TRAFFIC MEASUREMENTS
FOR PERIPHERAL DATA STORAGE PROCESSOR
2-WIRE NO. 1 ELECTRONIC SWITCHING SYSTEM

CONTENTS PAGE

1. GENERAL 1

2. TRAFFIC MEASUREMENT TYPES . . . 2

3. RECENT CHANGE MESSAGE INFORMATION 10

A. Definitions 10

B. Recent Change Message Fields . . 10

4. RECENT CHANGE MESSAGES 11

A. General Format and Responses . . 11

B. Adding, Changing, or Removing an Entry in Traffic Schedule Table (SCHDT) 16

C. Adding, Changing, or Removing an Entry in Traffic Report Controller Table (RPTCNTL) 17

D. Adding, Changing, or Removing an Entry in Traffic Report Contents Table (RPTCNT) 18

E. Verification of RC Information . . 18

5. TRAFFIC MEASUREMENT TABLE INTERACTION 21

6. TRAFFIC MEASUREMENT OUTPUT MESSAGE FORMAT 22

7. GUIDELINES AND EXAMPLES FOR REPORT PLANNING 22

8. ABBREVIATIONS 29

Figures

1. EPSCS 12 for Schedule 1 26

2. Partially Complete EPSCS 11 27

3. EPSCS 13 for Report 7 28

Tables

A. EPSCS Traffic Measurements . . . 3

B. E911 Traffic Measurements . . . 8

C. RC Tables and Keywords 12

D. Traffic RC Errors 13

E. Keyword Definitions 15

F. Tablename Definitions 16

G. Report Types 25

H. Schedules 25

1. GENERAL

1.01 This section covers the traffic measurements for the peripheral data storage processor (PDSP) as used with the No. 1 Electronic Switching System (ESS). The PDSP may be used with No. 1 ESS offices having 1E5 or later generics. The measurements described in this section are available With PDSP generics 3AP1, Issue 2A and 3AP2, Issue 1B, and 2.

1.02 This section is reissued to include the 2A generic and Expanded 911 (E911) traffic measurements.

1.03 This section covers the types of traffic counts kept and the types of equipment on which counts are kept. Recent change inputs and measurement output message formats are also covered.

1.04 Abbreviations used in this section are listed in Part 8.

2. TRAFFIC MEASUREMENT TYPES

2.01 Traffic measurements kept for the PDSP are peg counts and usage measurements. Peg count is a cumulative count of the number of times a specific event occurs during a fixed time interval. Usage is a cumulative count of the number of items found in a busy state during each periodic scan of a particular group of items. The busy conditions found during each scan are totaled for a fixed period of time to obtain usage.

2.02 The traffic measurement type (see Table A) is a numerical value which describes the measures being made. In Table A [for enhanced private switched communication service (EPSCS)] and Table B [for expanded 911 (E911)] the Measurement Designation column contains the legend that will be printed out on the TTY when the traffic report is outputted. The Members column shows how many units may be monitored for a particular type of measurement (i.e. Per DL means each data link may be monitored for a particular type of count).

→ TABLE A ←

EPSCS TRAFFIC MEASUREMENTS

MEASUREMENT TYPE	DESCRIPTION	MEASUREMENT DESIGNATION	MEMBERS
1	Peg count of messages accepted into data link buffer by data link driver (Note 1)	DL OUT MSG PEG	Per DL
2	Peg count of incoming data link messages	DL IN MSG PEG	Per DL
3	Peg count of transmitted CRC NAKs	DL OUT CRC PEG	Per DL
4	Peg count of CRC NAKs received	DL IN CRC PEG	Per DL
10	Peg count of transmitted protocol restart messages	DL OUT RSTRT PEG	Per DL
11	Peg count of restart messages received while data link was in protocol running state (Note 2)	DL IN RSTRT PEG	Per DL
15	Peg count of retransmitted messages	DL OUT RETRANS PEG	Per DL
22 *	Data link buffer usage	DL BUFFER USAGE	Per DL
23	Peg count of hardware errors	DL HRDWARE ERR PEG	Per DL
36	Peg count of originating messages attempted to be sent to a destination CNCC	DL DEST CNCC PEG	Per PDSP in network
38	Peg count of audit requests (N1 messages) received from CNCC	PIU CNCC AUDIT PEG	Per Customer
42	Peg count of outgoing hardware errors	PIU OUT ERR PEG	1 Member
44	Peg count of customer half hour reports (E1 messages)	PIU IN HALFHOUR PEG	Per Customer
45	Peg count of customer 100 second reports (DZ messages)	PIU IN 100SEC PEG	Per Customer
46	Peg count of customer short holding time reports (E33 messages)	PIU IN SHTHOLD PEG	Per Customer
47	Peg count of customer trunk messages (E3, E6 messages)	PIU IN TRUNK PEG	Per Customer

→ TABLE A (Contd) ←

EPSCS TRAFFIC MEASUREMENTS

MEASUREMENT TYPE	DESCRIPTION	MEASUREMENT DESIGNATION	MEMBERS
48	Peg count of any other messages received from the ESS over the PIU not itemized above	PIU IN OTHERMSG PEG	Per Customer
51	Peg count of message too long errors	PIU IN MSG LONG PEG	1 Member
54	Peg count of occurrences of data in the input FIFO	PIU IN FIFO PEG	1 Member
66 *	Count of available data base memory in 256 word blocks	DB MEMORY AVL	1 Member
68 *	Count of entries of 100 second usage program (Note 3)	NUM SCAN ENTRIES	1 Member
69	Peg count of messages rejected by a data link group (Note 4)	DLG OUT REJ MSG PEG	Per DLG
70	Peg count of messages a data link group attempted to transmit	DLG OUT ATT MSG PEG	Per DLG
71	Peg count of customer confirmed authorization code changes (E19 messages when CONFIRM TYPE=CONFIRM FROM ESS ACTION TAKEN FOR CC)	PIU IN ACCHANGE PEG	Per Customer
72	Peg count of messages with zero customer IDs (i.e. trunk seizure/ release reports)	PIU ZERO CUST PEG	1 Member
73	Peg count of audit requests (N1) message) received from CSACC	PIU CSACC AUDIT PEG	1 Member
76	Peg count of customer transmitted MDR message packets	MDR MSG PACKET PEG	Per Customer
77	Peg count of originating messages attempted to be sent to CSACC	DL DEST CSACC PEG	1 Member
25	Count of messages in DL buffer but not transmitted	DL MSGS LOST	Per DL
26	DL transmission speed	DL TYPE	Per DL
28	Count of data link outages on a 100 second basis	DL OUTAGE	Per DL
64	Peg count of level 1 initializations	INIT PEG	Per Level
80	Count of messages from a control center with illegal destinations	CC INVLD DEST PEG	1 Member

