SYSTEM CENTURY®
DIGITAL CENTRAL OFFICE

TROUBLE AND STATUS REPORTING
ADMINISTRATIVE PROCEDURES

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1. INTRODUCTION

1.01 This section is presented in two parts. Part I describes procedures for reporting troubles, forms to be used, and administrative procedures related to individual and multiple troubles. Typical forms that can be used for recording troubles, and administrative procedures for the maintenance of these forms, are also included in this part. These forms may be reproduced as required. Part II provides an outline of the various system status reports provided by the system and administrative instructions for maintaining these reports.

1.02 This section is reissued to provide additional call state definitions. Significant changes and additions are indicated by bars in the margin.

2. RELATED INFORMATION

2.01 General.

A Sales and Intructional Literature Index, which lists the latest publications available from Stromberg-Carlson Corporation, can be obtained from your Stromberg-Carlson sales representative or from Publications Services, Stromberg-Carlson Corporation, 400 Rinehart Road, Lake Mary, Florida 32746.

2.02 Related Drawing.

The following drawing is recommended for use with this document:

DS-814027 Port Control Store

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PART I. TROUBLE REPORTING

3. FAULT TICKET

3.01 Fault tickets are usually used as work orders for required corrective maintenance in the system. Make out a fault ticket for each equipment fault identified by fault analysis and/or fault printout. In addition, make out fault tickets for referred faults, user trouble reports, routine test faults, or for any other situation that indicates a need for corrective maintenance action within the switching system. Space is provided on the ticket to record information related to the fault report, as well as troubleshooting results and other pertinent data related to the maintenance effort.

3.02 After faults recorded on fault tickets have been acted upon and the results of the effort recorded, place the tickets in an active fault ticket file and retain them for a 3-month period. At the beginning of each month, remove tickets older than 3 months and file them in dated envelopes for long-term retention. Usually, fault tickets older than 1 year can be discarded.

3.03 A pigeonhole-type file is convenient for maintaining the active fault ticket file. Label the file to allow ticket filing by equipment categories of similar types. Examine the tickets in the active file and compare them frequently for evidence of repeated faults and fault trends. Place the fault ticket file at the maintenance center, convenient to the fault analyst.

3.04 Figure 1 shows an example of a fault ticket form that can be used in a digital central office. Figure 2 provides a detailed explanation of the information to be entered in each space on this form. The lettered notes on figure 2 refer to the entry space identically lettered on the sample fault ticket. Make entries in applicable spaces on each fault ticket for the particular fault being entered.

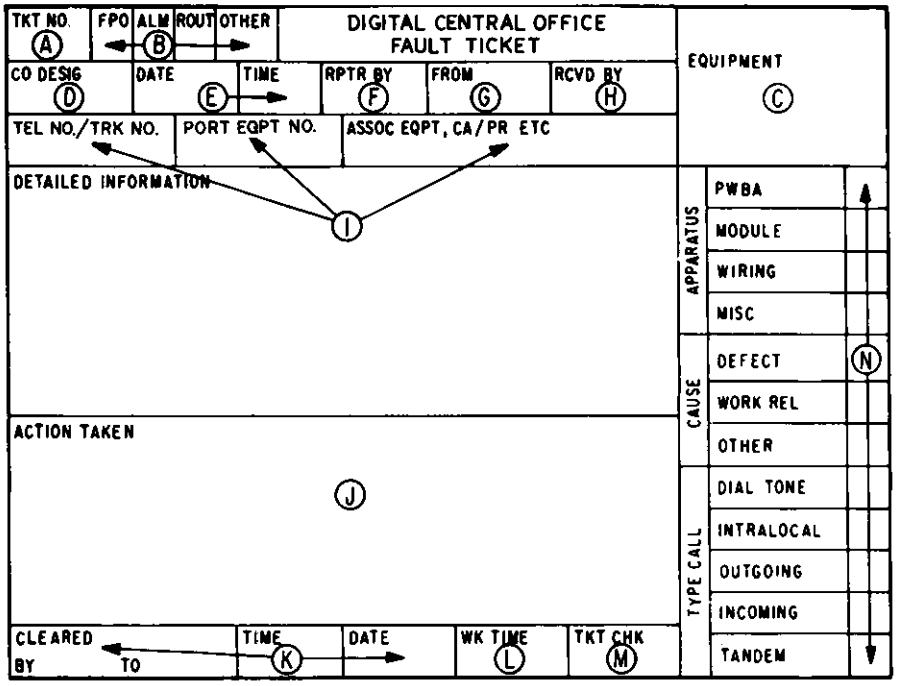
4. OFFICE FAULT RECORD LOG

4.01 The office fault record log is used as a current daily record of office work activities. It also provides a control sheet for keeping records of fault tickets and of circuits made busy manually by the system operator, or automatically by the system fault detection programs. The office maintenance activities for a particular interval of time, as determined by the operating company, can be recorded on as many sheets of the log as required. The interval of time presented by one or more log sheets depends on the office size and

TKT NO	FPO	ALM	ROUT	OTHER	DIGITAL CENTRAL OFFICE FAULT TICKET			EQUIPMENT		
CO DESIG		DATE		TIME	RPTR BY	FROM	RCVD BY			
TEL NO./TRK NO.		PORT EQPT NO.			ASSOC EQPT, CA/PR ETC					
DETAILED INFORMATION								APPARATUS	PWBA	
									MODULE	
									WIRING	
									MISC	
								CAUSE	DEFECT	
									WORK REL	
ACTION TAKEN									OTHER	
								TYPE CALL	DIAL TONE	
									INTRALOCAL	
									OUTGOING	
									INCOMING	
CLEARED BY TO		TIME		DATE	WK TIME		TKT CHK		TANDEM	

CP 4214A

Figure 1. Fault Ticket Form



NOTE	EXPLANATION
A	Fault ticket serial number.
B	Source of fault indication; check appropriate box: FPO= fault printout; ALM= alarm; ROUT= routiner test; OTHER- all other sources.
C	Identification of faulty equipment.
D	Central-office designation or name.
E	Date and time of fault analysis or identification.
F	Initials of person reporting fault.
G	Location of referring source.
H	Initials of person making out Fault Ticket.
I	Details of fault report.
J	Details of maintenance action or referral.
K	Initials of person who took maintenance action and person to whom clearance was reported; date and time.
L	Elapsed worktime required to clear fault.
M	Initials of person entering data in office log and filing Fault Ticket.
N	Details of fault found and type of call involved; check appropriate boxes.

