PERIPHERAL DATA STORAGE PROCESSOR
MAINTENANCE PROCEDURES
2-WIRE NO. 1 ELECTRONIC SWITCHING SYSTEM

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1. GENERAL

1.01 This section provides maintenance procedures and trouble location procedures for the operation of peripheral data storage processor (PDSP) for enhanced private switched communication service (EPSCS) and enhanced 911 (E911).

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

This section does not affect the Equipment Test List (ETL).

1.03 Abbreviations and acronyms used in this section are listed in Part 11.

2. ABNORMAL CONDITIONS DETECTION

2.01 There are three ways of detecting an abnormal condition at a PDSP.

(1) Alarms and summary status at the system status panel (SSP)

(2) The TTY messages printed on the PDSP local maintenance channel

(3) Analysis of traffic reports printed at the PDSP.

2.02 When the PDSP is normal (fault free), the SYSTEM NORMAL lamp on the SSP is lighted. Any device fault, control unit (CU) or memory fault, or alarm condition will cause the SYSTEM NORMAL lamp to extinguish and the appropriate summary status lamp on the SSP to light. Every fault condition which lights a lamp on the SSP will be accompanied by a TTY message, except for an overload condition. Overload is defined as insufficient system memory which results in insufficient message processing capability. There is not a TTY message for an overload condition. If an overload occurs, the TRAFFIC lamp on the SSP will light and the SYSTEM NORMAL lamp will extinguish. Determination of the cause of overloads is beyond the scope of this document.

3. ALARMS

A. Critical Alarm

3.01 There is only one TTY message which indicates a critical alarm in the PDSP system, and that message is printed when communication fails between the PDSP and the No. 1 Electronic Switching System (ESS).

B. Major Alarm

3.02 There are many causes for major alarms from both Extended Operating System (EOS) and EPSCS or E911. A complete listing of these alarm messages is located in the EOS Output Message Manual (OM-4C001-01), EPSCS Output Message Manual (OM-1A700-01), and the E911 Output Message Manual (OM-1A700-02).

3.03 Typical causes of major alarms are system initialization, CU troubles, data link (DL) group communication failures, and fault recovery inhibit messages.

C. Minor Alarms

3.04 There are many causes of minor alarms and complete lists may be found in the output messages manuals listed above. Minor alarms are not service affecting, but the cause of the alarm should be noted and appropriate action should be taken as described in the output message manual.

D. Power Alarm

3.05 When power fails in the processor interface frame (PIF), No. 1 ESS detects the failure and sends a message to the PDSP via the in-service processor interface unit (PIU). This message is interpreted and the major alarm is activated. The major alarm lamp on the SSP is lighted and the SYSTEM NORMAL lamp on the SSP is extinguished. The ALARM RLSE key will retire the alarm; however, the alarm lamp will remain lighted until No. 1 ESS detects that the power is restored and sends another message to the PDSP.

E. Fuse Alarm

3.06 When a fuse blows, No. 1 ESS sends a message to the PDSP, the minor power alarm will sound and the FUSE lamp will light at the SSP when this message is received. The SYSTEM NORMAL lamp will extinguish. The ALARM RLSE key will retire the fuse alarm; however, the fuse alarm will remain lighted until No. 1 ESS detects the restoral to normal condition.

4. COMMUNICATION CHECKS AND FAILURES

A. General

4.01 This part covers communication checks and the procedures to follow when these checks fail.

B. Communication Checks

4.02 Test messages are sent out every 30 seconds over data links from one office PDSP to an-

other for communication checks. These messages are sent in both directions.

4.03 The program responsible for directing these and other data messages through the office is called DSORT. Figure 4 shows a layout of the data flow through the office.

4.04 The means of exchanging data messages between two computers over communication channels, while assuring correct message sequencing and data integrity, is called protocol.

4.05 The type of protocol used by EPSCS is called DDCMP. An explanation of its contents and operation are as follows:

(a) ***DDCMP Messages:*** There are two types of messages, control and data.

(1) The control messages listed below carry channel control information, transmission status, and synchronization information.

- ACK—Acknowledge. Used to inform sending processor that a data message or a group of data messages was received with no errors.
- NAK—Negative Acknowledge. Used to inform sending processor that a data message or a group of data messages was received in error. (Error detection provided by means of block check characters.)
- REP—Reply to message number. Used by the sending processor to request the status of an outstanding unacknowledged message.
- START—Used by one processor to inform the distant processor to reinitialize the link. This empties and initializes data link buffers on each end of the link.
- STACK—Start Acknowledge. Used by the distant end to acknowledge that it will perform the start-up sequence.

(2) The data messages are made up of a 4-word DDCMP header, EPSCS data message, and a 1-word DDCMP trailer (see Fig. 1). Each message is assigned a number (1 through 256) and must be successfully accepted by the receiving end before the next message can be transmitted. All messages are held in the data link buffer until successfully transmitted.

