary for valid entries
 - if set to "C" for complete, TAGOUT HUNG field must not be "Y" or a re-entry of a "C" is required (E20 error)
 - if set to "C" for complete, O.O.S. field for all related component FEG's must not be YES or a re-entry of a "C" is required (E21 error).
- Conditionally updated fields
 - INITIALS: set the initials of the user currently logged on when status has changed.
 - PROCESSED: - set to "N" when status has changed.
 - set to "C" when status is set to COMPLETE.
 - LAST CHANGED: set to current date and time when update is complete.

MODE: CHANGE

MDS021

MODE : _____

COMPONENT INFORMATION SCREEN

DOCUMENT/TYPE ____-____-/____

COMPONENT NUMBER: ____-____-____

TECHNICAL SPECIFICATIONS

...FEG: ____-____-____ OOS: ____

...FEG: ____-____-____ OOS: ____

...FEG: ____-____-____ OOS: ____

...FEG: ____-____-____ OOS: ____

...FEG: ____-____-____ OOS: ____

...FEG: ____-____-____ OOS: ____

...FEG: ____-____-____ OOS: ____

UPDATE _ CONTINUATION PAGE _

COMPONENT INFORMATION SCREEN

SCREEN "B"

3.3 SEARCH AND REPORT WORK CONTROL LOG (WCL)

3.3.1 Overview

The search and report WCL function consists of 13 different programs: One program which determines the path, 11 which extract and sort the records selected, and one program for producing screen output (see illustration 3.3).

The purpose for designing a solution which requires 13 different programs was to keep the transaction programs small enough to fit within the on-line system core limitations; to keep the response time within the 15-second MIDAS requirement; and to assure effective maintainability of the MIDAS software.

The search and report WCL has 22 different paths which can be taken. These paths are defined by the S/R Request Screen and are listed below:

o Shop Record (3-digit)	o Related Maintenance (5-digit)
o System Start-up (3-digit)	o Related Maintenance (4-digit)
o Shop (2-digit)	o Related Maintenance (2-digit)
o Component Number (1st 5)	o Critical System
o Component Number (2nd 5)	o Last Changes (With logical value)
o Component Number (1st 10)	o Last Changed (Without logical value)
o Component Number (2nd 10)	o Tagout
o Document Number (No Type)	o Start Date
o FEG Number	o Work Status
o System (2-digit)	o Priority
o Tagout Scan	o Tech Spec

The output for the search and report function is a document summary screen. Notice that S/R reports can be requested and/or sorted on fields which either occur more than once for a document or are not directly related to a document. The example document on illustration 3.3.1 shows a document with its components, the component's technology specifications, the component's FEGs and the FEG's technology specifications.

TRANSACTION FLOW DIAGRAM

EXAMPLE DOCUMENT RECORD

If a request is made to "SEARCH FOR ALL" on TECH SPEC 17.7S1 and sort by FEG, the following summary records will be produced.

SELECTED

DOC1	FEG1
DOC1	FEG2
DOC1	FEG2
DOC1	FEG3
DOC1	Blank

The reason DOC1 FEG2 was selected twice was because COMP1 and COMP2 have FEG2 which has TECH SPEC TS1.

DOC1 blank was selected because COMP3 has TECH SPEC TS1. The blank appears because COMP3 has no FEG to sort by.

Notice that DOC1 FEG6 was not selected. This is because FEG6 has no TECH SPEC TS1.

The summary report, however, appears as follows:

DOC1	Blank
DOC1	FEG1
DOC1	FEG2
DOC1	FEG3

The difference between what was selected and what was reported is the absence of the second occurrence of DOC1 FEG2. All duplicated DOC/FEG combinations are eliminated so that the DOC/FEG combination is reported only once.

Another example using illustration 3 3.1 is the case where a request of "SEARCH FOR ALL" on component COMP1 without sorted by technology specification. In this case the following DOC/COMP combinations are selected.

DOC1	COMP1	TS1
DOC1	COMP1	TS2
DOC1	COMP1	TS3
DOC1	COMP1	TS1
DOC1	COMP1	TS9
DOC1	COMP1	TS10

In this example, the combination of DOC1/COMP1/TS1 occurs twice because COMP1 has 2 FEGs (FEG1 and FEG2) which have TS1. Secondly, DOC1/COMP1/TS10 was selected because COMP1 has directly related to TS10.

The summary report will have the following line items however:

DOC1	COMP1	TS1
DOC1	COMP1	TS2
DOC1	COMP1	TS3
DOC1	COMP1	TS9
DOC1	COMP1	TS10

Again, duplicates are eliminated so that each DOC/COMP/TS combination is reported only once.

3.3.2 Program Narrative

3.3.2.1 Program MDS03Q

Input to program MDS03Q is the S/R WCL request screen (screen MDS03Q). The primary function of MDS03Q is to determine the next 03 series program that is to be loaded and executed. These programs are described in the following pages.

Built into the MDS03Q program is a list of all WCL data base sets which are subject to the S/R WCL function. This list is in the form of programming logic (is embedded in the program logic) and is used to determine the next program to transfer to.

The following list consists of the programs subject to transfer and the conditions for transfer.

<u>SEARCH OR LIMIT ON</u>		<u>PROGRAM TRANSFERRED TO</u>
Shop	(3-digit)	MDS03A
System Startup	(3-digit)	MDS03A
Shop	(2-digit)	MDS03B
Component Number 1st 5		MDS03C
Component Number 2nd 5		MDS03C
Component Number 1st 10		MDS03C
Component Number 2nd 10		MDS03C
Document Number (No Type)		MDS03E
FEG Number		MDS03F
System Startup	(2-digit)	MDS03F
Tagout Scan		MDS03H
Related Maintenance	(5-digit)	MDS03I
Related Maintenance	(4-digit)	MDS03I
Related Maintenance	(2-digit)	MDS03I
Critical System		MDS03I
Last Changed (With Log Value)		MDS03J
Last Changed (Without Log Value)		MDS03J
Tagout		MDS03N
Start Date		MDS03N
Work Status		MDS03N
Priority		MDS03N

MDS03Q does not distinguish the difference between the entries in the search column and the limit column. That is, if a user enters a shop in the "SEARCH FOR ALL" column and a start date in the "LIMIT LIST TO" column, MDS03Q may select on start date and limit to shop. The records selected would be the same.

The reason MDS03Q would do this is because it is most likely that there are less documents associated with a given start date as opposed to shops (i.e., if there are an average of 500 documents for a shop and an average of 50 documents for a given start date, then by selecting on start date and limiting that list to shop is 10 times as efficient as selecting on shop and limiting to start date).

Illustration 3.3 lists the optimum paths from most optimum to least optimum. This list is located in the MDS03Q program logic.

S/R WCL

Program			
<u>Transferred To</u>		<u>Optimum Paths</u>	<u>Which Way Switch</u>
		Document Number/Type	Direct pass-off
4		Document Number	6
1		Tagout (1)	7
9		Component Number (12)	8
11		Tech Spec Number	9
9		Component No-PN (First 10)	3
2		System Startup	10
7		Related Maintenance	11
10		FEG Number	12
2		Shop Rec (3)	13
5		System (2-digit)	14
1		Start Date	15
3		Shop Rec (2)	16
7		Related Maintenance (4)	17
7		Critical System	18
9		Component Number N (second 5)	19
1		Work Status	20
1		Priority	21
8		Last-Changed	22
7		Related Maintenance (2)	23
9		Component Number P (first 5)	24
6		Tagout Scan	25
	MDS03X		
1	MDS03N		
2	MDS03A		
3	MDS03B		
4	MDS03E		
5	MDS03G		
6	MDS03H		
7	MDS03I		
8	MDS03J		
9	MDS03C		
10	MDS03F		
11	MDS03T		

ILLUSTRATION 3.3

Note that MDS03Q can pass-off to a select/sort program for more than one reason (i.e., if a user selects on a Tagout, Start Date, Work Status or Priority Entry, MDS03Q will transfer to MDS03N). So that MDS03N knows which field has been selected, MDS03Q will set a "WHICH WAY SWITCH" in a control record specifically set aside for the S/R WCL programs. The list of "WHICH WAY SWITCHES" is shown on illustration 3.3.

Prior to passing off to one of the select/sort programs, MDS03Q places the following information into the SRWCL control record:

REQUEST Information

- o Search for all entry
- o Limit list to entry
- o Sort entry

OPTIMUM PATH Data

- o Set names
- o Record name
- o Data base keys

WHICH WAY SWITCH

To pass-off, MDS03Q uses a transaction code which is identical to the name of the program being passed to.

3.3.3 Select/Sort Programs

MDS03N, MDS03A, MDS03B, MDS03E, MDS03H, MDS03I, MDS03J, MDS03C, MDS03F, MDS03T

The input to the select/sort programs is the SRWCL control record established by MDS03Q.

The primary function of these programs is to select all records indicated by the contents of the control record. The selected records are stored in a core resident internal table. This table will handle 500 records and, if exceeded, will set an error switch for later printing.

When selection is complete, the programs sort the records by using an internal bubble sort. While sorting, duplicate records are discarded. After sorting, the programs create a banner page and all subsequent summary pages, and physically store these pages in the data base. Physical storage is determined by ID, which is a table stored in the programs.

When completed, these programs will pass-off to MDS03D for report generation. Prior to pass-off, these programs store the last page number so that MDS03D knows when to stop reporting.

In the event that only one record was found, the select/sort programs will pass-off to MDS01D for screen "A" displaying.

If no records were found, the select/sort programs return a banner page with the appropriate message.

3.3.4 Report Generator MDS03D

Primary input to MDS03D is the physical data base area established by the select/sort programs.

Its primary function is to display the screens stored by the select/sort programs and handle the S/R WCL paging function.

It also produces the sort table overflow message on the banner page if an overflow condition occurred. In addition, it prints the physical data base storage overflow message. The data base can currently handle 100 pages/termings.

HDS030

SEARCH AND REPORT
W C L

	SEARCH FOR ALL	LIMIT LIST TO	SORT LIST BY FIELD
DOCUMENT/TYPE	-----/-----	-----/-----	-----
TAGOUT	-----	-----	-----
COMPONENT	-----	-----	-----
WORK STATUS	-----	-----	-----
START DATE	-----	-----	-----
FEG	-----	-----	-----
PRIORITY	-----	-----	-----
SHOP	X-----	X-----	-----
DOC S/U SYS	-----	-----	-----
CRIT SYS CODE	-----	-----	-----
REL.MAINT CODE	-----	-----	-----
TECH SPEC	17-----	17-----	-----
LAST CHANGE	-----/-----/-----	-----/-----/-----	-----

OUTPUT MODE PRINTER _

SEARCH AND REPORT WCL
REQUEST SCREEN

1. If a Document No. and Type are entered, screen is automatically XMITTED.
2. Must be one entry but no more than one entry in the SEARCH FOR ALL column.
3. No more than one entry in the LIMIT LIST TO column.
4. No more than one entry in the SORT column (if no value is entered, sort defaults to DOCUMENT/TYPE).
5. When a value is entered in Column 1, cursor automatically skips to the beginning of Column 2 when the field in Column 1 is TABBED out of.
6. When a value is entered in Column 2, cursor automatically skips to the beginning of Column 3 when the field in Column 2 is TABBED out of.
7. Field in Column 2 is skipped if that field has a value in Column 1.

SEARCHED ON : WORK STATUS REL
SORTED ON : TAGOUT

MDS03DPAGE 1 OF 3 PAGE

SEARCH AND REPORT WCL
BANNER PAGE

1. Banner page for S/R WCL is always the 1st page of the output summary report.
2. Always indicates the select criteria and sort criteria of the report.

DOCUMENT/TYPE	STATUS	TAGOUT/HUNG?	START DATE	SHOP	PRI/PROC	SORTED BY TAGOUT
81- 6/T	REL	- /	09-30-81	X-67R	3 /Y	-
81- 7/I	REL	- /	09-30-81	X-51R	2A/Y	-
AA-22222/W	REL	- /	09-10-81	X-11N	/Y	-
AA-99999/I	REL	- /	09-30-81	X-11N	1 /Y	-
AA-22222/I	REL	11- 11/Y	09-25-81	X-11N	1 /Y	11- 11
AA- MEM/I	REL	81- 100/C	09-17-81	X-11N	1 /Y	81- 100
AA-22222/B	REL	81- 100/Y	09-15-81	X-11N	1 /Y	81- 100
AA-22222/T	REL	81- 100/Y	09-26-81	X-11N	1 /Y	81- 100
AA-MARK4/I	REL	81- 100/Y	09-14-81	X-11N	2 /N	81- 100
81- 1/W	REL	81- 200/C	09-30-81	X-38R	1 /Y	81- 200
81- 2/E	REL	81- 200/Y	10-01-81	X-51S	1 /Y	81- 200
81- 2/I	REL	81- 200/Y	09-30-81	X-67R	2A/N	81- 200
81- 2/T	REL	81- 200/Y	09-30-81	X-67S	3 /N	81- 200
81- 2/W	REL	81- 200/Y	09-30-81	X-38S	2 /Y	81- 200
81-06006/W	REL	81- 200/Y	09-11-81	X-51S	3 /C	81- 200

MORE RECORDS FOR DISPLAY

MDS030PAGE 2 OF 3 PAGE

SEARCH AND REPORT WCL
 OUTPUT SUMMARY REPORT
 EXAMPLE

1. Last page is always indicated at the bottom of the screen.
2. Field sorted on is always identified in the SORTED BY COLUMN.
3. Value sorted on is always displayed in the SORTED BY COLUMN.

3.4 MIDAS SPECIAL REPORTS

This section describes the design of all MIDAS reports. The first section describes the design of those reports which execute in the UNIVAC batch environment with an output destination of the Data 100 RJE terminal located in the 4703 Building.

The second section describes the design of those reports which operate in the on-line or on-line batch mode with destinations of either the UTS400 screens or the UTS400 local printer.

3.4.1 MIDAS Batch Reports

3.4.1.1 General Design Approach

The MIDAS system currently generates five reports in the batch mode. These reports are requested from the UNIVAC on-line environment via a UNIVAC operating system level routine called PSTART which was specifically developed for MIDAS. This routine, once called, moves a PTIP resident permanent ECL file from the PTIP storage area to the UNIVAC batch input staging queue. The PSTART routine is called by a TIP transaction program specifically designed for the five different reports addressed in this section.

In general, the following approach for batch report generation is used in MIDAS:

1. A report request screen is obtained from the MIDAS special report sub-menu. Once the requested report data is placed on the screen and transmitted, a TIP transaction program is executed.
2. This program receives the report request screen, edits the screen for valid data, if valid, generates report parameter and places it into the MIDAS batch control record area of the MIDAS data base, calls the PSTART routine to move the report ECL to the UNIVAC batch input queue and, finally, returns a message to the user indicating a successful job transfer. Illustration 3.4.1.1.a shows the transaction flow of the MIDAS batch report request.

Every report request submitted by the MIDAS user will create a report parameter record and will submit an ECL run unit into the UNIVAC batch staging queue.

When the batch job starts, the parameter card is extracted from the control record area of the data base and then purged to ensure that the request is not processed twice.

MIDAS OFFLINE BATCH REPORT ENVIRONMENT

Illustration 3.4.1.1.a

3.4.1.2 Daily Delinquent Report

The Daily Delinquent Report consists of three programs and one sort pass. The single input for this report is the Daily Delinquent Report request screen obtained from the MIDAS report sub-menu.

3.4.1.2.1 Program Narrative

This section describes the function of each of the programs required to process the Daily Delinquency Report.

3.4.1.2.1.2 MDS22D

MDS22D is the program which accepts the report request screen from the UTS400 cluster. This program's sole function is to create and store the report parameter record consisting of data extracted from the input screen and to stage the Daily Delinquent Report ECL file. This ECL file has the runid of MDS22D.

3.4.1.2.1.3 Batch Job MDS22D

The ECL file which is staged by the transaction program MDS22D has a runid of MDS22D. Runid MDS22D will execute the extract program MDS22W, a SORTMERG pass, and the report generator MDS22G.

MDS22W is the first program executed. Its function is to first read the report parameter record created and stored by the transaction program MDS22D. It then purges this record in order to avoid a duplication of the report. The primary function of the program is to select all WCL data satisfied by the information provided by the parameter record and to write these records to a temporary file for sorting.

MDS22G is the Daily Delinquent Report generator. Its input is provided by the SORTMERG step output. When the report is completed, the output file is sent to the 4702 Building RJE terminal.

Illustration 3.4.1.2.a shows the functional flow of all programs required to process the Daily Delinquency Report.

3.4.1.3 Comprehensive WCL Report

The Comprehensive WCL Report consists of three programs and one sort pass. The single input for this report is the Comprehensive WCL Report request screen obtained from the MIDAS Special Report sub-menu.

3.4.1.3.1 Program Narrative

This section describes the function of each of the programs required to process the Comprehensive WCL Report.

3.4.1.3.1.1 MDS21T

MDS21T is the program which accepts the report request screen from the UTS400 cluster. This program's sole function is to create and store the report parameter record consisting of data extracted from the input screen and to stage the Comprehensive WCL Report ECL file. This ECL file has the runid of MDS21W.

3.4.1.3.1.2 Batch Job MDS21W

The ECL file which is staged by the transaction program MDS22T has a runid of MDS21W. Job MDS21W will execute the extract program MDS22W, a SORTMERG pass, and the report generator MDS21G.

DAILY DELINQUENT REPORT

Illustration 3.4.1.2.a

MDS21W is the first program executed. Its function is to first read the report parameter record created and stored by the transaction program MDS21T. It then purges this record in order to avoid a duplication of the report. The primary function of the program is to select all WCL data satisfied by the information provided by the parameter record and to write these records to a temporary file for sorting.

Illustration 3.4.1.3.a shows the functional flow of all programs required to process the Comprehensive WCL Report.

COMPREHENSIVE WCL REPORT

Illustration 3.4.1.3.a

3.4.1.4 Tech Spec Report

The Tech Spec Report consists of three programs and one sort pass. The single input for this report is the Tech Spec Report request screen obtained from the MIDAS Special Report sub-menu.

3.4.1.4.1 Program Narrative

This section describes the function of each of the programs required to process the Tech Spec Report.

3.4.1.4.1.1 MDS08T

MDS08T is the program which accepts the report request screen from the UTS400 cluster. This program's sole function is to create and store the report parameter record consisting of data extracted from the input screen and to stage the Tech Spec Report ECL file. This ECL file has the runid of MDS08W.

3.4.1.4.1.2 Batch Job MDS08W

The ECL file which is tagged by the transaction program MDS08T has a runid of MDS08W. Job MDS08W will execute the extract program MDS08W, a SORTMERG pass, and the report generator MDS08G.

MDS08W is the first program executed. Its function is to first read the report parameter record created and stored by the transaction program MDS08T. It then purges this record in order to avoid a duplication of the report. The primary function of the program is to select all WCL data satisfied by the information provided by the parameter record and to write these records to a temporary file for sorting.

MDS08G is the Tech Spec Report generator. Its input is provided by the SORTMERG step output. When the report is completed, the output file is sent to the 4702 Building RJE terminal. Illustration 3.4.1.4.a shows the functional flow of all programs required to process the Tech Spec Report.

TECH SPEC REPORT

Illustration 3.4.1.4.a

3.4.1.5 FEG Report

The FEG Report consists of three programs and one sort pass. The single input for this report is the FEG Report request screen obtained from the MIDAS Special Report sub-menu.

3.4.1.5.1 Program Narrative

This section describes the function of each of the programs required to process the FEG Report.

3.4.1.5.1.1 MDS05T

MDS05T is the program which accepts the report request screen from the UTS400 cluster. This program's sole function is to create and store the report parameter record consisting of data extracted from the input screen and to stage the report ECL file. This ECL file has the runid of MDS05W.

3.4.1.5.1.2 Batch Job MDS05W

The ECL file which is staged by the transaction program MDS05T has a runid of MDS05W. Job MDS05W will execute the extract program MDS05E, a SORTMERG pass, and the report generator MDS05G.

MDS05W is the first program executed. Its function is to first read the report parameter record created and stored by the transaction program MDS05T. It then purges this record in order to avoid a duplication of the report. The primary function of the program is to select all WCL data satisfied by the information provided by the parameter record and to write these records to a temporary file for sorting.

MDS05G is the Tech Spec Report generator. Its input is provided by the SORTMERG step output. When the report is completed, the output file is sent to the 4702 Building RJE terminal. Illustration 3.4.1.5.a shows the functional flow of all programs required to process the report.

Illustration 3.4.1.5.a

3.4.1.6 Daily Schedule Report

The Daily Schedule Report has three actual outputs. On the Report Request screen, the user can ask for a Daily Schedule Summary Report whose destination is the UTS400 screen or printer output where two batch reports are produced. This section discusses the batch reports. The screen output report is discussed elsewhere in this document.

The Daily Schedule batch report has five separate programs. The report is requested via the Daily Schedule Report request screen when a "Y" is placed in the PRINT field located at the bottom of the screen. When requested, the system will produce two different reports. They are:

- o All documents whose start date is the same as the date requested on the report request screen and has a processed flag = NO. This report is a summary report.
- o All documents whose start date is the same as the date requested on the report request screen has a processed flag = YES. This report is a DOCUMENT DETAIL report.

3.4.1.6.1 Program Narrative

This section describes the function of each of the programs required to process the Daily Schedule Report.

3.4.1.6.2 MDS20Q

MDS20Q is the transaction program which accepts the report request screen from the UTS400 cluster. The programs sole function is to create and store the report parameter record consisting of data extracted from the input screen and to stage the Daily Schedule Report ECL file. This ECL file has the RUNID of MDS20R.

3.4.1.6.3 Batch Job MDS20R

The ECL file which is staged by the transaction program MDS20Q has a RUNID of MDS20R. MDS20R will execute the first extract program MDS20W, followed by a sort, the first report generator program, MDS20G, the second extract program MDS20E, a second sort pass and, finally, the second report generator MDS20R. MDS20W is the first program executed. Its function is to:

- o Read the report request parameter record from the control record area of the data base. Once done, it then purges the record in order to avoid any duplications of the report.
- o It then extracts the DOCUMENT records whose data satisfies the select criteria indicated in the control record. MDS20W will select only those DOCUMENTS whose PROCESSED FLAG = NO. As it selects these DOCUMENT records, it writes them to an output file for sorting.
- o Since the second report pass requires that a banner page be produced for even those shops which have no documents which satisfy the select criteria, MDS20W will select and write to a second output file all shop data. This file will be processed later by program MDS20R.

Once MDS20W has been processed, job MDS20R executes a sort pass whose input is the DOCUMENT record file produced by this program and will then execute program MDS20G.

MDS20G

MDS20G is the report generator which produces a summary report of all this DOCUMENTS whose PROCESSED FLAG = NO. The input to the program is the sort step output. The report file which is the output of this program is eventually printed on the RJE unit located in the 4702 building.

BACKUP

After the first step of job MDS2OR is performed, a COPY is made of the SHOP report file produced by program MDS2OW. This is done in the event that a failure occurs sometime after the original file was generated. This allows a re-start at the MDS2OE step eliminating the need to restart the entire job MDS2OR.

MDS2OE

Program MDS2OE is the second extract program executed by job MDS2OR. Its function is to extract all DOCUMENT records which satisfy the select criteria contained in the control record and whose PROCESSED FLAG = YES. As DOCUMENT records are selected, MDS2OE writes them to the SHOP data file created by program MDS2OW. Their entire file is later sorted by SHOP which combines the SHOP data with the DOCUMENT data. Once processing is complete, job MDS2OR executes program MDS2OR.

MDS2OR

MDS2OR is the second report generator executed by job MDS2OR. This program receives its report data from the file created by program MDS2OE. The output report for this job consists of the full DOCUMENT record which is formed the same as the DOCUMENT screen "A" which is processed by the ICP functions. Once the report is completed, the report file is SYMBED to the RJE unit located in the 4702 building.

The transaction/program flow for the Daily Schedule report is shown in illustration 3.4.1.6.a.

DAILY SCHEDULE

Illustration 3.4.1.6.a

MD505T

FEG REPORT

A..SUPERIOR/INFERIOR LIST ONLY (SCREEN)

B..INFERIOR LIST ONLY (REMOTE PRINTER)

C..ALL FEG LIST (REMOTE PRINTER)

FEG NUMBER ----

FEG REPORT REQUEST SCREEN

1. When report "A" is requested, a value in the FEG field is required.
2. When a report "B" is requested, a value in the FEG field is required.
3. When report "C" is requested, report request is automatically XMITTED to the host.

START DATE -- -- -- --

PRINTER -

DAILY SCHEDULE REPORT
REQUEST SCREEN

1. When a date is entered but the printer is not, the following criteria is used to produce a summary report to the screen.
 - a. Start date = date entered above
 - b. WORK STATUS $\neq$ blank
 - c. PROCESSED = NO
2. If the printer is requested 2 reports are generated and sent to the 4702 Building RJE.
 - A. Summary report
 - a. Start date = date entered above.
 - b. processed flag = "N"
 - B. Detail report
 - a. Start date = date entered above
 - b. processed flag = "Y"

RD508T

TECH SPEC REPORT

TECH SPEC NO.

17.-----

TECHNICAL SPECIFICATION
REPORT REQUEST SCREEN

1. If a TECH SPEC No. is entered, a batch report will produce a TECH SPEC report for that TECH SPEC.
2. If an entry of ALL is entered in the 1st three characters of the field, the entire TECH SPEC data base is reported upon.

08/14/81

11:14:40

D A I L Y S C H E D U L E

SHOP: X-11N

NAME: INITIAL SHOP ENTERED

DATE: 07/30/81

PROCESS: NO

MODE: DAILY SCHEDULE

08/14/81 11:14:40

START DATE: 07/30/81 PROCESS: NO

DOCUMENT	STATUS	TAGOUT/HUNG	PRI	SHOP	DOCUMENT DESCRIPTION
----------	--------	-------------	-----	------	----------------------

AA-	2/1		1		X-11N
-----	-----	--	---	--	-------

AA-	3/1		1		X-11N
-----	-----	--	---	--	-------

08/14/81

11:14:40

D A I L Y S C H E D U L E

SHOP: X-12N

NAME: TEST TO INSERT BETWEEN SHOPS

DATE: 07/30/81

PROCESS: NO

NO NONPROCESSED DOCUMENTS

08/14/81

11:15:55

D A I L Y S C H E D U L E

SHOP: X-51s

NAME: ELECTRICIANS..SHOP

DATE: 07/30/81

PROCESS: YES

SHOP X-51S START DATE: 07/30/81 DAILY SCHEDULE 0A/14/81 11:15:55

81- 2/T DOCUMENT/TYPE S/U SYS:23A WORK DESCRIPTION

PRI: 3 PM MAINTENANCE ON TEMPERATURE

81- 3004Y TAGOUT/HUNG? REQ? Y SHOP: X-51S SWITCHES

CRIT.SYS.CODE: P 1

WORK CONTROL COMMENTS

STATUS: REL.MAINT: AA23A

THIS WORK SHOULD BE PERFORMED VIA

INITIALS: START DATE: 07-30-81

A ICR INSTRUCTION

PROCESSED: N LAST CHANGED: 08-06-81/0913

=====

COMPONENT

DESCRIPTION

OE COMMENTS

TSHH-71810- Q-39 HIGH TEMP SHUTDOWN

T/S

TSHL-71813- Q-39 LOW WATER TEMP SW IN T-58

T/S

TSLL-71832- LL TEMP SW WATER INK

T/S

08/14/81

11:15:55

D A I L Y S C H E D U L E

SHOP: X-56R

NAME: PIPEFITTERS, RSS

DATE: 07/30/81

PROCESS: YES

NO SCHEDULED DOCUMENTS

08/14/81

11:16:44

DELINQUENT REPORT

SHOP X-11N

NAME INITIAL SHOP ENTERED

DATE 08/14/81

DELINQUENT REPORT

08/14/81

11:16:44

SHOP1X-11N NAME: INITIAL SHOP ENTERED

DOCUMENT	STATUS	TAGOUT/HUNG	PRI	DATE	DOCUMENT DESCRIPTION
81-	0/I	NONREL	81-	101/ 1	07-21-81 WD-1
					WD-2
81-	1/4	COMP	81-818181/	1	06-30-81 THE NEW WORK DESCRIPTION
81-	1/4			SS 06-30-81	SSSSSSSSSSSSSS
					AAAAAAAAAAAAAA
AA-	1/I		81-	100/ 1	08-08-81
AA-	2/I	REL	81-	1000/ 3	08-07-81 TESTING THE ICP WCL
					FUNCTIONS IN INPUT MODE
AA-	2/I			1	07-30-81
AA-	3/I			1	07-01-81
AA-	3/I			1	07-30-81
AA-11111/W				1	08-13-81 TEST
AA-22222/I	REL			1	07-01-81 TEST DALE 1U UPDATE
					W2
AA-22222/W					07-01-81
AA-33333/I				1	07-01-81
AA-33333/W			81-	104/ 1	07-01-81
AA-33333/Z			81-	104/ 1	07-01-81
AA-44444/W			81-	102/ 1	- -
AA-55555/I			81-	102/ 1	08-11-81
AA-55555/W			81-	102/ 1	- -
AA-66666/I				1	- -
BB-11111/I			81-	103/ 1	08-01-81
BB-11111/W			81-	103/ 2	08-01-81
CC-11111/I				1	08-11-81
ZZ-	1/X	NONREL	81-	101/ 2A	07-09-81 WORK DESCRIPTION ONE
					WORK DESCRIPTION TWO
ZZ-	1/Z	NONREL	81-	101/ 2A	07-09-81 WORK DESCRIPTION ONE
					WORK DESCRIPTION TWO
ZZ-	2/X	NONREL	81-	101/ 2A	07-09-81 WORK DESCRIPTION ONE
					WORK DESCRIPTION TWO
ZZ-	2/Z	NONREL	81-	101/ 2A	07-09-81 WORK DESCRIPTION ONE
					WORK DESCRIPTION TWO

08/14/81

11:16:44

DELINQUENT REPORT

SHOP X-12N

NAME TEST TO INSERT BETWEEN SHOPS

DATE 08/14/81

NO DELINQUENTS

09/03/81

13:24:01

COMPERHENSIVE WCL REPORT

WORK STATUS ALL

START DATE 09/25/81

AA- 2/T DOCUMENT/TYPE S/U SYS:10A WORK DESCRIPTION
 81- 1000/N TAGOUT/HUNG? REQ? N PRI: 3 TESTING THE ICP WCL
 CRIT.SYS.CODE: P 1 SHOP: X-11N FUNCTIONS IN INPUT MODE
 STATUS:NONREL REL.MAINT: AA12A WORK CONTROL COMMENTS
 INITIALS: CHE START DATE: 09-25-81 DOING THE SAME AS ABOVE
 PROCESSED: N LAST CHANGED:09-02-81/0637

=====

COMPONENT	DESCRIPTION	OE COMMENTS
-----------	-------------	-------------

P- 1- PRIMARY SODI PUMP	JUST TESTING
T/S FECS OOS TMP- 1-1	TMP- 1-2 TMP- 1-3 TMP- 1-4

P- 1-A TEST COMPONENT
T/S FECS OOS TMP- 1-1

LSHH-71837- WH WTR LVL SW T-5A
 T/S FECS OOS TMP- 1-4

LSHH-71837-A * NOT IN DATA BASE
 FECS OOS TMP- 1-1 TMP- 1-2

LSLL-71834- LL WTR LEVEL SW Tk T-87
 T/S FECS OOS TMP- 1-1 TMP- 1-2 WEL-WTR-SUPP

AA-22222/T DOCUMENT/TYPE S/U SYS:111 WORK DESCRIPTION
 81- 100/Y TAGOUT/HUNG? REQ? Y PRI: 1 TEST ADD
 CRIT.SYS.CODE: P 1 SHOP: X-11N
 STATUS:COMP REL.MAINT: RM23A WORK CONTROL COMMENTS
 INITIALS: START DATE: 09-25-81
 PROCESSED: N LAST CHANGED:09-01-81/1329

=====

COMPONENT	DESCRIPTION	OE COMMENTS
-----------	-------------	-------------

P- 1- PRIMARY SODI PUMP	
T/S FECS OOS TMP- 1-1	TMP- 1-2 TMP- 1-3 TMP- 1-4 MORE

3.5 SEARCH AND REPORT - MIDAS COMPONENT INDEX (MCI)

3.5.1 Overview

The SEARCH and REPORT MCI function consists of nine different programs: 1 program which determines the "Optimum Path"; 4 programs which select and generate summary report data output to the UTS400 screen; 4 programs which select and generate summary report data output to the UTS400 printer.

The purpose for designing a solution which requires different programs was to keep the transaction programs small enough to fit within the on-line system core limitations; to keep the response time within the required 15 second requirement; to assure maximum maintainability of the MIDAS software.

The SEARCH and REPORT MCI has 14 different paths which can be taken. These paths are defined by the S/R MCI Request Screen and are listed below (see also illustration 3.5.a):

- o COMPONENT (1st 5 DIGITS)
- o COMPONENT (2nd 5 DIGITS)
- o COMPONENT (1st 10 DIGITS)
- o SYSTEM STARTUP (3 DIGITS)
- o SYSTEM STARTUP (2 DIGITS)
- o CELL
- o P&ID DRAWING
- o SCHEMATIC NO.
- o EQUIPMENT NO.
- o LOOP-LOGIC DIAGRAM NO.
- o LOOP NO.
- o PANEL
- o F.E.F. NO.
- o TECH. SPEC. NO.

SEARCH & REPORT INDICES

SINGLE RECORD SELECTED

Ø = D
E
I
L
V

COMPONENT TYPE

Illustration 3.5.a

3.5.2 Program Narrative

3.5.2.1 Program MDS14Q

Input to program MDS14Q is the S/R MCI request screen (screen MDS14Q).

The primary functions of MDS14Q is to determine first the "Optimum Path" to be taken by the next MDS14 series program to be scheduled and executed. With the exception of the COMPONENT 1st five set, COMPONENT 2nd five set, COMPONENT 1st ten set, F.E.G. NO. set and the TECH SPEC NO. set, all sets in the MCI data base have record counts which are incremented or decremented every time a member of the set is added or deleted.