* 100 second usage counts

→ TABLE A (Contd) ←

EPSCS TRAFFIC MEASUREMENTS

MEASUREMENT TYPE	DESCRIPTION	MEASUREMENT DESIGNATION	MEMBERS
81	Count of messages from a control center with illegal message numbers	CC INVLD MSG PEG	1 Member
82	Usage count of 3ACC maintenance	PDSP MTC USAGE	1 Member
83	Peg count of simultaneous 3ACC errors	PDSP DUPLEX ERR PEG	1 Member
84	Peg count of memory errors found by memory audit	MEM AUDT FAILURE PEG	1 Member
85	Peg count of TDC transient errors	TDC TRANS ERR PEG	Per TDC
86	Usage count of TDC maintenance	TDC MTC USAGE	Per TDC
87	Peg count of TDC faults	TDC FAULT PEG	Per TDC
88	Peg count of simultaneous TDC faults	TDC DUPLEX ERR PEG	1 Member
89	Count of data link group outage on a 100 second basis	DLG OUTAGE	Per DLG
90	Peg count of messages overflowing when an outage exists	DLG MTC OVFLW PEG	Per DLG
91	Peg count of incomplete MDRs aborted	MDR ERR PEG	1 Member
92	Peg count of PIU transient errors	PIU TRANS ERR PEG	1 Member
94	Usage count of PIU maintenance	PIU MTC USAGE	1 Member
95	Count of PIU outages (both PIUs out) on a 100 second basis	PIU OUTAGE	
96	Usage count of UDLC maintenance	UDLC MTC USAGE	1 Member
98	Peg count of UDLC transient errors	UDLC TRANS ERR PEG	1 Member
99	Peg count of UDLC faults	UDLC FAULT PEG	1 Member
110	Count of originating message detail reports	PIU IN OMDR PEG	Per Customer
111	Count of terminating message detail reports	PIU IN TMDR PEG	Per Customer
78	Count of total MDR blocks	MDR TOTAL BLK	1 Member
79	Count of total TNN blocks	TNN TOTAL BLK	1 Member
107	Count of PIU messages overflowing when an outage exists	PIU OUT OVFLW PEG	1 Member
112	Buffer size for a data link group	DLG BUFFER SIZE	Per DLG

→ TABLE A (Contd) ←

EPSCS TRAFFIC MEASUREMENTS

MEASUREMENT TYPE	DESCRIPTION	MEASUREMENT DESIGNATION	MEMBERS
113	Number of out of service messages that passed the filter	OSS TRANS PEG	Per Customer
114	Number of return to service messages that passed the filter	RTS TRANS PEG	Per Customer
115	Number of times the PDSP went into a minor overload	PDSP LOW OVRLD	1 Member
116	Number of times the PDSP went into a major overload	PDSP MED OVRLD	1 Member
117	Number of periods PDSP was in critical overload	PDSP CRIT OVRLD	1 Member
118	Number of level 2 initializations	PDSP INIT PEG2	1 Member
119	Number of level 3 initializations	PDSP INIT PEG3	1 Member
120	High priority message buffer usage	DLG HBUFF USAGE	Per DLG
121	Low priority message buffer usage	DLG LBUFF USAGE	Per DLG
122	Number of attempts to write in the high priority buffer	DLG OUT HATT MSG PEG	Per DLG
123	Number of high priority messages rejected	DLG OUT HREJ MSG PEG	Per DLG
124	Number of high priority messages to the low priority buffer	DLG OUT RETRY MSG PEG	Per DLG
125	Message detail peg for total MDRs in this reporting period	MDR TOT PEG	1 Member
126	Peg count of MDR overflows	MDR OVFLW PEG	1 Member
127	MDRs still in seizure state	MDR NET PEG	1 Member
128	TNN peg count of total TNNs seized	TNN TOT PEG	1 Member
129	Peg count of TNN overflows	TNN OVFLW PEG	1 Member
130	TNNs still in seizure state	TNN NET PEG	1 Member
131	Number of broadcast copies of local data link message	CNCC BRDCST PEG	Per Customer
132	Number of out of service message	OOS INFILT PEG	Per Customer

→ TABLE A (Contd) ←

EPSCS TRAFFIC MEASUREMENTS

MEASUREMENT TYPE	DESCRIPTION	MEASUREMENT DESIGNATION	MEMBERS
133	Number of return to service message	RTS INFILT PEG	Per Customer
134	Number of MDR packets not sent	MDR NTRAN PEG	Per Customer
135	Number of broadcast copies of local message	CSACC BRDCST PEG	Per Customer

Notes:

1. If data link gets restarted before message is transmitted, message will be lost. Count is not actual number of messages transmitted.

2. Additional starts received while trying to get data link started are not counted.

3. For each 15 minute period that is reported on the count must be divided by nine (i.e., 1 hr report of 36 means 1 message per 100 seconds).

4. If interested in number of lost messages, use this count instead of DL OUT OVFLW PEG (type 14) or DL PROTOCOL NO RUN STATE (type 24).