(b) ***DDCMP Start Operation:*** On system initialization all links are put into the DDCMP start state. Fig. 2 contains a typical start up sequence and data message exchange.

(c) ***DDCMP Restart Operation:*** There are two conditions for which the PDSP will restart the protocol:

(1) If, due to poor response time from the receiving end, the sending processor must send too many REP messages in any hour, the sending end will request a restart.

(2) If the data link buffer overflows and too many messages are rejected by the data link driver, a protocol restart will be requested.

C. DLGCOMM Errors

4.06 The SDORT program expects at least one message every 2 minutes. If no message is received within this time, a communication failure is generated, for example:

```
57 EPSCS REPORT ERROR
TYPE DLGCOMM NO 0

DLG 02 COMMUNICATION FAILURE
```

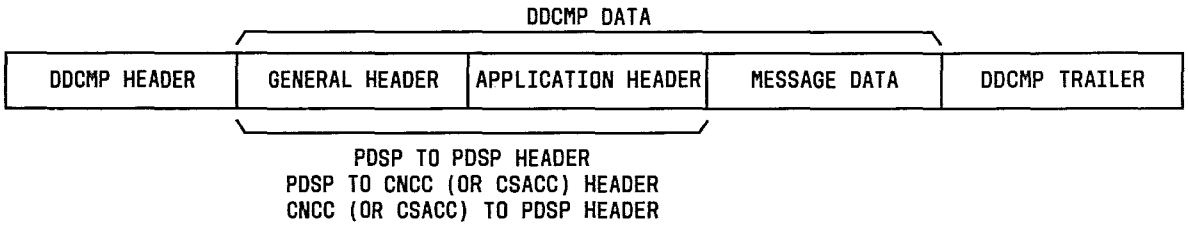

Fig. 1—DDCMP Message Format

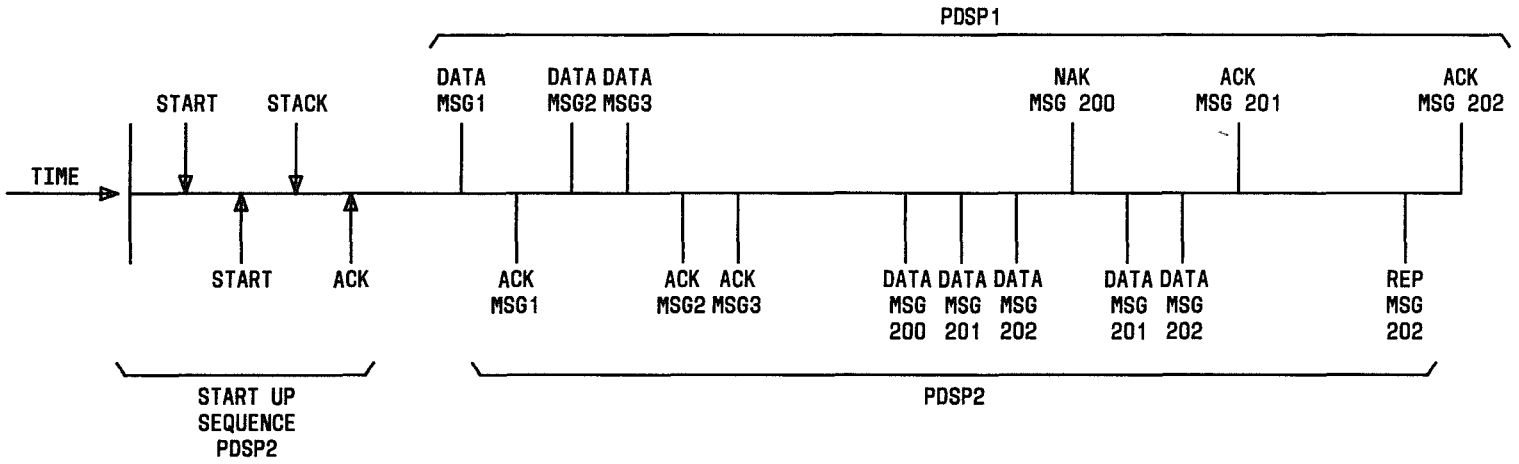

Fig. 2—DDCMP Control Data Message Exchange Between Two PDSPs

4.07 If only one data link fails, the most likely suspect is one of the data link interface (DLI) packs. If more than one data link fails within a 5- or 10-minute period, a UDLC pack could be faulty. Other possible causes are the modem, this end office or distant-end office.

4.08 Listed below is the sequence to follow when troubleshooting communication failures.

(a) Remove and restore data link.

(b) If the data link does not indicate data link group (DLG) 02 communication success, call customer service administration control center (CSACC) to verify that the other end PDSP is in service.

(c) Diagnose DLI and change pack if faulty. (Refer to Section 231-144-308.)

(d) Switch back-up facilities. Operate toggle switch simultaneously with other end.

