ENGINEERING AND ADMINISTRATION DATA ACQUISITION SYSTEM

OPERATING THE DIAL ADMINISTRATOR TTY

ENGINEERING AND ADMINISTRATION DATA ACQUISITION SYSTEM
OPERATING THE DIAL ADMINISTRATOR TTY

1. GENERAL

1.01 This section provides information on the dial administrator teletypewriter (DA-TTY) interface with the EADAS central control unit (CCU) in Phase 1 operation.

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

1.03 Each CCU may be equipped with a maximum of 16 DA-TTYs located remotely in dial administration quarters.

1.04 The TTYs are full keyboard send-receive machines (33- or 35-type KSR), connecting to the CCU via 108-type data sets and dedicated 110-baud data links.

1.05 The central control unit automatically directs any exception reports generated as a result of the 15-minute (or 30-minute) surveillance checks and all requested hourly status reports to these TTYs. Hourly reports will be printed out on the appropriate field teletypewriter according to a schedule entered via EADAS system definitions. (Refer to DFMP, Division D, Section 4-g). Exception reports use many of the same calculations as hourly reports although they appear only when a preset threshold or limit is exceeded during the most recent surveillance interval. It is also possible for the data users to request, via their DA-TTY, the following information on a demand report basis:

(a) Active and passive raw register input totals (see 3.02)

(b) Individual or summed calculated results from 96 previously stored collection intervals (see 3.03 and 3.06)

(c) Verification of calculation definitions (see 3.07)

(d) Processor time of day and prime channel number (see 3.04 and 3.08).

2. COMMAND LANGUAGE

2.01 Command language is the machine vocabulary used for communication with the CCU via a teletypewriter.

2.02 The command language utilizes control characters which have a special meaning to the EADAS processor. Their use is generally limited to that special purpose. Fig. 1 contains a list of special control characters utilized by the DA-TTY.

2.03 The command message format consists of up to three fields, each separated by a delimiter (the control character :). The first two fields consist of two alphabetic characters each and are called the action and identification fields respectively. A third, multicharacter field called the data field is usually required to complete the command but is sometimes optional.

Example:

Action Field	Identification Field	Data Field
OP:	TI:	!
DU:	RG:	PHLAPAGLS∅1,A,278!

Note that (:) delimiters are always required following each of the first two fields but that a comma control character is used to separate piece parts of the data field. All commands are terminated by an execute control character (!). The CCU will, in fact, take no action on an input command until it receives this execute character.

2.04 The CCU will respond to each command with messages indicating the acceptability of the command. For invalid commands, the message returned will indicate the source of the error. Fig. 1 includes a listing of the system responses and their meanings.

3. COMMAND MESSAGES

3.01 Fig. 2, entitled "Command Message Formats," is organized in alphabetical order. Valid

·combinations of action, identification, and data fields are described and various output responses are illustrated.

3.02 The input command DUMP REGISTER (DU:RG:), Fig. 2, Sheet 1, provides a means of examining either the active or passive registers. The active registers are the inputs gathering data for the current system period. The passive registers contain the total values for the last period. Ten register totals will always be printed starting with the requested register. Larger series of register totals or a dump of all registers associated with a particular channel may be obtained from the CCU location via the high speed line printer. The DU:RG: command is primarily used for special studies and maintenance verification on particular switching components. Register contents can also be used to verify and debug calculations.

3.03 The input command OUTPUT CALCULATION RESULTS (OP:CA:), Fig. 2, Sheet 1, provides dial administrators with the ability to retrieve the following information from the past 96 stored collection periods.

(a) The results of a calculation from a specific collection period

(b) The results of a calculation beginning at some specific period and ending at some specified surveillance period

(c) All calculation results for the last or some specified past period.

Output calculation results may be used in conjunction with the DUMP REGISTER command to obtain additional information concerning machine performance and in verifying calculation results. This command is particularly useful in the continuing process of determining appropriate threshold levels.

> *Note:* Only calculation results are available from the Long Term Calculation Result Area. Term information is not retained.

3.04 The input command OUTPUT TIME (OP:TI:), Fig. 2, Sheet 1, causes the CCU to output the time according to the internal software clock in the processor. This feature is helpful in determining the state of the processor.

3.05 The input command PRINT CENTRAL UNIT (PR:CU:), Fig. 2, Sheet 2, allows the DA-TTY to communicate with the CCU-TTY. Use of this command should be limited to unusual circumstances since it operates on a "barge-in" basis and will interrupt any task being performed on the CCU-TTY.