CP 4215A

Figure 2. Explanation of Fault Ticket Form

volume of entries. This interval is usually from 1 day to no more than 1 month. Carry over any log entries from a preceding interval that have not been closed out as entries on the log for the current interval. File log sheets for past intervals of time in dated envelopes and retain them for up to 1 year.

4.02 The log provides a convenient point of reference for a concise summary of the current maintenance activities in the office. Inspection of the log reveals the volume of current fault tickets issued and the backlog of uncleared faults. In addition, other activities affecting maintenance can be recorded.

4.03 The out-of-service ports report, referenced in paragraph 8.06, is used to verify the out-of-service entry on the log sheet.

4.04 Figure 3 shows a form that can be used as an office fault record log sheet. Figure 4 shows a detailed explanation for the information to be entered in each space on this form.

5. FAULT SUMMARY

5.01 To evaluate the fault incidence in an office and to recognize long-range fault trends, compare relative monthly and yearly fault levels in similar types of equipment. The fault summary form, shown in figure 5, is intended for this purpose.

5.02 This form is arranged to record the number of faults occurring in categories of similar equipment types each month of the year. In addition, space is provided to record the present and preceding year's total faults, and the monthly fault averages for the preceding year for each category of equipment However, do not include disproportionately high or low monthly entries caused by unusual, identifiable reasons in calculations of the preceding year's monthly averages. These averages should reflect only the usual operating norm, against which the current monthly fault levels can be realistically compared.

5.03 The equipment categories listed on this form should be the same as those under which the fault tickets are filed. Total each month's accumulation of tickets in the fault file and enter the results in the appropriate spaces for each category of equipment on the fault summary form. Keep these forms indefinitely, as a record of office fault history.

5.04 Inspection of the fault summary forms not only reveals the development of long-range fault trends but also immediately identifies abnormal monthly fault levels in any of the equipment categories. Abnormal fault levels indicate the need for detailed investigation to identify their cause. Careful analysis of the monthly accumulation of fault tickets for the affected equipment usually reveals the cause of the problem.

5.05 Figure 6 is an example of a fault summary form. Monthly fault entries shown on this figure were chosen for illustrative purposes; they do *not* show typical fault levels in a digital central office.

6. FAULT PRINTOUTS

6.01 Fault printouts are a major source of fault indications. Individual or repetitive fault printouts, for which analysis determines the cause, are to be attached to and/or recorded on fault tickets and recorded on the central-office fault record log. These faults should then be assigned to maintenance personnel, in accordance with their priority of importance, for corrective maintenance actions. The unique fault printout used in this system ensures a rapid analysis of most faults to the board level. Actions taken for first- and second-level diagnostics are reported by way of appropriate printouts. This includes those times the cause of a fault cannot be determined due to transient or insufficient information. These printouts are to be retained for subsequent periodic comparative analysis that may reveal a common circuit or condition that is causing the printouts.