(e) If switching back-up facilities fixes the problem, call private line test people via CSACC. Failure could be caused by a noisy line or carrier trouble.

(f) If after switching to back-up facilities link does not restore, change out both DLI packs even if DLI passes diagnostics.

(g) If data link still has not restored, request technical assistance according to local practices.

D. Processor Interface Unit Communication Check

4.09 Test messages are sent out every 2 seconds over the active processor interface unit (PIU) circuit from the No. 1 ESS to the 3A processor and returned from the 3A processor to the No. 1 ESS.

4.10 The No. 1 ESS programs responsible for directing these messages are PUMP (PIU unloader program) and PIAD (sends and counts received messages). The messages on the 3A processor are handled at interrupt level by PIU01 (PIU driver program) and PIUMNT (PIU fault recovery program). Figure 3 shows a layout of the data flow of the 2-second test message. Additionally, on the 3A processor programs EPSCCT and PIBLMT monitor the flow of the 2-second test message.

E. Processor Interface Unit Communication Failure

4.11 The 2-second test message is monitored independently by both the No. 1 ESS and 3A processor. Unlike the data link test messages, where each 3A processor independently transmits and receives a message, the PIU test messages are initiated solely by the No. 1 ESS. The No. 1 ESS criteria for success is the receipt of 2, 4, or 5 test messages in an 8-second period. If this number is not obtained, an F-level interrupt is generated which causes a PIU circuit switch. The 3A processor criteria for success is a single 2-second message in a 10-second period. If after a total of three 10-second periods, no test message has been received, the following failure message is generated.

EPSCS REPORT ERROR TYPE PIUCOMM NO 0

PIU 04 COMMUNICATION FAILURE

After the 3A processor has received at least one test message in any subsequent 10-second period, the following message is generated (one time only).

EPSCS REPORT TYPE PIUCOMM NO 4

PIU 00 COMMUNICATION SUCCESS.

4.12 Listed below is a sequence to follow when troubleshooting communication failures.

(a) If both a PI DFAIL message (on the No. 1 ESS maintenance TTY) and a PIU 00 COMMUNICATION FAILURE message (on the 3A processor maintenance TTY) are received, the PI DFAIL problem should be checked first.

(b) A communication failure on the active PI circuit will result in a switch to the standby PI where communications will normally be restored. The diagnostic will also be run on the formerly active circuit. The diagnostic should detect the fault and PK 1A284 should be used in the fault analysis. Faulty circuit packs should be replaced and the diagnostic rerun until an all test pass (ATP) is obtained.

(c) In the case where a communication failure has occurred on both PI circuit halves, the diagnostic should be manually requested on either circuit until an ATP is obtained and communications are reestablished.

(d) If phases 1 and 2 of the PI diagnostic fail, a call store bus problem or a central processor dis-

