

MECHANIZED AIDS TO MANAGEMENT  
EADAS NETWORK MANAGEMENT  
DISPLAY SYSTEM

GENERAL

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traffic data as it is being gathered from all types of switching machines via EADAS or peripheral bus computers (PBC) (4A/ETS machines), EADAS/NM examines the status of critical switching machine and trunk group functions and provides a visual report when potential congestion is imminent. EADAS/NM reports via a network display system which is activated because of exceptions found in calculations derived from 5-minute data and by the status of selected discrettes from switching locations. The display system includes exception and monitor printers, an exception display board, and CRT devices which display data in fixed format.

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1.05 The CRT display pages provide a means to:

- Request demand data from the EADAS/NM system
- Activate and deactivate controls at switching machines included in the EADAS/NM cluster
- Update or revise the EADAS/NM data base.

1. INTRODUCTION

1.01 This section describes the Engineering and Administration Data Acquisition System/Network Management (EADAS/NM) cathode ray tube (CRT) display system.

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

1.03 The title for each figure includes a number(s) in parentheses which identifies the paragraph(s) in which the figure is referenced.

1.04 EADAS/NM is a computerized system which allows centralized, real-time surveillance and control of all levels of the switching hierarchy from regional centers to selected end offices within predefined segments of the network. By analyzing

1.06 Six distinct packages of displays are provided to assist the network manager in the effective management of the EADAS/NM cluster. The six packages are:

- **TG—Trunk Group Pages:** Display network management (NM) and other traffic related data for trunk groups at offices within the EADAS/NM area.
- **MA—Machine Status Pages:** Display NM data for common control machine components; and equipment and control

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status of the machines within the EADAS/NM area.

- **CN—Control Pages:** Provide a listing of network controls available, those in effect, and a means to implement or remove controls on a centralized basis.
- **EX—Exception Pages:** Display data relative to calculation results which exceed preset thresholds for an office or area within the EADAS/NM system.
- **IN—Input and Monitor Pages:** Provide a means to verify and modify trunk group input information in the data base; assign items to the monitor system; and stipulate required monitor reports.
- **AN—Analysis Pages:** Provide an overview of trunk group performance from a specific office/area to another specific office/area.

A description of each individual page is included in subsequent subsections of this practice.

### 2. PAGE FORMAT

**2.01** Although the data provided by any one package covers different aspects of the total network management function, there are format items which apply to all display pages in the CRT system. These items are presented in the following paragraphs.

**2.02** The overall format for all pages includes fixed information, known as "BACKGROUND", and variable input and output areas, referred to as "WINDOWS." All characters contained in the BACKGROUND are protected; ie, they cannot be overwritten.

**2.03** Each page is divided into three major areas: **Identification and Selection; Data;** and **Transfer and Miscellaneous Information.** These three areas are generally defined as illustrated in Fig. 1.

#### **Identification and Selection**

**2.04** This segment of the display appears in the topmost portion of all displays. Associated with this segment is the identification of the display

by page number and title. Each display page has a unique number which consists of two alpha characters (the display package) and two numerical characters (the display page format within the package). For example: TG-01 is the page number of the first data display format in the trunk group package.

**2.05 Selection:** Windows (brackets or parentheses) are available in this portion for specifying the variables that are available with this page (eg, the office name, the trunk group name, thresholds, time interval, type and degree of control, etc).

**2.06 Error and Warning Messages:** Included in this section is a window for the system to alert the user in respect to incomplete or inconsistent inputs, or faults found by the system. A list of these messages and brief explanations are included in Fig. 2.

#### **Data**

**2.07** The main segment of the page contains the data requested for the reference office or trunk group. The format for this area varies by the package and page being displayed.

#### **Transfer and Miscellaneous**

**2.08** This section provides the following information and features:

- (a) **Time and Date**—That this page and data were processed by the computer.
- (b) **Scrolling**—A means to request the remainder of the data, where the list of items exceeds the capacity of one display page.
- (c) **Print**—A means to acquire a paper copy of the CRT display.
- (d) **Transfer**—A means to progress to another related display page without returning to a directory page, or reinputting the identity of the reference office or trunk group.
- (e) **CRT Subsystem**—A means to select a directory page with two alpha character inputs; a means to select any other page by inputting the page identity in the **PAGE** window; or a means to EXIT the CRT subsystem by

inputting "EXIT" in the *PAGE* window. (EXIT returns the CRT to command level *FUNCTION*.)