3.06 The input command SUM CALCULATION (SU:CA:), Fig. 2, Sheet 2, permits the output of a sum of the results of any given calculation for up to 96 periods worth of stored intervals. Since this command can produce the total of any peg count data for a 24- or 48-hour period, it is especially useful for:

(a) Originating peg count studies taken in local dial offices

(b) Separations peg count studies from tandem switching centers

(c) Plant register readings taken for maintenance index calculation purposes.

3.07 The input command VERIFY CALCULATION (VE:CA:), Fig. 2, Sheet 2, is provided to verify the contents of the calculation definition currently entered at the CCU location. It provides the dial administrator with the registers and constants used in the calculation in the form of an equation. The associated thresholds are also printed out. This command is useful in double-checking register assignment and threshold level status.

3.08 The input command VERIFY ENTITY (VE:EN:), Fig. 2, Sheet 2, requests that the channel number associated with the entity name be provided. It should be noted that even though calculations defined under an entity can reference more than one channel, only the channel stated in the entity definition will be printed out.

3.09 If a dial administrator TTY attempts to enter a command at a time when hourly and exception reports are about to print, the request will be ignored and it will be necessary to reenter the command after the reports have printed.

4. SYSTEM ERROR MESSAGES

4.01 As stated previously, exception reports are printed on DA teletypewriters as specified in the entity definition. The reports for each entity are preceded by a header consisting of the

time, date, and entity name followed by the reports for that entity. A malfunction in the system may cause some data to be lost. In the event this should occur, the header will be preceded by "SD" indicating that the data is suspect. Also, data may not be printed in which case the message "MSNG DATA" appears. Other indications of errors in the reports are asterisks followed by an A, M, S, T, or R which indicate that calculations have exceeded their bounds (overflow) in the following arithmetic operations:

* A = ADDITION (Limit = 1.07 billion or 2^{30}-1)

* M = MULTIPLICATION.(Limit = 1.07 billion or 2^{30}-1)

* S = SUBTRACTION (Negative numbers are not allowed)

* T = TERMS EXCEED 16 BITS (Limit = 65,535 or 2^{16}-1)

* R = RESULTS EXCEED 16 BITS (Limit = 65,535 or 2^{16}-1)

An hourly report which contains suspect data will have the characters "*SD*" on its last line.

4.02　Receipt of an error message should initiate action on the part of the dial administrator to determine the cause of the malfunction. One of the first steps recommended is to contact CCU personnel to insure their awareness of the condition.

SPECIAL CONTROL CHARACTERS, 2.02		
TTY CHARACTER	**EADAS FUNCTION OF CHARACTER**	**EXPLANATION OF FUNCTION**
!	EXECUTE	Indicates the end of an input message. The system will not attempt to process an input message until an execute is received.
&	ABANDON MESSAGE	This character causes the system to delete the entire line. It must be used before an execute is given. Carriage return, line feed, and the printing of a right angle bracket (]) on the new line will result.
:	FIELD DELIMITER	This is used between the Action, Information, and Data Fields of a command.
,	DATA FIELD DELIMITER	This is used only as a delimiter between the parts (sometimes referred to as arguments) of the Data Field in certain commands.
DEL or Rubout (←)	ERASE LAST CHARACTER	This is used to erase the last character entered. Each time one of these is used, another character is erased.
@	SUSPEND PRINT	It causes the system to stop normal printing on the teletype with the exception of error messages. It will remain disabled until receipt of the next execute character.
SYSTEM RESPONSES, 2.04		
RESPONSE	**TRANSLATION**	**MEANING**
NG	No Good	Message format was valid but action requested was incompatible with status of system.
RL	Repeat Later	Command was a valid request which may not be executed at this time due to unavailable system resources. Try again later.
PF	Printout Follows	The request is being processed. A printout will appear momentarily.
?A	Action Field Error	The Message contains an error in the action field. This could mean an improper character(s) was typed or that a field delimiter was omitted or incorrect.
?I	Identification Field Error	The message contains an error in the identification field. This may result from any one of 3 causes: (1) the identification field could be wrong due to too many characters or invalid characters, (2) the second delimiter could be missing, and (3) the action specified may not be in agreement with indicated identification.
?D	Data Field Error	The message contains an error in the data (third) field due to one of several causes: (1) the data field is incompatible with the action field and/or the identification field, (2) improper characters were entered in the data field, (3) correct characters were entered but exceeded the allowable limits for this type of data, (4) the delimiters (,) were used in the wrong position or were not present.