To determine the "Optimum Path" for the next program to follow, MDS14Q will walk through the following steps:

- o Collects the entries in the three columns SEARCH, LIMIT, SELECT
- o Checks the record counts in the sets for the entries collected above
- o Selects the set with the smallest set count as the primary search entry; selects the second to the smallest record as the secondary search entry.

When an entry of "A" for ALL is entered in the COMPONENT TYPE field, the "Optimum Path" calculation must be performed five different times since all 5 INDICES within the MCI must be scanned.

For those sets which do not have record counts, the following values are used for the "Optimum Path" calculation:

- o Scan on COMPONENT (1st 5 DIGITS) 30000
- o Scan on COMPONENT (2nd 5 DIGITS) 30000
- o Scan on COMPONENT (1st 10 DIGITS) 20
- o F.E.G.'s
- o TECH SPECS

The purpose for the calculation is to significantly decrease the processing time required to produce any requested S/R MCI request. That is, suppose the following S/R MCI request was generated:

```
SEARCH ON CELL 500
LIMIT TO P&ID 11088
SELECT ON EQUIPMENT NO. Q-58
COMPONENT TYPE = I (for Instrument)
```

The record counts for these sets occur as follows:

```
CELL 500 = 5000
P&ID 11088 = 150
EQUIPMENT NO. Q-58 = 50
```

The "Optimum Path" calculation will set the Equipment No. as the primary select and the P&ID No. as the secondary. Had the primary select been the CELL, the processing time will be 100 times as great.

Once the "Optimum Path" calculation has been completed, MDS14Q will then transfer to the next MDS14 series program. The program that program MDS14Q transfers to is determined by the field selected as the primary select field. The following table describes the program transferred to:

PRIMARY SELECT	PROGRAM	OUTPUT MODE
COMPONENT (1st 5)	MDS14C	SCREEN
COMPONENT (2nd 5)	MDS14C	SCREEN
COMPONENT (1st 10)	MDS14C	SCREEN
SYSTEM STARTUP (3 DIGIT)	MDS14D	SCREEN
P&ID	CELL	
SCHEMATIC NO.	MDS14D	SCREEN
EQUIPMENT NO.	MDS14D	SCREEN
LOOP-LOGIC	MDS14D	SCREEN
LOOP NO.	MDS14D	SCREEN
PANEL	MDS14D	SCREEN
F.E.G. NO.	MDS14F	SCREEN
TECH SPEC NO.	MDS14F	SCREEN
SYSTEM STARTUP (3 DIGIT)	MDS14S	SCREEN
COMPONENT (1st 5)	MDS14K	SCREEN
COMPONENT (2nd 5)	MDS14K	SCREEN
COMPONENT (1st 10)	MDS14K	SCREEN
SYSTEM STARTUP (3 DIGIT)	MDS14R	SCREEN
CELL	MDS14R	SCREEN
P&ID	MDS14R	SCREEN
SCHEMATIC NO.	MDS14R	SCREEN
EQUIPMENT NO.	MDS14R	SCREEN
LOOP-LOGIC	MDS14R	SCREEN
LOOP NO.	MDS14R	SCREEN
PANEL	MDS14R	SCREEN
F.E.G. NO.	MDS14J	SCREEN
TECH SPEC NO.	MDS14J	SCREEN
SYSTEM STARTUP (2 DIGIT)	MDS14J	SCREEN

During the "Optimum Path" calculation, the following edits/actions are taken:

IF	THEN
a) One of the select field sets has no owner record	A message of "RECORD NOT FOUND" is returned on the select screen
b) Owner record exists but has a record count of zero for	A message of "RECORD DOESN'T EXIST" is returned on the selected screen
c) Owner record exists but has a record count of 1	Passes to: MDS161 (INSTRUMENT) MDS16V (VALVE) MDS16E (EQUIPMENT) MDS16D (DAMPER)

In case c) above, a record count of 1 was found during the calculation. In this case, only one record will be found for the S/R MCI request. MDS14Q will schedule one of the 5 programs mentioned in case c) to generate a COMPONENT DETAIL screen.

3.5.2.2 S/R MCI Screen Output Programs (MDS14C, MDS14D, MDS14F, MDS14S)

The primary function of these programs is to select and generate the S/R MCI output report to the UTS400 screen. Utilizing the paging feature of PTIP, these programs will generate 4 pages (80 records) at a time. After the fourth page is generated, these programs will place the COMPONENT KEY of the next record to be selected in the control record area of the data base. When PTIP reschedules the program, it will continue generating the report starting with the COMPONENT stored in the control record.

3.5.2.3 S/R MCI UTS400 Printer Output Programs (MDS14J, MDS14K, MDS14L, MDS14R)

The primary function of these programs is to select and generate the S/R MCI output report to the UTS400 printer. Like the screen output programs, these programs utilize the paging feature of PTIP. The major difference here, however, is that since the output is to a printer, the programs will run

continuously. Since the programs can create a page of output much faster than a printer can print one (20 records representing a page) these programs will reach their maximum allowable PTIP page storage limit much sooner than the printer can print the equivalent amount of output (the limit is 60 pages or 60 PSENDS). To avoid program failure when the limit is reached, these programs will stop and re-schedule themselves for execution 30 seconds later. This allows the printer 30 seconds to print the stored pages (program generated pages are stored in an output buffer in CMS). When the program re-starts, it will check the amount of space available in the CMS buffer to determine if it may proceed to create the next set of 20 record pages. This is done through a call to an operating system level routine which checks the CMS buffers. If the buffer is still full (will not hold an additional 60 pages) the job re-schedules itself. It will start 30 seconds later.

This design allows the programs to generate an unlimited amount of output while remaining within the on-line design limitations.

MDS140

SEARCH AND REPORT
INDICESCOMPONENT TYPE
COMPONENT

SCAN? _

SEARCH

LIMIT

SELECT

SYSTEM START-UP

FEG NUMBER

P&ID NUMBER

CELL

CRITICAL SYSTEM

TECH SPEC NO. 17.

17.

17.

SCHEMATIC NO.

EQUIPMENT NO.

LOOP/LOGIC DIAG

LOOP NUM

PANEL

OUTPUT MODE

PRINTER _

S/R INDICES REQUEST SCREEN

1. Component type field - value must be entered.

Allowable values are

A: Scan All Indices
 I: Scan Instrument Index
 E: Scan Equipment Index
 V: Scan Value Index
 D: Scan Damper Index
 L: Scan Electrical Load Index

2. Scan? field: Only allowable value is a "Y" for yes. When not entered, the screen is automatically XMITTED to the host. This occurs only if there is a value in the COMPONENT field. The result will be a search for the record indicated in the COMPONENT field.

3. SEARCH column: must have an entry (only one entry) if the scan? field has a "Y" or COMPONENT is blank and scan? is blank. When the value is entered and the field TABbed out of, the cursor will jump to the LIMIT column. The SEARCH column can no longer be entered. In addition, the field which has a value in the SEARCH column is not accessible in the LIMIT column.

4. LIMIT column: does not require a value and may not contain more than one value. When a field value is entered, the cursor will jump to the SELECT column. The LIMIT column is no longer accessible. The fields which have values in the SEARCH and LIMIT columns are not accessible in the SELECT column.

5. Printer field: Only allowable value is a "Y". Default output for the S/R Indices is the screen. A "Y" routes the output to the printer (UTS420).

SEARCHED ON : SYSTEM-START-UP 23A
LIMITED TO : P & ID NUMBER 11008

PAGE 1 OF 1+

PAGE

S/R INDICES BANNER PAGE

1. Is always the 1st page of the output report.
2. Always indicates the select criteria entered on the S/R Indices request screen.

MDS14D MIDAS INDICES SUMMARY REPORT
TYPE [ALL]

09/22/81 07:25:38

COMPONENT NUMBER	DESCRIPTION	START UP	POWER INTERRUPT	CELL	P&ID DRAWG
B130- 21-	Q-39 WATER TANK T-58 HEATER	23A	- -		11008
P- 1-A	TEST COMPONENT	23A	- -	500	11008
Q- 39-	T 58 WATER TANK HEATER	23A	- -		11008
Q- 40-	T 58 WATER TANK HEATER	23A	- -		11008
KC-71801-	P-14/P-15 CYCLE TIME	23A	- -	603	11008
TSHH-71810-	Q-39 HIGH TEMP SHUTDOWN	23A	B130- 21-		11008
TSHL-71813-	Q-39 LOW WATER TEMP SW IN T-58	23A	B130- 21-		11008
23V- 811-	T-87 VENT	23A	- -		11008
23V- 812-	T-87 SUPPLY	23A	- -		11008
23V- 814-	T-87 OUTLET	23A	- -		11008
23V- 892-	NO DESCRIPTION	23A	- -		11008
23V- 3610-	NO DESCRIPTION	23A	- -		11008

END OF DISPLAY

PAGE 2 OF 2.

PAGE

S/R EXAMPLE OUTPUT SCREEN

1. Utilized PTIP pages for output.
2. Indices accessed is always indicated in the heading.

3.6 MIDAS FILE EDITING

3.6.1 Introduction

This section of the MIDAS System Design Document addresses the File Editing functions provided by the MIDAS system. In concept, the MIDAS data base consists of eight different files. They are:

- a. Work Control Log (WCL)
- b. Shop File
- c. Tech. Spec. File
- d. F.E.G. File
- e. Instrument Index File
- f. Equipment Index File
- g. Damper Index File
- h. Electrical Load Index File
- i. Valve Index File

Section 3.6 describes transactions which manage the data in Files b through i above. The WCL file data is managed by those transactions described in Section 3.2 of this document.

3.6.2 Edit Component File

There are 5 component files in all. They are made up by the Instrument, Equipment, Damper, Electrical and Value Indices.

Seven programs in all are used to insert, modify and delete records within the five files. Illustration 3.6.2a shows the transaction/program flow diagram of the Edit Component function.

3.6.2.1 Program Narrative

3.6.2.1.1 MDS16A

The Edit Component request screen is obtained from the MIDAS File Editing submenu. It requires the entry of a component number and component type. When xmitted, program MDS16A receives the screen.

It first checks to see if the record identified in the screen is resident in the file indicated by the component type. If the record is not on the file, MDS16A will transfer to one of 5 update programs in order to display a detailed Edit Component screen which is void of data with the exception of the Component number and Type entered on the request screen.

If the record does exist, MDS16A will transfer to the same update program to display all data field pertaining to Component entered in the request screen.

3.6.2.1.2 MDS16B

Program MDS16B performs the same function as program MDS16A with the following exceptions:

- a. Program MDS16B receives a buffer from the UTS400 as opposed to screen. This buffer is XMITTED when the SEARCH key is utilized at the UTS400 (providing the cursor is positioned at the beginning of a component number on any screen which displays component numbers).
- b. Since the component type is not known when the SEARCH key is used, MDS16B must first "look up" the component type prior to transferring to the appropriate MDS16 update programs.
- c. MDS16B does not edit the data base for existence of the component of the component since it obviously already exists.

3.6.2.1.3 MDS16I, MDS16V, MDS16E, MDS16L, MDS16D

As mentioned early in Section 3.6.2, there are five component files in MIDAS. This section describes the five programs which insert, modify and delete records within each one of these files.

These programs are scheduled and executed by either programs MDS16A or MDS16B. If scheduled by MDS16B, these programs will display the appropriate Indices record described in the terminal table. (The component no. and type was placed in the table by MDS16B prior to transfer). When this occurs, the update program will place the message at the bottom of the screen.

S/R MCI MODE...NO UPDATES ALLOWED

If scheduled by MDS16A, these programs will return one of two responses.

- a. If the record indicated by the component number and type is not resident in the file, the program will return an indices detail screen void of data with the exception of the component number and type, an action code of "A" for add and the message at the bottom of the screen.

RECORD NOT IN DATA BASE...YOU MAY ADD.

- b. If the record indicated by the component number and type is resident in the file, the program will return an indices detail screen with all data fields filled in.

These programs not only allow for the modifying of indices data, but allow for the attachment and deattachment of Tech. Spec. record and F.E.G. records in the two respective data bases. This is accomplished by "A"dding and "D"eleting Tech. Specs and FEG's in the Tech. Spec and FEG sections of the Component Detail Screen.

The five programs described in this section manage the data of the files listed below.

<u>PROGRAM</u>	<u>FILE</u>
MDS16I	Instrument Index
MDS16E	Equipment Index
MDS16L	Electrical Load Index
MDS16D	Damper Index
MDS16V	Value Index

These programs are almost identical in structure since the five indices are almost identical in format. The only exceptions are found in the data elements located at the bottom of each of the screens.

3.6.2.1.4 Maintenance Note

Since the programs identified by Section 3.6.2.1.3 are so similar, any change made to one of the programs will probably require changes to all five programs.

3.6.3 Edit Tech Spec

Introduction

In concept, the Edit Tech. Spec. function manages the Tech. Spec. file of the MIDAS Indices data base. It consists of two different programs. One program handles the displaying of the tech. Spec. record while the other handles the updates to the Tech. Spec. Record and its relationships.

3.6.3.1 Program Narrative

MDS08D

The only input to program MDS08D in the Edit Tech. Spec. screen obtained from the MIDAS special editing sub-menu. MDS08D performs the following functions upon receipt of the XMITted screen.

- If the Tech. Spec. exists, returns of Tech. Spec. description field filled in. In this case, the transaction code returned is MDS08U.
- If the Tech. Spec. does not exist, MDS08D returns the Tech. Spec. update screen with the message indicating that the record may be allowed. In this case, the transaction code returned is MDS08A. This instructs the UTS400 software that entry into the Tech. Spec. number field is allowed. (If the record exists, entry into these fields is not allowed.) The UTS400 then converts the transaction code to MDS08U.

MDS08U

This program is the Tech. Spec. record update program. Its only input is the Tech. Spec. screen. It will update the following Tech. Spec. data and relationships.

- Tech. Spec. description
- Components which this Tech. Spec. applies to
- F.E.G.s which this Tech. Spec. applies to
- System Compliance Procedure number

3.6.4 Edit Function Equipment Group (FEG)

Introduction

In concept, the Edit FEG function manages the FEG file of the MIADS Indices data base. The function consists of 2 different programs. One program handles the displaying and paging of the FEG record and its relationships while the other processes the updates of the record and its relationships.

The FEG file is hierarchical in structure. An FEG may have one to several parent (superior) FEGs and/or one to several child (inferior) FEGs.

The two programs described in this section display and maintain the hierarchical relationships among FEGs.

3.6.4.1 Program Narrative

MDS05D

MDS05D is the display/paging program of the Edit FEG function. It is also the report generator for the FEG on-line report (addressed in a different section). This description discusses the edit mode only.

The program is entered via the Edit FEG request screen obtained from the MIDAS special edit sub-menu. The transaction code for this screen is MDS05D.

MDS05D will return the following screen if the FEG exists.

- FEG number along with its corresponding startup system and description
- All of its superior FEGs
- All of its inferior FEGs
- An "Add FEG Relationship" section for addressing new superior/inferior FEGs

If the list of Superior/Inferior FEGs exceeds a full page, the transaction code returned to the UTS400 is MDS05E, otherwise, a code of MDS05U is returned.

When a code of MDS05E is returned, the following actions will occur in program MDS05D.

- If an action code of "D" is entered for any of the Superior or Inferior FEGs, or an "M" is entered in the action code field of the "CASE" FEG, MDS05D will schedule MDS05U for updating.
- If no action codes appear on the entire screen, MDS05D returns the second screen (page 2).

MDS05D does not utilize PTIP paging. It, instead, maintains all Superior/Inferior FEG records in working storage. The record limit for these records is:

- 50 Superior FEGs
- 150 Inferior FEGs

If these numbers are exceeded, MDS05U returns a message indicating an overflow.

If the FEG does not exist, MDS05D returns an Edit FEG screen with an "ADD FEG RELATIONSHIP" section only. In this case, a transaction code of MDS08A is returned which instructs the UTS400 program to allow entry into the FEG number field. (Not allowed in MCI resident FEG screens)

MDS05U

MDS05U is the update program for the Edit FEG function. MDS05U allows for the adding of FEGs to the FEG file, modifying the description and startup systems of the FEGs, and allows for update to the Inferior/Superior relationships of the FEG file with the following conditions.

- FEGs attempted to be assigned as Inferiors/Superiors must be resident in the FEG data base.
- FEG assigned as superiors may not be simultaneously assigned as inferiors.

MDS05U also allows for the deleting of an FEG from the data base. A delete can be performed only if the following conditions occur:

- No Tech. Specs. are related to the FEG
- No components are related to the FEG
- The FEG has no members in its Inferior/Superior set.

MDS16E

INDICES DATA RECORD

09/18/81 07:46:04

TYPE : E Q U I P M E N T

ACTION CODE A	COMPONENT NO. DOC-	DESCRIPTION					COMP. TYPE E	
		CRIT SYS.	ACT. CODE	TECH SPEC	ERR CODE	ACT. CODE	FEG NO	ERR CODE
STARTUP			17.					
BUILDING			17.					
CELL			17.					
LOCATION			17.					
P & ID			17.					
CABLE NO.			17.					
FUSE								
SCHEMATIC NUMBER								

YOU MAY ADD

INDICES DETAIL SCREEN

1. Component Number: never allowed to enter
2. Action code field allowable values
 - M = modify
 - D = delete
 - A = add (always set by the system when requested record not found)
3. Comp. Type field: never allowed entry
4. Critical Sys: See data dictionary for allowable values.
5. Action code field for TECH SPEC and FEG allowable values:
 - D = delete relationship
 - A = add relationship
6. Error code fields for TECH SPEC and FEG
 - E07 = TECH SPEC or FEG not on file
 - M07 = TECH SPEC or FEG already related

MDS16E

INDICES DATA RECORD

09/18/81 07:46:04

TYPE : E Q U I P M E N T

ACTION CODE COMPONENT NO.
A DOC-

DESCRIPTION

COMP. TYPE
E

	CRIT SYS.	ACT. CODE	TECH SPEC	ERR CODE	ACT. CODE	FEG NO	ERR CODE
STARTUP	---	---	17.	---	---	---	---
BUILDING	---	---	17.	---	---	---	---
CELL	---	---	17.	---	---	---	---
LOCATION	---	---	17.	---	---	---	---
P & ID	---	---	17.	---	---	---	---
CABLE NO.	---	---	17.	---	---	---	---
FUSE	---	---	---	---	---	---	---
SCHEMATIC NUMBER	---	---	---	---	---	---	---

YOU MAY ADD

INDICES DETAIL SCREEN

7. When deleting a component, the following condition must be met.

- a. When a "D" is entered in the action code field, the component number is set to blank. The number must be re-entered and must be identical to the component number that was fetched before the XMIT key is used.

MDS16E

INDICES DATA RECORD

09/18/81 07:46:04

TYPE : EQUIPMENT

ACTION CODE	COMPONENT NO.	DESCRIPTION				COMP. TYPE			
A	DOC-	-	-	-	-	-	-	-	E
		CRIT SYS.	ACT. CODE	TECH SPEC	ERR CODE	ACT. CODE	FEG NO		ERR CODE
STARTUP	---	---	-	17.	---	-	---	---	---
BUILDING	-----	---	-	17.	---	-	---	---	---
CELL	-----	---	-	17.	---	-	---	---	---
LOCATION	-----	---	-	17.	---	-	---	---	---
P & ID	-----	---	-	17.	---	-	---	---	---
CABLE NO.	-----	---	-	17.	---	-	---	---	---
FUSE	-----	---	-	17.	---	-	---	---	---
SCHEMATIC NUMBER	-----	---	-	17.	---	-	---	---	---

YOU MAY ADD

INDICES DETAIL SCREEN

EQUIPMENT

MDS161

INDICES DATA RECORD

09/18/84 07:45:20

TYPE : I N S T R U M E N T

ACTION CODE		COMPONENT NO.		DESCRIPTION				COMP. TYPE	
A		DUC-						I	
		CRIT	ACT.	TECH	ERR	ACT.	FEG	ERR	
		SYS.	CODE	SPEC	CODE	CODE	NO	CODE	
STARTUP		----	-	17.	----	-	----	----	
BUILDING		-----	-	17.	----	-	----	----	
CELL		----	-	17.	----	-	----	----	
LOCATION		-----	-	17.	----	-	----	----	
P & ID		----	-	17.	----	-	----	----	
CABLE NO.		-----	-	17.	----	-	----	----	
FUSE		-	-						
SCHEMATIC NUMBER		-----							
POSITION-ELECTRICAL FAILURE		--		LOOP NUMBER	-----				
POSITION-PNEUMATIC FAILURE		--		PANEL	-----				
LOOP/LOGIC DIAG. NUMBER		-----							
EQUIPMENT NUMBER		-----				---			

YOU MAY ADD

INDICES DETAIL SCREEN

INSTRUMENT

MDS16V

INDICES DATA RECORD

09/18/81 07:46:39

TYPE : VALVE

ACTION CODE	COMPONENT NO.	DESCRIPTION						COMP. TYPE
A	DOC-							V
		CRIT SYS.	ACT. CODE	TECH SPEC	ERR CODE	ACT. CODE	FEG NO	ERR CODE
STARTUP	---	----	-	17.	----	-	----	----
BUILDING	-----	----	-	17.	----	-	----	----
CELL	-----	----	-	17.	----	-	----	----
LOCATION	-----	----	-	17.	----	-	----	----
P & ID	-----	----	-	17.	----	-	----	----
CABLE NO.	-----	----	-	17.	----	-	----	----
FUSE	-----	----	-	17.	----	-	----	----
SCHEMATIC NUMBER	-----	----	-	17.	----	-	----	----
POSITION-ELECTRICAL FAILURE	---	----	-	SIZE	----	-	----	----
POSITION-PNEUMATIC FAILURE	---	----	-	VALVE TYPE	----	-	----	----
LOOP/LOGIC DIAG. NUMBER	-----	----	-	LIMIT SWITCH NUMBER	-----	-	-----	-----
OPERATOR TYPE	-----	----	-	SOLENOID/PNEUMATIC DIAG	-----	-	-----	-----

YOU MAY ADD

INDICES DETAIL SCREEN

VALVE

5.0 MIDAS DATA BASE

This section describes the MIDAS logical and physical data base designs. The MIDAS data base is made up of two different data bases. They are:

WCL or DOCUMENT data base

MCI or INDICES data base

Section 5.1 depicts the logical data base design of MIDAS while Section 5.2 lists the physical data base (schemas).

5.1 LOGICAL DATA BASE DESIGN

The following three diagrams are the logical data base designs of MIDAS. The logical data base is the first phase of the preliminary design effort and must be completed before application software design efforts can be completed. The logical designs must also be completed before the physical data base can be built.

MDS-FEG

MDS-COMP

MDS-TECH

5.2 PHYSICAL DATA BASE DESIGN

The MIDAS physical data base consists of five different schemas. They are:

- a. MIDAS Schema (Section 5.2.1)
- b. MCI Sub-schema (Section 5.2.2)
- c. WCL Sub-schema (Section 5.2.3)
- d. MCI/QLP Sub-schema (Section 5.2.4)
- e. WCL/QLP Sub-schema (Section 5.2.5)

Those programs which require access to both the WCL and MCI data bases must use the WCL/MCI schema. Those programs which require access to the MCI data base only use the MCI sub data base only.

The MCI/QLP and WCL/QLP sub-schemas are used for alpha and beta text purposes. QLP (Query Language processor) is a DMS1100 parameter driven utility which allows for a wide variety of queries into DMS1100 data bases. The QLP processor is used to ensure that data displayed and reported in all of the MIDAS functions are accurate.

The following five sections list the MIDAS schemas which are used by the MIDAS programs and QLP processor.

5.2.1 MIDAS Schema

SCHEMA(1).MDSSCH

IDENTIFICATION DIVISION.

SCHEMA NAME IS MDSSCH IN TIP FILE 101

LOCK FOR COPY IS *SCHLOK*

*

DATA DIVISION.

DATA NAME SECTION.

*

77	FEG-AREA	USAGE IS AREA-NAME
77	COMP-AREA	USAGE IS AREA-NAME
77	TECH-AREA	USAGE IS AREA-NAME
77	COMPKEY-AREA	USAGE IS AREA-NAME
77	EQUIP-AREA	USAGE IS AREA-NAME
77	INSTR-AREA	USAGE IS AREA-NAME
77	VALVE-AREA	USAGE IS AREA-NAME
77	DAMPER-AREA	USAGE IS AREA-NAME
77	LOAD-AREA	USAGE IS AREA-NAME
77	DCC-AREA	USAGE IS AREA-NAME
77	DOCKEY-AREA	USAGE IS AREA-NAME
77	FEG-AREA-NAME	USAGE IS AREA-NAME
77	DATE-AREA-NAME	USAGE IS AREA-NAME
77	SCREEN-AREA-NAME	USAGE IS AREA-NAME
01	FEG-AREA-KEY	USAGE IS AREA-KEY
01	DATE-AREA-KEY	USAGE IS AREA-KEY
01	SCREEN-AREA-KEY	USAGE IS AREA-KEY

*

AREA SECTION.

AREA CONTROL IS 511

*

AREA NAME IS MDS-FEG

AREA CODE IS 102

MODE IS DATA AREA

AREA MAPS TO TIP FILE

ALLOCATE 100 PAGES 5 OVERFLOW PAGES EVERY 20 DATA PAGES

PAGES ARE 224 WORDS

LOOKS INCLUDE QUICK-BEFORE-LOOKS

*

AREA NAME IS MDS-COMP

AREA CODE IS 103

MODE IS DATA AREA

AREA MAPS TO TIP FILE

ALLOCATE 100 PAGES 5 OVERFLOW PAGES EVERY 20 DATA PAGES

PAGES ARE 224 WORDS

LOOKS INCLUDE QUICK-BEFORE-LOOKS

*

AREA NAME IS MDS-TECH

AREA CODE IS 104

MODE IS DATA AREA

AREA MAPS TO TIP FILE

ALLOCATE 100 PAGES 5 OVERFLOW PAGES EVERY 20 DATA PAGES

PAGES ARE 224 WORDS

LOOKS INCLUDE QUICK-BEFORE-LOOKS

*

AREA NAME IS MDS-COMPKEY

AREA CODE IS 105

MODE IS DATA AREA

AREA MAPS TO TIP FILE

ALLOCATE 500 PAGES 100 OVERFLOW
PAGES ARE 224 WORDS
LOOKS INCLUDE QUICK-BEFORE-LOOKS
CALC USES 3 CHAINS

*

AREA NAME IS MDS-EQUIP
AREA CODE IS 106
MODE IS DATA AREA
AREA MAPS TO TIP FILE
ALLOCATE 100 PAGES 20 OVERFLOW
PAGES ARE 448 WORDS
LOOKS INCLUDE QUICK-BEFORE-LOOKS

*

AREA NAME IS MDS-INSTR
AREA CODE IS 107
MODE IS DATA AREA
AREA MAPS TO TIP FILE
ALLOCATE 100 PAGES 20 OVERFLOW
PAGES ARE 448 WORDS
LOOKS INCLUDE QUICK-BEFORE-LOOKS

*

AREA NAME IS MDS-VALVE
AREA CODE IS 108
MODE IS DATA AREA
AREA MAPS TO TIP FILE
ALLOCATE 100 PAGES 20 OVERFLOW
PAGES ARE 448 WORDS
LOOKS INCLUDE QUICK-BEFORE-LOOKS

*

AREA NAME IS MDS-DAMPER
AREA CODE IS 109
MODE IS DATA AREA
AREA MAPS TO TIP FILE
ALLOCATE 100 PAGES 20 OVERFLOW
PAGES ARE 448 WORDS
LOOKS INCLUDE QUICK-BEFORE-LOOKS

*

AREA NAME IS MDS-LOAD
AREA CODE IS 110
MODE IS DATA AREA
AREA MAPS TO TIP FILE
ALLOCATE 100 PAGES 20 OVERFLOW
PAGES ARE 448 WORDS
LOOKS INCLUDE QUICK-BEFORE-LOOKS

*

AREA NAME IS MDS-DOC
AREA CODE IS 111
MODE IS DATA AREA
AREA MAPS TO TIP FILE
ALLOCATE 50 PAGES DYNAMICALLY EXPANDABLE TO 400 PAGES
PAGES ARE 448 WORDS
LOOKS INCLUDE QUICK-BEFORE-LOOKS

*

AREA NAME IS MDS-SHOP
AREA CODE IS 112
MODE IS DATA AREA
AREA MAPS TO TIP FILE

ALLOCATE 1 PAGE DYNAMICALLY EXPANDABLE TO 100 PAGES
PAGES ARE 224 WORDS
LOOKS INCLUDE QUICK-BEFORE-LOOKS
LOAD IS 30 WORDS

*

AREA NAME IS MDS-INDX1
AREA CODE IS 113
MODE IS INDEX AREA
AREA MAPS TO TIP FILE
ALLOCATE 3 PAGES DYNAMICALLY EXPANDABLE TO 50 PAGES
PAGES ARE 224 WORDS

*

AREA NAME IS MDS-DATE
AREA CODE IS 114
MODE IS DATA AREA
AREA MAPS TO TIP FILE
ALLOCATE 12 PAGES
PAGES ARE 448 WORDS
LOOKS INCLUDE QUICK-BEFORE-LOOKS

*

AREA NAME IS MDS-DOCKEY
AREA CODE IS 115
MODE IS DATA AREA
AREA MAPS TO TIP FILE
ALLOCATE 100 PAGES 20 OVERFLOW
PAGES ARE 224 WORDS
LOOKS INCLUDE QUICK-BEFORE-LOOKS
CALC USES 3 CHAINS LINKED PRIOR

*

AREA NAME IS MDS-SCREEN
AREA CODE IS 116
MODE IS DATA AREA
AREA MAPS TO TIP FILE
ALLOCATE 600 PAGES EXPANDABLE TO 6000 PAGES
PAGES ARE 224 WORDS
LOOKS INCLUDE QUICK-BEFORE-LOOKS

*

RECORD SECTION.