### 3. PAGE ACCESS

#### *Manual*

**3.01** Each page in the system can be accessed manually; that is, it can be designated on its package directory page, or it can be specified in the *PAGE* window of any other page. With manual access, only the background format of the page is displayed, and the user must input required information to identify the unit or component for which data is required (name, threshold, interval, etc).

#### *Transfer*

**3.02** Certain pages have the capability to be "transferred to." When transfer is accomplished, the CLLI of the trunk group or the reference office is retained on the new display. Additional data may also be included, depending on the new page being displayed.

### 4. PAGE FEATURES AND OPERATIONS

**4.01** Included below are operational features available on all CRT pages and operations required for proper functioning of the page.

**4.02 *CRT Subsystem:*** Prescribed procedures must be followed to access the CRT subsystem. Initially, the *ON* switch of the Model 40 unit must be activated. The *SEND/RECEIVE* key must then be operated. The system will respond by displaying the word "FUNCTION" on the screen. Input the letters "CRT" and operate the *RETURN* key. When the system displays the Trunk Group Directory page, access to the system is available. A trunk group page may be "DESIGNATED." A directory page may be selected with input of two alpha characters in the directory window. Or any other specific page in the system may be selected by identifying it by package and number in the *PAGE* window.

**4.03** Tabs are set at the start of each input window on a line of a *CRT* page. As a result, the *CURSOR TAB* key can be used to position the cursor to any window slot where input is permitted.

**4.04 *Designation Operation:*** The designation operation causes the system to perform some required action. The designate window used throughout the system is a set of parentheses. The designate symbol is a plus sign (+). The only valid input in a set of parentheses is the designate symbol; all other characters are invalid. To instruct the system to respond, a designate symbol must be input into a set of parentheses and the *SEND* key on the Model 40 unit operated. For the purpose of this document, the term "designate" will infer that the full sequence of the designation must be completed for the system to respond.

**4.05 *System Response:*** Where the page format is retained after a designate, the system usually substitutes a "s" for the designate symbol. This serves as a verification of the request and identifies the requested item in the response.

**4.06 *Brackets:*** Throughout the display pages, brackets, "[ ]" are used to indicate locations on the displays where variable data may be input. The input identifies the office(s) and trunk group(s) for which data are required, threshold level to be used, etc. This input may be alpha, numeric, or a combination of both. Designate symbols are invalid in these areas.

**4.07 *Names*** for offices and trunk groups require input of the CLLI to identify the unit or trunk group desired. CLLI inputs may be entered in either upper or lower case; they are converted to upper case on output. In addition, a CLLI may be abbreviated. In this case, the office whose CLLI begins with the characters input is selected and its complete CLLI output. If the characters are not unique, one of the matching offices, generally the highest level office, will be selected and its CLLI output. A warning message, "ambiguous clli abbreviation", appears to caution the user that the office selected may not be the desired one.

**4.08 *Update on Send:*** Pages providing display of register data for one or more time periods generally provide an "update on send" capability. In other words, retransmission of the page with no new input entered will result in updating the displayed data to the new time period, if a five minute interval boundary has been crossed since the previous display. On the update, all scrolled lists are returned to part 1 when displayed. Update on send generally does not apply to expansion

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data, or to controls. Unless otherwise indicated in the page descriptions, the data for a page can be updated to display the latest interval of data by operating the SEND key.

**4.09 Print:** When *Print* ( ) is designated, the system will respond with a hard copy of the display presently on the CRT. The hard copy is printed on the monitor system printer.

**4.10 Scrolling:** Many displays will contain data, in the form of lists of items, which cannot be contained on one display. The display provides a means to scroll the list forward or backward. The initial output of this data will show the first part of the lists. The current part number and the total number of parts in the lists are specified ("PART x OF y", with x = current part, and y = total parts). This line also contains designate windows labelled "FRWD" and "BKWD". When the forward entry is designated, the next group of items on the list are displayed. This action can be repeated until all items on the list have been viewed. The backward operation causes the portion of the list previously viewed to be returned to the display. If the list exceeds the maximum length permitted for a page, even with scrolling, a warning, "list overflow", will be output. In this case, as much of the output lists as could be accommodated will be displayed. If the list to be searched is larger than the file size within the computer, the warning "list overflow" will be output, but no data will be displayed. The user should beware of items missing from these lists. The best approach is to use input options which

restrict the amount of data to be searched and displayed.

**4.11 Time Intervals:** The EADAS/NM system has the capability of storing four periods of 5 minute data. Where an option is available to select an interval and none is designated, the system defaults to display data for the most recent interval.