CENTRAL-OFFICE FAULT RECORD LOG SHEET

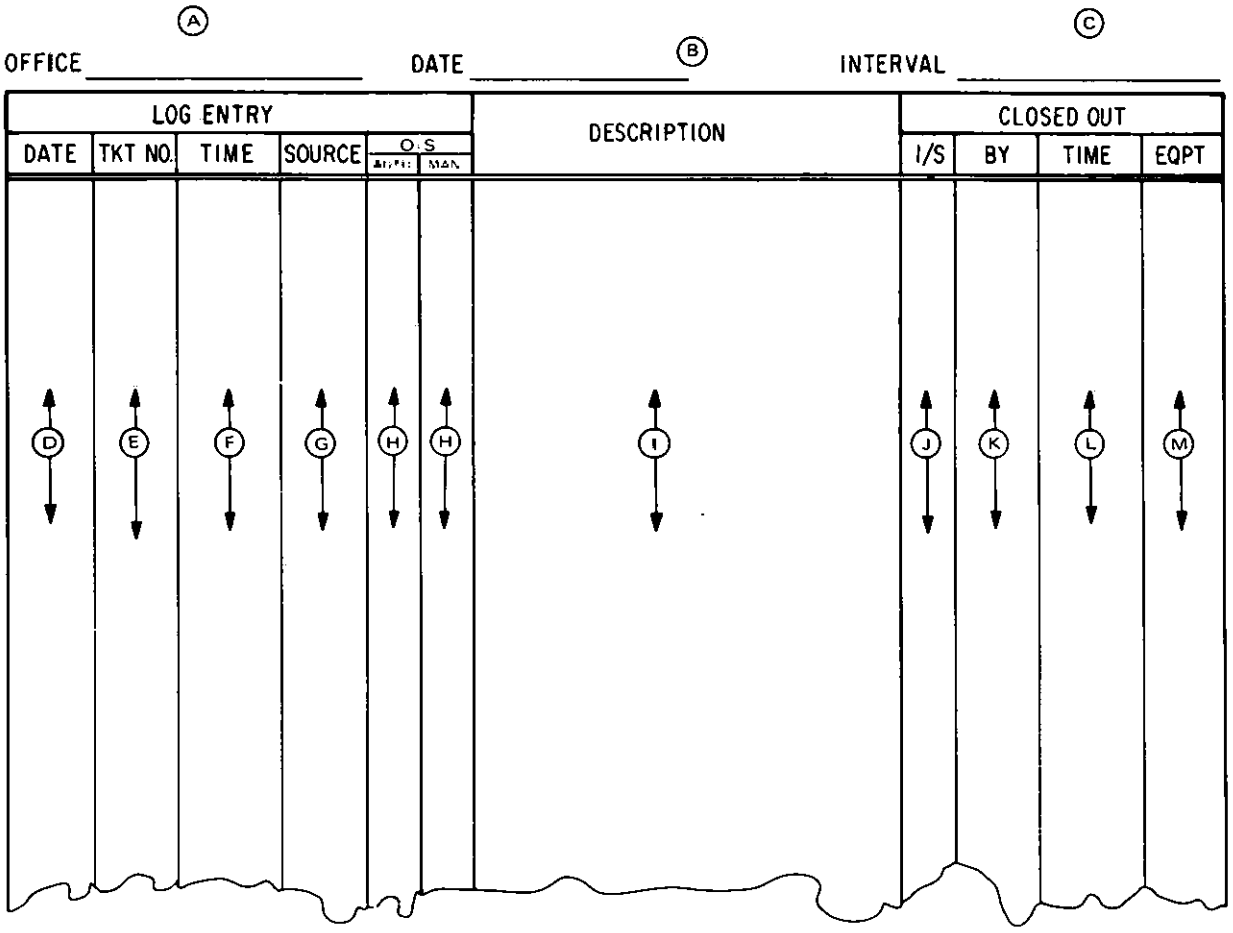
OFFICE _____ DATE _____ INTERVAL _____

LOG ENTRY						DESCRIPTION	CLOSED OUT			
DATE	TKT NO.	TIME	SOURCE	O/S AUTO	O/S MAN		I/S	BY	TIME	EQPT

CP 4217A

Figure 3. Office Fault Record Log Sheet

CENTRAL-OFFICE FAULT RECORD LOG SHEET



NOTE	EXPLANATION
A	Central-office designation or name.
B	Current day's date.
C	Interval covered by Log Sheet.
D	Date of entry.
E	Ticket number.
F	Time of entry.
G	Source of entry.
H	Check if circuit is made busy, indicate if automatically (AUTO.) or manually (MAN.) (out-of-service; O·S).
I	Description of fault or entry.
J	Check when circuit is restored to service (in-service, I/S).
K	Initials of person who took maintenance action.
L	Time of closeout.
M	Identification of faulty equipment.

CP 42188

Figure 4. Explanation of Fault Record Log Sheet

FAULT SUMMARY

OFFICE _____ YEAR _____

EQUIPMENT GROUP	PREV YR AVG	PREV YR TOTAL	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR TOTAL

CP 7351

Figure 5. Fault Summary Form

FAULT SUMMARY

OFFICE 323 YEAR 1976

EQUIPMENT GROUP	PREV YR AVG	PREV YR TOTAL	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR TOTAL
LINE PORTS	3	12	2	1	0	0	0	1	3	0	1	0	2	0	10
TRUNK PORTS	.5	6	0	0	2	0	1	0	1	1	0	0	2	0	7
TIMESLOT INTERCHANGE	.25	3	0	0	0	1	0	0	0	0	0	0	0	1	2
PORT CONTROL SYSTEM	.25	3	0	0	1	0	0	1	0	0	0	0	1	0	3
CPU	1.5	8	1	1	2	1	0	0	0	0	0	0	1	0	6
SERVICE CIRCUITS	.25	3	0	0	0	1	0	0	1	0	0	0	1	0	3

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Figure 6. Example of Fault Summary Form

6.02 Individual fault records consist of two or more lines of fault printout entries. The fault record printouts that cannot immediately be analyzed can be separated using a pair of scissors. These are to be filed according to the type of printout they represent and/or similarity of common control printout entries. These printouts are to be retained until periodic comparisons permit recognition of a fault pattern that may lead to identification of the fault, or until it is determined that the probable cause was transient. Usually, retention of fault printouts for 1 month is sufficent for these purposes. The fault printout filing system should be located in the maintenance area near the fault recorder and convenient to the analyst.

PART II. SYSTEM STATUS REPORTS

7. GENERAL

7.01 The system provides various reports indicating the status of the overall system, lines and trunks in lockout, equipment placed out of service both automatically and manually, and port alarm status. Some of these reports are generated automatically and others must be manually requested by the system operator.

7.02 The following paragraphs explain the significance of each report, procedures for requesting each report manually, and suggestions for maintaining each report.

8. PORT STATUS REPORT

8.01 General.

This report is a manually requested display of the status of all ports in the system. The reports can be requested at any time and show the status of the ports at the time the request was entered.

8.02 Administration.

These reports should be generated, as required, by the operating company in order to maintain an indication of port status. Records of equipment out of service, in alarm, and in lockout should be maintained so that a constant indication of office equipment status and maintenance actions is available.

NOTE. The task identification commands shown in the following paragraphs must be preceeded by the operator request $PORTST, and followed by a carriage return (indicated by the symbol ↵). The first two lines in the following displays are the standard identification lines used for all displays. These lines are used to identify the specific report requested.

8.03 Line Ports in Lockout.

This report is requested by the identification command LNLOUT (example 1). The first output (after the standard identification lines) is the values presently assigned to the line lockout high and low threshold limits. The second output displays the current count of line ports in lockout. The final lines are a list of all line ports in lockout. The possible port types (PORT TYPE) for lines are SP, for single-party; 2P, for two-party; 4P, for four-party; 8P, for eight-party; and PX, for PBX lines. The possible lockout status (LO STATUS) for lines are PERM/ANN, line is receiving the permanent signal recorded announcement; ROH, line is receiving receiver-off-hook tone; and LOCKOUT, line is in the lockout condition.

8.04 Trunk Ports in Lockout.

This report is requested by the identification command TKLOUT (example 2). The first output is the values presently assigned to the trunk lockout high and

Example 1. Line Ports in Lockout Report

```
$PORTST LNLOUT↵
    00:03:39  02/10/78 PORT STATUS REPORT     U2

    00:03:40    PORTST  LINE PORTS IN LOCKOUT REPORT

LINE LOCKOUT THRESHOLD LIMITS...HIGH..  LOW
                                  20     15

LINE LOCKOUT CURRENT COUNT...5

DIR. NO.   -FR -CELL-PT-  PORT TYPE  LO STATUS   HG#   #HG
 8437673     000  1    1      SP        PERM/ANN
 8437645     000  1    9      SP        PERM/ANN
 3226412     000  1   17      SP        LOCKOUT
 8437637     000  1   18      SP        LOCKOUT
             000  2    4      4P        LOCKOUT
    00:04:04   PORTST  EXIT
```

Example 2. Trunk Ports in Lockout Report

```
$PORTST TKLOUT
    00:13:52  02/10/78 PORT STATUS REPORT     U2

    00:13:54    PORTST  TRUNK PORTS IN LOCKOUT REPORT

TRUNK LOCKOUT THRESHOLD LIMITS:  HIGH   LOW
                                  20     15

TRUNK LOCKOUT CURRENT COUNT:  3

-FE - CELL-PT  PORT TYPE LO STATUS   HG#   #HG
000    0    0    EMTK    LOCKOUT     1     2
000    0    1    EMTK    LOCKOUT     1     7
000    0    7    EMTK    LOCKOUT     2     1
```

low threshold limits. The second output displays the current count of trunk ports in lockout. The final lines are a list of all trunk ports in lockout, including hunt group number (HG#) and number of ports assigned to the hunt group (#HG).