*

RECORD NAME IS MASTER-FEG-REC
RECORD CODE IS 102
LOCATION MODE IS DIRECT FEG-AREA-KEY, FEG-AREA-NAME
WITHIN MDS-FEG
RECORD MODE IS ASCII
05 FEG-FILLER PIC X

*

RECORD NAME IS FEG-REC
RECORD CODE IS 103
LOCATION MODE IS CALC RANDENTIAL
IN FEG-AREA
USING FEG-FEG-NO
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-FEG
RESERVE 2 POINTERS
RECORD MODE IS ASCII
05 FEG-FEG-NO PIC X(10)
05 FEG-FEG-DESCR PIC X(30)

05	EQU-INSTR-CNT	PIC 9(5)	USAGE COMP
05	EQU-LOAD-CNT	PIC 9(5)	USAGE COMP

*

RECORD NAME IS LOOP-LOGIC-DIAG-KEY-REC

RECORD CODE IS 126

LOCATION MODE IS CALC DMSCALC

IN COMPKEY-AREA

USING LOOPLOG-LOOP-LOGIC-DIAG-NUM

DUPLICATES ARE NOT ALLOWED

WITHIN MDS-COMPKEY

RECORD MODE IS ASCII

05	LOOPLOG-LOOP-LOGIC-DIAG-NUM	PIC X(5)	
----	-----------------------------	----------	--

05	LOOPLOG-INSTR-CNT	PIC 9(5)	USAGE COMP
----	-------------------	----------	------------

05	LOOPLOG-VALVE-CNT	PIC 9(5)	USAGE COMP
----	-------------------	----------	------------

05	LOOPLOG-DAMPER-CNT	PIC 9(5)	USAGE COMP
----	--------------------	----------	------------

*

RECORD NAME IS LOOP-KEY-REC

RECORD CODE IS 127

LOCATION MODE IS CALC DMSCALC

IN COMPKEY-AREA

USING LOOP-LOOP-NUM

DUPLICATES ARE NOT ALLOWED

WITHIN MDS-COMPKEY

RECORD MODE IS ASCII

05	LOOP-LOOP-NUM	PIC X(10)	
----	---------------	-----------	--

05	LOOP-INSTR-CNT	PIC 9(5)	USAGE COMP
----	----------------	----------	------------

*

RECORD NAME IS PANEL-KEY-REC

RECORD CODE IS 128

LOCATION MODE IS CALC DMSCALC

IN COMPKEY-AREA

USING PANEL-PANEL

DUPLICATES ARE NOT ALLOWED

WITHIN MDS-COMPKEY

RECORD MODE IS ASCII

05	PANEL-PANEL	PIC X(8)	
----	-------------	----------	--

05	PANEL-INSTR-CNT	PIC 9(5)	USAGE COMP
----	-----------------	----------	------------

*

RECORD NAME IS CONTROL-REC

RECORD CODE IS 129

LOCATION MODE IS CALC RANDENTIAL

IN COMP-AREA

USING CONTROL-CONTROL-TYPE, CONTROL-TERMINAL-ID

DUPLICATES ARE ALLOWED

WITHIN MDS-COMP

RECORD MODE IS ASCII

05	CONTROL-CONTROL-TYPE	PIC X(6)	
----	----------------------	----------	--

05	CONTROL-TERMINAL-ID	PIC 9(5)	USAGE COMP
----	---------------------	----------	------------

05	CONTROL-VARIABLE-LENGTH	PIC 9(5)	USAGE COMP
----	-------------------------	----------	------------

05	CONTROL-VARIABLE-DATA	PIC X(20)	
----	-----------------------	-----------	--

OCCURS 1 TO 40 TIMES

DEPENDING ON

CONTROL-VARIABLE-LENGTH

*

RECORD NAME IS DOC-PART-REC

RECORD CODE IS 130

LOCATION MODE IS CALC DMSCALC

05 FEG-SYS-START-CODE
10 FEG-SYS-START-CODE-1 PIC X(2)
10 FEG-SYS-START-CODE-2 PIC X

*

RECORD NAME IS COMPONENT-REC
RECORD CODE IS 104
LOCATION MODE IS CALC RANDENTIAL
IN COMP-AREA
USING COMP-COMP-NO

DUPLICATES ARE NOT ALLOWED
WITHIN MDS-COMP

RECORD MODE IS ASCII

05 COMP-COMP-NO PIC X(12)
05 COMP-COMP-TYPE PIC X

*

RECORD NAME IS TECH-SPEC-REC
RECORD CODE IS 105
LOCATION MODE IS CALC DMSCALC
IN TECH-AREA
USING TECH-TECH-SPEC-NO

DUPLICATES ARE NOT ALLOWED
WITHIN MDS-TECH

RECORD MODE IS ASCII

05 TECH-TECH-SPEC-NO PIC X(10)
05 TECH-TECH-SPEC-DESCR PIC X(30)

*

RECORD NAME IS COM-PROC-REC
RECORD CODE IS 106
LOCATION MODE IS VIA TECH-PROC SET
WITHIN MDS-TECH
RECORD MODE IS ASCII

05 SYS-COM-PROC-NO
10 SYS-COM-PROC-NO-1 PIC X(2)
10 SYS-COM-PROC-NO-2 PIC X(6)
10 SYS-COM-PROC-NO-3 PIC X(6)

*

RECORD NAME IS RELAT-FEG-FEG-REC
RECORD CODE IS 107
LOCATION MODE IS VIA SUPERIOR-FEG SET
WITHIN MDS-FEG
RESERVE 1 POINTERS
RECORD MODE IS ASCII

05 RELAT1-FILLER PIC X

*

RECORD NAME IS RELAT-COMP-FEG-REC
RECORD CODE IS 108
LOCATION MODE IS VIA FEG-COMP SET
WITHIN MDS-COMP

RECORD MODE IS ASCII

05 RELAT2-COMP-TYPE PIC X
05 RELAT2-COMP-NUM PIC X(12)

*

RECORD NAME IS RELAT-COMP-TECH-REC
RECORD CODE IS 109
LOCATION MODE IS VIA TECH-COMP SET
WITHIN MDS-COMP
RECORD MODE IS ASCII

05 RELAT3-COMP-TYPE PIC X
05 RELAT3-COMP-NUM PIC X(12)

*

RECORD NAME IS RELAT-FEG-TECH-REC
RECORD CODE IS 110
LOCATION MODE IS VIA TECH-FEG SET
WITHIN MDS-TECH
RECORD MODE IS ASCII
05 RELAT4-FILLER PIC X

*

RECORD NAME IS EQUIPMENT-REC
RECORD CODE IS 111
LOCATION MODE IS CALC DMSCALC
IN EQUIP-AREA
USING E-COMP-NUM
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-EQUIP
RESERVE 12 POINTERS

RECORD MODE IS ASCII
05 E-COMP-NUM PIC X(12)
05 E-COMP-TYPE PIC X
05 E-COMP-DESCR PIC X(30)
05 E-SYSTEM-STARTUP-CODE
10 E-SYSTEM-CODE PIC XX
10 E-STARTUP-CODE PIC X
05 E-CRITICAL-SYSTEM-CODES
10 E-CRIT-SYS-CODE-1 PIC X
10 E-CRIT-SYS-CODE-2 PIC X
10 E-CRIT-SYS-CODE-3 PIC X
10 E-CRIT-SYS-CODE-4 PIC X
10 E-CRIT-SYS-CODE-5 PIC X
10 E-CRIT-SYS-CODE-6 PIC X
10 E-CRIT-SYS-CODE-7 PIC X
05 E-BUILDING PIC X(5)
05 E-CELL PIC X(4)
05 E-LOCATION PIC X(10)
05 E-P-ID-NUM PIC X(5)
05 E-CABLE-NUM
10 E-CABLE-NUM-1 PIC X(4)
10 E-CABLE-NUM-2 PIC X(2)
10 E-CABLE-NUM-3 PIC X(8)
05 E-FUSE
10 E-FUSE-1 PIC X(5)
10 E-FUSE-2 PIC X(5)
10 E-FUSE-3 PIC X(2)
05 E-SCHEMATIC-NUM PIC X(20)

*

RECORD NAME IS INSTRUMENT-REC
RECORD CODE IS 112
LOCATION MODE IS CALC DMSCALC
IN INSTR-AREA
USING I-COMP-NUM
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-INSTR
RESERVE 20 POINTERS
RECORD MODE IS ASCII
05 I-COMP-NUM PIC X(12)

05	I-COMP-TYPE	PIC X
05	I-COMP-DESCR	PIC X(30)
05	I-SYSTEM-STARTUP-CODE	
	10 I-SYSTEM-CODE	PIC XX
	10 I-STARTUP-CODE	PIC X
05	I-CRITICAL-SYSTEM-CODES	
	10 I-CRIT-SYS-CODE-1	PIC X
	10 I-CRIT-SYS-CODE-2	PIC X
	10 I-CRIT-SYS-CODE-3	PIC X
	10 I-CRIT-SYS-CODE-4	PIC X
	10 I-CRIT-SYS-CODE-5	PIC X
	10 I-CRIT-SYS-CODE-6	PIC X
	10 I-CRIT-SYS-CODE-7	PIC X
05	I-BUILDING	PIC X(5)
05	I-CELL	PIC X(4)
05	I-LOCATION	PIC X(10)
05	I-P-ID-NUM	PIC X(5)
05	I-CABLE-NUM	
	10 I-CABLE-NUM-1	PIC X(4)
	10 I-CABLE-NUM-2	PIC X(2)
	10 I-CABLE-NUM-3	PIC X(8)
05	I-FUSE	
	10 I-FUSE-1	PIC X(5)
	10 I-FUSE-2	PIC X(5)
	10 I-FUSE-3	PIC X(2)
05	I-SCHEMATIC-NUM	PIC X(20)
05	I-EQUIPMENT-NUM	
	10 I-EQUIPMENT-NUM-1	PIC X(5)
	10 I-EQUIPMENT-NUM-2	PIC X(5)
	10 I-EQUIPMENT-NUM-3	PIC X(2)
05	I-LOOP-LOGIC-DIAG-NUM	PIC X(5)
05	I-LOOP-NUM	PIC X(10)
05	I-PANEL	
	10 I-PANEL-1	PIC X(2)
	10 I-PANEL-2	PIC X(4)
	10 I-PANEL-3	PIC X(2)
05	I-POS-ELEC-FAILURE	PIC X(2)
05	I-POS-PNEU-FAILURE	PIC X(2)

*

RECORD NAME IS VALVE-REC
 RECORD CODE IS 113
 LOCATION MODE IS CALC DMSCALC
 IN VALVE-AREA
 USING V-COMP-NUM
 DUPLICATES ARE NOT ALLOWED
 WITHIN MDS-VALVE
 RESERVE 14 POINTERS
 RECORD MODE IS ASCII

05	V-COMP-NUM	PIC X(12)
05	V-COMP-TYPE	PIC X
05	V-COMP-DESCR	PIC X(30)
05	V-SYSTEM-STARTUP-CODE	
	10 V-SYSTEM-CODE	PIC XX
	10 V-STARTUP-CODE	PIC X
05	V-CRITICAL-SYSTEM-CODES	
	10 V-CRIT-SYS-CODE-1	PIC X
	10 V-CRIT-SYS-CODE-2	PIC X

	10	V-CRIT-SYS-CODE-3	PIC X
	10	V-CRIT-SYS-CODE-4	PIC X
	10	V-CRIT-SYS-CODE-5	PIC X
	10	V-CRIT-SYS-CODE-6	PIC X
	10	V-CRIT-SYS-CODE-7	PIC X
05		V-BUILDING	PIC X(5)
05		V-CELL	PIC X(4)
05		V-LOCATION	PIC X(13)
05		V-P-ID-NUM	PIC X(5)
05		V-CABLE-NUM	
	10	V-CABLE-NUM-1	PIC X(4)
	10	V-CABLE-NUM-2	PIC X(2)
	10	V-CABLE-NUM-3	PIC X(8)
05		V-FUSE	
	10	V-FUSE-1	PIC X(5)
	10	V-FUSE-2	PIC X(5)
	10	V-FUSE-3	PIC X(2)
05		V-SCHEMATIC-NUM	PIC X(20)
05		V-LOOP-LOGIC-DIAG-NUM	PIC X(5)
05		V-POS-ELEC-FAILURE	PIC X(2)
05		V-POS-PNEU-FAILURE	PIC X(2)
05		V-SOLENOID-PNEU-DIAG	PIC X(5)
05		V-OPERATOR-TYPE	PIC X(4)
05		V-LIMIT-SWITCH-NUM	PIC X(7)
05		V-VALVE-SIZE	PIC X(6)
05		V-VALVE-TYPE	PIC X(4)

*

RECORD NAME IS DAMPER-REC
 RECORD CODE IS 114
 LOCATION MODE IS CALC DMSCALC
 IN DAMPER-AREA
 USING D-COMP-NUM
 DUPLICATES ARE NOT ALLOWED
 WITHIN MDS-DAMPER
 RESERVE 14 POINTERS
 RECORD MODE IS ASCII

05		D-COMP-NUM	PIC X(12)
05		D-COMP-TYPE	PIC X
05		D-COMP-DESCR	PIC X(33)
05		D-SYSTEM-STARTUP-CODE	
	10	D-SYSTEM-CODE	PIC XX
	10	D-STARTUP-CODE	PIC X
05		D-CRITICAL-SYSTEM-CODES	
	10	D-CRIT-SYS-CODE-1	PIC X
	10	D-CRIT-SYS-CODE-2	PIC X
	10	D-CRIT-SYS-CODE-3	PIC X
	10	D-CRIT-SYS-CODE-4	PIC X
	10	D-CRIT-SYS-CODE-5	PIC X
	10	D-CRIT-SYS-CODE-6	PIC X
	10	D-CRIT-SYS-CODE-7	PIC X
05		D-BUILDING	PIC X(5)
05		D-CELL	PIC X(4)
05		D-LOCATION	PIC X(10)
05		D-P-ID-NUM	PIC X(5)
05		D-CABLE-NUM	
	10	D-CABLE-NUM-1	PIC X(4)
	10	D-CABLE-NUM-2	PIC X(2)

	10 D-CABLE-NUM-3	PIC X(8)
05	D-FUSE	
	10 D-FUSE-1	PIC X(5)
	10 D-FUSE-2	PIC X(5)
	10 D-FUSE-3	PIC X(2)
05	D-SCHEMATIC-NUM	PIC X(20)
05	D-LOOP-LOGIC-DIAG-NUM	PIC X(5)
05	D-POS-ELEC-FAILURE	PIC X(2)
05	D-POS-PNEU-FAILURE	PIC X(2)
05	D-OPERATOR-TYPE	PIC X(4)

*

RECORD NAME IS ELECTRICAL-LOAD-REC

RECORD CODE IS 115

LOCATION MODE IS CALC DMSCALC

IN LOAD-AREA

USING L-COMP-NUM

DUPLICATES ARE NOT ALLOWED

WITHIN MDS-LOAD

RESERVE 14 POINTERS

RECORD MODE IS ASCII

05	L-COMP-NUM	PIC X(12)
05	L-COMP-TYPE	PIC X
05	L-COMP-DESCR	PIC X(30)
05	L-SYSTEM-STARTUP-CODE	
	10 L-SYSTEM-CODE	PIC X
	10 L-STARTUP-CODE	PIC X
05	L-CRITICAL-SYSTEM-CODES	
	10 L-CRIT-SYS-CODE-1	PIC X
	10 L-CRIT-SYS-CODE-2	PIC X
	10 L-CRIT-SYS-CODE-3	PIC X
	10 L-CRIT-SYS-CODE-4	PIC X
	10 L-CRIT-SYS-CODE-5	PIC X
	10 L-CRIT-SYS-CODE-6	PIC X
	10 L-CRIT-SYS-CODE-7	PIC X
05	L-BUILDING	PIC X(5)
05	L-CELL	PIC X(4)
05	L-LOCATION	PIC X(10)
05	L-P-ID-NUM	PIC X(5)
05	L-CABLE-NUM	
	10 L-CABLE-NUM-1	PIC X(4)
	10 L-CABLE-NUM-2	PIC X(2)
	10 L-CABLE-NUM-3	PIC X(8)
05	L-FUSE	
	10 L-FUSE-1	PIC X(5)
	10 L-FUSE-2	PIC X(5)
	10 L-FUSE-3	PIC X(2)
05	L-SCHEMATIC-NUM	PIC X(20)
05	L-EQUIPMENT-NUM	
	10 L-EQUIPMENT-NUM-1	PIC X(5)
	10 L-EQUIPMENT-NUM-2	PIC X(5)
	10 L-EQUIPMENT-NUM-3	PIC X(2)
05	L-VOLTS-NPHP	PIC X(11)
05	L-KW	PIC X(11)

*

RECORD NAME IS COMP-P-KEY-REC

RECORD CODE IS 116

LOCATION MODE IS CALC DMSCALC

IN COMPKEY-AREA
USING COMPP-COMP-NUM-1
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-COMPKEY
RECORD MODE IS ASCII
05 COMPP-COMP-NUM-1
05 COMPP-COMP-CNT

PIC X(5)
PIC 9(5) USAGE COMP

*

RECORD NAME IS COMP-N-KEY-REC
RECORD CODE IS 117
LOCATION MODE IS CALC DMSCALC
IN COMPKEY-AREA
USING COMPN-COMP-NUM-2
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-COMPKEY
RECORD MODE IS ASCII
05 COMPN-COMP-NUM-2
05 COMPN-COMP-CNT

PIC X(5)
PIC 9(5) USAGE COMP

*

RECORD NAME IS COMP-P-N-KEY-REC
RECORD CODE IS 118
LOCATION MODE IS CALC DMSCALC
IN COMPKEY-AREA
USING COMPPN-COMP-NUM-1-2
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-COMPKEY
RECORD MODE IS ASCII
05 COMPPN-COMP-NUM-1-2
05 COMPPN-COMP-CNT

PIC X(10)
PIC 9(5) USAGE COMP

*

RECORD NAME IS SYSTEM-KEY-REC
RECORD CODE IS 119
LOCATION MODE IS CALC DMSCALC
IN COMPKEY-AREA
USING SYS-SYSTEM-CODE
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-COMPKEY
RECORD MODE IS ASCII
05 SYS-SYSTEM-CODE
05 SYS-EQUIP-CNT
05 SYS-INSTR-CNT
05 SYS-VALVE-CNT
05 SYS-DAMPER-CNT
05 SYS-LOAD-CNT

PIC X(2)
PIC 9(5) USAGE COMP
PIC 9(5) USAGE COMP
PIC 9(5) USAGE COMP
PIC 9(5) USAGE COMP
PIC 9(5) USAGE COMP

*

RECORD NAME IS SYSTEM-STARTUP-KEY-REC
RECORD CODE IS 120
LOCATION MODE IS CALC DMSCALC
IN COMPKEY-AREA
USING SYSTART-SYSTEM-STARTUP-CODE
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-COMPKEY
RECORD MODE IS ASCII
05 SYSTART-SYSTEM-STARTUP-CODE
05 SYSTART-EQUIP-CNT
05 SYSTART-INSTR-CNT
05 SYSTART-VALVE-CNT

PIC X(3)
PIC 9(5) USAGE COMP
PIC 9(5) USAGE COMP
PIC 9(5) USAGE COMP

05	SYSTART-DAMPER-CNT	PIC 9(5)	USAGE COMP
05	SYSTART-LOAD-CNT	PIC 9(5)	USAGE COMP

*

RECORD NAME IS CELL-KEY-REC
 RECORD CODE IS 122
 LOCATION MODE IS CALC DMSCALC
 IN COMPKEY-AREA
 USING CELL-CELL

DUPLICATES ARE NOT ALLOWED
 WITHIN MDS-COMPKEY
 RECORD MODE IS ASCII

05	CELL-CELL	PIC X(4)	
05	CELL-EQUIP-CNT	PIC 9(5)	USAGE COMP
05	CELL-INSTR-CNT	PIC 9(5)	USAGE COMP
05	CELL-VALVE-CNT	PIC 9(5)	USAGE COMP
05	CELL-DAMPER-CNT	PIC 9(5)	USAGE COMP
05	CELL-LOAD-CNT	PIC 9(5)	USAGE COMP

*

RECORD NAME IS P-ID-KEY-REC
 RECORD CODE IS 123
 LOCATION MODE IS CALC DMSCALC
 IN COMPKEY-AREA
 USING PID-P-ID-NUM

DUPLICATES ARE NOT ALLOWED
 WITHIN MDS-COMPKEY
 RECORD MODE IS ASCII

05	PID-P-ID-NUM	PIC X(5)	
05	PID-EQUIP-CNT	PIC 9(5)	USAGE COMP
05	PID-INSTR-CNT	PIC 9(5)	USAGE COMP
05	PID-VALVE-CNT	PIC 9(5)	USAGE COMP
05	PID-DAMPER-CNT	PIC 9(5)	USAGE COMP
05	PID-LOAD-CNT	PIC 9(5)	USAGE COMP

*

RECORD NAME IS SCHEMATIC-KEY-REC
 RECORD CODE IS 124
 LOCATION MODE IS CALC DMSCALC
 IN COMPKEY-AREA
 USING SCHEMAT-SCHEMATIC-NUM

DUPLICATES ARE NOT ALLOWED
 WITHIN MDS-COMPKEY
 RECORD MODE IS ASCII

05	SCHEMAT-SCHEMATIC-NUM	PIC X(20)	
05	SCHEMAT-EQUIP-CNT	PIC 9(5)	USAGE COMP
05	SCHEMAT-INSTR-CNT	PIC 9(5)	USAGE COMP
05	SCHEMAT-VALVE-CNT	PIC 9(5)	USAGE COMP
05	SCHEMAT-DAMPER-CNT	PIC 9(5)	USAGE COMP
05	SCHEMAT-LOAD-CNT	PIC 9(5)	USAGE COMP

*

RECORD NAME IS EQUIPMENT-KEY-REC
 RECORD CODE IS 125
 LOCATION MODE IS CALC DMSCALC
 IN COMPKEY-AREA
 USING EQU-EQUIPMENT-NUM