→ TABLE B ←

E911 TRAFFIC MEASUREMENTS

MEASUREMENT TYPE	DESCRIPTION	MEASUREMENT DESIGNATION	MEMBERS
1	Peg count of occurrences of data in PIU input FIFO	PIU IN FIFO PEG	1 Member
2	Data base memory available, reported as the number of blocks unused (1 block contains 256 words)	DB MEMORY AVL	1 Member
3	Number of times the 100 second usage program was entered (should be nine for a 15-minute traffic report)	NUN SCAN ENTRIES	1 Member
4	Count of recent change messages accepted that did not change the data base	E9 RC NO CHANGE PEG	1 Member
5	Count of recent change messages accepted that did change the data base	E9 RC CHANGE PEG	1 Member
6	Count of recent change messages received which were in error	E9 RC ERROR PEG	1 Member
7	Count of ESN translations received from the No. 1 ESS	E9 ESN PEG	512 Members
8	3A CC maintenance usage per 100-second intervals	PDSP MTC USAGE	1 Member
9	Count of 3A CC duplex errors.	PDSP DUPLEX ERR PEG	1 Member
10	Count of memory errors found by the memory audit	MEM AUDT FAILURE PEG	1 Member
11	Count of transient errors	TDC TRANS ERR PEG	2 Members
12	TDC maintenance usage count	TDC MTC USAGE	2 Members
13	Count of faults taken by the TDC	TDC FAULT PEG	2 Members
14	Count of duplex errors taken by the TDCs	TDC DUPLEX ERR PEG	1 Member
15	Count of transient errors taken by the PROMATs	PROMAT TRANS ERR PEG	1 Member
16	PROMAT maintenance usage count	PROMAT MTC USAGE	1 Member
17	Count of the faults taken by the PROMAT	PROMAT FAULT PEG	1 Member
18	Count of the transient errors taken by the PIU	PIU TRANS ERR PEG	1 Member
19	Count of the faults taken by the PIU	PIU FAULT PEG	1 Member
20	PIU maintenance usage count	PIU MTC USAGE	1 Member
21	Count of duplex PIU outages	PIU OUTAGES	1 Member

→ TABLE B (Contd) ←

E911 TRAFFIC MEASUREMENTS

MEASUREMENT TYPE	DESCRIPTION	MEASUREMENT DESIGNATION	MEMEBERS
22	Flag to identify when to initialize traffic tables (Not a traffic count)	TRAF INIT FLAG	1 Member
23	Count of PIU incoming message errors	PIU IN MSG ERR PEG	1 Member
24	Count of the number of initializations of level 1 taken by the 3A CC	PDSP INIT PEG 1	1 Member
25	Count of the number of initializations of level 2 taken by 3A CC	PDSP INIT PEG 2	1 Member
26	Count of the number of initializations of level 3 taken by 3A CC	PDSP INIT PEG 3	1 Member
27	Count of the number of messages to the ESS overflowing the PIU buffer	PIU OUT OVFLW PEG	1 Member

3. RECENT CHANGE MESSAGE INFORMATION

A. Definitions

3.01 The following terms are used to describe recent change (RC) messages.

Keyword: A symbol consisting of two to eight alphanumeric characters with the first character always a letter.

Keyword Unit: Both keyword and, when needed, accompanying data in the form of one or more variables. Variables are numbers or alphanumeric symbols, depending on the keyword. When there is more than one variable, the variables are separated by commas. The keyword must be separated from its data by a space.

Examples: REPORT 4
TYPE 3
MEMBER 8

An example of a keyword unit with two variables is

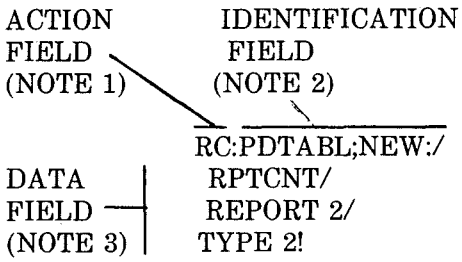
TYPE 6, 8

Delimiter: Puncutation (,,:,;,/) used so that the PDSP can determine the end of fields, subfields, keywords, keyword units, table names, or arguments within a message.

Default Value: The value that the PDSP assumes if no value is specified. In the first line of an RC message, NEW is a default value and may be omitted when typing the message for entry into the PDSP.

B. Recent Change Message Fields

3.02 RC messages are divided into three fields: action, identification, and data. The fields are always separated by a colon. The three fields are shown below using an example of an RC message.



Notes:

1. The action field in all RC messages is RC.

2. The identification field contains two subfields. The first subfield indicates the object of the RC (PDSP traffic table in this example). The second subfield indicates the type of message (NEW, CHG, or OUT). Since the second subfield in this example (NEW) is the default value, NEW may be omitted. The first line of the above message would then read as follows:

   RC:PDTABL:/

3. The data field is composed of a table name and keyword units. The tablename in this message is RPTCNT. The keyword units in this message are composed of the keywords REPORT and TYPE and their respective associated data.

Action Field

The action field is the first field of the RC message and is ended by the first colon. The action field for all RC messages is RC, to be interpreted as the command ***make a recent change.***

Identification Field

The identification field is ended by the second colon. The identification field has one, two, or three subfields. If the second subfield exists and has the default value NEW, NEW may be omitted.

Thus, the following message heading lines are equivalent:

RC:PDTABL;NEW:
RC:PDTABL:

3.03 The subfields in the identification field are separated by semicolons. Semicolons are not used elsewhere in the message.

Data Field

3.04 The data field consists of a tablename and keyword units and is the remaining portion of an RC message. The data field ***must*** begin on the second line of the message.

3.05 Message heading lines, tablenames, and keyword units in the data field are separated by a slash. All messages are terminated by an exclamation mark (!).

4. RECENT CHANGE MESSAGES

A. General Format and Responses

4.01 The RC message used for inputting data to the PDSP is RC:PDTABL. The general format of the message is as follows:

```
RC:PDTABL;[NEW]
          [CHG]:/
          [OUT]
TABLENAME/
KEYWORD UNIT/
      .
      .
      .
KEYWORD UNIT!
```

NEW is the default value for the second subfield of the identification field and may be omitted when inputting the RC to the PDSP. Thus, a NEW message heading line would read RC:PDTABL:/.

4.02 Certain keywords may be repeated without retyping the entire RC message. This is indicated by the letter R in the following discussion. To generate a repeated segment, proceed as follows:

Message format:
```
RC:PDTABL:/
TABLENAME/
KEYWORD UNIT 1/
KEYWORD UNIT 2/
-------------┐
KEYWORD UNIT 3! R
-------------┘
```

Message with repeated segment

Message format:
```
RC:PDTABL:/
TABLENAME/
KEYWORD UNIT 1/
KEYWORD UNIT 2/
KEYWORD UNIT 3/
REPEAT!
RC:PDTABL:/
KEYWORD UNIT 3/
REPEAT!
```

Message format: RC:PDTABL:/
KEYWORD UNIT 3!

In this generalized example the TABLENAME, KEYWORD UNIT 1, and KEYWORD UNIT 2 do not have to be retyped each time new KEYWORD UNIT 3 data is entered. Note, however, that the word REPEAT and the RC:PDTABL header must be typed for each repeated segment. The repeated segment may be used with NEW, CHG, or OUT messages.