8.05 Lockout Threshold Limits Change.

a. Lockout threshold limits are used in the system to determine the number of line or trunk ports in lockout at which the system automatically displays a message indicating that the upper limit (HI) has been reached or that the number of ports in lockout has fallen below the lower (LO) limit. Each port (line or trunk) entering the lockout state, after the upper limit has been reached, causes a display to inform maintenance personnel of the fact that the upper limit has been exceeded.

b. The lockout limits change function is requested by the identification command LIMITS (example 3). The current values of the line and trunk port lockout limits are displayed first. The system then waits for the operator's response. The operator has the ability, at this time, to change the high and low, high only, low only, or neither high nor low values of the line and/or trunk threshold limits. The required change must be entered below the value to be changed, using the system tabbing function. Any value skipped is not changed. After the change (if any), the limits are again displayed to allow the operator to verify the changes.

8.06 Out-of-Service Ports Report.

This report is requested by the identification command OSPORT (example 4). The output is a list of all ports out of service. The possible out-of-service statuses (O/S STATUS) for this report are:

a. MAN/REQ A manual request to place an in-use port out of service has been entered.

NOTE. The port is automatically placed out of service when it becomes idle.

b. MAN/ACT The port is out of service due to a manual request by the system operator.

c. AUTO/REQ – An automatic request to place an in-use port out of service has been made by the system due to a system-detected fault.

NOTE. The port is placed out of service when it becomes idle.

d. AUTO/ACT The port is out of service due to an automatic request by the system.

8.07 Ports-in-Alarm Report.

This report is requested by the identification command ALPORT (example 5). This report is a listing of all ports currently in the alarm state. Table 1 is a listing of all port-type mnemonics used in this display.

Example 3. Lockout Threshold Limits Change

```
$PORTST LIMITS↵
   00:28:44   02/10/78  PORT STATUS REPORT   V2

   00:28:44     PORTST     LOCKOUT THRESHOLD LIMITS

        ---LINE---         ---TRUNK---
        HI         LO      HI         LO
        20         15      15         20
        15         10      10         15↵
   00:29:19     PORTST   LOCKOUT THRESHOLD LIMITS

        ---LINE---         ---TRUNK---
        15         10      10         15
   00:29:25     PORTST     EXIT
```

Example 4. Out-of-Service Ports Report

```
$PORTST OSPORT↵
    00:05:58   01/10/78 PORT STATUS REPORT     V2

    00:06:00    PORTST   OUT OF SERVICE PORTS REPORT

DIR. NO.   -FR -CELL-PT-   PORT TYPE   O/S STATUS   HG#   #HG
N3241201     000 1    0       PX          MAN/ACT     257    2
 8437603     000 1    2       SP          MAN/ACT
 3231225     000 1    3       SP          MAN/ACT
             000 1    4       SP          MAN/ACT
             000 1    5       TDRC        MAN/ACT
             000 1    6       UN          MAN/ACT
             000 1    7       MFSD        MAN/ACT
 3231210     000 1    8       SP          MAN/ACT
 3226404     000 1    10      SP          MAN/ACT
 3226447     000 1    11      SP          MAN/ACT
             000 1    12      SP          MAN/ACT
             000 1    13      TDRC        MAN/ACT
             000 1    14      UN          MAN/ACT
             000 1    15      MFSD        MAN/ACT
 3231299     000 1    16      SP          MAN/ACT
             000 1    19      UN          MAN/ACT
             000 1    20      SP          MAN/ACT
             000 1    21      MFRC        MAN/ACT
             000 1    22      UN          MAN/ACT
             000 1    23      UN          MAN/ACT
N3241202     000 1    24      PX          MAN/ACT     257    2
 3226459     000 1    25      SP          MAN/ACT
 3226453     000 1    26      SP          MAN/ACT
             000 1    27      UN          MAN/ACT
             000 1    28      SP          MAN/ACT
             000 1    29      MFRC        MAN/ACT
             000 1    30      ????        MAN/ACT
             000 1    31      PGCT        MAN/ACT
    00:07:23    PORTST   EXIT
```

Example 5. Port-in-Alarm Report

```
$PORTST ALPORT
   00:30:49  02/10/78 PORT STATUS REPORT     V2

   00:30:50   PORTST  PORTS IN ALARM REPORT

DIR. NO.   -FR -CELL-PT-  PORT TYPE  HG#  #HG
             0    0    3     EMTK     11    1
             0    0    4     UN
             0    0    5     UN
             0    0    6     EMTK     8     1
             0    0    7     UN
             0    0    11    LPTK
             0    0    12    LPTK     5     2
             0    0    13    LPTK     4     1
             0    0    15    LPTK     7     2
             0    0    19    LPTK
             0    0    27    UN
             0    0    29    UN
             0    0    30    ????
 3231225     0    1    3     SP
             0    1    4     SP
 3226447     0    1    11    SP
             0    1    12    SP
             0    1    19    UN
             0    1    20    SP
             0    1    21    MFRC
             0    1    27    UN
             0    1    28    SP
             0    1    29    MFRC
             0    1    30    ????
             0    2    2     UN
             0    2    3     UN
             0    2    10    UN
             0    2    11    UN
             0    2    18    UN
             0    2    19    UN
             0    2    30    ????
             0    3    0     UN
             0    3    1     UN

   00:32:25   PORTST  EXIT
```

Table 1. Port-Type Mnemonics

MNEMONIC	*PORT TYPE*
UN	Unequipped
SP	Single-party line
2P	Two-party line
4P	Four-party line
8P	Eight-party line
PX	PBX line
SLLN	Sleeve-lead line
MFSD	MF sender
TDSD	TD sender
MFRC	MF receiver
TDRC	TD receiver
LPTK	Loop trunk
EMTK	E&M trunk
SSTK	Step-by-step trunk
PGCT	Port group control
UVAD	Universal adapter interface
CONF	Conference circuit
????	Spare or unassigned

8.08 Port Status Display.

a. The port status display is used to determine the out-of-service status (O/S STATUS), call state (CST), port command (PORT CMD), and port identity (PID) of the selected port. Refer to table 2 for definitions of the various port call states. Refer to DS-814027, referenced in paragraph 2.02, for explanations of the port command and port identity fields.

b. The display is requested by the identification command DISP (example 6). The sytem displays the header information first, and then pauses to allow the operator to enter the equipment number (FR-CELL-PT) of the port to be displayed. After each port is displayed the system pauses again to allow the operator to enter another equipment number or exit from the function by striking the RETURN key.