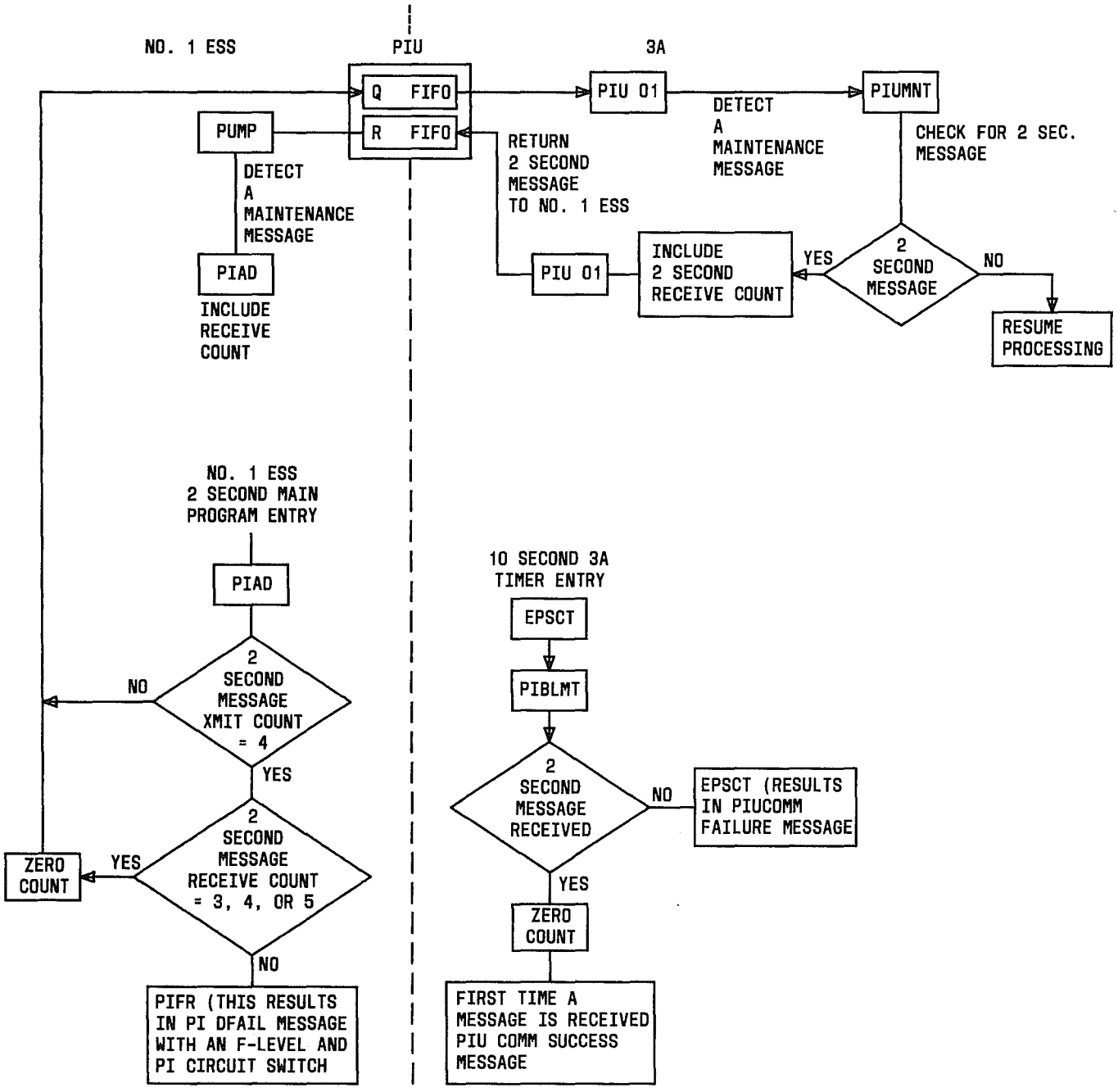

Fig. 3—Second Test Message Data Flow

tributor (CPD) problem could exist as well as an internal PI problem. It is very unlikely that two PI circuit halves will fail identically.

(e) If phases 3, 4, or 5 fail, a possible CPD problem could exist although an internal PI problem probably exists.

(f) If phase 6 fails, a problem exists with the PDSP access to the PI or with the PDSP itself. When analyzing phase 6 problems, it is important to look at word 30 (the block number or test number) of the raw data printout on the No. 1 ESS maintenance TTY. The lower three bits contain the test number (1 through 6) and the upper three bits contain an error code. See PK 1A284 for more details; a summary of word 30 bits follows:

Bit 22 set = PDSP timeout.

Bit 21 set = PDSP test STF, no raw data received.

Bit 20 set = PSDP test STP, raw data printed.

(g) Troubleshooting phase 6 PDSP time-outs—If test 1 times out, it demonstrates a lack of communciation (through the PI status bits in the standby) between the No. 1 ESS and the PDSP. Assuming the PDSP is cycling properly, the PI diagnostic should be run from the 3A processor. This will test the standby duplex bus selector (DBS) and PIU access circuits. Refer to IM-1A700/OM-1A700, TLM 1A728 and Section 231-144-104 for more details. Of course, if the PDSP is not properly cycling, that problem should be fixed immediately.

(h) Troubleshooting phase 6 PDSP STF, no raw data received—The raw data is sent over the active PI circuit and should always accompany the diagnostic raw data printout for tests 1 through 5. Test 6 is VDLC diagnostic and raw data is never sent back to the No. 1 ESS. The No. 1 ESS raw data is only an echo of the raw data printed on the 3A processor and does not contain any unique information. Failure of the raw data to traverse the active circuit could point to a possible problem. First, correct the standby circuit, then switch circuits and diagnose the formerly active circuit.

(i) Troubleshooting phase 6 PDSP test STF problem—Consult PK 1A284, OM-1A700, and Section 231-144-104 for further details.

(j) A communication failure on the PDSP and not on No. 1 ESS is most likely a PDSP software problem and help should be obtained through the normal procedures.

5. DATA BASE ERRORS

5.01 This part covers some of the most common data base errors and gives detailed procedures to correct these errors.

5.02 The examples given in this part are for post-cutover. Pre-cutover new customer information is usually entered into No. 1 ESS translations before it is entered into No. 3ACC translations. This causes message detail to be generated and sent by the No. 1 ESS to the PSDP, which will not recognize the address, destination, or customer ID as valid. Therefore, a data base 1, 2, or 3 error (respectively) will be printed at this point and should be ignored.

5.03 Data base errors usually result in lost customer data. This increases the importance of acting upon and correcting these errors as soon as possible.

5.04 The procedure to follow are:

(a) Consult OM-1A700 to determine the type of error that is occurring.

(b) Verify data base for correctness by outputting affected tables and checking these against the office forms.

(c) If an entry does not agree with the forms, and if the forms are assumed to be correct, use the appropriate RC message to correct the table entry. (See Section 231-144-350.)