Fig. 1—Special Control Characters (2.02, 2.04)

COMMAND MESSAGE FORMATS

VALID INPUT MESSAGES	DESCRIPTION	DATA FIELD	EXAMPLE
DU:RG:a, b, c!	DUmp ReGister Totals on Teletypewriter	a = Entity Name b = A or P (active or passive registers) c = starting register number (ten consecutive register totals will always be printed)	<u>DU:RG:PODUNK∅5, A, 278!</u> 1234∅ 09874 ∅∅081 76894 ∅∅635 ∅∅393 ∅∅434 ∅∅321 ∅∅718 ∅∅∅∅∅
OP:CA:a, b, c, d, e!	OutPut CAlculation Result	a = Entity Name b = Calculation name 　NOTE:　"ALL" will cause the results of all defined calculations for that entity to be printed. c = Starting time of interval HH:MM (4 digits specifying hours and minutes. See example). If blank, last collection interval is assumed (field d and e must also be blank). 　NOTE:　For this command, the start time refers to report generation. In the second example, data gathered from 11 A.M. (assuming a 30-minute system period) will be reflected in the 11:3∅ DTS result of ∅∅∅.1∅. d = Date of desired interval MM:DD (4 digits specifying month and day. See example). If blank, current day is used. e = Number of consecutive intervals (this field must be blank if "ALL" is wanted. If blank, one is assumed. A maximum of 96 intervals may be specified).	<u>OP:CA:PODUNK∅5, DTS!</u> PF DTS = ∅∅∅.5∅ <u>OP:CA:PODUNK∅5 DTS, 11:3∅, ∅7:25, 2!</u> PF DTS = ∅∅∅.1∅ P 11:3∅ DTS = ∅∅1.∅∅ F 12:∅∅ NOTE:　The P and F in the calculation results indicate whether the calculation passed or failed its threshold value. If an 0 prints, an overflow is indicated.
OP:TI:!	OutPut TIme	None required	<u>OP:TI:!</u> PF 12:25:56

Note: TTY input is <u>underlined</u> in the examples.

Fig. 2—Command Message Formats (Sheet 1 of 2)
(3.01 through 3.04)

COMMAND MESSAGE FORMATS

VALID INPUT MESSAGES	DESCRIPTION	DATA FIELD	EXAMPLE
PR:CU:a!	PRint to Central Unit Teletypewriter	a = message to be printed	<u>PR:CU:GOOD MORNING CCU!</u> OK NOTE: "OK" indicates message was printed on the CCU TTY. Use of this command should be limited. (Refer to 3.05.)
SU:CA: a,b,c,d,e	Sum Calculation	a = Entity name b = Calculation name (only one calculation may be specified) c = Starting time (HH:MM) d = Date of start time e = No. of consecutive intervals desired (maximum of ninty-six 15- or 30-minute system period intervals equaling 24 or 48 hours of calculated results retained in long term calculation results storage). Note: All 5 parts of data field must be supplied.	<u>SU:CA:PODUNK05,DRSTUDY,00:30, 11:15, 48!</u>PF DRSTUDY = 273045712 P 00:00 NOTE: In this command, the start time refers to report generation, ie, data gathered from midnight on a 30-minute system period requires a 00:30 starting time. The example above will result in the summing of 24 continuous hours of calculated results starting at midnight for the calculation named "DRSTUDY" and assuming a continuous Long Term Calculation Result Storage Interval is defined in the System Parameters. NOTE: The summed calculation result output of up to nine characters will be followed by a P (indicating that all individual calculations passed their threshold value) or an F (indicating that one or more failed). This is followed by the time of the last collection period.
VE:CA:a, b!	VErify CAlculation	a = Entity name b = Calculation name	<u>VE:CA:PODUNK05, DTS !</u> PF M, 1, UB, THRESH 1 = 001.00 THRESH 2 = 001.00 (R298*100)/R297 TERM LABELS = DLY, TST NOTE: The first character in the first line of the response denotes whether the calculation is a Master or Slave. The second character specifies the threshold schedule and the third the threshold type as follows: UB—Upper Bound LB—Lower Bound AP—Always Print NP—Never Print LU—Low and Upper Bound
VE:EN:a!	VErify ENtity Prime Channel Number	a = Entity name	<u>VE:EN:PODUNK05!</u> PF CH = 07

Note: TTY input is <u>underlined</u> in the examples.

Fig. 2—Command Message Formats (Sheet 2 of 2)
(3.01, 3.05 through 3.08)