Table 2. Call-State Definitions

CALL STATE (CST)	*DEFINITION*
0	Equipment idle
1	Receive equipment-busy tone (EBT)
2	Receive dial tone (DT), dial-pulse (DP) line
3	Receive DT, DTMF line
4	Lockout
5	Dialing, DP
6	Dialing, DTMF
7	Receive busy tone (BT)
8	Receive ringing, line
9	Circle digit, DP
10	Talking, line-to-line
11	Ringing, revertive call (RV)
12	Release timeout
13	Receive tick-tone, RV
14	Sending, DP
15	Seize out, multifrequency (MF)
16	Await answer, line-to-trunk
17	Talking, line-to-trunk
18	CAMA sending
19	Receiving DP, incoming trunk
20	Receiving MF, incoming trunk
21	Lockout trunk
22	Ringing, trunk-to-line
23	Receive BT, incoming trunk
24	Talking, tandem
25	Receive EBT, incoming trunk
26	Trunk guard time
27	Circle digit, DTMF
28	Await release, RV
29	Sending MF, outgoing trunk
30	Await CAMA answer
31	Tandem, send DP
32	Tandem, seize out MF

Table 2. Call-State Definitions (Cont)

CALL STATE (CST)	*DEFINITION*
33	Tandem, send MF
34	Await answer, tandem
35	Tone paths blocked, line
36	Ring halt
37	Recorded announcement, line
38	Recorded announcement, incoming trunk
39	Verifying, incoming trunk
40	Keystation disconnect
41	Tone paths blocked, trunk
42	Paystation tone
43	Talking, revertive
44	Talking, trunk-to-line
45	Timed disconnect, trunk
46	Hold, trunk-to-line
47	Permanent signal announcement
48	Receiver off-hook tone applied
49	DT to direct inward dialing (DID) trunk
50	TD from DID trunk
51	Await CAMA answer, DID
52	CAMA sending, DID
53	Await answer, ringback tone (RBT)
54	Await answer, RBT tandem
55	Recorded announcement circuits
56	Talk, inspectors test terminal
57	Alarm
58	Stuck coin alarm
59	Coin check
60	Final coin deposit
61	Await alarm, send answer
62	Alarm send tone
63	Tone paths blocked for alarm send
64	Receiver off-hook tone
65	Alarm check tone
66	Await test access
67	Test access
68	Test termination
69	Receive RFS
70	Originating setup path
71	Await originating setup path
72	Await cross path
73	Send marker release
74	Expanded line circuit
75	Terminating setup path
76	Await terminating setup path

Table 2. Call-State Definitions (Cont)

CALL STATE (CST)	*DEFINITION*
77	XIOP release
78	Disconnect XIOP
79	Await LAMA party test
80	Prepay control halt
81	Talking hold
82	Set up 911
83	Talking 911
84	Busy tone 911
85	Emergency rering 911
86	Camp on sender
87	Hold, line-to-line
88	Hold, tandem
89	Reserved
90	Reserved
91	Reserved
92	Reserved
93	Conference tone
94	Ring business line, call forwarding
95	Await CAMA whistle-thru answer
96	Await tandem CAMA whistle-thru answer
97	Improved mobile telephone service ringing
98	Loop-around initial
99	Loop-around milliwatt
100	Loop-around frequency cycling device
101	Loop-around balanced termination initial
102	Loop-around balanced termination
103	Loop around
104	Clear sender alarm
105	Camp on receiver
106	CAMA receiving
107	ONI dial
108	ONI wait
109	Custom calling, dial tone-dial pulse
110	Custom calling, dial tone-DTMF
111	Custom dialing, dial pulse
112	Custom dialing, DTMF
113	Custom dialing, confirmation tone
114	Talking, three-way calling
115	Holding, three-way calling
116	OG relay hold
117	Call waiting, ringing
118	Call waiting, talking
119	Call waiting, release
120	Call waiting, ringing line-to-trunk

Table 2. Call-State Definitions (Cont)

CALL STATE (CST)	*DEFINITION*
121	Call waiting, ringing line-to-line
122	10X initial attempt
123	Test tone, 100-, 102-type test
124	Ring test line
125	Supervisory test
126	Digital satellite interface (DSI) delay timer
127	(Spare)
128	(Spare)
129	(Spare)
130	CAMA loop-around, receiving MF
131	CAMA loop-around, receiving DP
132	CAMA loop-around test
133	CAMA loop-around, milliwatt test
134	CAMA loop-around, frequency cycling service
135	CAMA loop-around, balance termination test
136	CAMA loop-around, busy
137	Line load control
138	Await digital satellite interface
139	Digital satellite interface automatic test
140	Digital satellite interface alarm
141	Call processor timer
142	Usage sensitive recording party test
143	IDDD sending
144	Await second stage answer
145	Line service observing initialize
146	CCITT #5 trunk glare
147	Seize out sending transfer
148	Sending forward transfer
149	Await answer forward transfer
150	Talk forward transfer
151	Unanswered forward transfer
152	Timed disconnect forward transfer
153	CCITT #5 sender alarm
154	Malicious call trap and trace equipment
155	Nailed-up trunk
156	Reserved
157	Reserved
158	R2 signaling await crosspath
159	Second dial tone
160	Dial pulse-out R2 signaling
161	MF/DTMF-out R2
162	Receive R2
163	R2 through signaling
164	R2 trunk-to-trunk regeneration
165	R2 send dialpulse

Table 2. Call-State Definitions (Cont)

CALL STATE (CST)	*DEFINITION*
166	R2 send MF
167	Address complete
168	R2 local
169	R2 call waiting
170	R2 failure
171	R2 recorded announcement
172	R2 verifying
173	DSI pre-pay paystation control
174	Test 106 seizure
175	Test 106 dial tone
176	Test 106 dialing
177	Test 106 talking
178	Reserved
179	Reserved
180	Reserved
181	Reserved
182	Reserved
183	Reserved
184	Reserved
185	Reserved
186	Reserved
187	Blocked
188	Reringing
189	Camp on receiver
190	Reserved
191	Reserved
192	Reserved
193	Reserved
194	Reserved
195	Reserved
196	Reserved
197	Modified call waiting
198	Await DSI Badger meter connection
199	Await DSI Badger access
200	DSI Badger test access
201	Await DSI Badger release
202	Reserved
203	Reserved
204	Reserved
205	Await RLS wire chief test panel (WCTP) test access selector (TAS)
206	Await RLS WCTP connect
207	RLS WCTP testing
208	Await RLS WCTP release
209	Remote metallic test access