(d) If the data agrees with the forms, the accuracy of the forms can be verified by contacting CSACC who will interface with dial administration.

(e) If the data base and forms are correct, and the error message continues to print out, use the address in the error message to determine which program function is receiving bad information.

(f) The offset can be determined by subtracting the starting address listed in the generic load map from the address given in the printout. The

PR number for a particular pident can be found in PG-1A701.

(g) If the cause cannot be determined seek technical assistance according to local practice.

5.05 Following are examples of common data base errors and steps for correcting the errors.

A. Data Base Error No. 1 (Table Address in Data Base Out-of-Range)

(a) Error Message:

22 EPSCS REPORT ERROR TYPE
DATABASE NO a
09779:09781
0001 B3F2 000C 0000---

a = 1 = Table address in data base out of range.

000C = Error code in hexadecimal.

(b) Action:

(1) Read table directory by typing in

OP:PDTABL:/
TABDIR:

(2) Resulting output message gives the table name and offset address. This offset is added to the starting address of data base, (hexadecimal 034000, Gen., Iss. 2) to determine if address in within range.

(3) Address in the printout is used to locate the area in the program where the error occurred and to determine the meaning of error code.

B. Data Base Error No. 2 (Customer Destination Table Not Assigned)

(a) Error Message:

29 EPSCS REPORT ERROR TYPE
DATABASE NO a
CSECT EPSCS DISP 0756
0002 2FAE 0004 0000 ---

a = 2 = Customer destination table not assigned.

(b) Action:

(1) Verify that this is a valid office for that customer.

(2) Check No. 3ACC translations by typing in

OP:PDTABL:/
EPSCS ROUT:

OP:PDTABL:/
CNCCROUT!

C. Data Base Error No. 3 (Invalid or Unassigned Customer ID)

(a) Error Message:

42 EPSCS REPORT ERROR TYPE
DATABASE NO a
09625 : 0962D
0002 2FAE 0004 0000

a = 3 = Invalid or unassigned customer ID.

0004 = Customer ID.

(b) Action:

(1) Verify that MDR bit is not set in the LEN translator in No. 1 ESS by typing in

VFY-LEN-31000000100.

Resulting TR03 message will give contents of LEN auxiliary block. Bit 2 in LENCL3 word is MSGD bit.

(2) Verify No. 3ACC translations by typing in

OP:PDTABL:/
EPSIDT!

D. Data Base Error No. 4 (Unassigned TLN)

(a) Error Messages:

21 EPSCS REPORT ERROR TYPE
DATABASE NO a
CSECT EPSCR DISP 0756
09625 : 0962D
0002 1D7D 2AAA 0000

a = 4 = Unassigned TLN.

2AAA = TNN in hexadecimal.

(b) Action:

(1) Breakdown hexadecimal into binary as follows:

0101/010/10/101/010

TNN - 52252.

(2) Verify that TNN is valid for EPSCS.

(3) Check No. 3ACC translations,

OP:PDTABL:/
TLNT!
OP:PDTABL:/
TNTT!
OP:PDTABL:/
TNNT!

(4) Verify that the MDR bit is set in the LEN translator in No. 1 ESS by typing in

VFY-LEN-3100000100.

Resulting TR03 message will give contents of the LEN auxiliary block. Bit 2 in LENCL3 word is MSGD bit.

(5) Check that the ICUP bit is set in trunk group supplementary translator. When set, seizure and release messages will be generated for that trunk group and sent to the PDSP. The 3ACC uses these to calculate start holding time analyses. Time and trunk release messages are used for message detail and disconnect time. Use the following procedure to read the trunk group supplementary auxiliary block at the No. 1 ESS.

(a) Obtain address of Master Head Table.

Input: T-READ-110561501

Response: TWO 2

02360000

(Starting address of Master Head Table.)

(b) Obtain index for trunk group supplementary translator (Master Head Table + 6).

Input: T-READ-236000601

Response: TWO2

06271670

(Starting address of trunk group supplementary translator.)

(c) Obtain address plus trunk group (IF TG 24).

Input: T-READ-6271714002

Response: TWO 2
00011122 00000046

Bits 0 through 8 of the right-half word = 00 010 0110.

Bits 0 through 13 of the left-half word = 01001001010010 = 231122.

(d) Combine the left-half and right-half words in subparagraph (c) to obtain starting address of the auxiliary block.

Input: T-READ-23112201

Response: 03000010

03 = Word length.

Bit 3 = 1 (optional).

Word D.

The first word bits 0 through 17 correspond to optional words A through R, respectively, (see trunk group supplementary auxiliary block). Bits 18 through 22 equal word length.

(e) T-read three words.

Input: T-READ-23112203

Response: TWO 2
03000010 26020114 00004404
Word 0 Word 1 Word 0

Bit 11 is word D in ICUP bit and should equal 1 for EPSCS for trunk.