4.03 There are three traffic measurement related tables which may be modified by the RC:PDTABL message and sixteen keywords which are associated with these tables. (Some keywords are associated with more than one table.) See Table C for keywords which may be used with a particular tablename.

TABLE C

RC TABLES AND KEYWORDS

TABLENAME	KEYWORDS
SCHDT	SCHD, HOUR, MIN
RPTCNTL	REPORT, LENGTH, SUN, MON, TUES, WED, THURS, FRI, SAT, DEST
RPTCNT	REPORT, TYPE, MEMBER, MAX-CNT

4.04 The RC message is processed by the PDSP when the exclamation point (!) is typed. The PDSP first responds with PF (printout follows). If the RC is accepted, the output is

M tt RC PDTABL TABLENAME [NEW / CHG / OUT]

RC REQUEST COMPLETE

Where M indicates a manual request to the PDSP, tt is the minutes past the hour, and TABLENAME is the name of the table being changed by the RC. If the RC is not accepted, the output is

M tt RC PDTABL TABLENAME [NEW / CHG / OUT]

RC ABT ERROR TYPE
KEYWORD aaáááááá CODE bb

The M, tt, and TABLENAME are defined above. ERROR TYPE is the reason the RC was not accepted, aaáááááá is the keyword with which the error is associated, and bb is the error code. See Table D for definitions of traffic RC errors. See Table E for keyword definitions.

4.05 Table F gives definitions of the various tables as they are built using the RC:PDTABL messages. Other quantities are computed by the PDSP generic and are added to some tables. This additional information is explained under E Verification of RC Information in the paragraph for each table.

→ TABLE D ←

TRAFFIC RC ERRORS

CODE	DEFINITION
1	DL requested to be removed from DLG is last DL in DLG; DLG must first be removed from DLGT.
2	DLG requested to be removed from DLGT is also listed in PDSPROUT; DLG must be removed from PDSPROUT by removing PDSPs associated with that DLG or changing DLG.
3	DLG requested to be removed from DLGT or PDSPROUT is also listed as DESTID in CNCCROUT; DLG must first be removed from CNCCROUT by changing DESTID or removing EPSID associated with DLG.
4	PDSPID requested to be removed from PDSPROUT is also listed in EPSCROUT, PDSPID must be removed from EPSCROUT first by changing PDSPID or removing EPSID associated with PDSPID from EPSIDT.
5	DLG requested to be added to PDSPROUT contains no DLs; assign DLs to DLG in DLGT.
6	DL requested to be deleted from DLT is assigned to DLG; DL must first be removed from DLG.
7	DL requested to be assigned to DLG already assigned to another DLG; DL must first be unassigned from other DLG.
8	DL requested to be assigned to DLG not assigned to DLT; DL must first be assigned to DLT.
9	Invalid tablename entered.
10	Keyword with data entry of zero (0) is not allowed for tablename entered.
11	Address of requested table is invalid.
12	Necessary keyword is missing from RC message.
13	Keyword data is out of allowable range.
14	A paged program was not paged in.
15	There is no room in requested table for additional entries.
16	CHG message not allowed for requested table; must use OUT and then NEW RC messages.
17	Entry requested to be assigned is already assigned.
18	Old data is CHG message does not agree with information already in table.
19	Requested data cannot be output during reallocation.
20	Incorrect identification field entered in message header line.
21	Requested action cannot be inhibited during reallocation.
22	Requested action cannot be allowed during reallocation.
23	Incorrect sequence of commands entered.
24	Data is off-line and on-line memories does not match.
25	Data base entered is too large for existing memory.
26	Invalid data has been entered (perhaps wrong combination of data).

→TABLE D (Contd)←

TRAFFIC RC ERRORS

CODE	DEFINITION
27	Invalid keyword has been entered.
28	Incorrect memory address has been specified.
29	No DLG is assigned to the PDSP requested to be added to EPSCROUT; must first assign DLG to PDSPROUT.
30	The DL requested cannot be activated or deactivated.
31	Customer referenced is not in data base; must first add to EPSIDT.
32	PDSP requested to be removed from EPCSROUT is last PDSP in customer network; must remove customer from EPSIDT.
33	Off-line CPU has not been put out of service or it is the manual mode; requested action cannot be completed.
34	Off-line CPU could not be reserved for use by this task.
35	Paging is in progress; requested action cannot be completed.
36	Copying of buffer from one CU to the other failed.
37	Cannot assign DLG to PDSPID for which tables are being built.
38	DLG associated with local CNCC should not be assigned to a PDSPID in PDSPROUT.
39	Data being added is already in table and cannot be entered again.
40	DL being added to DLG does not have same characteristics as other DLs in DLG.
41	Input parameter should be even multiple of 4096 (4K) and was not.
42	The ADD parameter of input message is invalid if OFL parameter does not appear.
43	The data link cannot be removed from the device equipment table.
44	Unable to specify data link in the device equipment table.

TABLE E

KEYWORD DEFINITIONS

KEYWORD	DEFINITION
HOUR	Identifies the hour of the day that a report is to be printed. Range is 1 to 24. Hour 1 is 1 a.m. to 2 a.m.; hour 24 is midnight to 1 a.m.
LENGTH	Identifies the number of type-member entries in the RPTCNT table reserved for one report. Total number of entries reserved for all reports must be less than or equal to the office parameter OPNCNT.
LWRB	The allowable lower limit for the member range associated with a type.
MAX-CNT	Identifies if maximum count is being taken for a particular type-member (0 or not entered = no, 1= yes).
MEMBER	Identifies which unit of a particular type is to be monitored to obtain information for a count report.
MIN	Identifies which 15-minute portion of an hour that a report is to be printed. The first 15-minute interval begins on the hour.
OPNCNT	Office parameter which identifies the total space to be reserved for the Report Contents Table.
OPNRPT	Office parameter which identifies the number of reports to be defined. Usually includes number of reports expected in the next engineering interval.
OPNSCHD	Office parameter which identifies the number of schedules to be defined and used for traffic reports. Usually includes number of schedules expected in the next engineering interval.
PEG	Identifies count as peg count.
RANGE	Identifies total number of members that can be associated with a type.
REPORT	Identifies a specific report.
SCHD	Identifies a specific schedule.
TYPE	Identifies the kind of measurement to be calculated for report purposes (See Table A).
USAGE	Identifies count as usage count.
SUN, MON, TUES, WED, THURS, FRI, SAT	Identifies day of week that a report schedule is to be implemented.
DEST	Identifies the destination of a report. It can be 0 (default; print only on TTY), 1 (send report to CSACC), or 2 (send report to CSACC and print on TTY).