Table 2. Call-State Definitions (Cont)

CALL STATE (CST)	*DEFINITION*
210	Await RLS Badger test access
211	Await RLS Badger connect
212	RLS Badger test access
213	Await RLS Badger release
214 to 255	(Spare)

8.09 Port Storage Area Display.

a. The contents of individual port storage areas can be manually displayed by the system operator as required for maintenance. This display is useful for determining the exact status of, and all information pertaining to, any port, at any time.

b. In order to request this display, the operator must enter the identification command PSSNAP, followed by a carriage return. The system responds with the standard identification lines specifying the function requested. When the system displays FR-CELL-PT, the operator must enter the equipment number of the port to be displayed, under the proper headings (example 7).

c. The system response is the information for the specified port as shown in example 7. Refer to DS-814027, referenced in paragraph 2.02, for descriptions of the information provided for words 00 through 15.

9. HOURLY STATUS REPORT

9.01 The software provides a display indicating the overall status of the operating system. This report is automatically displayed every hour at 2 minutes past the hour, providing no other maintenance actions are in progress. A manual status display can be requested at any time by entering the command $STATUS, followed by a carriage return, at the system console.

10. SYSTEM STATUS REPORT

10.01 The software provides a manual version of the hourly status report that is used to determine the current status of the X and Y clocks, ringing generators, tone generators, traffic-measuring system, routine testing, automatic-recovery system, etc. This report is requested by entering the command $STATUS, followed by a carriage return. This report is also automatically displayed after a system startup.

11. CURRENT-STATE DISPLAY

11.01 A display of the current system state can be requested at any time by entering $STATE, followed by a carriage return, at the system console.

11.02 The various system states are indicated as follows:

a. 4 Normal and synchronized.

b. 2 MP running, single call processor.

c. 1 - MP running, both call processors out of service.

Example 6. Port Status Display

```
$PORTST DISP
    00:38:45  02/10/78 PORT STATUS REPORT     V2

    00:38:46   PORTST  DISPLAY PORT STATUS

DIR. NO:  -FR -CELL-PT-  PORT TYPE  CST  O/S STATUS  PORT CMD  PID
            0   2   08
            0   2   8      UN        0     NORMAL       0        1

DIR. NO:  -FR -CELL-PT-  PORT TYPE  CST  O/S STATUS  PORT CMD  PID
            0   2   10
            0   2   10     UN        57    ALR/INHB     0        1

DIR. NO:  -FR -CELL-PT-  PORT TYPE  CST  O/S STATUS  PORT CMD  PID

    00:39:26   PORTST  EXIT
```

Example 7. Port Storage Area Display

```
*PORTST PSSNAP
    00:45:44  02/10/78 PORT STATUS REPORT     02

    00:45:45    PORTST   PSA SNAPSHOT DUMP

-FR -CELL-PT-   WORD
  0    2    10
WORD 00-   CF1--D C B A   CF0--D C B A   SF1--D C B A   SF0--D C B A
           0 0 0 0         0 0 0 0         0 1 0 0         1 0 1 0
WORD 01-   CS7--6--5--4--3--2--1--0    SS7--6--5--4--3--2--1--0
             0  0  0  0  0  0  0  0      0  0  0  0  0  0  0  0
WORD 02-   TCL   O/S   PTY   SCL-(STATE TIMER)-STPS
             0     0     0     0                0
WORD 03-   RLE   RSP   THRD   THRE   THSD   THSE   FRZ   FRT   PCT   DCT
             0     0      0      0      0      0     0     0     0     0
WORD 04-   SPI   SZI   ENP   HLT   NMC   PRP   PRF   EUC
             0     0     0     0     0     0     0     0
WORD 05-   CMD   AR1   AR2   AR3   AR4   AR5   AR6
             0     0     0     0     0     0     0
WORD 06-   TIMER1   TIMER2
             0         0
WORD 07-   PLS   RLSC   LL1   LL2   A-CTRL-B   RLST
             0     0      0     0     0        0     0
WORD 08-   PID   PTI   CST
             0     0    0
WORD 09-         FEN#--(CC   MS   PG   TS)
                 0         0    0    0    0
WORD 10-   DGT03   DGT02   DGT01   DGT00
             0       0       0       0
WORD 11-   DGT07   DGT06   DGT05   DGT04
             0       0       0       0
WORD 12-   DGT11   DGT10   DGT09   DGT08
             0       0       0       0
WORD 13-   DGT15   DGT14   DGT13   DGT12
             0       0       0       0
WORD 14-   SCR AREA1
             0
WORD 15-   SCR AREA2
             0


-FR -CELL-PT-   WORD

    00:46:53    PORTST   EXIT
```

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SYSTEM CENTURY®
DIGITAL CENTRAL OFFICE

TROUBLE AND STATUS REPORTING ADMINISTRATIVE PROCEDURES

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1. INTRODUCTION

1.01 This section is presented in two parts. Part I describes procedures for reporting troubles, forms to be used, and administrative procedures related to individual and multiple troubles. Typical forms that can be used for recording troubles, and administrative procedures for the maintenance of these forms, are also included in this part. These forms may be reproduced as required. Part II provides an outline of the various system status reports provided by the system and administrative instructions for maintaining these reports.

2. RELATED INFORMATION

2.01 General.

A Sales and Intructional Literature Index, which lists the latest publications available from Stromberg-Carlson Corporation, can be obtained from your Stromberg-Carlson sales representative or from Publications Services, Stromberg-Carlson Corporation, P.O. Box 1698, Sanford, Florida 32771.

2.02 Related Drawing.

The following drawing is recommended for use with this document:

DS-814027 Port Control Store

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PART 1. TROUBLE REPORTING

3. FAULT TICKET

3.01 Fault tickets are usually used as work orders for required corrective maintenance in the system. Make out a fault ticket for each equipment fault identified by fault analysis and/or fault printout. In addition, make out fault tickets for referred faults, user trouble reports, routine test faults, or for any other situation that indicates a need for corrective maintenance action within the switching system. Space is provided on the ticket to record information related to the fault report, as well as troubleshooting results and other pertinent data related to the maintenance effort.