6. DLMSG ERRORS

6.01 This part covers DLMSG error messages with their probable causes and corresponding corrective procedures.

6.02 The DLMSG error messages usually occur after a new customer or new messages have been added.

6.03 The location sending the data may not be aware of the problem. This information can be determined from the digit layout of the general header in the message.

6.04 The message number of the affected message and the customer identification to which this message was intended are also included in the printout. See Table A for a list of message numbers and types.

6.05 When these messages occur repeatedly, it usually indicates a software problem. Request technical assistance according to local practice.

7. MSGLOSS ERRORS

7.01 This part covers MSGLOSS errors with their probable causes and corresponding corrective procedures.

7.02 The MSGLOSS errors are reported because all attempts to output data onto a data link group have failed and resulted in lost customer data.

7.03 The MSGLOSS messages No. 2, 3, and 4 are most likely to occur during peak loads (see OM-1A700). These messages can be caused by hardware faults in the UDLC or DLI's, and should be accompanied by REPORT UDLCP messages.

7.04 The procedures to follow are:

(a) Check for UDLC controller or DLI faults and diagnose failing circuit.

(b) If diagnostics fail, use TEST, FAULT, and SEGMENT number given in printout to index into the TLM, where a list of suspect circuit packs are given. Accompany raw data fields are defined in OM-1A700. See section B of TLM for repair procedures.

(c) If MSGLOSS errors are recurring and diagnostics are ATP, use error numbers as follows:

(1) MSGLOSS No. 2

21 EPSCS REPORT ERROR TYPE MSGLOSS NO a
0006 0006 0006 0000 0000 0000 0000 0000
001C 0000 04C9 1100 0100 18D3 0001 0001C

a = 2 = data link is not protocol running state and/or is not in synchronization with the other end.

The data link cannot communicate with the other end. If not accompanied by data link faults, trouble could be at the other end. Call CSACC to see if the other end office is down.

(2) MSGLOSS No. 3

24 EPSCS REPORT ERROR TYPE MSGLOSS NO a
0001 0000 0082 0000 0000 0000 0000 0000
0004 0001 04CB 1257 0100 38CD 0101 0004

a = 3 = data link buffers overflowed.

The data link capacity is exceeded. If not accompanied by UDLC or DLI faults, call CSACC. There may be a need to increase buffer size, or add additional data links in the group.

(3) MSGLOSS No. 4

22 EPSCS REPORT ERROR TYPE MSGLOSS No a
0006 0006 0006 0000 0000 0000 0000 0000
001C 0000 04C9 1100 0100 18D3 0001 001C

a = 4 = unknown reasons for failure, no data supplied from file system.

(d) If unable to determine reason for errors, request technical assistance according to local practice.

8. MDRSEQ ERRORS

8.01 This part covers MDRSEQ errors, their most probable causes, and corresponding corrective procedures.

8.02 The MDRSEQ error messages occur when ESS is generating MDR messages to the customer out of sequence or not at all. Correct message sequence is: (1) seizure for a specific TNN, (2) MDR for the same TNN, and (3) release. Abandoned calls do not generate MDRSEQ errors.

8.03 The MDRSEQ errors can occur if the ICUP bit is not set in the trunk group supplementary

TABLE A

MESSAGE NUMBER AND TYPE

MESSAGE NUMBER	TYPE	DESIGNATION	SOURCE (NOTE)	DESTINATION (NOTE)
1	1/2-Hour Traffic	E1	2	3,4
2	100-Second Line Usage	E2	2	3,4
3	2-Hour Nonusage	E3	2	3,4
4	Message Detail Origination	E4	2	1
5	Message Detail Origination	E4	1	3,4
6	Message Detail Termination	E5	2	3,4
7	Circuit Removed/Returned Service	E6	2	3,4
8	Wideband Active/Deactivate	E7		
9	Conference Bridge Active/Deactivate	E8	2	3,4
10	Error Message	E9	1	3,4
11	Error Message	E20		
12	EPSCS Trunk Seizure/Release Report	E10	1	3,4
13	Current Routing Pattern (Audit)	E11	2	3,4
14	Line/Trunk Configuration	E12	2	3,4
15	Wideband Status	E13		
16	Conference Bridge Configuration	E31	2	3,4
17	Request Conference Bridge Audit	N16	3,4	2
18	Circuit Out of Service	E13	2	3,4
19	Status of Queue Controls	E25	2	3,4
20	Status of Off-Hook Service Lines	E16	2	3,4
21	Treatment of Class of Codes	E14		
22	Audit Request	N1	3,4	1 or 2
23	Request Time and Date	N2	3,4	2
24	Reply Time and Date	E17	1	3,4
25	Request Authorization Code(s) Treatment	N3	3,4	2
26	Request Active Authorization Codes	K4	3,4	2
27	Reply Authorization Code Treatment	E18	2	3,4
28	Request Authorization Code Treatment Change	N5		
29	Confirm Authorization Code Treatment Change	E19	2	3,4
30	Request Conference Bridge	N7	3,4	2

See Note at end of table.