DUPLICATES ARE NOT ALLOWED
 WITHIN MDS-COMPKEY
 RECORD MODE IS ASCII

05	EQU-EQUIPMENT-NUM	PIC X(12)	
----	-------------------	-----------	--

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      IN DOC-AREA
      USING DOCPART-DOC-NUM
      DUPLICATES ARE ALLOWED
      WITHIN MDS-DOC
      RESERVE 16 POINTERS
      RECORD MODE IS ASCII
05  DOCPART-DOC-NUM                PIC X(7)
05  DOCPART-DOC-NUM-VH            PIC X
05  DOCPART-DOC-TYPE              PIC X
05  DOCPART-DOC-TYPE-VH          PIC X
05  DOCPART-PRIORITY              PIC X(2)
05  DOCPART-PRIORITY-VH          PIC X
05  DOCPART-SHOP
      10 DOCPART-SHOP-CODE        PIC X(2)
      10 DOCPART-SHOP-SUFFIX     PIC X
05  DOCPART-SHOP-VH              PIC X
05  DOCPART-DOC-SYS-START-CODE
      10 DOCPART-DOC-SYS-CODE    PIC X(2)
      10 DOCPART-DOC-START-CODE  PIC X
05  DOCPART-DOC-SYS-START-CODE-VH PIC X
05  DOCPART-CRITICAL-SYSTEM-CODES
      10 DOCPART-CRIT-SYS-CODE-1 PIC X
      10 DOCPART-CRIT-SYS-CODE-2 PIC X
      10 DOCPART-CRIT-SYS-CODE-3 PIC X
      10 DOCPART-CRIT-SYS-CODE-4 PIC X
      10 DOCPART-CRIT-SYS-CODE-5 PIC X
      10 DOCPART-CRIT-SYS-CODE-6 PIC X
      10 DOCPART-CRIT-SYS-CODE-7 PIC X
05  DOCPART-CRITICAL-SYSTEM-VH
      10 DOCPART-CRIT-SYS-VH-1   PIC X
      10 DOCPART-CRIT-SYS-VH-2   PIC X
      10 DOCPART-CRIT-SYS-VH-3   PIC X
      10 DOCPART-CRIT-SYS-VH-4   PIC X
      10 DOCPART-CRIT-SYS-VH-5   PIC X
      10 DOCPART-CRIT-SYS-VH-6   PIC X
      10 DOCPART-CRIT-SYS-VH-7   PIC X
05  DOCPART-TAGOUT-NUM
      10 DOCPART-TAGOUT-NUM-1    PIC X(2)
      10 DOCPART-TAGOUT-NUM-2    PIC X(5)
05  DOCPART-TAGOUT-HUNG          PIC X
05  DOCPART-TAGOUT-REQUESTED     PIC X
05  DOCPART-TAGOUT-REQUESTED-VH  PIC X
05  DOCPART-PROCESSED            PIC X
05  DOCPART-WORK-STATUS          PIC X(6)
05  DOCPART-INITIALS             PIC X(3)
05  DOCPART-START-DATE
      10 DOCPART-START-DATE-YR    PIC X(2)
      10 DOCPART-START-DATE-MO    PIC X(2)
      10 DOCPART-START-DATE-DA    PIC X(2)
05  DOCPART-START-DATE-VH        PIC X
05  DOCPART-LAST-CHGD
      10 DOCPART-LAST-CHGD-DT
          15 DOCPART-LAST-CHGD-YR  PIC X(2)
          15 DOCPART-LAST-CHGD-MO  PIC X(2)
          15 DOCPART-LAST-CHGD-DA  PIC X(2)
      10 DOCPART-LAST-CHGD-TIME
          15 DOCPART-LAST-CHGD-HR  PIC X(2)

```

	15	DOCPART-LAST-CHGD-MIN	PIC X(2)
05		DOCPART-WORK-DESCR	
	10	DOCPART-WORK-DESCR-1	PIC X(35)
	10	DOCPART-WORK-DESCR-2	PIC X(35)
05		DOCPART-WORK-DESCR-VH	PIC X
05		DOCPART-WORK-CONTROL-COMM	
	10	DOCPART-WORK-CONTROL-COMM-1	PIC X(35)
	10	DOCPART-WORK-CONTROL-COMM-2	PIC X(35)
	10	DOCPART-WORK-CONTROL-COMM-3	PIC X(35)

*

RECORD NAME IS COMP-PART-REC
 RECORD CODE IS 131
 LOCATION MODE IS VIA DOCPART-COMPART SET
 WITHIN MDS-DOC
 RECORD MODE IS ASCII

05		COMPART-COMP-NUM	
	10	COMPART-COMP-NUM-1	PIC X(5)
	10	COMPART-COMP-NUM-2	PIC X(5)
	10	COMPART-COMP-NUM-3	PIC X(2)
05		COMPART-COMP-NUM-VH	PIC X
05		COMPART-COMP-NUM-TEMP	PIC X
05		COMPART-COMP-DESCR	PIC X(30)
05		COMPART-COMP-DESCR-VH	PIC X
05		COMPART-COMP-COMM	PIC X(31)
05		COMPART-COMP-COMM-VH	PIC X

*

RECORD NAME IS FEG-PART-REC
 RECORD CODE IS 132
 LOCATION MODE IS VIA COMPART-FEGPART SET
 WITHIN MDS-DOC
 RESERVE 2 POINTERS
 RECORD MODE IS ASCII

05		FEGPART-FEG-NUM	
	10	FEGPART-FEG-NUM-1	PIC X(3)
	10	FEGPART-FEG-NUM-2	PIC X(3)
	10	FEGPART-FEG-NUM-3	PIC X(4)
05		FEGPART-FEG-NUM-VH	PIC X
05		FEGPART-FEG-NUM-VD	PIC X
05		FEGPART-FEG-NUM-TEMP	PIC X
05		FEGPART-O-C-S	PIC X

*

RECORD NAME IS TECH-SPEC-PART-REC
 RECORD CODE IS 133
 LOCATION MODE IS VIA COMPART-TECHPART SET
 WITHIN MDS-DOC
 RESERVE 1 POINTERS
 RECORD MODE IS ASCII

05		TECHPART-TECH-SPEC-NUM	PIC X(13)
05		TECHPART-TECH-SPEC-NUM-VD	PIC X

*

RECORD NAME IS SHOP-REC
 RECORD CODE IS 134
 LOCATION MODE IS INDEX SEQUENTIAL
 USING ASCENDING RANGE SHOP-SHOP-NUM
 INDEX AREA IS MDS-INDX1
 LINKS ARE NEXT
 DUPLICATES ARE NOT ALLOWED

WITHIN MDS-SHOP
RECORD MODE IS ASCII
05 SHOP-SHOP-NUM PIC X(3)
05 SHOP-SHOP-NAME PIC X(35)

*

RECORD NAME IS DATE-REC
RECORD CODE IS 135
LOCATION MODE IS DIRECT DATE-AREA-KEY, DATE-AREA-NAME
WITHIN MDS-DATE
RECORD MODE IS ASCII
05 DATE-MONTH
10 DATE-MONTH-N PIC 9(2)
05 DATE-DAY
10 DATE-DAY-N PIC 9(2)

*

RECORD NAME IS TAGOUT-REC
RECORD CODE IS 136
LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING TAG-TAGOUT-NUM
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY
RECORD MODE IS ASCII
05 TAG-TAGOUT-NUM PIC X(7)

*

RECORD NAME IS PRIORITY-REC
RECORD CODE IS 137
LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING PRIOR-PRIORITY
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY
RECORD MODE IS ASCII
05 PRIOR-PRIORITY PIC X(2)

*

RECORD NAME IS WORK-STATUS-REC
RECORD CODE IS 138
LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING WORKSTAT-WORK-STATUS
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY
RECORD MODE IS ASCII
05 WORKSTAT-WORK-STATUS PIC X(6)

*

RECORD NAME IS RM-REC
RECORD CODE IS 139
LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING RM-REL-MAINT-CODE-1
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY
RECORD MODE IS ASCII
05 RM-REL-MAINT-CODE-1 PIC X(2)

*

RECORD NAME IS RM-SYS-REC
RECORD CODE IS 140

LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING RMSYS-REL-MAINT-CODE-1-2
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY
RECORD MODE IS ASCII
05 RMSYS-REL-MAINT-CODE-1-2 PIC X(4)

*

RECORD NAME IS RM-SYSTART-REC
RECORD CODE IS 141
LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING RMSYSTART-REL-MAINT-CODE
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY
RECORD MODE IS ASCII
05 RMSYSTART-REL-MAINT-CODE PIC X(5)

*

RECORD NAME IS RELAT-RELMMAINT-DOC-REC
RECORD CODE IS 142
LOCATION MODE IS VIA DOCPART-RMSYSTART SET
WITHIN MDS-DOC
RECORD MODE IS ASCII
05 RELAT5-REL-MAINT-CODE
10 RELAT5-RM-CODE PIC X(2)
10 RELAT5-SYS-START-CODE
15 RELAT5-SYS-CODE PIC X(2)
15 RELAT5-START-CODE PIC X
05 RELAT5-REL-MAINT-CODE-VH PIC X

*

RECORD NAME IS CRITSYS-REC
RECORD CODE IS 143
LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING CRITSYS-CRIT-SYS-CODE
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY
RECORD MODE IS ASCII
05 CRITSYS-CRIT-SYS-CODE PIC X

*

RECORD NAME IS RELAT-CRITSYS-DOC-REC
RECORD CODE IS 144
LOCATION MODE IS VIA DOCPART-CRITSYS SET
WITHIN MDS-DOC
RECORD MODE IS ASCII
05 RELAT6-CRIT-SYS-CODE PIC X

*

RECORD NAME IS SYS-REC
RECORD CODE IS 145
LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING SYSTEM-SYS-CODE
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY
RECORD MODE IS ASCII
05 SYSTEM-SYS-CODE PIC X(2)

*

RECORD NAME IS SYSTART-REC
RECORD CODE IS 146
LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING SYSTART-SYS-START-CODE
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY
RECORD MODE IS ASCII
05 SYSTART-SYS-START-CODE PIC X(3)

*
RECORD NAME IS COMP-NUM-P-REC
RECORD CODE IS 147
LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING PCOMP-COMP-NUM-1
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY
RECORD MODE IS ASCII
05 PCOMP-COMP-NUM-1 PIC X(5)

*
RECORD NAME IS COMP-NUM-N-REC
RECORD CODE IS 148
LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING NCOMP-COMP-NUM-2
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY
RECORD MODE IS ASCII
05 NCOMP-COMP-NUM-2 PIC X(5)

*
RECORD NAME IS COMP-NUM-PN-REC
RECORD CODE IS 149
LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING PNCOMP-COMP-NUM-1-2
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY
RECORD MODE IS ASCII
05 PNCOMP-COMP-NUM-1-2 PIC X(10)

*
RECORD NAME IS COMP-NUM-REC
RECORD CODE IS 150
LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING COMPNUM-COMP-NUM
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY
RECORD MODE IS ASCII
05 COMPNUM-COMP-NUM PIC X(12)

*
RECORD NAME IS FEG-KEY-REC
RECORD CODE IS 152
LOCATION MODE IS CALC DMSCALC
IN DOCKEY-AREA
USING FEGKEY-FEG-NUM
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DOCKEY

RECORD MODE IS ASCII
05 FEGKEY-FEG-NUM

PIC X(10)

*

RECORD NAME IS TECH-SPEC-KEY-REC
RECORD CODE IS 153
LOCATION MODE IS CALC DMSCALC
IN DCKEY-AREA
USING TECHKEY-TECH-SPEC-NUM
DUPLICATES ARE NOT ALLOWED
WITHIN MDS-DCKEY
RECORD MODE IS ASCII
05 TECHKEY-TECH-SPEC-NUM

PIC X(10)

*

RECORD NAME IS SCREEN-REC
RECORD CODE IS 154
LOCATION MODE IS DIRECT SCREEN-AREA-KEY, SCREEN-AREA-NAME
WITHIN MDS-SCREEN
RECORD MODE IS ASCII
05 SCREEN-LINE-TABLE
10 SCREEN-LINE

PIC X(54)

OCCURS 15 TIMES

*

SET SECTION.

*

SET NAME IS MASTER-FEG
SET CODE IS 102
MODE IS CHAIN LINKED PRIOR
ORDER IS LAST
OWNER IS MASTER-FEG-REC
MEMBER IS FEG-REC MANUAL
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SUPERIOR-FEG
SET CODE IS 103
MODE IS CHAIN
ORDER IS LAST
OWNER IS FEG-REC
MEMBER IS RELAT-FEG-FEG-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS INFERIOR-FEG
SET CODE IS 104
MODE IS CHAIN
ORDER IS LAST
OWNER IS FEG-REC
MEMBER IS RELAT-FEG-FEG-REC MANUAL
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS FEG-COMP
SET CODE IS 105
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS FEG-REC
MEMBER IS RELAT-COMP-FEG-REC AUTOMATIC LINKED TO OWNER
ASCENDING KEY IS RELAT2-COMP-TYPE, RELAT2-COMP-NUM
DUPLICATES ARE NOT ALLOWED
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
SET NAME IS COMP-FEG
SET CODE IS 106
MODE IS CHAIN
ORDER IS LAST
OWNER IS COMPONENT-REC
MEMBER IS RELAT-COMP-FEG-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
SET NAME IS COMP-TECH
SET CODE IS 107
MODE IS CHAIN
ORDER IS LAST
OWNER IS COMPONENT-REC
MEMBER IS RELAT-COMP-TECH-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
SET NAME IS TECH-COMP
SET CODE IS 108
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS TECH-SPEC-REC
MEMBER IS RELAT-COMP-TECH-REC AUTOMATIC LINKED TO OWNER
ASCENDING KEY IS RELAT3-COMP-TYPE, RELAT3-COMP-NUM
DUPLICATES ARE NOT ALLOWED
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
SET NAME IS FEG-TECH
SET CODE IS 109
MODE IS CHAIN
ORDER IS LAST
OWNER IS FEG-REC
MEMBER IS RELAT-FEG-TECH-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
SET NAME IS TECH-FEG
SET CODE IS 110
MODE IS CHAIN
ORDER IS LAST
OWNER IS TECH-SPEC-REC
MEMBER IS RELAT-FEG-TECH-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
SET NAME IS TECH-PROC
SET CODE IS 111
MODE IS CHAIN
ORDER IS LAST
OWNER IS TECH-SPEC-REC
MEMBER IS COM-PROC-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
SET NAME IS COMP-P-COMP-PN
SET CODE IS 112
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS COMP-P-KEY-REC
MEMBER IS COMP-P-N-KEY-REC AUTOMATIC

ASCENDING KEY IS COMPPN-COMP-NUM-1-2
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS COMP-N-COMP-PN
SET CODE IS 113
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS COMP-N-KEY-REC
MEMBER IS COMP-P-N-KEY-REC AUTOMATIC
ASCENDING KEY IS COMPPN-COMP-NUM-1-2
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS COMP-PN-COMP
SET CODE IS 114
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS COMP-P-N-KEY-REC
MEMBER IS EQUIPMENT-REC MANUAL
ASCENDING KEY IS E-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET
MEMBER IS INSTRUMENT-REC MANUAL
ASCENDING KEY IS I-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET
MEMBER IS VALVE-REC MANUAL
ASCENDING KEY IS V-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET
MEMBER IS DAMPER-REC MANUAL
ASCENDING KEY IS D-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET
MEMBER IS ELECTRICAL-LOAD-REC MANUAL
ASCENDING KEY IS L-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SYS-SYSTART
SET CODE IS 115
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS SYSTEM-KEY-REC
MEMBER IS SYSTEM-STARTUP-KEY-REC AUTOMATIC
ASCENDING KEY IS SYSTART-SYSTEM-STARTUP-CODE
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SYSTART-EQUIP
SET CODE IS 116
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS SYSTEM-STARTUP-KEY-REC
MEMBER IS EQUIPMENT-REC MANUAL
ASCENDING KEY IS E-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS CELL-EQUIP
SET CODE IS 118
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS CELL-KEY-REC
MEMBER IS EQUIPMENT-REC MANUAL

ASCENDING KEY IS E-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS PID-EQUIP
SET CODE IS 119
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS P-ID-KEY-REC
MEMBER IS EQUIPMENT-REC MANUAL
ASCENDING KEY IS E-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SCHEMAT-EQUIP
SET CODE IS 120
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS SCHEMATIC-KEY-REC
MEMBER IS EQUIPMENT-REC MANUAL
ASCENDING KEY IS E-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SYSTART-INSTR
SET CODE IS 121
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS SYSTEM-STARTUP-KEY-REC
MEMBER IS INSTRUMENT-REC MANUAL
ASCENDING KEY IS I-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS CELL-INSTR
SET CODE IS 123
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS CELL-KEY-REC
MEMBER IS INSTRUMENT-REC MANUAL
ASCENDING KEY IS I-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS PID-INSTR
SET CODE IS 124
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS P-ID-KEY-REC
MEMBER IS INSTRUMENT-REC MANUAL
ASCENDING KEY IS I-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SCHEMAT-INSTR
SET CODE IS 125
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS SCHEMATIC-KEY-REC
MEMBER IS INSTRUMENT-REC MANUAL
ASCENDING KEY IS I-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS EQU-INSTR
SET CODE IS 126
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS EQUIPMENT-KEY-REC
MEMBER IS INSTRUMENT-REC MANUAL
ASCENDING KEY IS I-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
SET NAME IS LOOPLOG-INSTR
SET CODE IS 127
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS LOOP-LOGIC-DIAG-KEY-REC
MEMBER IS INSTRUMENT-REC MANUAL
ASCENDING KEY IS I-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
SET NAME IS LOOP-INSTR
SET CODE IS 128
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS LOOP-KEY-REC
MEMBER IS INSTRUMENT-REC MANUAL
ASCENDING KEY IS I-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
SET NAME IS PANEL-INSTR
SET CODE IS 129
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS PANEL-KEY-REC
MEMBER IS INSTRUMENT-REC MANUAL
ASCENDING KEY IS I-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
SET NAME IS SYSTART-VALVE
SET CODE IS 130
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS SYSTEM-STARTUP-KEY-REC
MEMBER IS VALVE-REC MANUAL
ASCENDING KEY IS V-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
SET NAME IS CELL-VALVE
SET CODE IS 132
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS CELL-KEY-REC
MEMBER IS VALVE-REC MANUAL
ASCENDING KEY IS V-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
SET NAME IS PID-VALVE
SET CODE IS 133
MODE IS CHAIN LINKED PRIOR

ORDER IS SORTED
OWNER IS P-ID-KEY-REC
MEMBER IS VALVE-REC MANUAL
ASCENDING KEY IS V-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SCHEMAT-VALVE
SET CODE IS 134
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS SCHEMATIC-KEY-REC
MEMBER IS VALVE-REC MANUAL
ASCENDING KEY IS V-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS LOOPLOG-VALVE
SET CODE IS 135
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS LOOP-LOGIC-DIAG-KEY-REC
MEMBER IS VALVE-REC MANUAL
ASCENDING KEY IS V-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SYSTART-DAMPER
SET CODE IS 136
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS SYSTEM-STARTUP-KEY-REC
MEMBER IS DAMPER-REC MANUAL
ASCENDING KEY IS D-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS CELL-DAMPER
SET CODE IS 138
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS CELL-KEY-REC
MEMBER IS DAMPER-REC MANUAL
ASCENDING KEY IS D-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS PID-DAMPER
SET CODE IS 139
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS P-ID-KEY-REC
MEMBER IS DAMPER-REC MANUAL
ASCENDING KEY IS D-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SCHEMAT-DAMPER
SET CODE IS 140
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS SCHEMATIC-KEY-REC
MEMBER IS DAMPER-REC MANUAL

ASCENDING KEY IS D-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS LOOPLOG-DAMPER
SET CODE IS 141
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS LOOP-LOGIC-DIAG-KEY-REC
MEMBER IS DAMPER-REC MANUAL
ASCENDING KEY IS D-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SYSTART-LOAD
SET CODE IS 142
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS SYSTEM-STARTUP-KEY-REC
MEMBER IS ELECTRICAL-LOAD-REC MANUAL
ASCENDING KEY IS L-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS CELL-LOAD
SET CODE IS 144
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS CELL-KEY-REC
MEMBER IS ELECTRICAL-LOAD-REC MANUAL
ASCENDING KEY IS L-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS PID-LOAD
SET CODE IS 145
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS P-ID-KEY-REC
MEMBER IS ELECTRICAL-LOAD-REC MANUAL
ASCENDING KEY IS L-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SCHEMAT-LOAD
SET CODE IS 146
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS SCHEMATIC-KEY-REC
MEMBER IS ELECTRICAL-LOAD-REC MANUAL
ASCENDING KEY IS L-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS EQU-LOAD
SET CODE IS 147
MODE IS CHAIN LINKED PRIOR
ORDER IS SORTED
OWNER IS EQUIPMENT-KEY-REC
MEMBER IS ELECTRICAL-LOAD-REC MANUAL
ASCENDING KEY IS L-COMP-NUM
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS DOCPART-COMPART
SET CODE IS 148
MODE IS CHAIN
ORDER IS SORTED
OWNER IS DOC-PART-REC
MEMBER IS COMP-PART-REC AUTOMATIC
ASCENDING KEY IS COMPART-COMP-NUM
DUPLICATES NOT ALLOWED
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS COMPART-FEGPART
SET CODE IS 149
MODE IS CHAIN
ORDER IS SORTED
OWNER IS COMP-PART-REC
MEMBER IS FEG-PART-REC AUTOMATIC
ASCENDING KEY IS FEGPART-FEG-NUM
DUPLICATES NOT ALLOWED
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS COMPART-TECHPART
SET CODE IS 150
MODE IS CHAIN
ORDER IS LAST
OWNER IS COMP-PART-REC
MEMBER IS TECH-SPEC-PART-REC MANUAL
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS FEGPART-TECHPART
SET CODE IS 151
MODE IS CHAIN
ORDER IS LAST
OWNER IS FEG-PART-REC
MEMBER IS TECH-SPEC-PART-REC MANUAL
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SHOP-DOCPART
SET CODE IS 152
MODE IS CHAIN LINKED PRIOR
ORDER IS LAST
OWNER IS SHOP-REC
MEMBER IS DOC-PART-REC MANUAL
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS DATE-START
SET CODE IS 153
MODE IS CHAIN LINKED PRIOR
ORDER IS LAST
OWNER IS DATE-REC
MEMBER IS DOC-PART-REC MANUAL
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS DATE-LASTCHG
SET CODE IS 154
MODE IS CHAIN LINKED PRIOR
ORDER IS LAST
OWNER IS DATE-REC

MEMBER IS DOC-PART-REC MANUAL
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS NOT-PROCESSED
SET CODE IS 155
MODE IS CHAIN LINKED PRIOR
ORDER IS LAST
OWNER IS DATE-REC
MEMBER IS DOC-PART-REC MANUAL
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS TAG-DOCPART
SET CODE IS 156
MODE IS CHAIN LINKED PRIOR
ORDER IS LAST
OWNER IS TAGOUT-REC
MEMBER IS DOC-PART-REC MANUAL
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS PRIOR-DOCPART
SET CODE IS 157
MODE IS CHAIN LINKED PRIOR
ORDER IS LAST
OWNER IS PRIORITY-REC
MEMBER IS DOC-PART-REC MANUAL
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS WORKSTAT-DOCPART
SET CODE IS 158
MODE IS CHAIN LINKED PRIOR
ORDER IS LAST
OWNER IS WORK-STATUS-REC
MEMBER IS DOC-PART-REC MANUAL
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS RM-RMSYS
SET CODE IS 159
MODE IS CHAIN
ORDER IS LAST
OWNER IS RM-REC
MEMBER IS RM-SYS-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS RMSYS-RMSYSTART
SET CODE IS 160
MODE IS CHAIN
ORDER IS LAST
OWNER IS RM-SYS-REC
MEMBER IS RM-SYSTART-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS RMSYSTART-DOCPART
SET CODE IS 161
MODE IS CHAIN LINKED PRIOR
ORDER IS LAST
OWNER IS RM-SYSTART-REC
MEMBER IS RELAT-RELMAINT-DOC-REC AUTOMATIC

SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS DOCPART-RMSYSTART
SET CODE IS 162
MODE IS CHAIN
ORDER IS LAST
OWNER IS DOC-PART-REC
MEMBER IS RELAT-RELMAINT-DOC-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS CRITSYS-DOCPART
SET CODE IS 163
MODE IS CHAIN LINKED PRIOR
ORDER IS LAST
OWNER IS CRITSYS-REC
MEMBER IS RELAT-CRITSYS-DOC-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS DOCPART-CRITSYS
SET CODE IS 164
MODE IS CHAIN
ORDER IS LAST
OWNER IS DOC-PART-REC
MEMBER IS RELAT-CRITSYS-DOC-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SYSTEM-SYSTART
SET CODE IS 165
MODE IS CHAIN
ORDER IS LAST
OWNER IS SYS-REC
MEMBER IS SYSTART-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS SYSTART-DOCPART
SET CODE IS 166
MODE IS CHAIN LINKED PRIOR
ORDER IS LAST
OWNER IS SYSTART-REC
MEMBER IS DOC-PART-REC MANUAL
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS COMPP-COMPPN
SET CODE IS 167
MODE IS CHAIN LINKED PRIOR
ORDER IS LAST
OWNER IS COMP-NUM-P-REC
MEMBER IS COMP-NUM-PN-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*

SET NAME IS COMPN-COMPPN
SET CODE IS 168
MODE IS CHAIN LINKED PRIOR
ORDER IS LAST
OWNER IS COMP-NUM-N-REC
MEMBER IS COMP-NUM-PN-REC AUTOMATIC
SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
 SET NAME IS COMPPN-COMP
 SET CODE IS 169
 MODE IS CHAIN LINKED PRIOR
 ORDER IS LAST
 OWNER IS COMP-NUM-PN-REC
 MEMBER IS COMP-NUM-REC AUTOMATIC
 SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
 SET NAME IS COMP-COMPART
 SET CODE IS 170
 MODE IS CHAIN LINKED PRIOR
 ORDER IS LAST
 OWNER IS COMP-NUM-REC
 MEMBER IS COMP-PART-REC AUTOMATIC
 SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
 SET NAME IS OOS-FEGPART
 SET CODE IS 171
 MODE IS CHAIN LINKED PRIOR
 ORDER IS LAST
 OWNER IS SYSTART-REC
 MEMBER IS FEG-PART-REC MANUAL
 SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
 SET NAME IS FEG-FEGPART
 SET CODE IS 172
 MODE IS CHAIN LINKED PRIOR
 ORDER IS LAST
 OWNER IS FEG-KEY-REC
 MEMBER IS FEG-PART-REC AUTOMATIC
 SET OCCURRENCE SELECTION THRU CURRENT OF SET

*
 SET NAME IS TECH-TECHPART
 SET CODE IS 173
 MODE IS CHAIN
 ORDER IS LAST
 OWNER IS TECH-SPEC-KEY-REC
 MEMBER IS TECH-SPEC-PART-REC AUTOMATIC
 SET OCCURRENCE SELECTION THRU CURRENT OF SET

5.2.2 MCI Sub-schema

-SCHEMA(1).MDS-COB

IDENTIFICATION DIVISION.

SUBSCHEMA NAME IS MDS-COB IN IIP FILE 101

OF SCHEMA MOSSCH

HOST LANGUAGE IS ASCII COBOL

KEY FOR COPY IS 'SCHLOK'

LOCK FOR INVOKE IS 'COBLOK'

*

DATA DIVISION.

*

DATA NAME SECTION.

DATA NAMES ARE FEG-AREA,

COMP-AREA,

TECH-AREA,

COMPKEY-AREA,

EQUIP-AREA,

INSTR-AREA,

VALVE-AREA,

DAMPER-AREA,

LOAD-AREA,

FEG-AREA-NAME,

FEG-AREA-KEY

*

AREA SECTION.

AREAS ARE

MDS-FEG,

MDS-COMP,

MDS-TECH,

MDS-COMPKEY,

MDS-EQUIP,

MDS-INSTR,

MDS-VALVE,

MDS-DAMPER,

MDS-LOAD

*

RECORD SECTION.

RECORDS ARE

MASTER-FEG-REC,

FEG-REC,

COMPONENT-REC,

TECH-SPEC-REC,

COM-PROC-REC,

RELAT-FEG-FEG-REC,

RELAT-COMP-FEG-REC,

RELAT-COMP-TECH-REC,

RELAT-FEG-TECH-REC,

EQUIPMENT-REC,

INSTRUMENT-REC,

VALVE-REC,

DAMPER-REC,

ELECTRICAL-LOAD-REC,

COMP-P-KEY-REC,

COMP-N-KEY-REC,

COMP-P-N-KEY-REC,

SYSTEM-KEY-REC,

SYSTEM-STARTUP-KEY-REC,

CELL-KEY-REC,

P-ID-KEY-REC,

SCHEMATIC-KEY-REC,

EQUIPMENT-KEY-REC,
LOOP-LOGIC-DIAG-KEY-REC,
LOOP-KEY-REC,
PANEL-KEY-REC,
CONTROL-REC

*

RECORD NAME IS FEG-REC

ITEMS ARE ALL

WITH FEG-FEG-NO-REDEFINED REDEFINES FEG-FEG-NO

10	FEG-FEG-NO-1	PIC X(3)
10	FEG-FEG-NO-2	PIC X(3)
10	FEG-FEG-NO-3	PIC X(4)

RECORD NAME IS COMPONENT-REC

ITEMS ARE ALL

WITH COMP-COMP-NO-REDEFINED REDEFINES COMP-COMP-NO

10	COMP-COMP-NO-1	PIC X(5)
10	COMP-COMP-NO-2	PIC X(5)
10	COMP-COMP-NO-3	PIC X(2)

RECORD NAME IS RELAT-COMP-FEG-REC

ITEMS ARE ALL

WITH RELAT2-COMP-NUM-REDEF REDEFINES RELAT2-COMP-NUM

10	RELAT2-COMP-NUM-1	PIC X(5)
10	RELAT2-COMP-NUM-2	PIC X(5)
10	RELAT2-COMP-NUM-3	PIC X(2)

RECORD NAME IS RELAT-COMP-TECH-REC

ITEMS ARE ALL

WITH RELAT3-COMP-NUM-REDEF REDEFINES RELAT3-COMP-NUM

10	RELAT3-COMP-NUM-1	PIC X(5)
10	RELAT3-COMP-NUM-2	PIC X(5)
10	RELAT3-COMP-NUM-3	PIC X(2)

RECORD NAME IS EQUIPMENT-REC

ITEMS ARE ALL

WITH E-COMP-NUM-REDEFINED REDEFINES E-COMP-NUM

10	E-COMP-NUM-1	PIC X(5)
10	E-COMP-NUM-2	PIC X(5)
10	E-COMP-NUM-3	PIC X(2)

RECORD NAME IS INSTRUMENT-REC

ITEMS ARE ALL

WITH I-COMP-NUM-REDEFINED REDEFINES I-COMP-NUM

10	I-COMP-NUM-1	PIC X(5)
10	I-COMP-NUM-2	PIC X(5)
10	I-COMP-NUM-3	PIC X(2)

RECORD NAME IS VALVE-REC

ITEMS ARE ALL

WITH V-COMP-NUM-REDEFINED REDEFINES V-COMP-NUM

10	V-COMP-NUM-1	PIC X(5)
10	V-COMP-NUM-2	PIC X(5)
10	V-COMP-NUM-3	PIC X(2)

RECORD NAME IS DAMPER-REC

ITEMS ARE ALL

WITH D-COMP-NUM-REDEFINED REDEFINES D-COMP-NUM

10	D-COMP-NUM-1	PIC X(5)
10	D-COMP-NUM-2	PIC X(5)
10	D-COMP-NUM-3	PIC X(2)

RECORD NAME IS ELECTRICAL-LOAD-REC

ITEMS ARE ALL

WITH L-COMP-NUM-REDEFINED REDEFINES L-COMP-NUM

10	L-COMP-NUM-1	PIC X(5)
10	L-COMP-NUM-2	PIC X(5)
10	L-COMP-NUM-3	PIC X(2)

RECORD NAME IS COMP-P-N-KEY-REC

ITEMS ARE ALL

WITH COMPPN-COMP-NUM-1-2-REDEF REDEFINES COMPPN-COMP-NUM-1-2

10	COMPPN-COMP-NUM-1	PIC X(5)
10	COMPPN-COMP-NUM-2	PIC X(5)

RECORD NAME IS EQUIPMENT-KEY-REC

ITEMS ARE ALL

WITH EQU-EQUIPMENT-NUM-REDEF REDEFINES EQU-EQUIPMENT-NUM

10	EQU-EQUIPMENT-NUM-1	PIC X(5)
10	EQU-EQUIPMENT-NUM-2	PIC X(5)
10	EQU-EQUIPMENT-NUM-3	PIC X(2)

RECORD NAME IS PANEL-KEY-REC

ITEMS ARE ALL

WITH PANEL-PANEL-REDEF REDEFINES PANEL-PANEL

10	PANEL-PANEL-1	PIC X(2)
10	PANEL-PANEL-2	PIC X(4)
10	PANEL-PANEL-3	PIC X(2)

SET SECTION.

SETS ARE

MASTER-FEG,
 SUPERIOR-FEG,
 INFERIOR-FEG,
 FEG-COMP,
 COMP-FEG,
 COMP-TECH,
 TECH-COMP,
 FEG-TECH,
 TECH-FEG,
 TECH-PROC,
 COMP-P-COMP-PN,
 COMP-N-COMP-PN,
 COMP-PN-COMP,
 SYS-SYSTART,
 SYSTART-EQUIP,
 CELL-EQUIP,
 PID-EQUIP,
 SCHEMAT-EQUIP,
 SYSTART-INSTR,
 CELL-INSTR,
 PID-INSTR,
 SCHEMAT-INSTR,
 EQU-INSTR,
 LOOPLOG-INSTR,
 LOOP-INSTR,
 PANEL-INSTR,
 SYSTART-VALVE,
 CELL-VALVE,
 PID-VALVE,
 SCHEMAT-VALVE,
 LOOPLOG-VALVE,
 SYSTART-DAMPER,
 CELL-DAMPER,
 PID-DAMPER,
 SCHEMAT-DAMPER,
 LOOPLOG-DAMPER,

SYSTART-LOAD,
CELL-LOAD,
PID-LOAD,
SCHEMAT-LOAD,
EQU-LOAD

POS-SCHEMA-MDS-COB2

-SCHEMA(1).MDS-COB3

IDENTIFICATION DIVISION.

SUBSCHEMA NAME IS MDS-COB3 IN TIP FILE 101
OF SCHEMA MDSSCH
HOST LANGUAGE IS ASCII COBOL
KEY FOR COPY IS 'SCHLOK'
LOCK FOR INVOKE IS 'COB3LOK'

*

DATA DIVISION.

*

DATA NAME SECTION.

DATA NAMES ARE FEG-AREA,
COMP-AREA,
TECH-AREA,
COMPKEY-AREA,
EQUIP-AREA,
INSTR-AREA,
VALVE-AREA,
DAMPER-AREA,
LOAD-AREA,
DOC-AREA,
DOCKEY-AREA,
FEG-AREA-NAME,
DATE-AREA-NAME,
SCREEN-AREA-NAME,
FEG-AREA-KEY,
DATE-AREA-KEY,
SCREEN-AREA-KEY

*

AREA SECTION.

AREAS ARE

MDS-FEG,
MDS-COMP,
MDS-TECH,
MDS-COMPKEY,
MDS-EQUIP,
MDS-INSTR,
MDS-VALVE,
MDS-DAMPER,
MDS-LOAD,
MDS-DOC,
MDS-SHOP,
MDS-INDX1,
MDS-DATE,
MDS-DOCKEY,
MDS-SCREEN

*

RECORD SECTION.

RECORDS ARE

MASTER-FEG-REC,
FEG-REC,
COMPONENT-REC,
TECH-SPEC-REC,
COM-PROC-REC,
RELAT-FEG-FEG-REC,
RELAT-COMP-FEG-REC,
RELAT-COMP-TECH-REC,
RELAT-FEG-TECH-REC,
EQUIPMENT-REC,

INSTRUMENT-REC,
 VALVE-REC,
 DAMPER-REC,
 ELECTRICAL-LOAD-REC,
 COMP-P-KEY-REC,
 COMP-N-KEY-REC,
 COMP-P-N-KEY-REC,
 SYSTEM-KEY-REC,
 SYSTEM-STARTUP-KEY-REC,
 CELL-KEY-REC,
 P-ID-KEY-REC,
 SCHEMATIC-KEY-REC,
 EQUIPMENT-KEY-REC,
 LOOP-LOGIC-DIAG-KEY-REC,
 LOOP-KEY-REC,
 PANEL-KEY-REC,
 CONTROL-REC,
 DOC-PART-REC,
 COMP-PART-REC,
 FEG-PART-REC,
 TECH-SPEC-PART-REC,
 SHOP-REC,
 DATE-REC,
 TAGOUT-REC,
 PRIORITY-REC,
 WORK-STATUS-REC,
 RM-REC,
 RM-SYS-REC,
 RM-SYSTART-REC,
 RELAT-RELMAINT-DOC-REC,
 CRITSYS-REC,
 RELAT-CRITSYS-DOC-REC,
 SYS-REC,
 SYSTART-REC,
 COMP-NUM-P-REC,
 COMP-NUM-N-REC,
 COMP-NUM-PN-REC,
 COMP-NUM-REC,
 FEG-KEY-REC,
 TECH-SPEC-KEY-REC,
 SCREEN-REC

*

RECORD NAME IS FEG-REC

ITEMS ARE ALL

WITH FEG-FEG-NO-REDEFINED REDEFINES FEG-FEG-NO

10 FEG-FEG-NO-1	PIC X(3)
10 FEG-FEG-NO-2	PIC X(3)
10 FEG-FEG-NO-3	PIC X(4)

RECORD NAME IS COMPONENT-REC

ITEMS ARE ALL

WITH COMP-COMP-NO-REDEFINED REDEFINES COMP-COMP-NO

10 COMP-COMP-NO-1	PIC X(5)
10 COMP-COMP-NO-2	PIC X(5)
10 COMP-COMP-NO-3	PIC X(2)

RECORD NAME IS RELAT-COMP-FEG-REC

ITEMS ARE ALL

WITH RELAT2-COMP-NUM-REDEF REDEFINES RELAT2-COMP-NUM

10	RELAT2-COMP-NUM-1	PIC X(5)
10	RELAT2-COMP-NUM-2	PIC X(5)
10	RELAT2-COMP-NUM-3	PIC X(2)
RECORD NAME IS RELAT-COMP-TECH-REC		
ITEMS ARE ALL		
WITH RELAT3-COMP-NUM-REDEF REDEFINES RELAT3-COMP-NUM		
10	RELAT3-COMP-NUM-1	PIC X(5)
10	RELAT3-COMP-NUM-2	PIC X(5)
10	RELAT3-COMP-NUM-3	PIC X(2)
RECORD NAME IS EQUIPMENT-REC		
ITEMS ARE ALL		
WITH E-COMP-NUM-REDEFINED REDEFINES E-COMP-NUM		
10	E-COMP-NUM-1	PIC X(5)
10	E-COMP-NUM-2	PIC X(5)
10	E-COMP-NUM-3	PIC X(2)
RECORD NAME IS INSTRUMENT-REC		
ITEMS ARE ALL		
WITH I-COMP-NUM-REDEFINED REDEFINES I-COMP-NUM		
10	I-COMP-NUM-1	PIC X(5)
10	I-COMP-NUM-2	PIC X(5)
10	I-COMP-NUM-3	PIC X(2)
RECORD NAME IS VALVE-REC		
ITEMS ARE ALL		
WITH V-COMP-NUM-REDEFINED REDEFINES V-COMP-NUM		
10	V-COMP-NUM-1	PIC X(5)
10	V-COMP-NUM-2	PIC X(5)
10	V-COMP-NUM-3	PIC X(2)
RECORD NAME IS DAMPER-REC		
ITEMS ARE ALL		
WITH D-COMP-NUM-REDEFINED REDEFINES D-COMP-NUM		
10	D-COMP-NUM-1	PIC X(5)
10	D-COMP-NUM-2	PIC X(5)
10	D-COMP-NUM-3	PIC X(2)
RECORD NAME IS ELECTRICAL-LOAD-REC		
ITEMS ARE ALL		
WITH L-COMP-NUM-REDEFINED REDEFINES L-COMP-NUM		
10	L-COMP-NUM-1	PIC X(5)
10	L-COMP-NUM-2	PIC X(5)
10	L-COMP-NUM-3	PIC X(2)
RECORD NAME IS COMP-P-N-KEY-REC		
ITEMS ARE ALL		
WITH COMPPN-COMP-NUM-1-2-REDEF REDEFINES COMPPN-COMP-NUM-1-2		
10	COMPPN-COMP-NUM-1	PIC X(5)
10	COMPPN-COMP-NUM-2	PIC X(5)
RECORD NAME IS EQUIPMENT-KEY-REC		
ITEMS ARE ALL		
WITH EQU-EQUIPMENT-NUM-REDEF REDEFINES EQU-EQUIPMENT-NUM		
10	EQU-EQUIPMENT-NUM-1	PIC X(5)
10	EQU-EQUIPMENT-NUM-2	PIC X(5)
10	EQU-EQUIPMENT-NUM-3	PIC X(2)
RECORD NAME IS PANEL-KEY-REC		
ITEMS ARE ALL		
WITH PANEL-PANEL-REDEF REDEFINES PANEL-PANEL		
10	PANEL-PANEL-1	PIC X(2)
10	PANEL-PANEL-2	PIC X(4)
10	PANEL-PANEL-3	PIC X(2)
RECORD NAME IS DOC-PART-REC		

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ITEMS ARE ALL
WITH DOCPART-DOC-NUM-REDEF REDEFINES DOCPART-DOC-NUM
    10 DOCPART-DOC-NUM-1 PIC X(2)
    10 DOCPART-DOC-NUM-2 PIC X(5)
RECORD NAME IS SHOP-REC
ITEMS ARE ALL
WITH SHOP-SHOP-NUM-REDEF REDEFINES SHOP-SHOP-NUM
    10 SHOP-SHOP-NUM-1 PIC X(2)
    10 SHOP-SHOP-NUM-2 PIC X
RECORD NAME IS TAGOUT-REC
ITEMS ARE ALL
WITH TAG-TAGOUT-NUM-REDEF REDEFINES TAG-TAGOUT-NUM
    10 TAG-TAGOUT-NUM-1 PIC X(2)
    10 TAG-TAGOUT-NUM-2 PIC X(5)
RECORD NAME IS RM-SYS-REC
ITEMS ARE ALL
WITH RMSYS-REL-MAINT-CODE-1-2-REDEF REDEFINES
    RMSYS-REL-MAINT-CODE-1-2
    10 RMSYS-REL-MAINT-CODE-1 PIC X(2)
    10 RMSYS-REL-MAINT-CODE-2 PIC X(2)
RECORD NAME IS RM-SYSTART-REC
ITEMS ARE ALL
WITH RMSYSTART-REL-MAINT-CODE-REDEF REDEFINES
    RMSYSTART-REL-MAINT-CODE
    10 RMSYSTART-REL-MAINT-CODE-1 PIC X(2)
    10 RMSYSTART-REL-MAINT-CODE-2 PIC X(2)
    10 RMSYSTART-REL-MAINT-CODE-3 PIC X
RECORD NAME IS SYSTART-REC
ITEMS ARE ALL
WITH SYSTART-SYS-START-CODE-RED REDEFINES
    SYSTART-SYS-START-CODE
    10 SYSTART-SYS-START-CODE-1 PIC X(2)
    10 SYSTART-SYS-START-CODE-2 PIC X
RECORD NAME IS COMP-NUM-PN-REC
ITEMS ARE ALL
WITH PNCOMP-COMP-NUM-1-2-REDEF REDEFINES
    PNCOMP-COMP-NUM-1-2
    10 PNCOMP-COMP-NUM-1 PIC X(5)
    10 PNCOMP-COMP-NUM-2 PIC X(5)
RECORD NAME IS COMP-NUM-REC
ITEMS ARE ALL
WITH COMPNUM-COMP-NUM-REDEF REDEFINES COMPNUM-COMP-NUM
    10 COMPNUM-COMP-NUM-1 PIC X(5)
    10 COMPNUM-COMP-NUM-2 PIC X(5)
    10 COMPNUM-COMP-NUM-3 PIC X(2)
RECORD NAME IS FEG-KEY-REC
ITEMS ARE ALL
WITH FEGKEY-FEG-NUM-REDEF REDEFINES FEGKEY-FEG-NUM
    10 FEGKEY-FEG-NUM-1 PIC X(3)
    10 FEGKEY-FEG-NUM-2 PIC X(3)
    10 FEGKEY-FEG-NUM-3 PIC X(4)
SET SECTION.
SETS ARE
    MASTER-FEG,
    SUPERIOR-FEG,
    INFERIOR-FEG,
    FEG-COMP,
    COMP-FEG,

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COMP-TECH,
TECH-COMP,
FEG-TECH,
TECH-FEG,
TECH-PROC,
COMP-P-COMP-PN,
COMP-N-COMP-PN,
COMP-PN-COMP,
SYS-SYSTART,
SYSTART-EQUIP,
CELL-EQUIP,
PID-EQUIP,
SCHEMAT-EQUIP,
SYSTART-INSTR,
CELL-INSTR,
PID-INSTR,
SCHEMAT-INSTR,
EQU-INSTR,
LOOPLOG-INSTR,
LOOP-INSTR,
PANEL-INSTR,
SYSTART-VALVE,
CELL-VALVE,
PID-VALVE,
SCHEMAT-VALVE,
LOOPLOG-VALVE,
SYSTART-DAMPER,
CELL-DAMPER,
PID-DAMPER,
SCHEMAT-DAMPER,
LOOPLOG-DAMPER,
SYSTART-LOAD,
CELL-LOAD,
PID-LOAD,
SCHEMAT-LOAD,
EQU-LOAD,
DOCPART-COMPART,
COMPART-FEGPART,
COMPART-TECHPART,
FEGPART-TECHPART,
SHOP-DOCPART,
DATE-START,
DATE-LASTCHG,
NOT-PROCESSED,
TAG-DOCPART,
PRIOR-DOCPART,
WORKSTAT-DOCPART,
RM-RMSYS,
RMSYS-RMSYSTART,
RMSYSTART-DOCPART,
DOCPART-RMSYSTART,
CRITSYS-DOCPART,
DOCPART-CRITSYS,
SYSTEM-SYSTART,
SYSTART-DOCPART,
COMPP-COMPPN,
COMPN-COMPPN,

COMPPN-COMP,
COMP-COMPART,
OOS-FEGPART,
FEG-FEGPART,
TECH-TECHPART

1DS-SCHEMA.MDS-QLP

5.2.3 WCL Sub-schema

-SCHEMA(1).MDS-COB2

IDENTIFICATION DIVISION.

SUBSCHEMA NAME IS MDS-COB2 IN TIP FILE 101

OF SCHEMA MDSSCH

HOST LANGUAGE IS ASCII COBOL

KEY FOR COPY IS 'SCHLOK'

LOCK FOR INVOKE IS 'COB2LOK'

*

DATA DIVISION.

*

DATA NAME SECTION.

DATA NAMES ARE COMP-AREA,

DOC-AREA,

DOCKEY-AREA,

DATE-AREA-NAME,

SCREEN-AREA-NAME,

DATE-AREA-KEY,

SCREEN-AREA-KEY

*

AREA SECTION.

AREAS ARE

MDS-COMP,

MDS-DOC,

MDS-SHOP,

MDS-INDEX,

MDS-DATE,

MDS-DOCKEY,

MDS-SCREEN

*

RECORD SECTION.

RECORDS ARE

CONTROL-REC,

DOC-PART-REC,

COMP-PART-REC,

FEG-PART-REC,

TECH-SPEC-PART-REC,

SHOP-REC,

DATE-REC,

TAGOUT-REC,

PRIORITY-REC,

WORK-STATUS-REC,

RM-REC,

RM-SYS-REC,

RM-SYSTART-REC,

RELAT-RELMAINT-DOC-REC,

CRITSYS-REC,

RELAT-CRITSYS-DOC-REC,

SYS-REC,

SYSTART-REC,

COMP-NUM-P-REC,

COMP-NUM-N-REC,

COMP-NUM-PN-REC,

COMP-NUM-REC,

FEG-KEY-REC,

TECH-SPEC-KEY-REC,

SCREEN-REC

*

RECORD NAME IS DOC-PART-REC

ITEMS ARE ALL

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WITH DOCPART-DOC-NUM-REDEF REDEFINES DOCPART-DOC-NUM
    10 DOCPART-DOC-NUM-1          PIC X(2)
    10 DOCPART-DOC-NUM-2          PIC X(5)
RECORD NAME IS SHOP-REC
ITEMS ARE ALL
WITH SHOP-SHOP-NUM-REDEF REDEFINES SHOP-SHOP-NUM
    10 SHOP-SHOP-NUM-1          PIC X(2)
    10 SHOP-SHOP-NUM-2          PIC X
RECORD NAME IS TAGOUT-REC
ITEMS ARE ALL
WITH TAG-TAGOUT-NUM-REDEF REDEFINES TAG-TAGOUT-NUM
    10 TAG-TAGOUT-NUM-1         PIC X(2)
    10 TAG-TAGOUT-NUM-2         PIC X(5)
RECORD NAME IS RM-SYS-REC
ITEMS ARE ALL
WITH RMSYS-REL-MAINT-CODE-1-2-REDEF REDEFINES
                                RMSYS-REL-MAINT-CODE-1-2
    10 RMSYS-REL-MAINT-CODE-1    PIC X(2)
    10 RMSYS-REL-MAINT-CODE-2    PIC X(2)
RECORD NAME IS RM-SYSTART-REC
ITEMS ARE ALL
WITH RMSYSTART-REL-MAINT-CODE-REDEF REDEFINES
                                RMSYSTART-REL-MAINT-CODE
    10 RMSYSTART-REL-MAINT-CODE-1 PIC X(2)
    10 RMSYSTART-REL-MAINT-CODE-2 PIC X(2)
    10 RMSYSTART-REL-MAINT-CODE-3 PIC X
RECORD NAME IS SYSTART-REC
ITEMS ARE ALL
WITH SYSTART-SYS-START-CODE-RED REDEFINES
                                SYSTART-SYS-START-CODE
    10 SYSTART-SYS-START-CODE-1   PIC X(2)
    10 SYSTART-SYS-START-CODE-2   PIC X
RECORD NAME IS COMP-NUM-PN-REC
ITEMS ARE ALL
WITH PNCOMP-COMP-NUM-1-2-REDEF REDEFINES
                                PNCOMP-COMP-NUM-1-2
    10 PNCOMP-COMP-NUM-1          PIC X(5)
    10 PNCOMP-COMP-NUM-2          PIC X(5)
RECORD NAME IS COMP-NUM-REC
ITEMS ARE ALL
WITH COMPNUM-COMP-NUM-REDEF REDEFINES COMPNUM-COMP-NUM
    10 COMPNUM-COMP-NUM-1         PIC X(5)
    10 COMPNUM-COMP-NUM-2         PIC X(5)
    10 COMPNUM-COMP-NUM-3         PIC X(2)
RECORD NAME IS FEG-KEY-REC
ITEMS ARE ALL
WITH FEGKEY-FEG-NUM-REDEF REDEFINES FEGKEY-FEG-NUM
    10 FEGKEY-FEG-NUM-1          PIC X(3)
    10 FEGKEY-FEG-NUM-2          PIC X(3)
    10 FEGKEY-FEG-NUM-3          PIC X(4)
SET SECTION.
SETS ARE
    DOCPART-COMPART,
    COMPART-FEGPART,
    COMPART-TECHPART,
    FEGPART-TECHPART,
    SHOP-DOCPART,
    DATE-START,

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DATE-LASTCHG,
NOT-PROCESSED,
TAG-DOCPART,
PRIOR-DOCPART,
WCRKSTAT-DOCPART,
RM-RMSYS,
RMSYS-RMSYSTART,
RMSYSTART-DOCPART,
DOCPART-RMSYSTART,
CRITSYS-DOCPART,
DOCPART-CRITSYS,
SYSTEM-SYSTART,
SYSTART-DOCPART,
COMPP-COMPPN,
COMPN-COMPPN,
COMPPN-COMP,
COMP-COMPART,
OOS-FEGPART,
FEG-FEGPART,
TECH-TECHPART

MDS-SCHEMA.MDS-COB3

5.2.4 MCI/QLP Sub-schema

-SCHEMA(1).MDS-QLP

IDENTIFICATION DIVISION.

SUBSCHEMA NAME IS MDS-QLP IN TIP FILE 101

OF SCHEMA MDSSCH

HOST LANGUAGE IS QLP

KEY FOR COPY IS 'SCHLOK'

LOCK FOR INVOKE IS 'QLPLOCK'

DATA DIVISION.

DATA NAME SECTION.

DATA NAMES ARE FEG-AREA,
COMP-AREA,
TECH-AREA,
COMPKEY-AREA,
EQUIP-AREA,
INSTR-AREA,
VALVE-AREA,
DAMPER-AREA,
LOAD-AREA,
FEG-AREA-NAME,
FEG-AREA-KEY

AREA SECTION.

AREAS ARE

MDS-FEG,
MDS-COMP,
MDS-TECH,
MDS-COMPKEY,
MDS-EQUIP,
MDS-INSTR,
MDS-VALVE,
MDS-DAMPER,
MDS-LOAD

RECORD SECTION.

RECORDS ARE

MASTER-FEG-REC,
FEG-REC,
COMPONENT-REC,
TECH-SPEC-REC,
COM-PROC-REC,
RELAT-FEG-FEG-REC,
RELAT-COMP-FEG-REC,
RELAT-COMP-TECH-REC,
RELAT-FEG-TECH-REC,
EQUIPMENT-REC,
INSTRUMENT-REC,
VALVE-REC,
DAMPER-REC,
ELECTRICAL-LOAD-REC,
COMP-P-KEY-REC,
COMP-N-KEY-REC,
COMP-P-N-KEY-REC,
SYSTEM-KEY-REC,
SYSTEM-STARTUP-KEY-REC,
CELL-KEY-REC,
P-ID-KEY-REC,
SCHEMATIC-KEY-REC,
EQUIPMENT-KEY-REC,
LOOP-LOGIC-DIAG-KEY-REC,
LOOP-KEY-REC,
PANEL-KEY-REC,

SET SECTION.
SETS ARE

CONTROL-REC

MASTER-FEG,
SUPERIOR-FEG,
INFERIOR-FEG,
FEG-COMP,
COMP-FEG,
COMP-TECH,
TECH-COMP,
FEG-TECH,
TECH-FEG,
TECH-PROC,
COMP-P-COMP-PN,
COMP-N-COMP-PN,
COMP-PN-COMP,
SYS-SYSTART,
SYSTART-EQUIP,
CELL-EQUIP,
PID-EQUIP,
SCHEMAT-EQUIP,
SYSTART-INSTR,
CELL-INSTR,
PID-INSTR,
SCHEMAT-INSTR,
EQU-INSTR,
LOOPLOG-INSTR,
LOOP-INSTR,
PANEL-INSTR,
SYSTART-VALVE,
CELL-VALVE,
PID-VALVE,
SCHEMAT-VALVE,
LOOPLOG-VALVE,
SYSTART-DAMPER,
CELL-DAMPER,
PID-DAMPER,
SCHEMAT-DAMPER,
LOOPLOG-DAMPER,
SYSTART-LOAD,
CELL-LOAD,
PID-LOAD,
SCHEMAT-LOAD,
EQU-LOAD

QLP SECTION.

PATH NAME IS FEG

ROOT IS FEG-REC

FETCH NEXT CURRENCY ALLOWED

PATH NAME IS COMPONENT

ROOT IS COMPONENT-REC

FETCH NEXT CURRENCY ALLOWED

PATH NAME IS TECH

ROOT IS TECH-SPEC-REC

FETCH NEXT CURRENCY ALLOWED

PATH NAME IS MASTER-FEG

ROOT IS MASTER-FEG-REC

FETCH NEXT CURRENCY ALLOWED

THRU MASTER-FEG TO FEG-REC

PATH NAME IS FEG-S
ROOT IS FEG-REC
FETCH NEXT CURRENCY ALLOWED
THRU SUPERIOR-FEG TO RELAT-FEG-FEG-REC

PATH NAME IS S-FEG
ROOT IS RELAT-FEG-FEG-REC
FETCH NEXT CURRENCY ALLOWED
THRU SUPERIOR-FEG TO FEG-REC

PATH NAME IS FEG-I
ROOT IS FEG-REC
FETCH NEXT CURRENCY ALLOWED
THRU INFERIOR-FEG TO RELAT-FEG-FEG-REC

PATH NAME IS I-FEG
ROOT IS RELAT-FEG-FEG-REC
FETCH NEXT CURRENCY ALLOWED
THRU INFERIOR-FEG TO FEG-REC

PATH NAME IS FEG-COMP
ROOT IS FEG-REC
FETCH NEXT CURRENCY ALLOWED
THRU FEG-COMP TO RELAT-COMP-FEG-REC
THRU COMP-FEG TO COMPONENT-REC

PATH NAME IS FEG-TECH
ROOT IS FEG-REC
FETCH NEXT CURRENCY ALLOWED
THRU FEG-TECH TO RELAT-FEG-TECH-REC
THRU TECH-FEG TO TECH-SPEC-REC

PATH NAME IS COMP-FEG
ROOT IS COMPONENT-REC
FETCH NEXT CURRENCY ALLOWED
THRU COMP-FEG TO RELAT-COMP-FEG-REC
THRU FEG-COMP TO FEG-REC

PATH NAME IS COMP-TECH
ROOT IS COMPONENT-REC
FETCH NEXT CURRENCY ALLOWED
THRU COMP-TECH TO RELAT-COMP-TECH-REC
THRU TECH-COMP TO TECH-SPEC-REC

PATH NAME IS TECH-COMP
ROOT IS TECH-SPEC-REC
FETCH NEXT CURRENCY ALLOWED
THRU TECH-COMP TO RELAT-COMP-TECH-REC
THRU COMP-TECH TO COMPONENT-REC

PATH NAME IS TECH-FEG
ROOT IS TECH-SPEC-REC
FETCH NEXT CURRENCY ALLOWED
THRU TECH-FEG TO RELAT-FEG-TECH-REC
THRU FEG-TECH TO FEG-REC

PATH NAME IS TECH-PROC
ROOT IS TECH-SPEC-REC
FETCH NEXT CURRENCY ALLOWED
THRU TECH-PROC TO COM-PROC-REC

PATH NAME IS EQUIP
ROOT IS EQUIPMENT-REC
FETCH NEXT CURRENCY ALLOWED

PATH NAME IS INSTR
ROOT IS INSTRUMENT-REC
FETCH NEXT CURRENCY ALLOWED

PATH NAME IS VALVE

ROOT IS VALVE-REC
 FETCH NEXT CURRENCY ALLOWED
 PATH NAME IS DAMPER
 ROOT IS DAMPER-REC
 FETCH NEXT CURRENCY ALLOWED
 PATH NAME IS LOAD
 ROOT IS ELECTRICAL-LOAD-REC
 FETCH NEXT CURRENCY ALLOWED
 PATH NAME IS COMP-PN-EQUI
 ROOT IS COMP-P-N-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMP-PN-COMP TO EQUIPMENT-REC
 PATH NAME IS COMP-P-EQUIP
 ROOT IS COMP-P-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMP-P-COMP-PN TO COMP-P-N-KEY-REC
 THRU COMP-PN-COMP TO EQUIPMENT-REC
 PATH NAME IS COMP-N-EQUIP
 ROOT IS COMP-N-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMP-N-COMP-PN TO COMP-P-N-KEY-REC
 THRU COMP-PN-COMP TO EQUIPMENT-REC
 PATH NAME IS SYSTART-EQUI
 ROOT IS SYSTEM-STARTUP-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU SYSTART-EQUIP TO EQUIPMENT-REC
 PATH NAME IS SYS-EQUIP
 ROOT IS SYSTEM-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU SYS-SYSTART TO SYSTEM-STARTUP-KEY-REC
 THRU SYSTART-EQUIP TO EQUIPMENT-REC
 PATH NAME IS CELL-EQUIP
 ROOT IS CELL-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU CELL-EQUIP TO EQUIPMENT-REC
 PATH NAME IS PID-EQUIP
 ROOT IS P-ID-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU PID-EQUIP TO EQUIPMENT-REC
 PATH NAME IS SCHEMAT-EQUI
 ROOT IS SCHEMATIC-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU SCHEMAT-EQUIP TO EQUIPMENT-REC
 PATH NAME IS COMP-PN-INST
 ROOT IS COMP-P-N-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMP-PN-COMP TO INSTRUMENT-REC
 PATH NAME IS COMP-P-INSTR
 ROOT IS COMP-P-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMP-P-COMP-PN TO COMP-P-N-KEY-REC
 THRU COMP-PN-COMP TO INSTRUMENT-REC
 PATH NAME IS COMP-N-INSTR
 ROOT IS COMP-N-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMP-N-COMP-PN TO COMP-P-N-KEY-REC
 THRU COMP-PN-COMP TO INSTRUMENT-REC

PATH NAME IS SYSTART-INST
 ROOT IS SYSTEM-STARTUP-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU SYSTART-INSTR TO INSTRUMENT-REC
 PATH NAME IS SYS-INSTR
 ROOT IS SYSTEM-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU SYS-SYSTART TO SYSTEM-STARTUP-KEY-REC
 THRU SYSTART-INSTR TO INSTRUMENT-REC
 PATH NAME IS CELL-INSTR
 ROOT IS CELL-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU CELL-INSTR TO INSTRUMENT-REC
 PATH NAME IS PID-INSTR
 ROOT IS P-ID-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU PID-INSTR TO INSTRUMENT-REC
 PATH NAME IS SCHEMAT-INST
 ROOT IS SCHEMATIC-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU SCHEMAT-INSTR TO INSTRUMENT-REC
 PATH NAME IS EQU-INSTR
 ROOT IS EQUIPMENT-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU EQU-INSTR TO INSTRUMENT-REC
 PATH NAME IS LOOPLOG-INST
 ROOT IS LOOP-LOGIC-DIAG-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU LOOPLOG-INSTR TO INSTRUMENT-REC
 PATH NAME IS LOOP-INSTR
 ROOT IS LOOP-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU LOOP-INSTR TO INSTRUMENT-REC
 PATH NAME IS PANEL-INSTR
 ROOT IS PANEL-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU PANEL-INSTR TO INSTRUMENT-REC
 PATH NAME IS COMP-PN-VALV
 ROOT IS COMP-P-N-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMP-PN-COMP TO VALVE-REC
 PATH NAME IS COMP-P-VALVE
 ROOT IS COMP-P-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMP-P-COMP-PN TO COMP-P-N-KEY-REC
 THRU COMP-PN-COMP TO VALVE-REC
 PATH NAME IS COMP-N-VALVE
 ROOT IS COMP-N-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMP-N-COMP-PN TO COMP-P-N-KEY-REC
 THRU COMP-PN-COMP TO VALVE-REC
 PATH NAME IS SYSTART-VALV
 ROOT IS SYSTEM-STARTUP-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU SYSTART-VALVE TO VALVE-REC
 PATH NAME IS SYS-VALVE
 ROOT IS SYSTEM-KEY-REC