TABLE F

TABLENAME DEFINITIONS

TABLENAME	DEFINITION
RPTCNT (See Note)	RPTCNT contains report identifiers and lists of which units are to be monitored for a particular report. RPTCNT also contains indicators showing whether maximum count should be reported for a particular unit. Maximum = 12.
RPTCNTL	RPTCNTL defines the length of each individual report and the day(s) and schedule(s) with which it should be associated. RPTCNTL also contains information identifying the place(s) at which reports should be printed.
SCHDT (See Note)	SCHDT contains schedule identifiers and the time(s) at which reports should be printed.

Note: Report and schedule identifiers are numerical values, assigned by the user, used to identify the report or schedule when initially defined or when output.

4.06 In order for traffic counts to be printed out the office parameters OPNCNT, OPNRPT, and OPNSCHD must be defined during office reallocation. See Sections 231-144-303 and 231-144-350 for information on reallocation. If these parameters are not defined, the counts will still be kept but will not be printed out.

B. Adding, Changing, or Removing an Entry in Traffic Schedule Table (SCHDT)

Adding Entry in Traffic Schedule Table

```
RC:PDTABL:/
SCHDT/
SCHD dda/
HOUR bb/        R (See Note)
MIN cccc!
```

Note: HOUR must be reentered for each repeated segment. The variables cccc for MIN stand for the four 15 minute intervals in the hour (i.e. cccc = 1000 means the report would be printed on the hour; cccc = 0010 means the report would be printed on the half hour; cccc = 1010 means the report would be printed on the hour and the half hour.)

Changing an Entry in Traffic Schedule Table

```
RC:PDTABL;CHG:/
SCHDT/
SCHD dda/
HOUR bb/        R (See Note)
MIN cccc, dddd!
```

Note: HOUR must be reentered for each repeated segment. For MIN, cccc is old information, dddd is new information.

Removing Entry from Traffic Schedule Table

```
RC:PDTABL;OUT:/
SCHDT/
SCHD a̸a̸a/   R (See Note)
HOUR b̸b/!
```

Note: To delete an entire schedule, enter SCHD only. To delete an hour within a schedule, enter SCHD and HOUR. To delete more than one hour within a schedule, enter SCHD once and HOUR as many times as necessary. To delete more than one schedule, enter SCHD as often as necessary; SCHDT need not be retyped.

C. Adding, Changing, or Removing Entry in Traffic Report Controller Table (RPTCNTL)

Adding Entry in Traffic Report Controller Table

```
RC:PDTABL:/
RPTCNTL/
REPORT a̸a̸a/
LENGTH b̸b/
SUN c̸c̸c/
MON d̸d̸d/
TUES e̸e̸e/      R (See Note)
WED f̸f̸f/
THUS g̸g̸g/
FRI h̸h̸h/
SAT j̸j̸j/
DEST k!
```

Note: SUN, MON, TUES, WED, THURS, FRI, SAT and DEST are optional keywords. Only those to be associated with a schedule need be entered. The variable field identifies the schedule (from SCHDT) for that day. For repeated segments only REPORT must be specified.

Changing an Entry in Traffic Report Controller Table

```
RC:PDTABL;CHG:/
RPTCNTL/
REPORT a̸a̸a/
LENGTH b̸b, c̸c/
SUN d̸d̸d, e̸e̸e/
MON f̸f̸f, g̸g̸g/
TUES h̸h̸h, j̸j̸j/        R (See Note)
WED k̸k̸k, m̸m̸m/
THURS n̸n̸n, p̸p̸p/
FRI r̸r̸r, s̸s̸s/
SAT t̸t̸t, u̸u̸u/
DEST v, w!
```

Note: REPORT must be entered for each repeated segment. LENGTH, SUN, MON, TUES, WED, THURS, FRI, SAT or DEST are entered only when it is desired to change a value in a particular REPORT segment. In all cases the first set of variables is old data; the second set is new data.

Removing an Entry From Traffic Report Controller Table

```
RC:PDTABL;OUT:/
RPTCNTL/
REPORT a̸a̸a!  R
```

D. Adding, Changing, or Removing an Entry in Traffic Report Contents Table (RPTCNT)

Adding an Entry in Traffic Report Contents Table

```
RC:PDTABL:
RPTCNT/
REPORT ŕŕa/
TYPE ƀƀƀb/
MEMBER ćććc/      R (See Note)
MAX-CNT d!
```

Note: MAX-CNT is an optional keyword and is entered only if maximum count is wanted for this TYPE and MEMBER. When defining a particular report, REPORT need be entered only once and TYPE, MEMBER, and MAX-CNT (if desired) as often as necessary. When defining more than one report, REPORT must be entered once for each report but RPTCNT need not be retyped.

Changing an Entry in Traffic Report Contents Table

```
RC:PDTABL;CHG;/
RPTCNT/
REPORT ŕŕa/
TYPE ƀƀƀb, ćććc/
MEMBER đđđd, ććće/     R (See Note)
MAX-CNT f,g!
```

Note: TYPE and MEMBER must be entered for each repeated segment. MAX-CNT is entered only in those segments in which it is desired to change values. To change more than one type-member combination within a report, enter REPORT once and TYPE and MEMBER as many times as necessary. To change type-member combinations on more than one report enter REPORT for each report. RPTCNT need not be retyped. For TYPE, ƀƀƀb is old information and ćććc is new information. For MEMBER, đđđd is old information and ććće is new information. For MAX-CNT, f is the old information and g is new information.

Removing an Entry from Traffic Report Contents Table

```
RC:PDTABL;OUT:/
RPTCNT/
REPORT ŕŕa/
TYPE ƀƀƀb/
MEMBER ćććc/      R (See Note)
MAX-CNT d!
```

Note: To delete type-member combination within report enter REPORT, TYPE, and MEMBER. If MAX-CNT is not entered, it is assumed to be zero. IF, however, it is not zero in the table, then MAX-CNT 0 must be entered. To delete more than one type-member combination in a report, enter REPORT once and TYPE and MEMBER as often as necessary. To delete an entire report enter REPORT only. To delete more than one report enter REPORT as often as necessary; RPTCNT need not be retyped.