3.02 After faults recorded on fault tickets have been acted upon and the results of the effort recorded, place the tickets in an active fault ticket file and retain them for a 3-month period. At the beginning of each month, remove tickets older than 3 months and file them in dated envelopes for long-term retention. Usually, fault tickets older than 1 year can be discarded.

3.03 A pigeonhole-type file is convenient for maintaining the active fault ticket file. Label the file to allow ticket filing by equipment categories of similar types. Examine the tickets in the active file and compare them frequently for evidence of repeated faults and fault trends. Place the fault ticket file at the maintenance center, convenient to the fault analyst.

3.04 Figure 1 shows an example of a fault ticket form that can be used in a digital central office. Figure 2 provides a detailed explanation of the information to be entered in each space on this form. The lettered notes on figure 2 refer to the entry space identically lettered on the sample fault ticket. Make entries in applicable spaces on each fault ticket for the particular fault being entered.

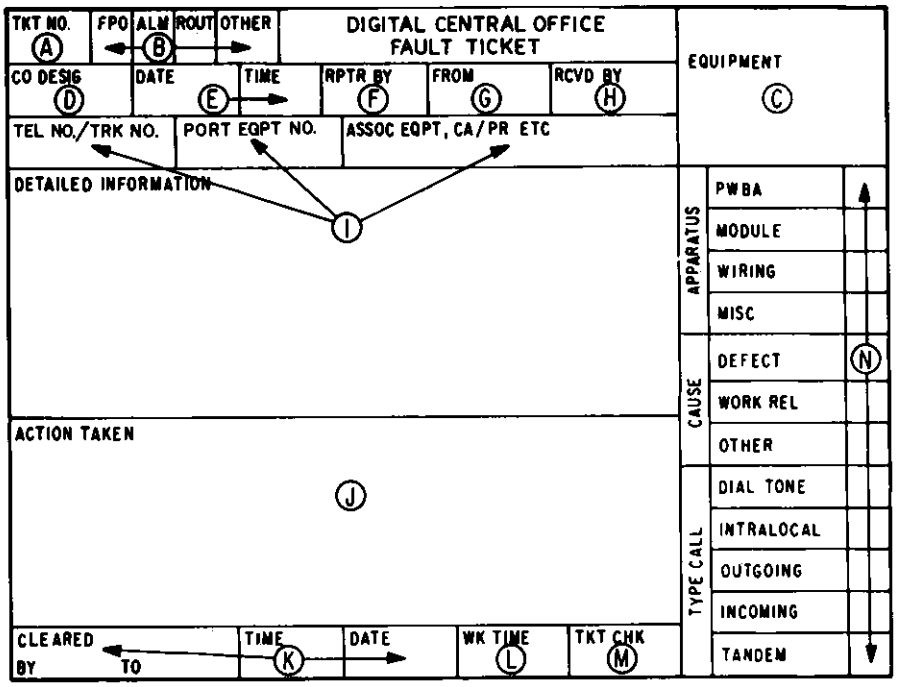
4. OFFICE FAULT RECORD LOG

4.01 The office fault record log is used as a current daily record of office work activities. It also provides a control sheet for keeping records of fault tickets and of circuits made busy manually by the system operator, or automatically by the system fault detection programs. The office maintenance activities for a particular interval of time, as determined by the operating company, can be recorded on as many sheets of the log as required. The interval of time presented by one or more log sheets depends on the office size and

TKT NO	FPO	ALM	ROUT	OTHER	DIGITAL CENTRAL OFFICE FAULT TICKET			EQUIPMENT		
CO DESIG	DATE	TIME	RPTR BY	FROM	RCVD BY					
TEL NO./TRK NO.	PORT EQPT NO.	ASSOC EQPT, CA/PR ETC								
DETAILED INFORMATION						APPARATUS	PWBA			
							MODULE			
							WIRING			
							MISC			
						CAUSE	DEFECT			
ACTION TAKEN							WORK REL			
							OTHER			
						TYPE CALL	DIAL TONE			
							INTRALOCAL			
							OUTGOING			
							INCOMING			
CLEARED BY TO	TIME	DATE	WK TIME	TKT CHK			TANDEM			

CP 4214A

Figure 1. Fault Ticket Form



NOTE	EXPLANATION
A	Fault ticket serial number.
B	Source of fault indication; check appropriate box: FPO= fault printout; ALM= alarm; ROUT= routiner test; OTHER= all other sources.
C	Identification of faulty equipment.
D	Central-office designation or name.
E	Date and time of fault analysis or identification.
F	Initials of person reporting fault.
G	Location of referring source.
H	Initials of person making out Fault Ticket.
I	Details of fault report.
J	Details of maintenance action or referral.
K	Initials of person who took maintenance action and person to whom clearance was reported; date and time.
L	Elapsed worktime required to clear fault.
M	Initials of person entering data in office log and filing Fault Ticket.
N	Details of fault found and type of call involved; check appropriate boxes.

CP 4215A

Figure 2. Explanation of Fault Ticket Form

volume of entries. This interval is usually from 1 day to no more than 1 month. Carry over any log entries from a preceding interval that have not been closed out as entries on the log for the current interval. File log sheets for past intervals of time in dated envelopes and retain them for up to 1 year.

4.02 The log provides a convenient point of reference for a concise summary of the current maintenance activities in the office. Inspection of the log reveals the volume of current fault tickets issued and the backlog of uncleared faults. In addition, other activities affecting maintenance can be recorded.

4.03 The out-of-service ports report, referenced in paragraph 8.06, is used to verify the out-of-service entry on the log sheet.

4.04 Figure 3 shows a form that can be used as an office fault record log sheet. Figure 4 shows a detailed explanation for the information to be entered in each space on this form.

5. FAULT SUMMARY

5.01 To evaluate the fault incidence in an office and to recognize long-range fault trends, compare relative monthly and yearly fault levels in similar types of equipment. The fault summary form, shown in figure 5, is intended for this purpose.