## 5. DIRECTORY PAGES

**5.01** Each package of display pages has a unique directory page. The directory page contains an inventory of all the pages within that particular package. The directory page number is always 00, preceded by the two alpha characters which identify the package. As an example, the directory page for the trunk group package is TG-00. Associated with each page listed on a directory page is a set of parentheses. When the desired display is designated, the system removes the directory page and presents the designated display. When displays are accessed via the directory page, only the display background is shown. Each directory page provides the means to select any other directory page by inputting the desired package alpha identity in the *DIRECTORY* window.

**5.02** The directory pages differ from other display pages in both the identification and transfer segments of the page. In the identification area, the user can "EXIT" from the CRT display subsystem by performing a designate. In the transfer segment, a list of other package alpha identities is included.

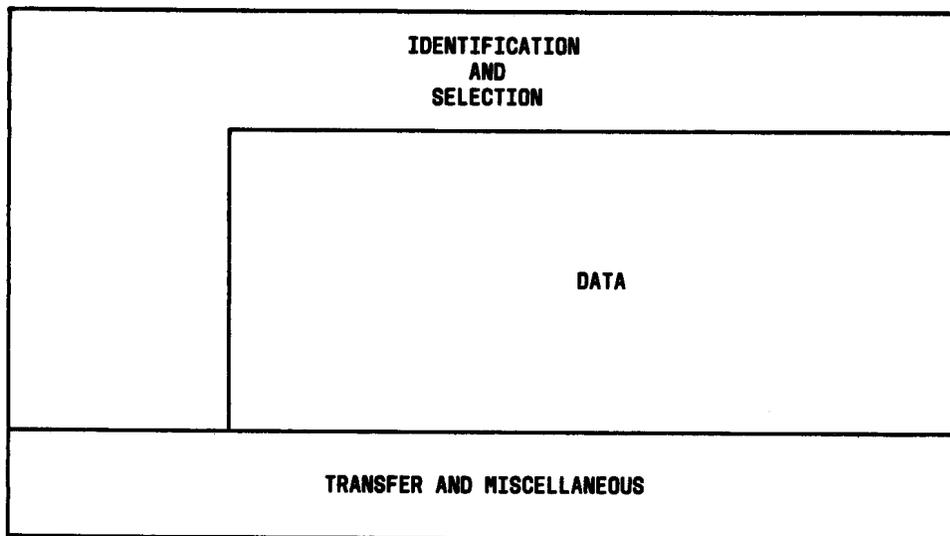


Fig. 1—Generalized Display Format (2.03)

## ERROR AND WARNING MESSAGES

The following are the error and warning messages that might occur in response to user requests. They appear on the second segment of the CRT display and are flagged by "warning nn" or "errors nn" (where nn = number of errors) blinked at the top of the page.

CODE	MESSAGE	EXPLANATION
01	crt read failure	Error detected in transmission of data from the screen; in most cases retransmission will clear this.
02	cli not found	No office found with CLI matching that entered.
03	input data conversion error	Wrong type of data input in a window, such as character data entered in a window requiring a number.
04	incomplete or misleading input	Required input missing in some windows, or conflicting requests found in windows.
05	reference data inconsistency	Data base related problem: most frequently that the data required to generate a requested output simply is not available in the data base. A common example is on display of machine type for an office internal to the EADAS/NM cluster but having no data in the data base. This case can usually be ignored. However, other cases may indicate real data base problems, as when a missing E2A or TDC control or discrete address, or ETS TGI, causes rejection of a control request.
06	disk read error	Unable to read data from disk. (However, on some pages also used as for error 05.)
07	transfer to non- existent display	User requested transfer to a page that has not been implemented.
08	reg data not avable or suspect	Register data unavailable for display (could not be collected for specified time period) or flagged as suspect.
09	list overflow	Intermediate or final output lists too long for display (even with scrolling); some output may be missing. The user should use input options to cut down the amount of output.
10	ambiguous cli abbreviation	CLI entered in an office window is not unique.
11	scrolled out of range	User asked to scroll past last part of output or backwards from first part.
12	bad calling parameter	Software error encountered (frequently resulting in entering a routine with a bad parameter).
13	disk write error	Unable to write data to disk.
14	network analysis dilemma	Problem relating to trunking or routing information in data base: usually that no trunk group was found between two input offices (on TG43 also for inability to resolve multiple route advance chains for trunk groups between two offices).

Fig. 2—Error and Warning Messages (2.06)