TABLE A (Contd)

MESSAGE NUMBER AND TYPE

MESSAGE NUMBER	TYPE	DESIGNATION	SOURCE (NOTE)	DESTINATION (NOTE)
31	Confirm Conference Bridge	E21	2	3,4
32	Request Routing Pattern Change	E21	2	3,4
33	Confirm Routing Pattern Change	E22	2	3,4
34	Request Wideband Channel	N9		
35	Confirm Wideband Channel	E23		
36	Request Change of Status of Designated Off-Hook Line	N10	3,4	2
37	Confirm Change of Status of Designated Off-Hook Line	E24	2	3,4
38	Echo Request from CNCC or CSACC	N29	3,4	1
39	Echo Request To CNCC or CSACC	E29	1	3,4
40	Request Status Change of Queue Controls (off/on)	N11	3,4	2
41	Confirm Status Change of Queue Controls (off/on)	E26	2	3,4
42	Request Change of Treatment of the Class of Codes	N12		
43	Confirm Change of Treatment of the Class of Codes	E27		
44	PDSP Holding Time Analysis Report	PEI-63	1	2
45	ESS Holding Time Analysis Report	E33	2	4
46	Data Link Communication Test Message	N28	1	1
47	Data Link Communication Test Message	E28	1	3,4
48	Request Time and Date	PE5-1	1	2
49	Reply Time and Date	EP5-1	2	1
50	No.1 ESS Clock Change	EP5-2	2	1
51	Midnight Passed	EP5-5	2	1
52	Trunk Seizure/Release	EP1-10	2	1

Note: The source and destinations code are as follows: 1 = PDSP
2 = No. 1 ESS
3 = CNCC
4 = CSACC

translator, and the MDR bit is set in the LEN translator (No. 1 ESS translations).

8.04 Troubleshooting procedures to follows are:

(a) Check for PDSP initialization (Section 231-144-301) or PIU hardware faults. These can cause transient errors.

(b) Verify that the TNN given in the printout is a valid EPSCS TNN.

(c) Use the TNN to verify that the ICUP and MDR bits are set in the No. 1 ESS translations. (The procedures to verify these bits are given in Part 5.)

(d) If either bit is not set, use RC message to correct.

(e) If translations are correct, try to establish a pattern on the same trunk.

(f) If unable to determine the cause or correct the problem, request technical assistance according to local practice.

8.05 Following is an example of an MDRSEQ error printout.

```
22 EPSCS REPORT ERROR TYPE
MDRSEQ NO 1
0002 3C6E 0ED0 0000 0000 0000 0000 0000
```

(a) The MDRSEQ No. 1 and 2 errors are probably caused by the MDR bit set with the ICUP bit not set for TNN in No. 1 ESS translations.

(b) The MDRSEQ No. 3, 4, and 5 errors are probably caused by PIU going down. If this is not the case and the problem is recurring, it could be a No. 1 ESS or PDSP program problem.

9. HOURLY REPORTS AND TRAFFIC REPORTS

9.01 Studying the hourly and traffic reports can be helpful when dealing with transient errors, which are more difficult to correct than hard faults. Hard faults frequently can be corrected by diagnosing a unit and replacing a faulty pack. Diagnosing a transient error can result in an ATP message, in which case, the hourly and traffic report may be helpful. For example, the hour error summaries may answer questions such as:

(a) Do certain errors occur only at certain times?

(b) Do errors occur singly or in pairs?

(c) What equipment was on line when the error occurred?

10. MAINTENANCE SCHEDULE

10.01 The following is a typical maintenance schedule. Tape for both TDCs should be the same. When overwrites or translations are entered, all tapes should be updated accordingly.

(a) Monday

(1) Clean tape heads.

(2) Adjust tape tension.

(3) Diagnose TDC's.

(4) Remove tapes and insert backup tapes anytime overwrites or data base changes have been made.

(5) Adjust tape tension.

(6) Diagnose TDC's.

(7) Restore CU to diagnose standby.

(8) Switch CU.

(b) Tuesday, Wednesday, and Thursday

(1) Switch CU

(2) Diagnose CU

(3) Diagnose TDC's

(4) Restore CU.

(c) Friday

(1) Diagnose TDC's

(2) Restore CU to diagnose standby

(3) Switch CU

(4) Restore CU to diagnose new standby.