```

    FETCH NEXT CURRENCY ALLOWED
    THRU SYS-SYSTART      TO  SYSTEM-STARTUP-KEY-REC
    THRU SYSTART-VALVE    TO  VALVE-REC
PATH NAME IS CELL-VALVE
    ROOT IS CELL-KEY-REC
    FETCH NEXT CURRENCY ALLOWED
    THRU CELL-VALVE      TO  VALVE-REC
PATH NAME IS PID-VALVE
    ROOT IS P-ID-KEY-REC
    FETCH NEXT CURRENCY ALLOWED
    THRU PID-VALVE      TO  VALVE-REC
PATH NAME IS SCHEMAT-VALV
    ROOT IS SCHEMATIC-KEY-REC
    FETCH NEXT CURRENCY ALLOWED
    THRU SCHEMAT-VALVE  TO  VALVE-REC
PATH NAME IS LOOPLOG-VALV
    ROOT IS LOOP-LOGIC-DIAG-KEY-REC
    FETCH NEXT CURRENCY ALLOWED
    THRU LOOPLOG-VALVE  TO  VALVE-REC
PATH NAME IS COMP-PN-DAMP
    ROOT IS COMP-P-N-KEY-REC
    FETCH NEXT CURRENCY ALLOWED
    THRU COMP-PN-COMP    TO  DAMPER-REC
PATH NAME IS COMP-P-DAMPE
    ROOT IS COMP-P-KEY-REC
    FETCH NEXT CURRENCY ALLOWED
    THRU COMP-P-COMP-PN  TO  COMP-P-N-KEY-REC
    THRU COMP-PN-COMP    TO  DAMPER-REC
PATH NAME IS COMP-N-DAMPE
    ROOT IS COMP-N-KEY-REC
    FETCH NEXT CURRENCY ALLOWED
    THRU COMP-N-COMP-PN  TO  COMP-P-N-KEY-REC
    THRU COMP-PN-COMP    TO  DAMPER-REC
PATH NAME IS SYSTART-DAMP
    ROOT IS SYSTEM-STARTUP-KEY-REC
    FETCH NEXT CURRENCY ALLOWED
    THRU SYSTART-DAMPER  TO  DAMPER-REC
PATH NAME IS SYS-DAMPER
    ROOT IS SYSTEM-KEY-REC
    FETCH NEXT CURRENCY ALLOWED
    THRU SYS-SYSTART      TO  SYSTEM-STARTUP-KEY-REC
    THRU SYSTART-DAMPER  TO  DAMPER-REC
PATH NAME IS CELL-DAMPER
    ROOT IS CELL-KEY-REC
    FETCH NEXT CURRENCY ALLOWED
    THRU CELL-DAMPER     TO  DAMPER-REC
PATH NAME IS PID-DAMPER
    ROOT IS P-ID-KEY-REC
    FETCH NEXT CURRENCY ALLOWED
    THRU PID-DAMPER      TO  DAMPER-REC
PATH NAME IS SCHEMAT-DAMP
    ROOT IS SCHEMATIC-KEY-REC
    FETCH NEXT CURRENCY ALLOWED
    THRU SCHEMAT-DAMPER  TO  DAMPER-REC
PATH NAME IS LOOPLOG-DAMP
    ROOT IS LOOP-LOGIC-DIAG-KEY-REC
    FETCH NEXT CURRENCY ALLOWED

```

THRU LOOPLOG-DAMPER TO DAMPER-REC
 PATH NAME IS COMP-PN-LOAD
 ROOT IS COMP-P-N-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMP-PN-COMP TO ELECTRICAL-LOAD-REC
 PATH NAME IS COMP-P-LOAD
 ROOT IS COMP-P-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMP-P-COMP-PN TO COMP-P-N-KEY-REC
 THRU COMP-PN-COMP TO ELECTRICAL-LOAD-REC
 PATH NAME IS COMP-N-LOAD
 ROOT IS COMP-N-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMP-N-COMP-PN TO COMP-P-N-KEY-REC
 THRU COMP-PN-COMP TO ELECTRICAL-LOAD-REC
 PATH NAME IS SYSTART-LOAD
 ROOT IS SYSTEM-STARTUP-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU SYSTART-LOAD TO ELECTRICAL-LOAD-REC
 PATH NAME IS SYS-LOAD
 ROOT IS SYSTEM-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU SYS-SYSTART TO SYSTEM-STARTUP-KEY-REC
 THRU SYSTART-LOAD TO ELECTRICAL-LOAD-REC
 PATH NAME IS CELL-LOAD
 ROOT IS CELL-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU CELL-LOAD TO ELECTRICAL-LOAD-REC
 PATH NAME IS PID-LOAD
 ROOT IS P-ID-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU PID-LOAD TO ELECTRICAL-LOAD-REC
 PATH NAME IS SCHEMAT-LOAD
 ROOT IS SCHEMATIC-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU SCHEMAT-LOAD TO ELECTRICAL-LOAD-REC
 PATH NAME IS EQU-LOAD
 ROOT IS EQUIPMENT-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU EQU-LOAD TO ELECTRICAL-LOAD-REC
 PATH NAME IS CONTROL
 ROOT IS CONTROL-REC
 FETCH NEXT CURRENCY ALLOWED

MDS-SCHEMA.MDS-QLP2

5.2.5 WCL/QLP Sub-schema

-SCHEMA(1).MDS-QLP2

IDENTIFICATION DIVISION.

SUBSCHEMA NAME IS MDS-QLP2 IN TIP FILE 101.

OF SCHEMA MDSSCH

HOST LANGUAGE IS QLP

KEY FOR COPY IS *SCHLOK*

LOCK FOR INVOKE IS *QLP2LOK*

DATA DIVISION.

DATA NAME SECTION.

DATA NAMES ARE DOC-AREA,
DOCKEY-AREA,
DATE-AREA-NAME,
SCREEN-AREA-NAME,
DATE-AREA-KEY,
SCREEN-AREA-KEY

AREA SECTION.

AREAS ARE MDS-DOC,
MDS-SHOP,
MDS-INDX1,
MDS-DATE,
MDS-DOCKEY,
MDS-SCREEN

RECORD SECTION.

RECORDS ARE DOC-PART-REC,
COMP-PART-REC,
FEG-PART-REC,
TECH-SPEC-PART-REC,
SHOP-REC,
DATE-REC,
TAGOUT-REC,
PRIORITY-REC,
WORK-STATUS-REC,
RM-REC,
RM-SYS-REC,
RM-SYSTART-REC,
RELAT-RELMAINT-DOC-REC,
CRITSYS-REC,
RELAT-CRITSYS-DOC-REC,
SYS-REC,
SYSTART-REC,
COMP-NUM-P-REC,
COMP-NUM-N-REC,
COMP-NUM-PN-REC,
COMP-NUM-REC,
FEG-KEY-REC,
TECH-SPEC-KEY-REC,
SCREEN-REC

SET SECTION.

SETS ARE DOCPART-COMPART,
COMPART-FEGPART,
COMPART-TECHPART,
FEGPART-TECHPART,
SHOP-DOCPART,
DATE-START,
DATE-LASTCHG,
NOT-PROCESSED,
TAG-DOCPART,

PRIOR-DOCPART,
WORKSTAT-DOCPART,
RM-RMSYS,
RMSYS-RMSYSTART,
RMSYSTART-DOCPART,
DOCPART-RMSYSTART,
CRITSYS-DOCPART,
DOCPART-CRITSYS,
SYSTEM-SYSTART,
SYSTART-DOCPART,
COMPP-COMPPN,
COMPN-COMPPN,
COMPPN-COMP,
COMP-COMPART,
OOS-FEGPART,
FEG-FEGPART,
TECH-TECHPART

QLP SECTION.

PATH NAME IS DOC-COMP-TEC

ROOT IS DOC-PART-REC

FETCH NEXT CURRENCY ALLOWED

THRU DOCPART-COMPART TO COMP-PART-REC

THRU COMPART-TECHPART TO TECH-SPEC-PART-REC

PATH NAME IS DOC-COMP-FEG

ROOT IS DOC-PART-REC

FETCH NEXT CURRENCY ALLOWED

THRU DOCPART-COMPART TO COMP-PART-REC

THRU COMPART-FEGPART TO FEG-PART-REC

THRU FEGPART-TECHPART TO TECH-SPEC-PART-REC

PATH NAME IS SHOP-DOC

ROOT IS SHOP-REC

FETCH NEXT CURRENCY ALLOWED

THRU SHOP-DOCPART TO DOC-PART-REC

PATH NAME IS DATE-ST-DOC

ROOT IS DATE-REC

FETCH NEXT CURRENCY ALLOWED

THRU DATE-START TO DOC-PART-REC

PATH NAME IS DATE-LC-DOC

ROOT IS DATE-REC

FETCH NEXT CURRENCY ALLOWED

THRU DATE-LASTCHG TO DOC-PART-REC

PATH NAME IS NOT-PROC-DOC

ROOT IS DATE-REC

FETCH NEXT CURRENCY ALLOWED

THRU NOT-PROCESSED TO DOC-PART-REC

PATH NAME IS TAG-DOC

ROOT IS TAGOUT-REC

FETCH NEXT CURRENCY ALLOWED

THRU TAG-DOCPART TO DOC-PART-REC

PATH NAME IS PRIOR-DOC

ROOT IS PRIORITY-REC

FETCH NEXT CURRENCY ALLOWED

THRU PRIOR-DOCPART TO DOC-PART-REC

PATH NAME IS WORK-ST-DOC

ROOT IS WORK-STATUS-REC

FETCH NEXT CURRENCY ALLOWED

THRU WORKSTAT-DOCPART TO DOC-PART-REC

PATH NAME IS RM-SYS-DOC
 ROOT IS RM-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU RM-RMSYS TO RM-SYS-REC
 THRU RMSYS-RMSYSTART TO RM-SYSTART-REC
 THRU RMSYSTART-DOCPART TO RELAT-RELMAINT-DOC-REC
 THRU DOCPART-RMSYSTART TO DOC-PART-REC
 PATH NAME IS DOC-RMSYSTAR
 ROOT IS DOC-PART-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU DOCPART-RMSYSTART TO RELAT-RELMAINT-DOC-REC
 THRU RMSYSTART-DOCPART TO RM-SYSTART-REC
 PATH NAME IS CRITSYS-DOC
 ROOT IS CRITSYS-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU CRITSYS-DOCPART TO RELAT-CRITSYS-DOC-REC
 THRU DOCPART-CRITSYS TO DOC-PART-REC
 PATH NAME IS DOC-CRITSYS
 ROOT IS DOC-PART-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU DOCPART-CRITSYS TO RELAT-CRITSYS-DOC-REC
 THRU CRITSYS-DOCPART TO CRITSYS-REC
 PATH NAME IS SYS-DOC
 ROOT IS SYS-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU SYSTEM-SYSTART TO SYSTART-REC
 THRU SYSTART-DOCPART TO DOC-PART-REC
 PATH NAME IS COMPP-DOC
 ROOT IS COMP-NUM-P-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMPP-COMPPN TO COMP-NUM-PN-REC
 THRU COMPPN-COMP TO COMP-NUM-REC
 THRU COMP-COMPART TO COMP-PART-REC
 THRU DOCPART-COMPART TO DOC-PART-REC
 PATH NAME IS COMPN-DOC
 ROOT IS COMP-NUM-N-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU COMPN-COMPPN TO COMP-NUM-PN-REC
 THRU COMPPN-COMP TO COMP-NUM-REC
 THRU COMP-COMPART TO COMP-PART-REC
 THRU DOCPART-COMPART TO DOC-PART-REC
 PATH NAME IS OOS-DOC
 ROOT IS SYS-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU SYSTEM-SYSTART TO SYSTART-REC
 THRU OOS-FEGPART TO FEG-PART-REC
 THRU COMPART-FEGPART TO COMP-PART-REC
 THRU DOCPART-COMPART TO DOC-PART-REC
 PATH NAME IS FEG-DOC
 ROOT IS FEG-KEY-REC
 FETCH NEXT CURRENCY ALLOWED
 THRU FEG-FEGPART TO FEG-PART-REC
 THRU COMPART-FEGPART TO COMP-PART-REC
 THRU DOCPART-COMPART TO DOC-PART-REC
 PATH NAME IS TECH-DOC₁
 ROOT IS TECH-SPEC-KEY-REC
 FETCH NEXT CURRENCY ALLOWED

THRU TECH-TECHPART TO TECH-SPEC-PART-REC
THRU COMPART-TECHPART TO COMP-PART-REC
THRU DOCPART-COMPART TO DOC-PART-REC
PATH NAME IS TECH-DOC2
ROOT IS TECH-SPEC-KEY-REC
FETCH NEXT CURRENCY ALLOWED
THRU TECH-TECHPART TO TECH-SPEC-PART-REC
THRU FEGPART-TECHPART TO FEG-PART-REC
THRU COMPART-FEGPART TO COMP-PART-REC
THRU DOCPART-COMPART TO DOC-PART-REC
PATH NAME IS SCREEN
ROOT IS SCREEN-REC
FETCH NEXT CURRENCY ALLOWED

RINTS

6.0 DATA BASE BACKUP AND RECOVERY PROCEDURE (SYSTEM A)

6.1 BACKUP

Currently, all DMS1100 data bases residing on System A are backed up to tape once a day. This usually occurs between the hours of 4:30 and 6:30 pm. In our current environment, this takes approximately 30 minutes. Once MIDAS is in place, this could take from 45 to 60 minutes. Since MIDAS is the first 24-hour system, the above hours of backup can be changed to better suite the MIDAS user.

6.2 TRANSACTION LOGGING

In addition to daily data base backup, each and every transaction which affects the data base is logged on the systems transaction log tape. This would include transactions which Insert, Modify, Delete records or record relationships but would not include query type transactions.

6.3 DATA BASE RECOVERY

6.3.1 Due to a Damaged Data Base

In the event that the data base was damaged (either by a damaged disk or damaged information) the following steps are taken to restore to current status (current status being the last transaction entered prior to the problem).

6.3.1.1 Upon notification, BCSR's Technology Department will restore the data base from the last backup mentioned in 1.0 above.

6.3.1.2 Once restored, a "Selective Recovery" procedure is executed. This procedure gathers all MIDAS transactions entered on the log tape between the time the last backup was taken and the time the data base was damaged.

6.3.2 Due to Bad Data

In the event that bad data was entered into the system, the following steps can be taken to recover.

6.3.2.1 Upon notification, BCSR's Technology Department will restore the data base from any backup tape from 1.0 above for up to 10 days prior to the request for restore. (I.e., if the request was made on June 26, BCSR can restore from backup tapes taken on any day between June 16 and June 25.) Because of the technological and physical storage problems, this duration is not subject to negotiation.

In addition to the above, BCSR can restore to a pre-defined checkpoint. Checkpoints are registered on the transaction log tape. Currently, only one checkpoint is registered at noon every working day. What this allows for is data base restoration not only from a backup tape, but from a backup tape and all transactions entered between the time the backup was done and the time the checkpoint was registered. (I.e., if the request for restore was made on June 26, HEDL could restore not only to June 18 (example) from the 4:30 backup tape, but from the June 18 backup tape plus all transactions entered between June 18 at 4:30 pm and noon, June 19.)

The above checkpoint procedure can be modified, if necessary, to better suite the MIDAS requirement.

APPENDIX A

MIDAS DATA DICTIONARY
(As Defined in the Functional Specification)

3.4.2 Edit Criteria

Blank is an allowable value for all data elements except Document Number.

X - Alphanumeric
A - Alphabetic
N - Numeric
- Blank

BREAKER NUMBER

Data type and size: X(12), X X X X X - X X X X X - X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component number

Definition: Breaker that provides power to the component.

BUILDING

Data type and size: N(4) + A(1), N N N N A

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Building in which the component is located.

CABLE NUMBER

Data type and size: X(13), X X X X - X X - X X X X X X X

1. Normal (7 characters)
2. Emergency (W, X, or Y + 7 characters)
3. PPS AA-NNNNNNN
4. IEM AAA-AA-7X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Cable(s) providing power or current path to a component.

CELL (ROOM)

Data type and size: X(4), X X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Cell (or Room) in which the component is located.

COMPONENT DESCRIPTION

Data type and size: X (30) including any special characters

Allowable values: Free Format

Data input default value: Blank

occurrences in this element: One (both)

Data it depends on: Component Number (both)

Definition: Alphanumeric description of a component.

COMPONENT NUMBER

Data type and size: X(12), X X X X X - X X X X X - X X

occurrences in this element: Unlimited (WCL), one (Indices)

Data it depends on: Document Number/Type (WCL)

Definition: A unique code number for each component.

Component number is the composit of three

fields: Prefix - first 5 characters, Number - second 5 characters, Suffix - last 2

characters, P R E F I X - N U M B E R - S U F F I X.

COMPONENT TYPE

Data type and size: A(1)

Allowable values:

<u>Value</u>	<u>Meaning</u>
I	ICR (Instrument Calibration and Recall)
E	EIB (Equipment Index Bechtel)
L	ELL (Electrical Load List)
D	DIB (Damper Index Bechtel)
V	VIB (Valve Index Bechtel)

Data input default value: Blank

occurrences in this element: N/A (WCL); one (Indices)

Data depends on: Component Number

Definition: Alpha description of component type

CRITICAL SYSTEM CODE

Data type and size: X(4)/or X(1)

X(1) when one the Document Screen

X(4) when on the Indices Screen

Allowable values: SEISMIC I = SESI = 1

Class 1E = CLIE = E

PPS = PPS = P

FIRE PROTECTION = FIRE = F

ASME = ASME = A

SEISMIC 3/1 = S3/1 = 3

A28 = A28 = 8

Data input default value: Blank

occurrences in this element: Up to 7 (WCL); up to 4 (Indices)

Data it depends on: Document Number/Type and Component Number

Definition: Critical system identification applicable to components and current requested work on a document.

Rev. C

CURRENT DATE/TIME

Data type and size: N(10), N N - N N - N N/N N N N
occurrences in this element: Appears on all screens
Data it depends on: Screens
Definition: Date and 24 hour time supplied by UNIVAC operating system.

DOCUMENT NUMBER

Data type and size: N(7), N N - N N N N N
Data input default value: First 2 characters default to present year.
occurrences in this element: One (WCL)
Data it depends on: N/A
Definition: Identification on each document.

DOCUMENT STARTUP CODE

Data type and size: A(1), A
occurrences in this element: One (WCL), N/A (Indices)
Data it depends on: Document System S/U Code
Definition: Alpha code used to subdivide a system into subsystems.

DOCUMENT SYSTEM

Data type and size: N(2), N N
occurrences in this element: One (WCL), N/A (Indices)
Data it depends on: Document System Code
Definition: Plant system to which the document is a function of.

DOCUMENT SYSTEM STARTUP CODE

Data type and size: N(2) + A(1), N N A
Data input default value: Blank
occurrences in this element: One (WCL), N/A (Indices)
Data it depends on: Document Number/Type
Definition: System Startup Code for a document.

DOCUMENT TYPE

Data type and size: A(1)

Allowable values: I = ICRS

P = PMP

T = TPM

W = Work Requests (030)

R = ICRS/PMP

occurrences in this element: One (WCL)

Data it depends on: Document Number

Definition: Document Type used to perform maintenance

EQUIPMENT NUMBER

Data type and size: X(12), X X X X X - X X X X X - X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Equipment that an instrument or breaker services.

FEG DESCRIPTION

Data type and size: X(30) including any special character

Allowable values: Free Format

occurrences in this element: One (both)

Data it depends on: FEG Number (both)

Definition: Alphanumeric description of a Functional Equipment Group.

FEG NUMBER

Data type and size: X(10), X X X - X X X - X X X X

occurrences in this element: Three (WCL), six (Indices)

Data it depends on: Component Number

Definition: Identification number for each functional equipment grouping.

Rev. C

HUNG?

Data type and size: A(1)

Allowable values: Value Definition

Y Yes

N No

C Clear

Data input default value: Blank

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Tagout, Document Number/Type

Definition: Status of tagout.

INITIALS

Data type and size: A(3), A A A

Allowable values: Initials from the list of authorized users.

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: User's initials, automatically supplied by
MIDAS. Not entered by user except at log in.

KW (KILO WATTS)

Data type and size: X(11), X X X X X X X X X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Power rating of the component.

LAST CHANGED

Data type and size: N(10), N N - N N - N N/N N N N

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Date/time when the document was last changed,
automatically supplied by MIDAS, not entered by
user.

LIMIT SWITCH NUMBER

Data type and size: X(7), X X X X X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Valve limit switch number.

LOCATION

Data type and size: X(10), X X X X X X X X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Location of the component within the cell,
room, building, panel, etc.

LOOP/LOGIC DIAGRAM NUMBER

Data type and size: N(5), N N N N N

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Loop diagram or Logic diagram associated with
the component.

LOOP NUMBER

Data type and size: X(10), X X X X X X X X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Loop number associated with the component.

MORE

Data type and size: A(4), A A A A

Allowable values: "More", Blank

Data input default value: Blank

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: One for component No., Document No., Type
One for FEG No., Document No./ Type

Definition: Indicates if more than one Tech Spec No.
applies to the component or FEG

OE COMMENT

Data type and size: X(40) including any special characters

Allowable values: Free Format

Data input default value: Blank

occurrences in this element: one (WCL).

Data it depends on: Component Number N/A (Indices)

Definition: A free format section to allow entering
pertinent component related information.

O.O.S (OUT-OF-SERVICE)

Data type and size: A(1)

Allowable values: Value Definition

Y Yes

N No

Data input default value: Blank

occurrences in this element: Up to three (WCL), N/A
(Indices)

Data it depends on: FEG, Component Number, Document
Number/Type.

Definition: Status of FEG with respect to a component and
document combination.

OPERATOR TYPE

Data type and size: A(4), A A A A

Allowable values: Value Definition

MAN	Manual
RMAN	Remote Manual
PNEU	Pneumatic
SOL	Solenoid
ELEC	"Pre Con" Electric Rotating Gear Operator

Valve Definition

MOT	Motor (Electric but not Pre Con")
ETA	Electro-Thermal Actuator
FL	Fusibly Link with Spring or Gravity Closure

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Type of operator for valve or damper.

PANEL OR LOCAL RACK

Data type and size: A(4) + N(4), A A - N N N N - A A

occurrences in this element: None (WCL), one (Indices)

Data it depends on: Component Number

Definition: Electrical panel or local rack associated with a
component.

P&ID NUMBER

Data type and size: N(5), N N N N N

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Piping and Instrument Diagram drawing number.
Westinghouse H4 drawing number.

POSITION-ELECTRIC FAILURE

Data type and size: A(2), A A

Allowable values: Value Definition

FO	Fail Open
FC	Fail Closed
FA	Fail in Place
FI	Fail Indeterminant

POSITION-ELECTRIC FAILURE continued

occurrences in this element: N/A (WCL), one (Indices)
Data it depends on: Component Number
Definition: Valve failure position on loss of electrical power supply.

POSITION-PNEUMATIC FAILURE

Data type and size: A(2), A A
Allowable values:

<u>Value</u>	<u>Definition</u>
FO	Fail Open
FC	Fail Closed
FI	Fail Indeterminant
FA	Fail in Place

occurrences in this element: N/A (WCL), one (Indices)
Data it depends on: Component Number
Definition: Valve fail position on loss of pneumatic supply on pneumatic signal.

POWER INTERRUPT

Data type and size: X(12), X X X X X - X X X X X - X X
occurrences in this element: N/A (WCL), one (Indices)
Data it depends on: Component Number
Definition: Fuse supplying power to the component.

PRIORITY

Data type and size: X(2), X X
Allowable values: 1, 2A, 2, 3, 4
Data input default values: Blank
occurred in this element: One (WCL), N/A (Indices)
Data it depends on: Document Number/Type
Definition: A weighting function used to determine the urgency of a activity performance for plant operation.

PROCESSED?

Data type and size: A(1)

Allowable values: Y (Yes), N (No), C (Complete)

Data input default value: Blank

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Processing status of a document. If "yes", the document will appear on a shop schedule. Automatically supplied by MIDAS. Not entered by user.

RELATED MAINTENANCE CODE

Data type and size: X(5), X X X X X

Data input default value: Blank

occurrences in this element: Up to three

Data it depends on: Component and Document Number/Type

Definition: Maintenance Grouping Code. Related Maintenance Code is the composite of three fields. RM Code (first two characters), System (second two characters) S/U Code (last character). To the user related maintenance code will function as one (RM Code), two (RM Code + System) or three (RM Code + System + S/U Code) fields.

REQUESTED?

Data type and size: A(1), A

Allowable values: Y (Yes), N (No)

Data input default value: Blank

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Indicates if a tagout is requested for a document

SCHEME

Data type and size: X(13), X X X X - X X - X X X X X X X

1. Normal (7 characters)
2. Emergency (W, X, or Y + 7 characters)
3. PPS AA-NNNNNNN
4. IEM AAA-AA-7X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Cable(s) providing power or current path to a component.

SCHEMATIC NUMBER

Data type and size: X(20), X X X X X X X X X X X X X X X X
X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Schematic drawing number on which the schematic
of the component is found.

SCRATCHPAD DATE

Data type and size: N(6), N N - N N - N N

Allowable values: Any value on calendar

occurrences in this element: one (WCL), N/A (Indices)

Data it depends on: Scratchpad Record

Definition: Date when the scratchpad record was last
changed. Automatically supplied by MIDAS not
entered by user.

SHOP

Data type and size: N(2) + A(1), X - N N A

Allowable values: Those values contained in the shop file

Data input default value: Blank

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Code designation for shop.

NOTE: the A, alpha is the suffix of the shop and blank is a
valid value.

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SHOP NAME

Data type and size: X(35), including special characters

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Shop

Definition: Name of shop with lead responsibility for the
work performance.

SOLENOID/PNEUMATIC DIAGRAM

Data type and size: N(5), N N N N N

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Solenoid/Pneumatic Diagram drawing number.

START DATE

Data type and size: N(6), N N - N N - N N

Allowable values: Any value allowed by calendar but no date in the past.

Data input default value: YR defaults to current year

occurrences in this element: One (WCL), N/A
(Indices)

Data it depends on: Document Number/Type

Definition: The date the document is scheduled to be worked.

STARTUP CODE

Data type and size: A(1), A

occurrences in this element: N/A (WCL), one
(Indices)

Data it depends on: System Startup Code

Definition: Alpha code used to subdivide a system into subsystems.

SYSTEM CODE

Data type and size: N(2), N N

occurrences in this element: N/A (WCL), one
(Indices)

Data it depends on: System Startup Code

Definition: System to which the component belongs.

SYSTEM COMPLIANCE PROCEDURE NUMBER

Data type and size: A(2), N(12); A A - N N N N N N - N N N N N N

Data input default value: Blank

occurrences in this element: N/A (WCL), 1 to 12
(Indices)

Data it depends on: Tech Spec number

Definition: Procedure to perform the Tech Spec surveillance requirement.

SYSTEM STARTUP CODE

Data type and size: N(2) + A(1), N N A

Data input default value: Blank

occurrences in this element: N/A (WCL), one
(Indices)

Data it depends on: Component Number

Definition: System and sub-system that the component belongs to.

TAGOUT NUMBER

Data type and size: N(2) + N(5), N N - N N N N N

Allowable values: First two N's designate year.

Data input default value: Blank, first two N's default to current YR when value to be entered.

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Identification code of a tagout. Not always unique for each document.

TECH SPEC DESCRIPTION

Data type and size: X(30)

Allowable Values: Free Format

Data input default value: Blank

occurrences in this element: N/A (WCL): one (Indices)

Data it depends on: Tech. Spec. Number

Definition: Description of the Tech. Spec.

TECH SPEC NUMBER

Data type and size: X(13), including (.), 17.XXXXXXXXXX

Allowable values: 17. + the remaining characters

Data input default value: Blank

occurrences in this element: One (WCL), 0 to N (Indices)

Data it depends on: Component Number, FEG Number

Definition: Limiting condition for operation and surveillance requirements defined by Chapter 17 of the FSAR.

VALVE SIZE

Data type and size: X(6), X X X X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Valve body end connection size in inches, except for pressure relief valves as follows:

Relief Valves:

- 1) Inlet and outlet sizes will both be given, since in most cases the inlet and outlet sizes are different.
- 2) For fractional size inlet, decimal (i.e., 1.5 = 1-1/2) notation will be used.

VALVE SIZE (CONTINUED)

Definition (Continued):

Relief Valves (Continued)

- 3) For fractional size outlet, a code letter "A" will be used to designate the 1/2" (i.e., 2A = 2-1/2").

Typical Sizes Are:

01 x 02 = 1 inch inlet by 2 inch outlet
1.5 x 2A = 1-1/2 inch inlet by 2-1/2 inch outlet

VALVE TYPE

Data type and size: X(4), X X X X

Allowable values: Valve Type (Listed in alpha-numeric order, same as computer sort by valve type), where:

BF = Butterfly
BL3W = Ball, 3-way pattern
BL4W = Ball, 4-way pattern
BL = Ball
CK = Swing check
CYL = Compressed gas cylinder valve
GBA = Globe, angle pattern
GBC = Globe, cryogenic service
GBN = Globe, needle plug
GB3W = Globe, 3-way pattern
GB = Globe
GT = Gate
LMA = Liquid metal (angle pattern)
LMCK = Liquid metal check
LMS = Liquid metal (straight pattern)
LMY = Liquid metal (WYE pattern)
PL = Plug
PR = Pressure relief valve
FREG = Pressure regulator
(self-actuated)
RD = Rupture disk
SCK = Stop check
SLCK = Spring loaded check
VB = Vacuum breaker

VALVE TYPE (CONTINUED)

Allowable Values (Continued):

2WAY = 2-way in-line process solenoid
valve

3WAY = 3-way pilot solenoid valve

4WAY = 4-way pilot solenoid valve

5WAY = 5-way pilot solenoid valve

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Type of valve.

VOLTS (NPHP)

Data type and size: X(11), X X X X X X X X X X X

occurrences in this element: N/A (WCL), one (Indices)

Data it depends on: Component Number

Definition: Voltage Rating or Name Plate Horse Power
Rating of the component.

WORK CONTROL COMMENTS

Data type and size: X(110) including special characters,
free format.

Data input default value: Blank

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Comments relative to the evolution
performed by the work document.

WORK DESCRIPTION

Data type and size: X(70), including special characters

Data input default value: Blank

occurrences in this element: One (WCL), N/A (Indices)

Data it depends on: Document Number/Type

Definition: Description of work on a document.

WORK STATUS

Data type and size: A(6), A A A A A A

Allowable values: Retest, Comp., REL, NON REL

Data input default value: Blank

occurrences in this element: One (WCL), N/A
(Indices)

Data it depends on: Document Number/Type

Definition: Status of document as a whole

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SECTION C

MIDAS
TEST SCRIPTS

(ISSUE 1)

DOCUMENT NO: BCSR-ADS-0273

TITLE: MIDAS CERTIFICATION PROCEDURE (TEST SCRIPTS)

CONTROLLED BY: Systems Department

ORIGINAL RELEASE DATE: _____

ISSUE NO: _____ TO: _____ DATE: _____

PREPARED BY: M. McKagen _____

APPROVAL: _____

5415A/
09/28/81

(DATE)

ABSTRACT

The MIDAS CERTIFICATION PROCEDURE is intended to be used as the primary test and certification tool for all programs which make up the MIDAS system. This procedure utilizes the Path Method of software certification. That is, if followed, this procedure will force the execution of all MIDAS programs and all processes within those programs.

Not included in this document are test scripts for the various MIDAS batch reports. It was determined that certification of report format and content was adequate and that developing and maintaining test documentation for these reports was not necessary.

To effectively execute this procedure, a basic understanding of the MIDAS system would be beneficial. Therefore, it is recommended that the MIDAS System Functional Specification and the MIDAS User's Guide be consulted before proceeding with this test.

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1.0 EDIT FEG

MIDAS SYSTEM TEST SCRIPT

FUNCTION: EDIT FEGDATE 11/13/80ORIGINATOR: M. E. McKaganTEST NO: 1.0TEST PREREQUISITE: NONETEST DESCRIPTION: Test all subfunctions of the "EDIT FEG" function.

RESULTS: Indicate successful update

Signature Block

H Test Performed By:

Accepted By:

E

D Date

Date

L

1.1 INSERT FEG WHEN FEG RECORD IS NOT ON FILE

1.1.1 Begin test by suppressing the FILE EDITING function key indicated on the MIDAS main menu. The result should be the FILE EDIT submenu. Suppress the "EDIT FEG" subfunction key indicated on the screen.

1.1.2 Response to 1.1.1.1 will be the EDIT FEG screen (see Attachment A). The cursor should be positioned at the beginning of the FEG NO. field. Enter the following FEG NO.

001-000-0000

When you have filled the field, the record will be automatically fetched. The response will be the same screen indicating that the FEG is not on file and that you may add it. An "A" will have automatically been entered in the ACTION CODE field of the CASE FEG with the cursor positioned at the beginning of the SYSTEM FIELD. Enter the following SYSTEM and DESCRIPTION:

2 1 B T E S T F E G N O 1 1 0

1.1.3 Once the data described in 1.1.2 is entered, transmit this data to the data base by using the TRANSMIT key.

1.1.4 Response to 1.1.3 will be the EDIT FEG screen with the data entered in 1.1.2 being displayed. A message at the bottom of the screen will indicate that a successful update was achieved.

Repeat this test using the following data.

002-000-0000 21A TEST FEG NO. 2

003-000-0000 21A TEST FEG NO. 3

.
.
.
.
.

015-000-0000 21A TEST FEG NO. 15

Start each subsequent test by suppressing the EDIT FEG subfunction key.

TEST PREREQUISITE: None

1.2.1 Modify FEG Description.

1.2.1.1 As a result of Test No. 1.1.2, the EDIT FEG screen should be on display (blank). Enter the following FEG NO.

001-000-0000

the record will automatically be fetched.

1.2.1.2 Response to 1.2.1.1 will be the following data:

_001-000-0000 21A TEST FEG NO. 110 _ NO SUPERIOR*

Place an "M" in the action code field. The cursor will automatically be repositioned at the beginning of the SYSTEM field. Change the SYSTEM and description so that they read 21A TEST FEG NO. 1.

1.2.1.3 Response to 1.2.1.2 should be the EDIT FEG screen with the following FEG record on display:

001-000-0000 21A TEST FEG NO. 1

with message at the bottom of the screen indicating a successful update.

End the test by suppressing the EDIT FEG subfunction key.

*This message will appear for all FEG's that have no superiors.

TEST PREREQUISITE: 1.1

1.2.3 Establish Superior/Inferior FEG Relationships

1.2.3.1 Begin the test by entering the following FEG NO.

001-000-0000

the record will automatically be fetched.

1.2.3.2 Response to 1.2.3.1 will be an FEG screen with the description of FEG 001-000-0000.

1.2.3.3 The cursor should be positioned at the ACTION CODE field of the case FEG. TAB out of the ACTION CODE field. Since it is assumed that no action is to be taken on the case FEG, the cursor will automatically be positioned on the first ACTION CODE field of the Superior/Inferior portion of the screen. Enter the following data:

A	002-000-0000	---	_____	I
A	008-000-0000	---	_____	I
A	016-000-0000	---	_____	I

where "A" is for ADD relationship and "I" refers to inferiors.
Establish the relationship by suppressing the TRANSMIT key.

1.2.3.4 Response to the 1.2.3.3 should be the following

002-000-0000	21A TEST FEG NO. 2	I
008-000-0000	21A TEST FEG NO. 8	I
A 016-000-0000		I NOT IN DATA BASE

Line 3 of the above example should be blinking.

1.2.3.5 Continue the test by suppressing the EDIT FEG subfunction key.

Enter the following FEG

002-000-0000

1.2.3.6 Response to 1.2.3.5 should be the description of FEG 002-000-0000 with its description and system filled in. In addition, it should show FEG NO. 001-000-0000 as a SUPERIOR FEG. TAB forward to the first available blank FEG line. In the "ADD RELATIONSHIP" portion of the screen enter the following:

A	003-000-0000	---	_____	I
A	004-000-0000	---	_____	I

Establish the relationship by TRANSMITTING the data to the data base.

TEST PREREQUISITE: 1.1

- 1.2.3.7 Enter 008-000-0000 as the case FEG. The response should show 001-000-0000 as a superior with "TEST FEG NO. 1" as its description AND 21A as its system. In the "ADD RELATIONSHIP" portion of the screen enter the following:

A	009-000-0000	---	_____	I
A	010-000-0000	---	_____	I

Establish the relationship by TRANSMITTING to the data base.

- 1.2.3.8 Obtain a fresh screen and FETCH the following FEG

005-000-0000

- 1.2.3.9 The result should be the above FEG with its description. There should be no related FEG's. Enter the following FEG relationships:

A	003-000-0000	---	_____	S
A	004-000-0000	---	_____	S
A	009-000-0000	---	_____	S
A	010-000-0000	---	_____	S
A	006-000-0000	---	_____	I
A	007-000-0000	---	_____	I

Establish the relationship by TRANSMITTING the data to the data base.

- 1.2.3.10 The result of the update should be all superior and inferior FEG's with their respective descriptions and systems.

End the test by suppressing the EDIT FEG function key.

NOTE: The resultant FEG structure established by this test is illustrated in diagram 1.2.3.

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DIAGRAM 1.2.3
FEG TEST NETWORK NO. 1

1.2.4 Reorganize an Existing FEG Structure

- 1.2.4.1 To begin the test, enter FEG NO. 005-000-0000 as the CASE FEG. This will fetch its superior and inferior FEG's from the data base. The resulting list should consist of the following:

SUPERIOR

003-000-0000
 004-000-0000
 009-000-0000
 010-000-0000

INFERIOR

006-000-0000
 007-000-0000

- 1.2.4.2 Reorganize the structure by entering a "D" in the action code field of FEG number 003-000-0000. Now enter the following relationship in the "ADD RELATIONSHIP" part of the screen:

A 002-000-0000 _____ S

this will establish FEG NO. 002-000-0000 as a superior to 005-000-0000 where "A" means add and "S" means superior. Transmit the result to the data base.

- 1.2.4.3 To complete the reorganization enter FEG NO. 011-000-0000 as the CASE FEG and FETCH it from the data base. This FEG should have no relationships. Establish its inferior FEG's by entering the following:

A 013-000-0000 _____ I
 A 014-000-0000 _____ I
 A 010-000-0000 _____ I

and transmit to the data base. The resulting FEG network is illustrated in Diagram 1.2.4. Complete the test by suppressing the EDIT FEG function key.

TEST PREREQUISITE: 1.2.3

DIAGRAM 1.2.4
FEG TEST NETWORK NO. 2

1.2.5 Insert an FEG and Add Relationships on One Screen

1.2.5.1 Begin the test by entering 016-000-0000 as the case FEG. The response should be the same screen with a message indicating that the record is not on file and that you may add it.

1.2.5.2 Enter the description and system.

21A TEST FEG NO. 16

Enter the following relationships for this FEG:

<u>A</u>	003-000-0000	— — —	<u>S</u>
<u>A</u>	006-000-0000	— — —	<u>I</u>

1.2.5.3 When the above data has been entered, TRANSMIT the data to the data base.

The new FEG network is shown in Diagram 1.2.5

TEST PREREQUISITE: 1.1

DIAGRAM 1.2.5
FEG TEST NETWORK NO. 3

1.3 DELETE AN FEG FROM THE DATA BASE

- 1.3.1 Begin the test by entering 014-000-0000 as the CASE FEG. The result will be

SUPERIOR
011-000-0000

- 1.3.2 Enter "D" for the action code for the CASE FEG and a "D" for the SUPERIOR FEG and TRANSMIT to the data base. This will delete FEG 014-000-0000 from the data base. To check, enter the deleted FEG as the case FEG. The result should be a blank screen with an informative message.

- 1.3.3. Now enter 005-000-0000 as the CASE FEG. When the record returns with its Superior/Inferior list enter an action code of "D" and TRANSMIT it to the data base. The result will be the Superior and Inferior list for this FEG with a message indicating that FEG NO. 005-000-0000 may not be deleted until all relationships have been deleted.

TEST PREREQUISITE: 1.1

1.4 FETCH AN FEG RECORD FROM A DISPLAY SCREEN

1.4.1 Enter 002-000-0000 as the case FEG. The result should be:

SUPERIOR

001-000-0000

INFERIOR

003-000-0000

004-000-0000

005-000-0000

1.4.2 Place the cursor on the first character of the FEG field containing FEG NO 005-000-0000. Fetch the FEG record by suppressing the FETCH key. The response will be:

SUPERIOR

002-000-0000

004-000-0000

009-000-0000

010-000-0000

INFERIOR

006-000-0000

007-000-0000

TEST PREREQUISITE: 1.2.3

1.5 FURTHER REORGANIZATION OF AN FEG BY DELETING AN FEG THAT HAS SUPERIORS AND INFERIORS

- 1.5.1 Use 005-000-0000 as the case FEG. The relationships should be the following:

SUPERIOR

002-000-0000
004-000-0000
009-000-0000
010-000-0000

INFERIOR

006-000-0000
007-000-0000

- 1.5.2 Proceed to DELETE 005-000-0000 from the data base. Do this by first deleting all of Superior and Inferior relationships. The result will be the network in Diagram 1.5. Notice that FEG 007-000-0000 now has no superior. Until it is reassigned a superior, the message "NO SUPERIOR" will appear in its message field.

TEST PREREQUISITE: 1.2

DIAGRAM 1.5
FEG TEST NETWORK NO. 2

1.6 DUPLICATE FEG's ON A SCREEN

- 1.6.1 Enter FEG NO. 002-000-0000 as the CASE FEG. The response will be the following Superior/Inferior lists.

SUPERIOR

001-000-0000

INFERIOR

003-000-0000

004-000-0000

ADD RELATIONSHIP