E. Verification of RC Information

4.07 All the tables that are built with the RC:PDTABL command can be output on the TTY to verify the accuracy of the data in the tables. TYPEDSC (type description) may also be output on the TTY. The data printed out is in decimal.

4.08 The basic form of the input message necessary to output tables is

```
OP:PDTABL:/
TABLENAME/
KEYWORD UNIT!
```

For tables which are to be output in whole, only the TABLENAME need be entered. For tables which may only be output in part or for which only partial data is required, TABLENAME and KEYWORD UNIT must be entered. In the following examples, the format of the input messages will be shown along with an example of the output. Information that would be printed will be represented by Xs.

4.09 The basic form of the output table is

```
M tt OP PDTABL TABLENAME
INFORMATION
OP REQUEST COMPLETE
```

In the first line of the output message M indicates a response to a manual request and tt is minutes past the hour.

Output Traffic Schedule Table (SCHDT)

4.10 SCHDT lists the fifteen minute periods during which a report will be printed out. SCHDT cannot be output in its entirety; the schedule (SCHD) desired must also be specified.

```
OP:PDTABL:/
SCHDT/
SCHD 5! PF

M  tt  OP  PDTABL  SCHDT
SCHD       HOUR      MIN
  5          1        X
  5          2        X
  .          .        .
  .          .        .
  .          .        .
  5         24        X
OP  REQUEST  COMPLETE
```

Output Traffic Report Controller Table (RPTCNTL)

4.11 RPTCNTL lists all defined reports. Information for each report includes report length, which schedule(s) is assigned for each day of the week, and the index into the Report Contents Table for the type-member combinations associated with the reports. RPTCNTL may be output in whole or in part.

OP:PDTABL:/
RPTCNTL ! PF

M tt OP PDTABL RPTCNTL

REPORT	LENGTH	DEST	SUN	MON	TUES	WED	THURS	FRI	SAT	INDEX
1	X	X	X	X	X	X	X	X	X	X
2	X	X	X	X	X	X	X	X	X	X
.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.
X	X	X	X	X	X	X	X	X	X	X

OP REQUEST COMPLETE

OP:PDTABL:/
RPTCNTL/
REPORT 5 ! PF

M tt OP PDTABL RPTCNTL

REPORT	LENGTH	DEST	SUN	MON	TUES	WED	THURS	FRI	SAT	INDEX
5	X	X	X	X	X	X	X	X	X	X

OP REQUEST COMPLETE

Output Traffic Report Contents Table (RPTCNT)

4.12 RPTCNT lists all the type-member combinations associated with a report. It also indicates whether maximum count is being taken. RPTCNT cannot be output in its entirety; the REPORT desired must also be specified.

```
OP:PDTABL:/
RPTCNT/
REPORT 4! PF

M tt OP  PDTABL  RPTCNT
  REPORT  TYPE   MEMBER   MAX-CNT
     4      X       X        X
     4      X       X        X
     .      .       .        .
     .      .       .        .
     .      .       .        .
     4      X       X        X
OP REQUEST COMPLETE
```

Output Traffic Type Description Table (TYPEDSC)

4.13 TYPEDSC is not built using the RC:PDTABL and is generic dependent. TYPEDSC lists all of the counts that the generic has available. (See Table A). For each type of count TYPEDSC lists the lower boundary value, the range of values, the index into the traffic holding and total tables, and if the count is peg or usage. TYPEDSC may be output in whole or in part.

```
OP:PDTABL:/
TYPEDSC! PF

M tt OP  PDTABL  TYPEDSC
  TYPE  LWRB  RANGE  INDEX  USAGE  PEG
    1     X      X      X      X     X
    2     X      X      X      X     X
    .     .      .      .      .     .
    .     .      .      .      .     .
    .     .      .      .      .     .
    X     X      X      X      X     X
OP REQUEST COMPLETE

OP:PDTABL:/
TYPEDSC/
TYPE 23! PF

M tt OP  PDTABL  TYPEDSC
  TYPE  LWRB  RANGE  INDEX  USAGE  PEG
   23     X      X      X      X     X
OP REQUEST COMPLETE
```

5. TRAFFIC MEASUREMENT TABLE INTERACTION

5.01 Tables SCHDT, RPTCNTL, and RPTCNT are all necessary for a report to be printed out. Each individual report is defined in RPTCNT by a unique identification number (the number input to identify the report when defining initially or outputting) and a list of type-member combinations to be reported on. Report printing schedules are defined in SCHDT. Each schedule has a unique identification number (the number input to identify the schedule when defining initially or outputting) and a list of

times for a report to be printed. RPTCNT and SCHDT are correlated by RPTCNTL. RPTCNTL has a list of reports and the schedule that each report should follow for each day of the week.

5.02 As an example, assume that there are five reports (1-5) defined in RPTCNT and six schedules (1-6) defined in SCHDT. RPTCNTL must then be defined to assign the desired reports to the desired schedule(s). RPTCNTL may then appear as shown below.

REPORT	LENGTH	DEST	SUN	MON	TUES	WED	THURS	FRI	SAT	INDEX
1	X	0	1		1		1			X
2	X	2	2	3	2	3	2	3	4	X
3	X	1	1	5	5	5	5	5	1	X
4	X	1	2	3	2	3	2	3	1	X
5	X	1	6	6	6	6	6	6	6	X

This indicates that report 1 is printed Sunday, Tuesday, and Thursday according to Schedule 1. Report 2 is printed according to schedule 2 on Sunday, Tuesday, and Thursday; schedule 3 on Monday, Wednesday, and Friday; and schedule 4 on Saturday. Report 5 is printed every day according to schedule 6.

5.03 See Section 231-144-152 for a more detailed explanation of traffic measurement software.

6. TRAFFIC MEASUREMENT OUTPUT MESSAGE FORMAT

6.01 The traffic report output messages are printed automatically based on the information in tables SCHDT and RPTCNTL. The information printed out is decimal. The format of the output message is shown below.

tt TRAFFIC REPORT NO X

TYPE	MEMBER	COUNT
X	X	X
X	X	X
X	X	X
X	X	X
X	X	X

TRAFFIC REPORT COMPLETE

In the first line the tt is minutes past the hour and X is the report number. Information from Table A Measurement Designation column appears under TYPE.