10.02 Whenever a tape is updated, clean heads and readjust tape tension.

11. ABBREVIATIONS AND ACRONYMS

11.01 Abbreviations and acronyms used in this section are as listed below.

ANI	Automatic Number Identification
ATP	All Test Pass
CC	Central Control
CNCC	Customer Network Control Center
CPD	Central Processor Distributor
CS	Call Store
CSACC	Customer Service Administrative Control Center
CU	Control Unit
DBS	Duplex Bus Selector
DL	Data Link
DLG	Data Link Group
DLI	Data Link Interface
DMA	Direct Memory Access
EOS	Extended Operating System
EPSCS	Enhanced Private Switched Communication Service
ESS	Electronic Switching System
ETL	Equipment Test List
FIFO	First-In First-Out
E911	Enhanced 911 Service
ID	Customer Identification
LEN	Line Equipment Number
PCH	Parallel Channel
PDSP	Peripheral Data Storage Processor
PI	Peripheral Interface
PIF	Processor Interface Frame
PIU	Processor Interface Unit
PSAP	Public Safety Answering Service Point
SCH	Serial Channel
SPCH	Subparallel Channel
SSP	System Status Panel
TAPE	Tape Data Controller
TDC	Tape Data Controller
TLM	Trouble Locating Manual
TLN	Trunk Link Network
TNN	Trunk Network Number
TTY	Teletypewriter
UDLCP	Universal Data Link Control Pair

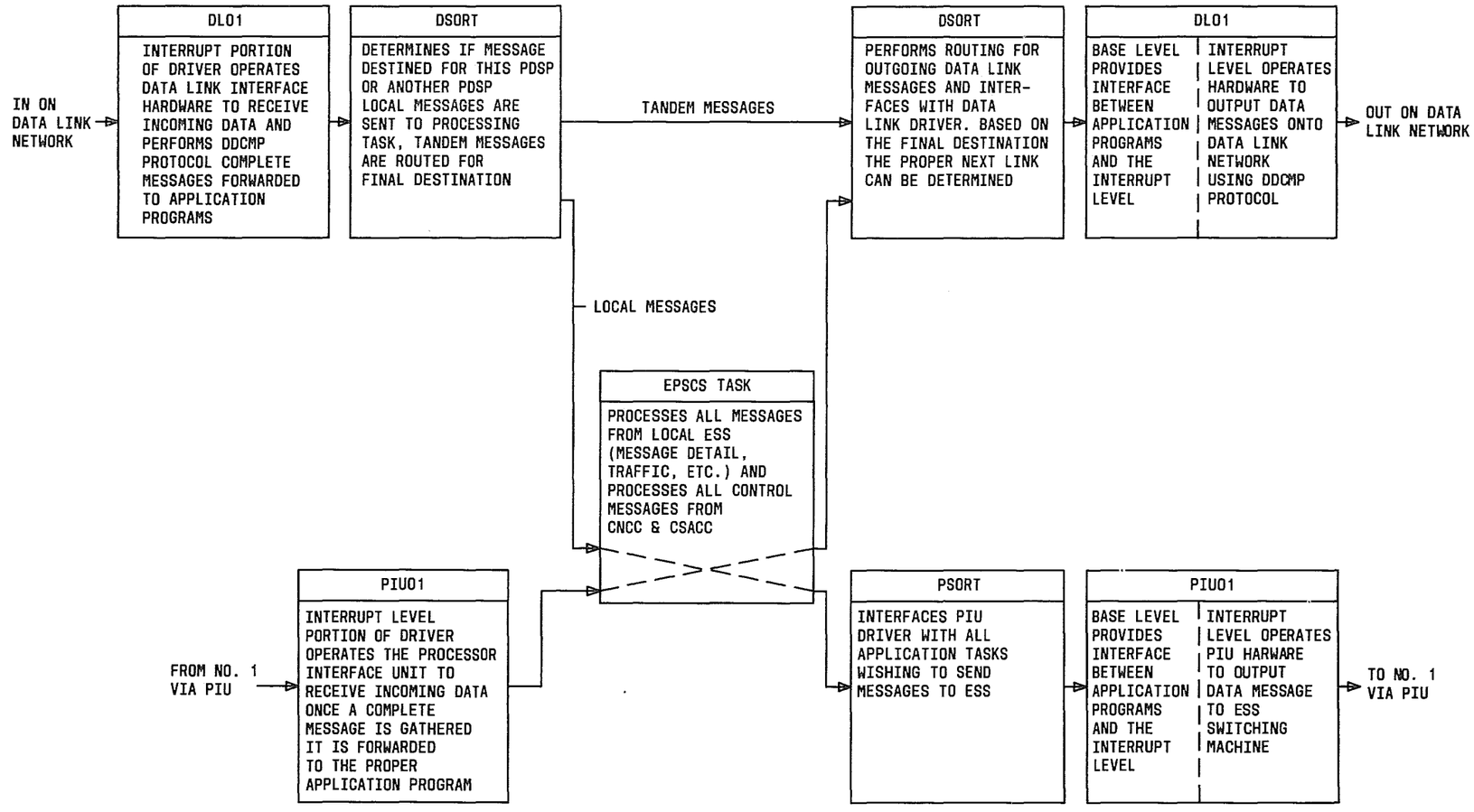

Fig. 4—PDSP Data Flow