```
  - - - - -  
  - - - - -
```

- 1.6.2 To test the edit, attempt to establish FEG NO. 002-000-0000 as a SUPERIOR FEG. The result should be the following error code and message:

E01-RELATIONSHIP ERROR

- 1.6.3 Repeat this test by attempting to establish 003-000-0000 as a SUPERIOR and 001-000-0000 as an Inferior.

TEST PREREQUISITE: 1.2

2.0 EDIT TECH SPEC

MIDAS SYSTEM TEST SCRIPT

FUNCTION: EDIT TECH SPECDATE 12/09/80ORIGINATOR: M. E. McKaganTEST NO: 2.0TEST PREREQUISITE: 1.0TEST DESCRIPTION: Test all features of the MIDAS "EDIT TECH SPEC" function.

RESULTS: _____

ACCEPTANCE

Yes ☐ No ☐ (If not acceptable, explain below)

COMMENTS: _____

Signature Block

B Test Performed By:

Program Manager:

C

S Date

Date

R

H Test Performed By:

Accepted By:

E

D Date

Date

L

2.1 ADD A TECH SPEC

2.1.1 Begin the test by suppressing the FILE EDITING function key indicated on the MIDAS main menu. This should give you the file editing sub-menu. Now suppress the EDIT TECH SPEC function key indicated on the sub-menu.

2.1.2 The response to 2.1.1 will be the EDIT TECH SPEC screen (Appendix 2A) with the cursor positioned in the TECH SPEC NO. field. Enter the following TECH SPEC NO.:

17. _____

and TAB out of the field. The TECH SPEC record will automatically be fetched.

2.1.3 Because the above TECH SPEC is not on the file, you will receive the same screen back with the message

RECORD NOT IN DATA BASE . . . YOU MAY ADD.

The cursor will be positioned on the DESCRIPTION FIELD of the TECH SPEC RECORD. Note that an action code of "A" has automatically been placed in the action code field of the TECH SPEC. Enter the following description:

2.1.4 TRANSMIT the record to the data base by hitting the TRANSMIT key.

2.1.5 The response to 2.1.4 will be the same screen that was transmitted with the message:

SUCCESSFUL UPDATE

Finish the test by suppressing the EDIT TECH SPEC subfunction key.

TEST PREREQUISITE: None

2.2 MODIFY TECH SPEC DESCRIPTION

- 2.2.1 Result of Test 2.1 should leave you with a fresh screen with the cursor positioned at the beginning of the TECH SPEC NO. field. Enter the same TECH SPEC that was inserted in Test 2.1 (_ _ _ _ _) and TAB out of the field.
- 2.2.2 The record will automatically be fetched from the data base. The resulting screen should be complete with the TECH SPEC NO. and its description with the cursor positioned in the action code field.
- 2.2.3 The intent is to modify the description, therefore, enter an action code of "M" for modify. Once entered the cursor will automatically be positioned at the beginning of the description field. Change the description so that it now reads

- 2.2.4 Transmit the record to the data base.
- 2.2.5 Response to 2.2.4 should be the same screen with the new description and with the message

SUCCESSFUL UPDATE

being displayed at the bottom of the screen. End the test by suppressing the EDIT TECH SPEC subfunction key.

TEST PREREQUISITE: None

2.3 ESTABLISHING TECH SPEC RELATIONSHIPS

2.3.1 Begin the test by entering the TECH SPEC NO. used in Tests 2.1 and 2.2 (____). When the record is returned to you TAB out of the ACTION CODE field.

2.3.2 Since no entry was made in the ACTION CODE field, it is assumed that no action is to be made on the TECH SPEC RECORD, therefore, the cursor will be automatically re-positioned on the action code field of the first available COMPONENT for this TECH SPEC.

2.3.3 Enter the following values in the COMPONENT column:

```

-  - - - - - - - - - - - - - - - -
-  - - - - - - - - - - - - - - - -
-  - - - - - - - - - - - - - - - -

```

Now use the GLOBAL TAB key to position the cursor at the first FEG entry in the FEG column.

2.3.4 Enter the following FEG values:

```

-  - - - - - - - - - - - - - - - -
-  - - - - - - - - - - - - - - - -
-  - - - - - - - - - - - - - - - -

```

and use the GLOBAL TAB key to position the cursor at the first SCP entry in the SCP column.

2.3.5 Enter the following SCP values:

```

-  - - - - - - - - - - - - - - - -
-  - - - - - - - - - - - - - - - -

```

2.3.6 TRANSMIT the data to the data base.

2.3.7 The response to 2.3.6 should be the same screen with the message at the bottom

SUCCESSFUL UPDATE

2.3.8 To complete the test, obtain a fresh screen (EDIT TECH SPEC subfunction key) and enter the same TECH SPEC as in 2.1.2 and the same values as entered in Steps 2.3.3, 2.3.4 and 2.3.5. When entered, TRANSMIT to the data base. The response should be a code of M02 for all 8 entries. This means that all relationships have been successfully established.

End the test by obtaining a fresh screen.

TEST PREREQUISITE: 1.1

2.4 ADDING A TECH SPEC WITH ITS RELATIONSHIPS

2.4.1 Enter the following TECH SPEC:

17. -----

when the screen is returned, an action code of "A" will have been filled in. Enter the following description:

2.4.2 Use the GLOBAL TAB key to position the cursor to the first entry in the COMPONENT column. Enter the following:

```

- - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -

```

Use the GLOBAL TAB to position the cursor for FEG entries and enter the following:

```

- - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -

```

Use the GLOBAL TAB key to position the cursor for SCP entries and enter the following:

```

- - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -

```

2.4.3 TRANSMIT the data to the data base by using the GLOBAL TAB key followed by the TRANSMIT key. The response should be the same screen with the message at the bottom:

SUCCESSFUL UPDATE

2.4.4 To check this test, obtain a fresh screen and enter the same TECH SPEC NO. as in 2.4.1. When the record is returned, enter the same data as was entered in 2.4.2 and TRANSMIT the data to the data base.

2.4.5 The result to 2.4.4 should show a code of M02 for all entries. This demonstrates that the data base was successfully updated.

End the test by obtaining a fresh screen.

TEST PREREQUISITE: 1.1

2.5 DELETING A TECH SPEC FROM THE DATA BASE

2.5.1 Begin the test by entering the following TECH SPEC:

17. _____

when the record is returned, place a "D" in the ACTION CODE field.

2.5.2 Transmit the data to the data base. Notice that no reference was made to the COMPONENTS, FEG's and SCP's that were related to this TECH SPEC. These relationships will be automatically deleted.

2.5.3 The response to this transaction should be:

SUCCESSFUL UPDATE

To check, re-enter this TECH SPEC. The response will be:

RECORD NOT IN DATA BASE . . . YOU MAY ADD

TEST PREREQUISITE: 2.4

2.6 DATA BASE EDITS

2.6.1 Test COMPONENT, FEG and SCP edits.

2.6.1.1 Enter the following TECH SPEC NO.:

17. _____

When the record has returned, TAB through the ACTION CODE field and place the cursor in the first available position in the COMPONENT column. Enter:

and for FEG's enter

and for SCP's

2.6.1.2 When all data is entered, TRANSMIT the data to the data base. The response should be the same screen with the following error codes:

COMPONENTS

FEG's

SCP's

End the test by obtaining a fresh screen.

TEST PREREQUISITE: 2.3

3.0 EDIT COMPONENT

MIDAS SYSTEM TEST SCRIPT

FUNCTION: EDIT COMPONENTDATE 12/18/80ORIGINATOR: M. E. McKaganTEST NO: 3.0TEST PREREQUISITE: 1.0, 2.0TEST DESCRIPTION: Test all features of Edit Component.

RESULTS: _____

ACCEPTANCE

Yes ☐ No ☐ (If not acceptable, explain below)

COMMENTS: _____

Signature Block

B Test Performed By:

Program Manager:

C

S Date

Date

R

H Test Performed By:

Accepted By:

E

D Date

Date

L

3.1 INSERT COMPONENT

3.1.1 Begin the test by suppressing the FILE EDITING function key indicated on the MIDAS main menu. The result should be the FILE EDITING sub-menu. Now suppress the EDIT COMPONENT subfunction key.

3.1.2 The result should be a screen consisting of a Component no. field and a Component type field. Enter the following:

When the Component type is entered, an Index screen will be created as specified in 3.1.3.

3.1.3 In this case, the record is not on file so the response should be the common indices data elements making up the top half of the screen, with the data elements particular to this index making up the bottom half (see Appendix 3). There should also be a message at the bottom of the screen:

RECORD NOT ON FILE-YOU MAY ADD

Note that a transaction code of "A" for add has been automatically filled in with the cursor positioned at the beginning of the description field.

3.1.4 Enter the following data elements:

```

1  Description -----
2  Startup -----
3  Building -----
4  Cell -----
5  Location -----
6  P & ID -----
7  Cable No. -----
8  Fuse -----
9  Critical Sys -----
   -----
10 Schematic Number -----
11 Position-Electrical Failure -----
12 Position-Numatic Failure -----
13 Loop/Logic Diag. No. -----
14 Equipment No. -----
15 Loop No. -----
16 Panel -----

```

Once all the data has been entered, TRANSMIT the data to the data base.

TEST PREREQUISITE: 1.0, 2.0

- 3.1.5 The response to 3.1.4 should be the same screen with the message at the bottom of the screen.

SUCCESSFUL UPDATE

- 3.1.6 Continue the test by suppressing the EDIT COMPONENT subfunction key. This will give you a fresh screen. Repeat test 3.1 using the following data element.

3.1.5.1 Component No. _____
 Component Type _____
 1 Description _____
 2 Startup _____
 3 Building _____
 4 Cell _____
 5 Location _____
 6 P & ID _____
 7 Cable no. _____
 8 Fuse _____
 9 Critical Sys _____

 10 Schematic Number _____
 11 Position-Electrical Failure _____
 12 Position-Numatic Failure _____
 13 Loop/Logic Diag. No. _____
 14 Operator Type _____
 15 Size _____
 16 Valve Type _____
 17 Limit Switch No. _____
 18 Solenoid/Pneumatic Diag. _____

3.1.6.2 Component No. _____
 Component Type _____
 1 Description _____
 2 Startup _____
 3 Building _____
 4 Cell _____
 5 Location _____
 6 P & ID _____
 7 Cable No. _____
 8 Fuse _____
 9 Critical Sys _____

 10 Schematic Number _____
 11 Position-Electrical Failure _____
 12 Position-Numatic Failure _____
 13 Loop/Logic Diag. No. _____
 14 Operator Type _____

- 3.1.7 Complete the test by obtaining a blank EDIT COMPONENT screen.

3.2 INSERT COMPONENT WITH ITS RELATIONSHIP

3.2.1 Begin the test by entering the following component number and type:

Response is the same as in 3.1.2 and 3.1.3. Now enter the following data elements:

Description -----
 Startup -----
 Building -----
 Cell -----
 Location -----
 P & ID -----
 Cable No. -----
 Fuse -----
 Critical Sys -----

3.2.2 To establish the TECH SPEC and FEG relationships for this component, place the cursor on the first available ACTION CODE of the TECH SPEC portion of the screen and establish the TECH SPEC relations by entering:

A 17. -----
A 17. -----

Where the "A" stands for ADD relationship.

3.2.3 Establish the FEG relationships for this component by positioning the cursor at the first available ACTION CODE field of the FEG portion of the screen and enter:

When completed, TRANSMIT the data to the data base.

3.2.4 The response to 3.2.3 should be the same screen with the message at the bottom:

SUCCESSFUL UPDATE

Complete the test by obtaining a blank EDIT COMPONENT screen.

TEST PREREQUISITE: 1.0, 2.0

3.3 MODIFY COMPONENT

3.3.1 Modify Component Record

3.3.1.1 Begin the test by entering the following component number and type:

The resultant record should be the same as the data entered in test 3.2 with the cursor positioned in the ACTION CODE field for this component. Enter an action code of "M" for modify*.

3.3.1.2 The cursor will automatically position itself at the beginning of the description field. Modify the data element for this component as follows:

```

Description -----
Startup -----
Building -----
Cell -----
Location -----
P & ID -----
Cable No. -----
Fuse -----
Critical Sys -----

```

When completed, TRANSMIT the data to the data base.

3.3.1.3 The result should be the same screen with the message at the bottom:

SUCCESSFUL UPDATE

Complete the test by obtaining a blank EDIT COMPONENT screen.

*NOTE: COMPONENT NO. and COMPONENT TYPE can not be modified as can the component's data fields.

TEST PREREQUISITE: 3.2

3.3.2 Modify Component Relations

3.3.2.1 Begin the test by entering the following component number and type:

The result should be the same record as in test 3.3.1.

3.3.2.2 Position the cursor at the first available ACTION CODE field of the TECH SPEC portion of the screen. Do this by using the GLOBAL TAB key 3 times. Notice the no entry was made in the ACTION CODE field for this component. An action code is not necessary when there is no intent to modify any of this records data elements. Enter a TECH SPEC action code of "D" for delete. Now position the cursor at the first available BLANK TECH SPEC action code field and enter

A 17. -----
 A 17. -----
 A -----

3.3.2.3 Position the cursor at the first available ACTION CODE field of the FEG portion of the screen and enter an action code of "D". Now, in the first available blank FEG field enter:

A -----
 A -----
 A -----

Once entered, TRANSMIT the data to the data base.

3.3.2.4 The response to 3.3.2.3 should be the same screen. There should be 2 error messages:

and 17. -----

with a legend at the bottom providing a brief description of the error. In this case, the error was due to the TECH SPEC and FEG not being in the data base. There should also be a message at the bottom of the screen:

ALL OTHER UPDATES SUCCESSFUL

This indicates that all other relationship modifications were established.

3.3.2.5 Complete the test by obtaining a fresh EDIT COMPONENT screen.

TEST PREREQUISITE: 3.2

3.4 DELETE COMPONENT

- 3.4.1 Begin the test by entering the following component number and type:

The response should be the same data record from test number 3.3.2.

- 3.4.2 Enter an ACTION CODE of "D" for Delete, this will cause the COMPONENT NO. to disappear. You must at this point re-enter the COMPONENT NO. for purposes of validation. To test the validation edit, enter a different COMPONENT NO. than the one fetched. This should force an E 1 0 MIDAS error with the fetched COMPONENT NO. and the re-entered COMPONENT NO. being displayed. Now enter the correct COMPONENT NO. and TRANSMIT the data to the data base. (NOTE: The transaction can be sent either by using the TRANSMIT key or by TABING out of the last COMPONENT field.) The response should be:

SUCCESSFUL UPDATE

- 3.5.3 Test for successful deletion by fetching this same component. The response should be:

RECORD NOT ON FILE . . . YOU MAY ADD

TEST PREREQUISITE: 3.2

4.0 EDIT COMPONENT

MIDAS SYSTEM TEST SCRIPT

FUNCTION: FEG REPORTDATE 2/02/81ORIGINATOR: M. E. McKaganTEST NO: 4.0TEST PREREQUISITE: 1.0,TEST DESCRIPTION: Test all features of FEG report

RESULTS:

ACCEPTANCE

Yes ☐ No ☐ (If not acceptable, explain below)

COMMENTS:

Signature Block

B Test Performed By:

Program Manager:

C

S Date

Date

R

H Test Performed By:

Accepted By:

E

D Date

Date

L

4.1 TEST REPORT TYPE B

4.1.1 Begin the test by rebuilding the FEG network illustrated on page 10 (diagram 1.2.5). Once completed, suppress the "Special Report" function key indicated on the MIDAS main menu. This will produce the MIDAS system report sub-menu.

4.1.2 To request the report, suppress the FEG Report sub-function key. The result will be the FEG Report request screen. Ask for report type B by placing an "X" in the report "B" request field. Since report "B" requires an FEG number, the report screen cannot be sent until an FEG is entered. Enter the following FEG:

TAB out of the last field. Since no other action can be taken, your request will have automatically been sent to the UNIVAC.

4.1.3 The response to 4.1.2 should be the same screen with a blinking message at the bottom:

JOB SUCCESSFULLY STAGED FOR PROCESSING

4.1.4 When the job has finished executing, the report itself will start printing on the printer connected to the RJE terminal in the 4702 building when the printer is on and available.

MIDAS FEG reports will be identified by the following message:

FEG REPORT..MIDAS REPORT OUTPUT

This message will be located on the output banner page.

4.1.5 Once the report has been secured, check the output format and content. The network described by the various levels of indentation should match the network described on page 10. The case FEG _____ should have an MO2 NO SUPERIOR message associated with it.

TEST PREREQUISITE: 1.0

4.2 TEST REPORT TYPE C

- 4.2.1 Begin the test by obtaining FEG report request screen. Enter an "X" in the report request field for report type C. Since no FEG is required for this report, the request will be automatically sent.
- 4.2.2 The response to 4.2.1 will be the same as in 4.1.3 with the output being received as in 4.1.4.
- 4.2.3 Check the resulting report content and format. The network described by the various levels of indentation should match the entire network described on page 10. There should be two M02 messages on the report. One for FEG no ____ - ____ - ____ and ____ - ____ - ____.

TEST PREREQUISITE: 1.0

4.3 TEST REPORT TYPE A

4.3.1 Begin the test by obtaining the FEG report request screen. Enter an "X" in the report request screen for Report type "A". Since an FEG number is required for this report, you may not TRANSMIT until an FEG has been entered. Test this by attempting to TRANSMIT. You should get a MIDAS E 1 1 error code.

4.3.2 Enter the following case FEG:

and TRANSMIT the screen. (NOTE: Your request can be sent either by using the TRANSMIT key or by TABING out of the last FEG field.)

4.3.3 Unlike reports B and C, this report will be sent back to your screens and will be formatted like the screen in EDIT FEG. Check the network described on the screen against the network described on page 10.

TEST PREREQUISITE: 1.0

4.4 TESTING FOR INFINITE LOOP

4.4.1 Begin the test by reorganizing the FEG network on page 10 as follows:

- o Enter ____ - ____ - ____ as the case FEG through the EDIT FEG function.
- o Delete FEG ____ - ____ - ____ as an inferior.
- o Establish FEG ____ - ____ - ____ as an inferior.

Once completed, TRANSMIT the data.

4.4.2 Now procede as in test 4.2. The resulting report should show an E05* INFINITE LOOP error associated with FEG no ____ - ____ - ____. This FEG is inferior to itself in this network.

*NOTE: Reorganize the network to eliminate the loop before proceding.

TEST PREREQUISITE: 1.0

5.0 SEARCH/REPORT INDICES

MIDAS SYSTEM TEST SCRIPT

FUNCTION: SEARCH/REPORT INDICESDATE 6/05/81ORIGINATOR: M. E. McKaganTEST NO: 5.0

TEST PREREQUISITE: _____

TEST DESCRIPTION: Test all features of SEARCH/REPORT INDICES

RESULTS: _____

ACCEPTANCE

Yes ☐ No ☐ (If not acceptable, explain below)

COMMENTS: _____

Signature Block

B Test Performed By:

Program Manager:

C

S Date

Date

R

H Test Performed By:

Accepted By:

E

D Date

Date

L

5.1 TEST COMPONENT SCAN REQUEST

5.1.1 Test Component Scan using first 5 only.

Begin the test by suppressing the SEARCH/REPORT INDICES function key indicated on the MIDAS main menu. The result will be the SEARCH and Report Indices Screen. Enter an "A" for all in the COMPONENT TYPE field. The cursor will automatically position itself in the first field of the COMPONENT NO. Enter the following COMPONENT NO.:

TAB forward until the cursor is positioned in the SCAN field. Enter a "Y" for yes and TRANSMIT the report request.

The result will be a banner page indicating your select criteria. Begin paging forward by either using the TRANSMIT key for single paging or by entering the desired page number in the page field located at the bottom of the screen. Check to be sure that all Components selected have first 5 values entered above.

End the test by returning to the main menu.

5.1.2 Test Component Scan using 2nd 5 only.

Repeat test 5.1.1 and use the following component number:

The results should be the same as in 5.1.1. Be sure that all Components selected have second field values equal to the value entered above.

5.1.3 Test Component Scan using 1st 5 and 2nd 5.

Repeat test 5.1.1 and use the following Component Number:

The results should be the same as in 5.1.1. Be sure that all Components selected have 1st and 2nd field values equal to the one entered above.

5.1.4 Test Component Scan for Single Component.

Enter an "A" in the Component type field and enter the following Component Number:

TAB through the SCAN FIELD (do not enter a value). Your report request will automatically be sent to the host. (If a scan is not requested it is assumed that the selection of the single Component is desired.)

The result should be a MIDAS COMPONENT detail screen with the message at the bottom of the screen:

SEARCH AND REPORT PATH . . NO UPDATES ALLOWED

End of COMPONENT SCAN Test.

5.2 TEST SYSTEM START-UP SEARCH REQUEST

- 5.2.1 Test select on 1st 2 characters only. Begin the test by securing a blank SEARCH and REPORT INDICES screen. Enter an "A" for ALL in the COMPONENT TYPE field. TAB forward until the cursor is positioned in the SYSTEM START-UP field under the SEARCH column and enter the following START-UP code:

Once entered, TRANSMIT the request to the HOST.

The result will be a banner page indicating your select criteria. Page forward as you did in test 5.1.1. Be sure that all Components selected have SYSTEM START-UP codes whose first 2 characters match the select criteria on the banner page.

End the test by securing a blank SEARCH and REPORT INDICES screen.

- 5.2.2 Test Select on all 3 characters.

Repeat test 5.2.1 and use the following SYSTEM START-UP code:

The results should be the same as in 5.2.1 with all components having all 3 characters of the SYSTEM START-UP code equal to the code on the banner page.

End of SYSTEM START-UP test.

5.3 TEST TECH SPEC AND FEG SEARCH REQUEST

5.3.1 Test TECH SPEC search request.

Begin the test by obtaining a blank SEARCH and REPORT INDICES screen. Enter an "A" for ALL in the Component Type field. TAB forward until the cursor is positioned in the TECH SPEC field under the select column. Enter the following TECH SPEC NO.

17. _ _ _ _ _

and TRANSMIT the request to the host.

The result will be a banner page indicating your select criteria. Page forward in the same manner as in test 5.1.1. Check to be sure that all Components selected have the same TECH SPEC as indicated on the banner page. (See note below.)

End the test by securing a blank SEARCH and REPORT INDICES screen.

NOTE: TECH SPEC numbers do not appear on the summary screens so the components related to that TECH SPEC should be known ahead of time. Test data can be established by using the EDIT TECH SPEC and EDIT COMPONENT functions.

5.3.2 Test FEG search request.

Begin the test by entering an "A" for ALL in the COMPONENT TYPE field. TAB forward until the cursor is positioned in the first field of the FEG NUMBER under the SEARCH column. Enter the following FEG NUMBER:

_ _ _ - _ _ _ - _ _ _

and TRANSMIT the report request to the HOST.

The result will be a banner page describing your select criteria. Page forward in the same manner as in test 5.1.1. Check to be sure that all components selected have the same FEG as described on the banner page. (See note below.)

END FEG and TECH SPEC search request test.

NOTE: FEG NUMBERS do not appear on the summary screens so the componenets related to that FEG should be known ahead of time. Test data can be established by using the EDIT FEG and EDIT COMPONENT functions.

5.4 TEST SEARCH/REPORT INDICES FOR SEARCH/LIMIT/SELECT

5.4.1 Test the SEARCH FEATURE of SEARCH/REPORT INDICES.

Begin the test by securing a blank SEARCH and REPORT INDICES screen. Enter an "A" for ALL in the COMPONENT TYPE field. TAB forward until the cursor is positioned in the P & ID field under the SEARCH COLUMN and enter the following P & ID No.:

TRANSMIT the report request to the host.

The result should be the SEARCH and REPORT banner page with COMPONENT TYPE "ALL" and a SEARCH on P & ID _____. Begin paging forward. Check to be sure that all P & ID's are the same as the P & ID shown on the banner page.

End the test by securing a blank SEARCH and REPORT INDICES screen.

5.4.2 Test the SEARCH/LIMIT feature of SEARCH and REPORT INDICES.

Begin the test by entering a "A" for ALL for the Component type. TAB forward until the cursor is positioned in the P & ID field in the SEARCH column. Enter the same P & ID as was used in test 5.4.1. TAB forward until the cursor is positioned in the CELL field under the LIMIT column* and enter the following CELL:

and TRANSMIT the report request to the HOST.

The response should be a banner page which indicates an INDICES TYPE of ALL, a SEARCH on P & ID of _____ and LIMITED TO CELL _____. Begin paging forward. Be sure that all COMPONENTS listed have P & ID's and CELLS which match the ones on the banner page.

End the test by securing a blank SEARCH and REPORT INDICES screen.

* When a value is entered in SELECT column, the cursor will automatically jump to the beginning of the next column since only one value per column is allowed.

5.4.3 Test the SEARCH/LIMIT/SELECT features of SEARCH and REPORT INDICES.

Begin the test by entering an "A" for ALL in the COMPONENT TYPE field. TAB forward until the cursor is positioned in the P & ID field under the select column. Enter the same P & ID as entered in test 5.4.1. Now use the GLOBAL TAB key to position the cursor at the beginning of the LIMIT column. TAB forward until the cursor is positioned in the CELL field under the LIMIT column and enter the same CELL No. as was entered in test 5.4.2. Now use the GLOBAL TAB key to position the cursor at the beginning of the SELECT column. TAB forward until the cursor is positioned in the CRITICAL SYSTEM field under the SELECT column and enter the following CRITICAL SYSTEM:

Once entered, TRANSMIT the report request to the HOST.

The result should be a banner page indicating one INDICES TYPE of "ALL" with a SEARCH on P & ID _____, LIMITED TO CELL _____, and SEARCHED on CIRT. SYS. _____. Begin paging forward. Be sure that all COMPONENTS listed have the same P & ID's, CELLS and CRITICAL SYSTEMS that were listed on the banner page.

End the test by securing a blank SEARCH and REPORT INDICES screen.

5.5 TEST THE ADDITIONAL SUPPORT FEATURES OF S/R INDICES.

5.5.1 Test the TAB BACH and TAB SCIP feature.

Begin the test by entering an "A" for ALL in the COMPONENT TYPE field. Under the SEARCH column, enter a P & ID No. of . Use the GLOBAL TAB to position the cursor at the beginning of the LIMIT column. Begin TABBING forward. Be sure that when attempting to TAB into the P & ID field, the cursor will jump from the FEG No. field directly to the CELL field. This occurs because there is already a value in the P & ID field under the SEARCH column.

Now attempt to TAB BACH into the SEARCH column. The system should not allow this since there is already a value in the SEARCH column.

TRANSMIT the report request to the HOST and proceed to the next test (5.5.2).

5.5.2 Test the BLOW-UP feature of S/R INDICES.

Be sure to complete test 5.5.1 before proceeding. This test begins with a banner page on the screen with INDICES TYPE ALL, SEARCHED ON P & ID . Page forward one page. Notice that the cursor is located just to the left of the COMPONENT No's on the summary screen. Begin TABBING FORWARD. The cursor should travel down the screen always to the left of the COMPONENT NO.'s. The TAB BACK key should move the cursor up the screen. Place the cursor in front of any COMPONENT on the screen and suppress the F21 key.

The result should be a COMPONENT INDEX detail screen with the message at the bottom:

SEARCH AND REPORT PATH . . . NO UPDATES ALLOWED.

The actual INDEX from which the COMPONENT came (i.e. VALVE, DAMPER, etc.) should be indicated at the top of the screen.

Proceed with the next test.

5.5.3 Test the RETURN feature of S/R INDICES.

Be sure to complete TEST 5.5.2 before proceeding. This test begins with a COMPONENT INDEX detail screen on the UTS400 screen. Suppress the FCC LOCATE KEY.

The result should be the return of the summary screen from test 5.5.2. The cursor should be positioned in front of the COMPONENT NO. that was previously BLOWN-UP in test 5.5.2.

Proceed on to the next test.

5.5.4 Test the MODE SWITCH to S/R INDICES.

Position the cursor in front of a different COMPONENT NO. and suppress the F21 key. The result will be the COMPONENT INDICES detail screen. TAB through all data fields until the cursor is positioned in the P & ID field for that COMPONENT and suppress the F20 key.

The result should be the SEARCH and REPORT INDICES screen with the P & ID No. from the detail screen filled in under the SEARCH column. The cursor should be positioned in the COMPONENT TYPE field.

Begin TABBING forward. The cursor should completely SCIP the SEARCH column since a value already exists.

Repeat this test by transmitting the report request to the HOST. When the banner page returns, advance one page, place the cursor in front of a COMPONENT; suppress the F21 key. When the detail screen is returned, place the cursor at the beginning of the COMPONENT NO. and suppress the F20 key.

The result will be the SEARCH and REPORT INDICES screen with the COMPONENT field filled in.

End of TEST 5.0.

6.0 TECH SPEC REPORT

MIDAS SYSTEM TEST SCRIPT

FUNCTION: TECH SPEC REPORTDATE 6/05/81ORIGINATOR: M. E. McKaganTEST NO: 6.0

TEST PREREQUISITE: _____

TEST DESCRIPTION: Test all features of TECH SPEC REPORT

RESULTS: _____

ACCEPTANCE

Yes ☐ No ☐ (If not acceptable, explain below)

COMMENTS: _____

Signature Block

B Test Performed By:
C
S Date
R

Program Manager:

Date

H Test Performed By:
E
D Date
L

Accepted By:

Date

6.1 TEST THE TECH SPEC REPORT FUNCTION FOR A SINGLE TECH SPEC.

Begin the test by entering the SPECIAL REPORT mode through the MIDAS MAIN MENU. Enter the TECH SPEC REPORT MODE by suppressing the appropriate sub-function key indicated on the SPECIAL REPORT SUBMENU.

The result will be a blank TECH SPEC report screen with the cursor positioned at the beginning of the TECH SPEC field. Enter the following TECH SPEC:

17. _____

And either TAB out of the field or TRANSMIT the request to the host.

The result will be a TECH SPEC report output screen (see Appendix 6). COMPONENTS related to the TECH SPEC will be listed first, followed by its related FEG's and finally its SYSTEM COMPLIANCE PROCEDURE NUMBERS.

Begin paging forward. Do this by either suppressing the TRANSMIT KEY or by entering the desired page number in the space provided at the bottom of the screen. The cursor will be positioned in the page field when each screen is returned. Continue paging forward until all pages have been returned.

Complete the test by securing a blank TECH SPEC report screen.

6.2 TEST THE TECH SPEC REPORT REQUEST FOR ALL TECH SPECS.

Begin the test by securing a blank TECH SPEC REPORT screen. The cursor should be positioned at the beginning of the TECH SPEC field. Enter ALL in the TECH SPEC field and either TAB out of the field or TRANSMIT the report request to the host.

The result will be the same TECH SPEC REPORT request screen with a message at the bottom indicating that the job was successfully started.

A TECH SPEC REPORT request of ALL will start a batch job. When the job has finished executing, the report itself will begin printing in the RJE terminal room in the 4702 Building when the printer is on and available.

MIDAS TECH SPEC reports can be identified by the following message:

TECH SPEC REPORT . . MIDAS REPORT OUTPUT

This message will be located on the output banner page.

Once the output has been secured, check the output format and content. COMPONENTS will be listed first and will be sorted in COMPONENT order. FEGs will be listed next sorted in FEG order. SYSTEM COMPLIANCE PROCEDURE NUMBERS will be listed next sorted in ascending order.

End the test by returning to the MIDAS main menu (do this by suppressing the BOB key).

7.0 LEFT OPEN FOR EXPANSION

8.0 LEFT OPEN FOR EXPANSION

9.0 TEST THE GENERAL FEATURES OF INPUT, PROCESS AND CHANGE (IPC) FUNCTIONS

9.1 INSERTING A DOCUMENT INTO THE WORK CONTROL LOG (WCL)

Begin the test by entering the input function from the MIDAS main menu. The result is a document detail screen "A" with the cursor positioned at the beginning of the document field. Enter the following document number and type:

 - /

After entering, XMIT the screen to the host. Since this document is not resident in the data base, the following message will be returned on screen "A" along with the document number and type:

"NO ERRORS"

Since an update was not requested, you are in input, process, change "EDIT" mode. The processed field should be set to "N" for no.

Enter the following data into the nameplate portion of the screen.

```

MODE :INPUT
-----/.. DOCUMENT/TYPE          S/U SYS:___ WORK DESCRIPTION
PRI:  ___
-----/.. TAGOUT/HUNG? REQ? _ SHOP: X-___
CRIT.SYS.CODE: _ _ _ _ _ WORK CONTROL COMMENTS
STATUS: _ _ _ _ _ REL.MAINT: _ _ _ _ _
INITIALS: _ _ _ _ _ START DATE: _ _ _ _ _
PROCESSED: _ _ _ _ _ LAST CHANGED: _ _ _ _ _ / _ _ _ _
=====

```

Notice that through cursor movement, the tagout, tagout hung and work control comment fields are skipped. These fields are protected in input mode.

The cursor will be positioned at the beginning of the first component field in the component section of the screen. Use the big tab key to position the cursor in the edit or update field at the bottom of the screen. Once positioned, enter a "Y" for yes. Notice that the screen is XMITted automatically for you.

The result should be the same screen back with the message at the bottom:

SUCCESSFUL COMPLETION

End the test by returning to the main menu.

9.2 ADDING COMPONENTS TO A DOCUMENT (INDICES RESIDENT COMPONENTS)

Begin the test by entering the input mode from the MIDAS main menu. Enter the document number and type that was entered in test 9.1 and XMIT the screen to the host. Result should be the document number and type along with all the namplate data entered in test 9.1. The cursor should be positioned in the REQ? field.

To add components to this record, you must first enter a "Y" for yes in the add component field located at the bottom of the screen. Do this by suppressing the big tab key twice and the tab forward key twice. When the "Y" is entered, there will be a short pause. When the screen is returned, the cursor will automatically be positioned at the beginning of the first component field. Add the following components:

COMPONENT	DESCRIPTION	OE COMMENTS
		[00S]
		[00S]
		[00S]
		[00S]
UPDATE	CONTINUATION PAGE	ADD COMPONENT:...

Once entered, XMIT the screen to the data base.

Since no update was requested, MIDAS defaults to edit mode. The response will be the same screen with the component descriptions filled in. Notice that for the component that has no associated FEG's it has the message "NO FEG ASSOCIATED". In addition to the descriptions, there is a message at the bottom of the screen

"NO ERRORS"

To update your data base, place a "Y" in the update field. Do this by suppressing the big tab key twice. Enter a "Y". The screen will be automatically transmitted.

The response will be screen "A" for this document with the first four components related to the document. There is a message at the bottom of the screen

"SUCCESSFUL UPDATE"

9.3 ADDING COMPONENTS TO A DOCUMENT (COMPONENTS NOT RESIDENT IN THE INDICES)

Begin the test by entering the input mode from the MIDAS main menu. Enter the document used in test 9.1. Once entered, XMIT the screen to the host.

When the data is returned on document screen "A", place a "Y" in the add component field located at the bottom of the screen and XMIT.

Enter the following components.

COMPONENT	DESCRIPTION	OE COMMENTS
		(00S)
		(00S)
		(00S)
		(00S)
UPDATE CONTINUATION PAGE		ADD COMPONENT:...

When entered, XMIT the screen to the host. The response will be the same screen with a message at the bottom of the screen

"E17. COMPONENT 1,2"

The component descriptions for component 1 and 2 for this screen will be

"NOT IN MCI"

To attach these temporary components to this document, place an "*" in the disposition field for the components which are identified as NOT IN MCI and place

Once entered, XMIT the screen to the host. The returned screen will have the message

"SUCCESSFUL UPDATE"

with the first four components for this document.

End the test by obtaining the MIDAS main menu.

9.4 ENTERING A DOCUMENT INTO THE WCL ALONG WITH ITS COMPONENTS

Begin the test by entering the input mode from the MIDAS main menu. Enter the following data indicated on the screen below.

```

MDS0411          MODE : INPUT
S/U SYS:_____ WORK DESCRIPTION
PRI:_____
TAGOUT/HUNG? REQ? .. SHOP: X-_____
CRIT.SYS.CODE: _ _ _ _ _ WORK CONTROL COMMENTS
STATUS:_____ REL.MAINT: _____
INITIALS: _ _ _ START DATE: _ _ _ _ _
PROCESSED: _ LAST CHANGED: _ _ _ _ _ / _ _ _ _ _
=====
COMPONENT          DESCRIPTION          OE COMMENTS
-----
NONE:
-----
NONE:
-----
NONE:
-----
NONE:
-----
EDITOR UPDATE          CONTINUATION PAGE          ADD COMPONENT: _

```

Once entered, XMIT the screen to the host. The response will be the following screen:

```

MODE : INPUT
DOCUMENT/TYPE          S/U SYS:          DOCUMENT DESCRIPTION
PRI:
TAGOUT/HUNG?  REQ?    SHUP: X-
CRIT.SYS.CODE:        WORK CONTROL COMMENTS
STATUS:  REL.MAINT:
INITIALS:  START DATE:
PROCESSED: N  LAST CHANGED:
=====
COMPONENT          DESCRIPTION          OE COMMENTS
=====
(008)
(008)
(008)

```

End the test by obtaining the MIDAS main menu.

9.5 ENTERING A DOCUMENT INTO THE WCL IN "CHANGE" MODE

Begin the test by entering the change mode from the MIDAS main menu. Enter the following document number/type.

MDS015 W C L CHANGE

DOCUMENT/TYPE _____/_____ TAGOUT _____

The screen will have been automatically sent to the host.

The returned document screen "A" will have the document number and type entered above the message.

"E14 DOCUMENT NOT IN DATA BASE YOU MAY ADD"

Located at the bottom of the screen.

9-6

Since update has not yet been requested, MIDAS assumes you are in edit mode. The process field should be set to "N" with the message at the bottom "NO ERRORS".

Now place a "Y" in the update field. The screen will be automatically XMITted for you.

The returned screen will have the same data as entered with the last changed field filled in on the message at the bottom

"SUCCESSFUL UPDATE"

9.6 ADDING COMPONENTS TO A DOCUMENT IN CHANGE MODE

Adding components to a document in change mode is identical to test 9.2 with the following exceptions:

Adding components to a document in process mode is identical to that of change mode with the following exceptions.

- Begin the test by entering change mode from the MIDAS main menu. Enter the following:

DOCUMENT/TYPE - / TAGOUT -

When the document has been returned, place a "D" in the disposition field for the components indicated below and place an "X" in the update field and XMIT the screen to the host.

COMPONENT	DESCRIPTION	QE COMMENTS
P- 1- D PRIMARY SODI PUMP T/S		0008
P- 1-A D TEST COMPONENT T/S FEGS QOS: TMP- 1-1		0008
		0008
		0008
UPDATE	CONTINUATION PAGE	ADD COMPONENT:

Response should be the same screen with the appropriate components deleted.

9.8.2 Deleting a Component in Process Mode

Follow the same procedure as in test 9.8.1 and note the following exceptions:

1. Mode at the top of the screen indicates process as opposed to change.

9.8.3 Deleting a Component in Input Mode

The deleting of components in input mode is not allowed. Test this by following the procedures in test 9.8.1. When attempting to enter a "D" in the disposition field, the message "INVALID VALUE" will appear at the bottom of the screen.

9.9 TEST MULTI-PAGE DOCUMENTS IN INPUT, PROCESS AND CHANGE MODE

Begin by entering the input mode from the MIDAS main menu. Enter the following document number and type.

 /

Add the following four components to this document.

COMPONENT	DESCRIPTION	OF COMMENTS
P- 1-A		(005)
P- 1-B		(005)
P- 15-		(005)
23V- 814-		(005)
UPDATE CONTINUATION PAGE ADD COMPONENT:Y		

When the screen has returned, add the next four listed below:

COMPONENT	DESCRIPTION	DE COMMENTS
Q- 40- -		(00S)
Q- 39- -		(00S)
23V- 811- -		(00S)
23V- 812- -		(00S)
UPDATE - CONTINUATION PAGE - ADD COMPONENT:Y		

The resulting screen should appear as below. The components are listed in sorted order. The continuation page field should have a "Y" for yes indicating that there are more records for display.

```

                                MODE : INPUT
AA-MARK4/I DOCUMENT/TYPE      S/U SYS:12A      DOCUMENT DESCRIPTION
                                PRI:      1 TEST SCRIPTS
- / TAGOUT/HUNG? REQ? N SHOP: X-11N
                                CRIT.SYS.CODE: 1 P WORK CONTROL COMMENTS
STATUS:NONREL REL.MAINT: M12A1 ----- TEST SCRIPTS ON 9/5/81...MEM
INITIALS: CHE START DATE: 09-17-81
PROCESSED: N LAST CHANGED:09-05-81/1157
=====
COMPONENT      DESCRIPTION      OE COMMENTS
P-      1-A _ TEST COMPONENT
T/S
(00S)
P-      1-B _ TEST COMPONENT 1-B
---
(00S)
P-      15- _ WELL WATER PUMP
T/S
(00S)
Q-      39- _ T 58 WATER TANK HEATER
T/S
(00S)
UPDATE _ CONTINUATION PAGE Y ADD COMPONENT:..
SUCCESSFUL COMPLETION

```

To obtain the next set of components, merely suppress the XMIT key.

The result should be the following screen. Note that the components are in sorted order. Since there are no more records for display, the continuation page field is blank.

MIDAS CONTACT LIST

(ATTACHMENT 1)

PROBLEM CATAGORY	WHO TO CONTACT		SHIFT	PHONE	ALTERNATE (IN ORDER)	
	ORG	IND				
1. UTS400 SOFTWARE	BCSR	Arbogast Arbogast	PRIME Swing/Grave	6-6250 547-1229	L. Marshall 545-6932 M. McKagan 582-3391	
2. UTS400 HARDWARE	Operations Supervisor		All	6-6508	None	
3. UNIVAC SOFTWARE	Technology	Stephan Technology Pager	PRIME Swing/Grave	6-6398 85-764	W. Schering 6-6964 None	
4. UNIVAC HARDWARE	Operations Supervisor		All	6-6508	None	
5. MIDAS SOFTWARE	Management Systems	L. Marshall D. Ady M. McKagan	PRIME	6-8563 6-8563 6-1835		
	Management Systems	L. Marshall D. Ady	Swing/Grave	545-6932 547-3830	M. McKagan 582-3391	
6. COMMUNICATIONS	Communi- cations	D. Ellison J. Dell T. Amundson	PRIME	6-2902 6-2902 6-2902	L. Marshall 6-8563 M. McKagan 6-1835	
	G.T.E.					
7. ALL OTHERS	Management Systems	L. Marshall D. Ady M. McKagan	ALL	6-8563/545-6932 6-8563/547-3830 6-1835/582-3391	None	

MIDAS CONTACT LIST

(ATTACHMENT 2)

CONTACT	TYPE	SHIFT	PHONE	ALTERNATE
1. TRAY STRATTON	Prime Contact	Prime	6-9203	Chuck Topping
2. CHUCK TOPPING	Secondary Contact	Prime	6-9204	Tray Stratton
3. OPERATIONS ENG. (O.E.)	End User	All	6-0681	S.O.M.*
4. S.O.M.*	End User	All	6-0748	Operations Eng.

*Shift Operations Manager

UPDATE _ CONTINUATION PAGE _ ADD COMPONENT:..

COMPONENT	DESCRIPTION	OF COMMENTS
Q- 38-		(OOS)
P- 1-		(OOS)
		(OOS)
		(OOS)
		(OOS)
UPDATE - CONTINUATION PAGE -		ADD COMPONENT:Y

Since the first component is not in the MCI, you will receive an E17 error for component number 1. Place an * in the disposition field for this component and re-XMIT to the host.

The returned screen will appear as below:

```

MDS04U          MODE :INPUT
AA-MARK4/I DOCUMENT/TYPE      S/U SYS:12A      DOCUMENT DESCRIPTION
                                PRI: 1 TEST SCRIPTS
- / TAGOUT/HUNG? REQ? N SHOP: X-11N
                                CRIT.SYS.CODE: 1 P      WORK CONTROL COMMENTS
STATUS:NONREL REL.MAINT: M12A1- TEST SCRIPTS ON 9/5/81...MEM
INITIALS: CHE START DATE: 09-17-81
PROCESSED: N LAST CHANGED:09-05-81/1157
=====
COMPONENT      DESCRIPTION      OE COMMENTS
P- 1- PRIMARY SODI PUMP
T/S (00S)
P- 1-A TEST COMPONENT
T/S (00S)
P- 1-B TEST COMPONENT 1-B
---- (00S)
P- 15- WELL WATER PUMP
T/S (00S)
UPDATE CONTINUATION PAGE Y ADD COMPONENT:_
7 SUCCESSFUL COMPLETION

```

By suppressing the XMIT key, the following components will be displayed:

```

-----
COMPONENT      DESCRIPTION      OE COMMENTS
0- 38- * NOT IN MCI
---- (00S)_
0- 39- T 58 WATER TANK HEATER
T/S (00S)_
0- 40- T 58 WATER TANK HEATER
---- (00S)_
23V- 811- T-87 VENT
T/S (00S)
UPDATE CONTINUATION PAGE Y ADD COMPONENT:_

```

Suppressing the XMIT key again will display the last two components for this document as indicated below:

COMPONENT	DESCRIPTION	OE COMMENTS
23V- 812- - T-87 SUPPLY T/S		(00S)
23V- 814- - T-87 OUTLET T/S		(00S)
- - - - -		(00S)
- - - - -		(00S)
UPDATE - CONTINUATION PAGE - ADD COMPONENT:..		

Note that the first and second pages have a "Y" in the continuation page field where as the third is blank indicating that there are no more components for display.

By suppressing the XMIT key once more, the first page will be re-displayed.

End the test by obtaining the MIDAS main menu.

This test is identical in the change and process modes with the exceptions noted in Sections 9.6 and 9.7.

9.10 DELETING COMPONENTS IN A MULTI-PAGE DOCUMENT IN CHANGE AND PROCESS MODES

Begin the test by entering the change mode from the MIDAS main menu and enter the document used in test 9.9. The components returned will be as follows:

COMPONENT	DESCRIPTION	DE COMMENTS
P- T/S	1- PRIMARY SODI PUMP	(00S)
P- T/S	1-A TEST COMPONENT	(00S)
P- T/S	1-B TEST COMPONENT 1-B	(00S)
P- T/S	15- WELL WATER PUMP	(00S)
UPDATE CONTINUATION PAGE Y ADD COMPONENT:..		

Proceed to delete the first and third components on this screen. The result will be the following screen.

COMPONENT	DESCRIPTION	DE COMMENTS
P- T/S	1-A TEST COMPONENT	(00S)
P- T/S	15- WELL WATER PUMP	(00S)
Q- T/S	38- * NOT IN MCI	(00S)
Q- T/S	39- T 58 WATER TANK HEATER	(00S)
UPDATE CONTINUATION PAGE Y ADD COMPONENT:..		

Since there are four components remaining, the continuation page field contains a "Y". Suppress the XMIT key to obtain the next set of components. The screen will appear as follows:

End the test by obtaining the MIDAS main menu.

To test this feature in process mode, add the two components to the document that were just deleted. Do this in any one of the input, process and change modes. Then proceed to delete them in process.

9.11 MODIFYING COMPONENT DESCRIPTIONS AND OE COMMENT IN INPUT MODE

Begin the test by entering the input mode from the MIDAS main menu. Enter the document number and type that was used in test 9.10.

Position the cursor in the disposition field of the first component. This component is in indices resident component and, therefore, its description cannot be changed. Attempt to tab into the description field. The cursor will skip the description field and will be positioned at the beginning of the OE comment field. Although indices resident description cannot be changed, temporary components can be changed.

For those components whose disposition field has an "*", the cursor will allow entry into the description field. Modify the component descriptions and OE comments so that they appear as follows:

Once done, place a "Y" in the update field. The screen will automatically be XMITted to the host.

The result will be the same screen. Check to be sure that the data on the returned screen is the same as above. There should also be the message at the bottom of the screen:

"SUCCESSFUL UPDATE"

End the test by obtaining the MIDAS main menu.

9.12 MODIFYING COMPONENT DESCRIPTION AND OE COMMENTS IN CHANGE MODE

The test for modifying component descriptions and OE comments is the same as in input mode. To test, follow the same procedures as in test 9.11. Change the component descriptions and OE comments so that they appear as they did prior to test 9.11.

9.13 MODIFYING COMPONENT DESCRIPTION AND OE COMMENTS IN PROCESS MODE

The test for modifying component descriptions and OE comments is the same as in input mode. To test, follow the same procedure as in test 9.11. Change the component description and OE comments as indicated in test 9.11.

9.14 OBTAINING SCREEN "B" FROM SCREEN "A"

Begin the test by fetching the following document in any one of the input, process or change modes.

- /

Position the cursor at the beginning of the first component field. Do this by suppressing the big tab key. Obtain screen "B" by suppressing the F14 function key.

The result should be the component information screen with the proper mode indicated at the top. The cursor should be positioned in the disposition field of the first FEG.

To return, suppress the "STATUS" key. The result should be the screen "A" that was departed from. The cursor should be positioned at the point from which is left. Do this for all components on the screen.

End the test by obtaining the MIDAS main menu.

9.15 UPDATING SCREEN "B" IN INPUT MODE

Begin by calling up the following document in input mode.

- /

Once obtained, fetch the component information screen for the first component on the screen. (Not simply XMIT the screen to the host.) Since no update was requested, a message should appear at the bottom of the screen.

"UPDATE NOT = Y"

9.15.1 Adding an FEG to This Component

By suppressing the tab forward key once, the cursor will be positioned in the disposition field of the second FEG. Place an "*" in this field and add the following FEG:

- /

By suppressing the big tab key twice, the cursor will be positioned in the update field.

Enter a "Y". The screen will be automatically sent to the host. The response should be the document screen "A" with the message at the bottom

"SUCCESSFUL COMPLETION"

With the cursor positioned at the beginning of the first component field. Use the F14 key to be sure that the component information screen has the following contents.

End the test by obtaining a MIDAS main menu.

9.16 PROCESSING SCREEN "B" IN CHANGE AND PROCESS MODE

Begin the test by fetching the following document in either change or process mode. When the screen is returned, fetch a component information screen for the first component for this document.

9.16.1 Deleting an FEG

Position the cursor in the disposition field of the temporary FEG indicated by an "*". Place a "D" for delete in this field, place a "Y" in the update field. The screen will be automatically sent to the host. The result should be document screen "A" with the message at the bottom:

"SUCCESSFUL UPDATE"

To ensure the delete to place, obtain the component information screen for the case component. Do this by using the F14 key (cursor should be positioned at the beginning of the case component).

Check to be sure that the FEG has been deleted.

9.16.2 Setting an FEG OOS

By suppressing the big tab key once, the cursor will position itself in the OOS field of the first FEG. Enter a "Y" in this field. enter a "Y" in the update field. The result should be the document screen "A" with the message at the bottom:

"SUCCESSFUL UPDATE"

Check to be sure that the FEG that was placed OOS is being displayed in the OOS section of the case component.

9.16.3 Adding an FEG and Placing it OOS at the Same Time

Begin the test by obtaining the component information screen. Position the cursor in the disposition field of the first available open FEG line.

Enter the following FEG.

* _ _ _

Now place a "Y" in the OOS field for this FEG, place a "Y" in the update field. The response should be the document screen "A" with the message

"SUCCESSFUL UPDATE"

Check to be sure that the FEG just added is located in the OOS section of the case component.

9.17 TEST THE OOS FIELD ON DOCUMENT SCREEN "A"

9.17.1 Test for the OOS = N

Begin the test by tabbing forward into the OOS field for the case component. Place an "N" for no in the field. Now place a "Y" in the update field.

The response should be the same screen "A" with the message at the bottom:

"SUCCESSFUL COMPLETION"

Check to be sure that the two FEGs that were previously being displayed in the OOS section of the case component are now gone. To ensure that these FEGs are no longer OOS, obtain the screen "B" for this component.

End the test by suppressing the status key.

9.17.2 Test for OOS = Y

Begin the test by entering a "Y" in the OOS field for the first component for this document, then place a "Y" in the update field.

The response should be the document screen "A" with the message at the bottom:

"SUCCESSFUL COMPLETION"

Check to ensure that all FEGs associated with this component are displayed in the OOS section of the case component.

10.0 SEARCH AND REPORT WORK CONTROL LOG (S/R WCL)

The Search and Report WCL function currently supports 21 different select criteria. The Search for all column, however, appears to call for only 13. The additional select capabilities are provided by the various scans which are indicated by an "*" in the appropriate fields. The 21 different selects are indicated in the grid charts included in this section.

The S/R WCL function is comprised of 13 different programs. It is the intent of this procedure to test all 13 programs and all paths through these programs.

10.1 TESTING THE S/R WCL FUNCTION VIA THE GRID CHARTS

The S/R WCL grid chart is made up of row-wise select criteria and column-wise limit criteria. In order to successfully test all S/R WCL programs and paths, at least one select in all 21 rows on the grid chart must be performed. More specifically, an S/R WCL request screen must be obtained via the MIDAS main menu. The first test would consist of entering a DOCUMENT NO. and XMITting. When the summary report has been examined for accuracy, a value in TAGOUT field in the SELECT column is entered and XMITted etc. This process must be repeated until all 21 rows have been accounted for.

This process is now repeated by filling in values in the Limit columns. For all 21 rows, a value in all 13 columns must be entered.

10.2 RECORDING THE TESTS

Each row and column on the grid chart has an entry box associated with it. Within each box is an S entry for the value that was used in the select column of the S/R WCL screen and an L entry for the value that was used in the limit column of the S/R WCL request screen. It is important that the actual test values be entered. This becomes very helpful if a problem is encountered since the actual values are pertinent to analyzing the problem. Ample copies of the grids should be made prior to the test. Do not use the original grids in the document since they are all you have.

10.3 TESTING THE SORT CAPABILITY

Once the select and limit tests have been performed, the test must be repeated for all possible sort criterias available. A field is provided at the bottom of each grid entitled SORT LIST BY FIELD. It is important that the field sorted on is entered here. This information is necessary for proper problem analysis if a problem is encountered.

10.4 ESTABLISHING TEST DATA

In order to properly test the S/R WCL function, a good representative test data must be available. There must be at least 20 Documents in the test set (the more the better). For most Documents there should be at least one component (MCI resident or Document temporary). These components must have at least one Tech. Spec. and one FEG. The FEG must have at least one Tech. Spec. Each Document must have a complete nameplate data set.

It will take considerable time to establish and enter the test data set. This test set should be entered the week prior to conducting this test. The Document Numbers should have some kind of unique identification (i.e., 77 - / where all Documents for this test have first two entries of 77). This isolates this test set from all other alpha test, beta test and training data sets.

Remember:

- a) Make plenty of copies of the grids
- b) Record all data values used for testing on the grid
- c) Provide ample time for entering test data

LIMIT LIST TO

SEARCH FOR ALL

		DOCUMENT NO.	TACOUT NO.	TACOUT SCAN	COMPONENT NO.	COMPONENT NO. FIRST 10	COMPONENT NO. FIRST 5	COMPONENT NO. SECOND 5	TECH SPEC
1	DOCUMENT NO.	S L	S L	S L	S L	S L	S L	S L	S L
2	TACOUT NO	S L	S L	S L	S L	S L	S L	S L	S L
3	TACOUT SCAN	S L	S L	S L	S L	S L	S L	S L	S L
4	COMPONENT NO.	S L	S L	S L	S L	S L	S L	S L	S L
5	COMPONENT NO. FIRST 10	S L	S L	S L	S L	S L	S L	S L	S L
6	COMPONENT NO. FIRST 5	S L	S L	S L	S L	S L	S L	S L	S L
7	COMPONENT NO. SECOND 5	S L	S L	S L	S L	S L	S L	S L	S L
8	TECH SPEC NO.	S L	S L	S L	S L	S L	S L	S L	S L
9	SYSTEM STARTUP	S L	S L	S L	S L	S L	S L	S L	S L
10	SYSTEM (2 CHAR)	S L	S L	S L	S L	S L	S L	S L	S L
11	RELATED MAINT	S L	S L	S L	S L	S L	S L	S L	S L
12	RELATED MAINT (4 CHAR)	S L	S L	S L	S L	S L	S L	S L	S L

LIMIT LIST TO

SYSTEM STARTUP

SYSTEM (2 CHAR)

RELATED MAINT

RELATED MAINT (4)

FEC. NO.

SHOP RECORD
(3 CHAR)SHOP RECORD
(2 CHAR)

START DATE

1	S L	S L	S L	S L	S L	S L	S L	S L
DOCUMENT NO.								
2	S L	S L	S L	S L	S L	S L	S L	S L
TAGOUT NO.								
3	S L	S L	S L	S L	S L	S L	S L	S L
TAGOUT SCAN								
4	S L	S L	S L	S L	S L	S L	S L	S L
COMPONENT NO.								
5	S L	S L	S L	S L	S L	S L	S L	S L
COMPONENT NO. FIRST 5								
6	S L	S L	S L	S L	S L	S L	S L	S L
COMPONENT NO. SECOND 5								
7	S L	S L	S L	S L	S L	S L	S L	S L
COMPONENT NO. FIRST 10								
8	S L	S L	S L	S L	S L	S L	S L	S L
TECH SPEC NO.								
9	S L	S L	S L	S L	S L	S L	S L	S L
SYSTEM STARTUP								
10	S L	S L	S L	S L	S L	S L	S L	S L
SYSTEM (2 CHAR)								
11	S L	S L	S L	S L	S L	S L	S L	S L
RELATED MAINT								
12	S L	S L	S L	S L	S L	S L	S L	S L
RELATED MAINT (4 CHAR)								

SEARCH FOR ALL

LIMIT LIST TO

RELATED MAINT
(2 CHAR)

CRITICAL SYS.

WORK STATUS

PRIORITY

LAST CHANGED

1	S	S	S	S	S	S	S	S
DOCUMENT NO.	L	L	L	L	L	L	L	L
2	S	S	S	S	S	S	S	S
TAGOUT NO.	L	L	L	L	L	L	L	L
3	S	S	S	S	S	S	S	S
TAGOUT SCAN	L	L	L	L	L	L	L	L
4	S	S	S	S	S	S	S	S
COMPONENT NO.	L	L	L	L	L	L	L	L
5	S	S	S	S	S	S	S	S
COMPONENT NO. FIRST 10	L	L	L	L	L	L	L	L
6	S	S	S	S	S	S	S	S
COMPONENT NO. FIRST 5	L	L	L	L	L	L	L	L
7	S	S	S	S	S	S	S	S
COMPONENT NO. SECOND 5	L	L	L	L	L	L	L	L
8	S	S	S	S	S	S	S	S
TECH SPEC NO.	L	L	L	L	L	L	L	L
9	S	S	S	S	S	S	S	S
SYSTEM STARTUP	L	L	L	L	L	L	L	L
10	S	S	S	S	S	S	S	S
SYSTEM (2 CHAR)	L	L	L	L	L	L	L	L
11	S	S	S	S	S	S	S	S
RELATED MAINT	L	L	L	L	L	L	L	L
12	S	S	S	S	S	S	S	S
RELATED MAINT (4 CHAR)	L	L	L	L	L	L	L	L

SEARCH FOR ALL

LIMIT LIST TO

DOCUMENT NO.

TAGOUT NO.

TAGOUT SCAN

COMPONENT NO.

EQUIPMENT NO.
FIRST 10

COMPONENT NO.
FIRST 5

COMPONENT NO.
SECOND 5

TECH SPEC N

13	S FEC NO	S L	S L	S L	S L	S L	S L	S L
14	S SHOP RECORD 3 CHAR	S L	S L	S L	S L	S L	S L	S L
15	S SHOP RECORD 2 CHAR	S L	S L	S L	S L	S L	S L	S L
16	S START DATE	S L	S L	S L	S L	S L	S L	S L
17	S RELATED MAINT. 2 CHAR	S L	S L	S L	S L	S L	S L	S L
18	S CRITICAL SYS.	S L	S L	S L	S L	S L	S L	S L
19	S WORK STATUS	S L	S L	S L	S L	S L	S L	S L
20	S PRIORITY	S L	S L	S L	S L	S L	S L	S L
21	S LAST CHANGED	S L	S L	S L	S L	S L	S L	S L
	S L	S L	S L	S L	S L	S L	S L	S L
	S L	S L	S L	S L	S L	S L	S L	S L
	S L	S L	S L	S L	S L	S L	S L	S L

SEARCH FOR ALL

		LIMIT LIST TO							
		SYSTEM STARTUP	SYSTEM (2 CHAR)	RELATED MAINT	RELATED MAINT (4 CHAR)	FEG NO	SHOP RECORD (3 CHAR)	SHOP RECORD (2 CHAR)	START DATE
13	FEG NO.	S L	S L	S L	S L	S L	S L	S L	S L
14	SHOP RECORD 3 CHAR	S L	S L	S L	S L	S L	S L	S L	S L
15	SHOP RECORD 2 CHAR	S L	S L	S L	S L	S L	S L	S L	S L
16	START DATE	S L	S L	S L	S L	S L	S L	S L	S L
17	REL. MAINT (2)	S L	S L	S L	S L	S L	S L	S L	S L
18	CRITICAL SYS	S L	S L	S L	S L	S L	S L	S L	S L
19	WORK STATUS	S L	S L	S L	S L	S L	S L	S L	S L
20	PRIORITY	S L	S L	S L	S L	S L	S L	S L	S L
21	LAST CHANGED	S L	S L	S L	S L	S L	S L	S L	S L
		S L	S L	S L	S L	S L	S L	S L	S L
		S L	S L	S L	S L	S L	S L	S L	S L
		S L	S L	S L	S L	S L	S L	S L	S L

LIMIT LIST TO

RELATED MAINT
(2 CHAR)

CRITICAL SYS.

WORK STATUS

PRIORITY

LAST CHANGED

SEARCH FOR ALL

13	S	S	S	S	S	S	S	S
FEC NO	L	L	L	L	L	L	L	L
14	S	S	S	S	S	S	S	S
SHOP RECORD 3 CHAR	L	L	L	L	L	L	L	L
15	S	S	S	S	S	S	S	S
SHOP RECORD 2 CHAR	L	L	L	L	L	L	L	L
16	S	S	S	S	S	S	S	S
START DATE	L	L	L	L	L	L	L	L
17	S	S	S	S	S	S	S	S
RELATED MAINT 2 CHAR	L	L	L	L	L	L	L	L
18	S	S	S	S	S	S	S	S
CRITICAL SYS	L	L	L	L	L	L	L	L
19	S	S	S	S	S	S	S	S
WORK STATUS	L	L	L	L	L	L	L	L
20	S	S	S	S	S	S	S	S
PRIORITY	L	L	L	L	L	L	L	L
21	S	S	S	S	S	S	S	S
LAST CHANGED	L	L	L	L	L	L	L	L
	S	S	S	S	S	S	S	S
	L	L	L	L	L	L	L	L
	S	S	S	S	S	S	S	S
	L	L	L	L	L	L	L	L
	S	S	S	S	S	S	S	S
	L	L	L	L	L	L	L	L

MDS05U
^CTION FEG NUMBER

FEG EDIT

DESCRIPTION

TYPE

___/___/___
MESSAGES

1990年 1月 1日 至 1990年 1月 31日

EDIT FEG SCREEN

EDIT TECH SPEC

$\frac{1}{\sqrt{2}} \begin{pmatrix} 1 & i \\ 0 & 1 \end{pmatrix}$

17

[illegible]

EDIT TECH SPEC SCREEN

MDS16L

INDICES DATA RECORD

--/--/-- --:--:--

TYPE : -----

ACTION CODE	COMPONENT NO.	DESCRIPTION					COMP. TYPE		
---	-----	---	---	---	---	---	---	---	---
		CRIT SYS.	ACT. CODE	TECH SPEC	ERR CODE	ACT. CODE	FEG NO	ERR CODE	
STARTUP	---	----	-	17.	----	---	-	----	----
BUILDING	-----	----	-	17.	----	---	-	----	----
CELL	-----	----	-	17.	----	---	-	----	----
LOCATION	-----	----	-	17.	----	---	-	----	----
P & ID	-----	----	-	17.	----	---	-	----	----
CABLE NO.	-----	----	-	17.	----	---	-	----	----
FUSE	-----	----	-	17.	----	---	-	----	----
SCHEMATIC NUMBER -----									

 VOLTS/NPHW -----
 KW -----

EQUIPMENT NUMBER -----

 EDIT ELECTRICAL LOAD INDEX SCREEN

MDS160

INDICES DATA RECORD

--/--/-- :--:--

TYPE : -----

ACTION CODE	COMPONENT NO.	DESCRIPTION					COMP. TYPE		
		CRIT SYS.	ACT. CODE	TECH SPEC	ERR CODE	ACT. CODE	FEG NO	ERR CODE	
STARTUP	---	----	-	17.	----	-	----	----	
BUILDING	-----	----	-	17.	----	-	----	----	
CELL	-----	----	-	17.	----	-	----	----	
LOCATION	-----	----	-	17.	----	-	----	----	
P & ID	-----	----	-	17.	----	-	----	----	
CABLE NO.	-----	----	-	17.	----	-	----	----	
FUSE	-----	----	-	17.	----	-	----	----	
SCHEMATIC NUMBER -----									
POSITION-ELECTRICAL FAILURE --									
POSITION-PNEUMATIC FAILURE --									
LOOP/LOGIC DIAG. NUMBER -----									
OPERATOR TYPE -----									

 EDIT DAMPER INDEX SCREEN

MDS16I

INDICES DATA RECORD

___/___/___ :___:___

TYPE : _____

ACTION CODE	COMPONENT NO.	DESCRIPTION					COMP. TYPE		
		CRIT SYS.	ACT. CODE	TECH SPEC	ERR CODE	ACT. CODE	FEG NO	ERR CODE	
STARTUP	---	----	-	17.	----	---	---	----	
BUILDING	-----	----	-	17.	----	---	---	----	
CELL	----	----	-	17.	----	---	---	----	
LOCATION	-----	----	-	17.	----	---	---	----	
P & ID	-----	----	-	17.	----	---	---	----	
CABLE NO.	-----	----	-	17.	----	---	---	----	
FUSE	-----	----	-	17.	----	---	---	----	
SCHEMATIC NUMBER	-----	----	-	17.	----	---	---	----	
POSITION-ELECTRICAL FAILURE	---	---	---	LOOP NUMBER	---	---	---	---	
POSITION-PNEUMATIC FAILURE	---	---	---	PANEL	---	---	---	---	
LOOP/LOGIC DIAG. NUMBER	-----	----	-		----	---	---	----	
EQUIPMENT NUMBER	-----	----	-		----	---	---	----	

EDIT INSTRUMENT INDEX SCREEN

MDS16V

INDICES DATA RECORD

--/--/-- --:--:--

TYPE : -----

ACTION CODE	COMPONENT NO.	DESCRIPTION				COMP. TYPE			
		CRIT SYS.	ACT. CODE	TECH SPEC	ERR CODE	ACT. CODE	FEG NO	ERR CODE	
STARTUP	---	----	-	17.-----	----	-	----	----	
BUILDING	-----	----	-	17.-----	----	-	----	----	
CELL	-----	----	-	17.-----	----	-	----	----	
LOCATION	-----	----	-	17.-----	----	-	----	----	
P & ID	-----	----	-	17.-----	----	-	----	----	
CABLE NO.	-----	----	-	17.-----	----	-	----	----	
FUSE	-----	----	-	17.-----	----	-	----	----	
SCHEMATIC NUMBER: -----									
POSITION-ELECTRICAL FAILURE		--		SIZE			-----		
POSITION-PNEUMATIC FAILURE		--		VALVE TYPE			----		
LOOP/LOGIC DIAG. NUMBER		-----		LIMIT SWITCH NUMBER			-----		
OPERATOR TYPE		----		SOLENOID/PNEUMATIC DIAG			----		

EDIT VALUE INDEX SCREEN

MDS16E

INDICES DATA RECORD

TYPE : -----

___/___/___ : : :---

CTION CODE	COMPONENT NO.	DESCRIPTION					COMP. TYPE		
---	-----	---	---	---	---	---	---	---	
		CRIT SYS.	ACT. CODE	TECH SPEC	ERR CODE	ACT. CODE	FEG NO	ERR CODE	
STARTUP	---	----	-	17.-----	---	-	---	----	
BUILDING	-----	----	-	17.-----	---	-	---	----	
CELL	----	----	-	17.-----	---	-	---	----	
LOCATION	-----	----	-	17.-----	---	-	---	----	
P & ID	-----	----	-	17.-----	---	-	---	----	
CABLE NO.	-----	----	-	17.-----	---	-	---	----	
FUSE	-----	----	-	17.-----	---	-	---	----	
SCHEMATIC NUMBER	-----								

EDIT EQUIPMENT INDEX SCREEN

MDS14D MIDAS INDICES SUMMARY REPORT
TYPE [ALL]

09/22/81 07:25:38

SEARCHED ON : SYSTEM-START-UP 23A
LIMITED TO : P & ID NUMBER 11008

PAGE 1 OF 1+

PAGE

MDS14D MIDAS INDICES SUMMARY REPORT

09/22/81 07:25:38

TYPE [ALL]

COMPONENT NUMBER	DESCRIPTION	START UP	POWER INTERRUPT	CELL	P&ID DRAWG
B130- 21-	Q-39 WATER TANK T-58 HEATER	23A	- -		11008
P- 1-A	TEST COMPONENT	23A	- -	500	11008
Q- 39-	T 58 WATER TANK HEATER	23A	- -		11008
Q- 40-	T 58 WATER TANK HEATER	23A	- -		11008
KC-71801-	P-14/P-15 CYCLE TIME	23A	- -	603	11008
TSHH-71810-	Q-39 HIGH TEMP SHUTDOWN	23A	B130- 21-		11008
TSHL-71813-	Q-39 LOW WATER TEMP SW IN T-58	23A	B130- 21-		11008
23V- 811-	T-87 VENT	23A	- -		11008
23V- 812-	T-87 SUPPLY	23A	- -		11008
23V- 814-	T-87 OUTLET	23A	- -		11008
23V- 892-	NO DESCRIPTION	23A	- -		11008
23V- 3610-	NO DESCRIPTION	23A	- -		11008

END OF DISPLAY

PAGE 2 OF 2.

PAGE

APPENDIX J

MDS140

SEARCH AND REPORT
INDICES

COMPONENT TYPE _

COMPONENT _

SCAN? _

SEARCH

LIMIT

SELECT

SYSTEM START-UP _

FEG NUMBER _

P&ID NUMBER _

CELL _

CRITICAL SYSTEM _

TECH SPEC NO. 17 _

17 _

17 _

SCHEMATIC NO. _

EQUIPMENT NO. _

LOOP/LOGIC DIAG _

LOOP NUM _

PANEL _

OUTPUT MODE

PRINTER _

PS0411 MODE :INPUT

-----/--- DOCUMENT/TYPE S/U SYS:----- WORK DESCRIPTION
-----/--- TAGOUT/HUNG? REQ? PRI: -----
-----/--- CRIT.SYS.CODE: SHOP: X-----
STATUS:----- REL.MAINT:----- WORK CONTROL COMMENTS
INITIALS:----- START DATE:-----
PROCESSED:----- LAST CHANGED:-----/-----

COMPONENT	DESCRIPTION	OE COMMENTS
-----	-----	NONE:-----
-----	-----	NONE:-----
-----	-----	NONE:-----
-----	-----	NONE:-----
-----	-----	NONE:-----
EDIT OR UPDATE	CONTINUATION PAGE	ADD COMPONENT:-----

DOCUMENT DETAIL SCREEN

DS02I

MODE : _____
COMPONENT INFORMATION SCREEN

DOCUMENT/TYPE ---/---

COMPONENT NUMBER:-----

TECHNICAL SPECIFICATIONS

..FEG:----- OOS:-----

..FEG:----- OOS:-----

..FEG:----- OOS:-----

..FEG:----- OOS:-----

..FEG:----- OOS:-----

..FEG:----- OOS:-----

..FEG:----- OOS:-----

UPDATE _ CONTINUATION PAGE _

COMPONENT INFORMATION SCREEN

SCREEN "B"

MDS030

SEARCH AND REPORT

W C L

	SEARCH FOR ALL	LIMIT LIST TO	SORT LIST BY FIELD
DOCUMENT/TYPE	---/---	---/---	---
TAGOUT	-----	-----	---
COMPONENT	-----	-----	---
WORK STATUS	-----	-----	---
START DATE	-----	-----	---
FEG	-----	-----	---
PRIORITY	---	---	---
SHOP	X-----	X-----	---
DOC S/U SYS	-----	-----	---
CRIT SYS CODE	-----	-----	---
REL MAINT CODE	-----	-----	---
TECH SPEC	17.-----	17.-----	---
LAST CHANGE	---/---/---	---/---/---	---

SEARCHED ON : WORK STATUS REL
SORTED ON : TAGOUT

MDS03DPAGE 1 OF 3 PAGE -----

DOCUMENT/TYPE	STATUS	TAGOUT/HUNG?	START DATE	SHOP	PRI/PROC	SORTED BY TAGOUT
81- 6/T	REL	- /	09-30-81	X-67R	3 /Y	-
81- 7/I	REL	- /	09-30-81	X-51R	2A/Y	-
AA-22222/W	REL	- /	09-10-81	X-11N	/Y	-
AA-99999/I	REL	- /	09-30-81	X-11N	1 /Y	-
AA-22222/I	REL	11- 11/Y	09-25-81	X-11N	1 /Y	11- 11
AA- MEM/I	REL	81- 100/C	09-17-81	X-11N	1 /Y	81- 100
AA-22222/B	REL	81- 100/Y	09-15-81	X-11N	1 /Y	81- 100
AA-22222/T	REL	81- 100/Y	09-26-81	X-11N	1 /Y	81- 100
AA-MARK4/I	REL	81- 100/Y	09-14-81	X-11N	2 /N	81- 100
81- 1/W	REL	81- 200/C	09-30-81	X-38R	1 /Y	81- 200
81- 2/E	REL	81- 200/Y	10-01-81	X-51S	1 /Y	81- 200
81- 2/I	REL	81- 200/Y	09-30-81	X-67R	2A/N	81- 200
81- 2/T	REL	81- 200/Y	09-30-81	X-67S	3 /N	81- 200
81- 2/W	REL	81- 200/Y	09-30-81	X-38S	2 /Y	81- 200
81-06006/W	REL	81- 200/Y	09-11-81	X-51S	3 /C	81- 200

MORE RECORDS FOR DISPLAY

SECTION D

MIDAS
OPERATIONS PROCEDURES
(ISSUE 1)

DOCUMENT NO: _____

TITLE: MIDAS OPERATIONS PROCEDURES

CONTROLLED BY: _____

ORIGINAL RELEASE DATE: _____

ISSUE NO: 1R1 TO: _____ DATE: _____

PREPARED BY:

M. McKagan 5/18/81
M. McKagan

APPROVAL:

(DATE)

4542A/09
05/14/81

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1.0 OBJECTIVES

The objective of this procedure is to provide adequate production support to HEDL MIDAS users with respect to questions or problems associated with the use of the system.

2.0 SCOPE

This procedure applies to the MIDAS on-line system only and will be in effect 24 hours/day seven days/week.

3.0 RESPONSIBILITIES

3.1 ON-LINE SYSTEMS MONITOR

It is the responsibility of the on-line systems monitor to act as the focal point for all problems or questions related to the day to day operation of MIDAS.

3.1.1 End-User Focal Point

The on-line systems monitor is the focal point for all problems or questions encountered by the end-user. It is the monitor's responsibility to insure that a timely initial response is provided to the end-user regarding any problems that are reported (30 minutes or less) and that periodic follow-up status is also provided. The initial response must include an estimate of when the end-user can expect the problem to be resolved.

3.1.2 Problem Assessment

The on-line Systems Monitor will try, to the best of his ability, to assess the true nature of the problem (i.e., telephone line, data base, UTS400, UNIVAC transaction software, etc.) and will contact one of the following organizations to assist in the resolution of the problem:

CATEGORY

ORGANIZATION

TELECOMMUNICATIONS

COMMUNICATIONS

DATA BASE	TECHNOLOGY
TRANSACTION SOFTWARE	MIDAS ANALYST
UNIVAC HARDWARE	OPERATIONS
UTS400 HARDWARE	UNIVAC C.E.
UTS400 SOFTWARE	MIDAS ANALYST

If the on-line monitor is unable to fit the problem into one of the categories above, he will ask the MIDAS analyst for assistance.

3.1.3 Problem and Resolution Logging

All problems reported by the end-user will be logged by the on-line systems monitor as well as the step by step resolution to that problem. This information will be logged via the On-line Systems Performance Detail Information Sheet.

3.1.4 Access to FFTF

There will be cases where the resolution to a problem may involve access to the end-user work station in the FFTF containment building.

If FFTF access is required, the BCSR analyst, UNIVAC C.E. or G.T.E. service engineer must obtain a keycard activation. To secure this clearance, the on-line monitor should contact the following:

- a. The HEDL-MIDAS lead engineer if access is required during prime time.
- b. The Shift Operations Manager if access is required during swing or grave shift.

In every case, the monitor must report vehicle access if vehicle access is required along with any ADP equipment, tools or tool kits that will be necessary to resolve the problem.

3.1.5 Data Base Backup

The current MIDAS requirement calls for data base backup to tape every 24 hours. To best suit the MIDAS end-user, the backup must occur between the hours of 2 and 4 a.m. Since the system is unavailable during the backup period, the on-line monitor must contact the end-user no later than 1/2 hour prior to backup and must contact the end-user immediately after backup.

3.1.6 Checkpoints

The on-line systems monitor is responsible for ensuring that the MIDAS checkpoints are recorded as required. The current MIDAS requirement calls for checkpoints at 0000, 0800 and 1600 hours.

3.2 DATA BASE RECOVERY

In the event that data base recovery is required, the on-line systems monitor must secure from the end-user the information necessary to execute the MIDAS Data Base Backup and Recovery procedures 4.3.1 or 4.3.2. Since the data base is unavailable during the recovery period, the monitor must pass on to the end-user an estimate of when recovery will be completed. Once completed, the monitor must contact the end-user indicating that recovery is completed.

3.3 SCHEDULED AND UNSCHEDULED DOWN TIME

3.3.1 Scheduled

The on-line systems monitor will inform the MIDAS end-user of any UNIVAC scheduled down time. This notification must be made as soon as the scheduled time is planned by BCSR. The end-user must be notified once again no less than one-half hour prior to the scheduled time. In both cases, the duration of expected down time should be passed on as well.

3.3.2 Unscheduled

In the case of unscheduled down time, the on-line monitor must call the MIDAS end-user and notify him of the shut down. In many cases, the end-user may call prior to the notification. In both cases, the monitor should give an estimate of when the system will be available again. If this is not known, the end-user should be contacted periodically, informing the user of recovery progress.

4.0 DATA BASE BACKUP AND RECOVERY PROCEDURE (SYSTEM A)

4.1 BACKUP

Currently, all DMS1100 data bases residing on System A are backed up to tape once a day. This usually occurs between the hours of 4:30 and 6:30 p.m. In our current environment, this takes approximately 30 minutes. Once MIDAS is in place, this could take from 45 to 60. Since MIDAS is the first 24 hour system, the above hours of backup can be changed to better suite the MIDAS user.

4.2 TRANSACTION LOGGING

In addition to daily data base backup, each and every transaction which affects the data base is logged on the systems transaction log tape. This would include transactions which insert, modify or delete records or record relationships but would not include query type transactions.

4.3 DATA BASE RECOVERY

4.3.1 Due To A Damaged Data Base

In the event that the data base was damaged (either by a damaged disk or damaged information) the following steps are taken to restore to current status (current status being the last transaction entered prior to the problem.)

4.3.1.1 Upon notification, BCSR's Technology department will restore the data base from the last backup mentioned in 1.0 above.

4.3.1.2 Once restored, a "selective recovery" procedure is executed. This procedure gathers all MIDAS transactions entered on the log tape between the time the last backup was taken and the time the data base was damaged.

4.3.2 Due To Bad Data

In the event that bad data was entered into the system, the following steps can be taken to recover:

4.3.2.1 Upon notification, BCSR's Technology department will restore the data base from any backup tape from 1.0 above for up to 10 days prior to the request for restore. (i.e., if the request was made on June 26, BCSR can restore from backup tapes taken on any day between June 16 and June 25). Because of the technological and physical storage problems, this duration is not subject to negotiation.

In addition to the above, BCSR can restore to a pre-defined checkpoint. Checkpoints are registered on the transaction log tape. Currently, only one checkpoint is registered at noon every working day. What this allows for is data base restoration not only from a backup tape but from a backup tape and all transactions entered between the time the backup was done and the time the checkpoint was registered. (i.e., if the request for restore was made on June 26, HEDL could restore not only to June 18 (example) from the 4:30 backup tape, but from the June 18 backup tape plus all transactions entered between June 18 at 4:30 p.m. and noon, June 19.)

The above checkpoint procedure can be modified, if necessary, to better suite the MIDAS requirement.

5.0 MIDAS CONTACTS

This section of the procedure identifies the on-line systems monitor's contacts for problem resolution. (See the MIDAS CONTACT sheet, attachment 1.) Persons contacted and time contacted should be recorded on the On-line System Performance Detail Information Sheet.

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