7. GUIDELINES AND EXAMPLES FOR REPORT PLANNING

7.01 This part discusses example types of traffic measurement reports and example schedules. Guidelines for calculating office parameters OPNRPT, OPNCNT, and OPNSCHD are included. Also included are examples of completed EPSCS 11 (RPTCNTL), EPSCS 12 (SCHDT), and EPSCS 13 (RPTCNT) forms

and the RC messages necessary to enter the information from the forms into the PDSP data base. Refer to Translation Guide TG-1A for specific information.

7.02 Nine types of reports have been defined for PDSP traffic data. These report types are listed in Table G. Each report type lists the counts to be taken (Table A), CNT value (for calculating OPNCNT, paragraph 7.06) and basis for generating report (i.e., Report Type 1—Counts for data links—should be built on a per data link basis [1 report for each data link]).

7.03 Three schedules have been defined for report printing. Table H contains a listing of these schedules including which report types (Table G) should be associated with each schedule.

7.04 Before traffic reports will be printed out, certain office parameters must be input to the PDSP. These parameters are calculated based on the office configuration and the types of reports desired. As an example, consider an office with two EPSCS customers, three data links, and three data link groups. All possible reports will be generated for this office.

7.05 The office parameters OPNRPT (number of reports to be defined) is calculated for the example office as follows:

Report type 1: 1 report per data link; 3 data link (3 reports)
Report type 2: 1 report per data link group; 3 data link groups (3 reports)
Report type 3: 1 report (1 report)
Report type 4: 1 report (1 report)
Report type 5: 1 report (1 report)
Report type 6: 1 report per EPSCS customer; 2 EPSCS customers (2 reports)
Report type 7: 1 report (1 report)
Report type 8: 1 report per EPSCS customer; 2 EPSCS customers (2 reports)
Report type 9: 1 report (1 report)
OPNRPT sum equals 15.

For this example the value 15 should be entered on the EPSCS 1 form (See Section 231-144-350) for OPNRPT.

7.06 The office parameter OPNCNT is the total space to be reserved in memory for the report contents table. Table G gives a count (CNT) value for each type of report on a per report basis. For each type of report the total CNT is calculated by multiplying the CNT value by the number of reports. The sum of all CNT values for all report types is OPNCNT. For the example office, OPNCNT is calculated as follows:

Report Type 1: CNT = 15, 3 reports = 45
Report Type 2: CNT = 5, 3 reports = 15
Report Type 3: CNT = 10, 1 report = 10
Report Type 4: CNT = 8, 1 report = 8
Report Type 5: CNT = 10, 1 report = 10
Report Type 6: CNT = 5, 2 reports = 10
Report Type 7: CNT = 5, 1 report = 5
Report Type 8: CNT = 10, 2 reports = 20
Report Type 9: CNT = 5, 1 report = 5
OPNCNT sum equals 128.

For this example the value 128 should be entered on the EPSCS 1 form (See Section 231-144-350) for OPNCNT.

7.07 The office parameter OPNSCHD is the number of schedules to be defined. The value 3 (see paragraph 7.03, Table H) should be entered on the EPSCS 1 form (See Section 231-144-350) for OPNSCHD.

7.08 Figure 1 shows the EPSCS 12 form completed for schedule 1 from TABLE H. Also in Fig. 1 are the RC messages necessary to input the data on the form. A separate form would be necessary for each schedule.

7.09 A portion of the EPSCS 11 form necessary for the example office is shown in Fig. 2. Refering to paragraph 7.05, an additional eight entries on the EPSCS 11 form would be necessary to completely specify the reports for the example office. The RC messages necessary to input the EPSCS 11 data are also shown in Fig. 2. Each unique report number will require a separate EPSCS 13 Form. A destination of 0 indicates that reports are to be printed locally. Enter a 1 if the reports are to be sent to the CSACC. Enter a 2 if the reports are to be both printed locally and sent to the CSACC. The report length indicates the count value for the report. The count value is the maximum number of entries that may be used to complete an EPSCC 13 form for that report number.

7.10 Figure 3 shows the completed EPSCS 13 form and the RC messages necessary to define Report 7 (see Fig. 2, EPSCS 11, ITEM 7 and TABLE G, REPORT TYPE 3). A separate form would be required for each report.

TABLE G

REPORT TYPES

TYPE NUMBER	REPORT DEFINITION	BASIS	CNT
1	Traffic counts for data links — types 1, 2, 3, 4, 11, 14, 15, 16, 17, 18, 22, 23, 24, 68	1 report per data link	15
2	Traffic counts for data link groups — types 37, 69, 70, 68	1 report per link group	5
3	Traffic counts for PIU hardware — types 42, 50, 51, 52, 53, 54, 55, 68	1 report	10
4	Traffic counts for TNN and MDR — types 57, 58, 59, 60, 61, 68	1 report	8
5	3 AM report for TNN and MDR — types 57, 58, 59, 60, 61, 62, 66, 68	1 report	10
6	Traffic counts for CNCC — types 38, 39, 40	1 report per EPSCS customer	5
7	Traffic counts for CSACC — types 73, 74, 75	1 report	5
8	Traffic counts for messages over PIU — types 43, 44, 45, 46, 47, 48, 71, 36, 76, 68	1 report per EPSCS customer	10
9	Miscellaneous traffic counts — types 77, 76, 72, 68	1 report	5

TABLE H

SCHEDULES

SCHEDULE NUMBER	SCHEDULE DEFINITION	REPORT TYPES (TABLE F)
1	7:45 AM, 8:45 AM, 9:45 AM, 10:45 AM; 11:45 AM, 12:45 PM, 1:45 PM, 2:45 PM, 3:45 PM, 4:45 PM, 5:45 PM	1, 2, 3
2	3:45 AM	5
3	8 AM, 5 PM	4, 6, 7, 8, 9

EPSCS 12(01) TG-1A

DATE _____

PAGE _____

EPSCS PDSP
TRAFFIC SCHEDULE RECORD
NO. 1 ESS

ESS UNIT _____ PDSP UNIT 1

ITEM 00	SCHEDULE NO. 1

ITEM	HOUR	MINUTES				REMARKS	ITEM	HOUR	MINUTES				REMARKS
		00	15	30	45				00	15	30	45	
01	7	0	0	0	1		08	14	0	0	0	1	
02	8	0	0	0	1		09	15	0	0	0	1	
03	9	0	0	0	1		10	16	0	0	0	1	
04	10	0	0	0	1		11	17	0	0	0	1	
05	11	0	0	0	1		12						
06	12	0	0	0	1		13						
07	13	0	0	0	1		14						

```
RC:PDTBL:/
SCHDT/
SCHD 1/
HOUR 7/
MIN 0001/
REPEAT!
RC:PDTBL:/
HOUR 8/
REPEAT!
RC:PDTABL:/
HOUR 9/
REPEAT!
```

```
RC:PDTABL:/
HOUR 10/
REPEAT!
RC:PDTABL:/
HOUR 11/
REPEAT!
RC:PDTABL:/
HOUR 12/
REPEAT!
RC:PDTABL:/
HOUR 13/
REPEAT!
```

```
RC:PDTABL:/
HOUR 14/
REPEAT!
HOUR 15/
RC:PDTABL:/
REPEAT!
RC:PDTABL:/
HOUR 16/
REPEAT!
RC:PDTABL:/
HOUR 17!
```

NOTE: THE MIN KEYWORD DOES NOT HAVE TO BE ENTERED FOR EACH REPEATED SEGMENT SINCE IT DOES NOT CHANGE.

Fig. 1—EPSCS 12 for Schedule 1

EPSCS 11(01) TG-1A

DATE _____

PAGE _____

EPSCS PDSP
REPORT CONTROLLER RECORD
NO. 1 ESS

ESS UNIT _____ PDSP UNIT _____

ITEM	REPORT NO.	REPORT LENGTH	DEST	SCHEDULE NUMBER							REMARKS
				MON	TUES	WED	THUR	FRI	SAT	SUN	
01	1	15	0	1	1	1	1	1	1	1	Type 1 - DL 0
02	2	15	0	1	1	1	1	1	1	1	Type 1 - DL 1
03	3	15	0	1	1	1	1	1	1	1	Type 1 - DL 2
04	4	5	2	1	1	1	1	1	1	1	Type 2 - DLG 1
05	5	5	2	1	1	1	1	1	1	1	Type 2 - DLG 2
06	6	5	2	1	1	1	1	1	1	1	Type 2 - DLG 3
07	7	10	0	1	1	1	1	1	1	1	Type 3

```
RC:PDTABL:/
RPTCNTL/
REPORT 1/
LENGTH 15/
SUN 1/
MON 1/
TUES 1/
WED 1/
THUR 1/
FRI 1/
SAT 1/
DEST 0/
REPEAT!
RC:PDTABL:/
REPORT 2/
REPEAT!
RC:PDTABL:/
REPORT 3/
REPEAT!
RC:PDTABL:/
REPORT 4/
LENGTH 5/
DEST 2/
REPEAT!
RC:PDTABL:/
REPORT 5/
REPEAT!
RC:PDTABL:/
REPORT 6/
REPEAT!
RC:PDTABL:/
REPORT 7/
LENGTH 10/
DEST 0!
```

NOTE: THE KEYWORDS LENGTH AND DEST MUST BE RE-ENTERED FOR REPORT 4 AND REPORT 7 BECAUSE THEIR VALUE HAVE CHANGED.

Fig. 2—Partially Complete EPSCS 11

EPSCS 13(01) TG-1A

DATE _____

PAGE _____

EPSCS PDSP
REPORT CONTENTS TABLE RECORD
NO. 1 ESS

ESS UNIT _____ PDSP UNIT _____

ITEM 00	REPORT NO. 7

ITEM	TYPE	MEMBER	MAX-CNT	REMARKS	ITEM	TYPE	MEMBER	MAX-CNT	REMARKS
01	42	1	0		08	68	1	0	
02	50	1	0		09				
03	51	1	0		10				
04	52	1	0		11				
05	53	1	0		12				
06	54	1	1						
07	55	1	1						

```
RC:PDTABL:/
RPTCNT/
REPORT 7/
TYPE 42/
MEMBER 1/
REPEAT!
RC:PDTABL:/
TYPE 50/
REPEAT!
```

```
RC:PDTABL:/
TYPE 51/
REPEAT!
RC:PDTABL:/
TYPE 52/
REPEAT!
RC:PDTABL:/
TYPE 53/
REPEAT!
```

```
RC:PDTABL:/
TYPE 54/
MAX-CNT 1/
REPEAT!
RC:PDTABL:/
TYPE 55/
MAX-CNT 1/
REPEAT!
RC:PDTABL:/
TYPE 68!
```

NOTE: SINCE ALL MEASUREMENT TYPES IN REPORT 7 HAVE ONLY 1 MEMBER, MEMBER IS NOT ENTERED FOR EACH REPEATED SEGMENT. MAX-CNT IS ENTERED ONLY FOR THOSE TYPES WHERE MAXIMUM COUNT FOR A 15 MINUTE PERIOD IS DESIRED.

Fig. 3—EPSCS 13 for Report 7

8. ABBREVIATIONS

ATT	Attempt
AVL	Available
COMM	Communications
CNCC	Customer Network Control Center
CNT	Count
CPU	Central Processor Unit
CU	Control Unit
CSACC	Customer Service Administration Control Center
DB	Data Base
DEST	Destination
DL	Data Link
DLG	Data Link Group
DLT	Data Link Table
EPCSROUT	EPSCS Customer Routing Table
EPSCS	Enhanced Private Switched Communication System
EPSIDT	EPSCS Customer ID Table
ERR	Error
ESS	Electronic Switching System
E911	Expanded 911
FIFO	First-In First-Out
INIT	Initializations
INVLD	Invalid
LWRB	Lower Limit of Member Number Range
MAX-CNT	Maximum Count
MIN	Minute
MDR	Message Detail Record
MSG	Message
MTC	Maintenance
NUM	Number
OP	Office Parameter
OPNCNT	Total Space Reserved for the Report Contents Table
OPNRPT	Number of Reports to be Defined
OPNSCHD	Number of Schedules to be Defined
OVFLW	Overflow
PDSP	Peripheral Data Storage Processor
PDSPID	PDSP Identification
PDTABL	PDSP Table
PEG	A Cumulative Count During a Specified Time
PIU	Processor Interface Unit
RC	Recent Change
RPTCNT	Traffic Count Report Contents Table
RPTCNTL	Traffic Count Report Controller Table
SCHDT	Traffic Count Schedule Table
TDC	Tape Data Controller
TNN	Trunk Network Number
TRANS	Transient
TTY	Teletypewriter
TYPE DSC	Type Description
UDLC	Universal Data Link Controller