5.02 This form is arranged to record the number of faults occurring in categories of similar equipment types each month of the year. In addition, space is provided to record the present and preceding year's total faults, and the monthly fault averages for the preceding year for each category of equipment. However, do not include disproportionately high or low monthly entries caused by unusual, identifiable reasons in calculations of the preceding year's monthly averages. These averages should reflect only the usual operating norm, against which the current monthly fault levels can be realistically compared.

5.03 The equipment categories listed on this form should be the same as those under which the fault tickets are filed. Total each month's accumulation of tickets in the fault file and enter the results in the appropriate spaces for each category of equipment on the fault summary form. Keep these forms indefinitely, as a record of office fault history.

5.04 Inspection of the fault summary forms not only reveals the development of long-range fault trends but also immediately identifies abnormal monthly fault levels in any of the equipment categories. Abnormal fault levels indicate the need for detailed investigation to identify their cause. Careful analysis of the monthly accumulation of fault tickets for the affected equipment usually reveals the cause of the problem.

5.05 Figure 6 is an example of a fault summary form. Monthly fault entries shown on this figure were chosen for illustrative purposes; they do *not* show typical fault levels in a digital central office.

6. FAULT PRINTOUTS

6.01 Fault printouts are a major source of fault indications. Individual or repetitive fault printouts, for which analysis determines the cause, are to be attached to and/or recorded on fault tickets and recorded on the central-office fault record log. These faults should then be assigned to maintenance personnel, in accordance with their priority of importance, for corrective maintenance actions. The unique fault printout used in this system ensures a rapid analysis of most faults to the board level. Actions taken for first- and second-level diagnostics are reported by way of appropriate printouts. This includes those times the cause of a fault cannot be determined due to transient or insufficient information. These printouts are to be retained for subsequent periodic comparative analysis that may reveal a common circuit or condition that is causing the printouts.

CENTRAL-OFFICE FAULT RECORD LOG SHEET

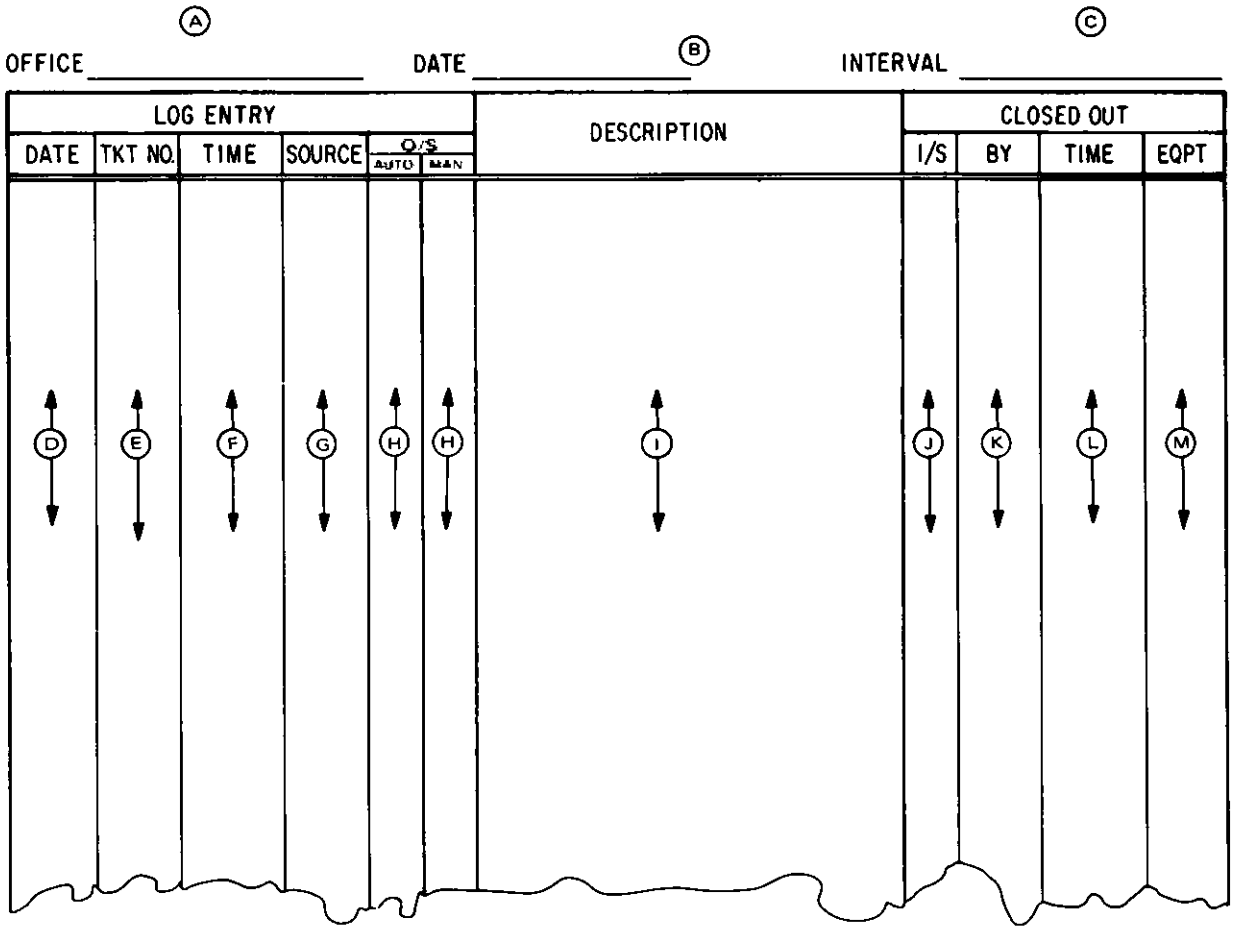
OFFICE _____ DATE _____ INTERVAL _____

LOG ENTRY						DESCRIPTION	CLOSED OUT			
DATE	TKT NO.	TIME	SOURCE	O/S AUTO	O/S MAN		I/S	BY	TIME	EQPT

CP 4217A

Figure 3. Office Fault Record Log Sheet

CENTRAL-OFFICE FAULT RECORD LOG SHEET



NOTE	EXPLANATION
A	Central-office designation or name.
B	Current day's date.
C	Interval covered by Log Sheet.
D	Date of entry.
E	Ticket number.
F	Time of entry.
G	Source of entry.
H	Check if circuit is made busy, indicate if automatically (AUTO.) or manually (MAN.) (out-of-service; O/S).
I	Description of fault or entry.
J	Check when circuit is restored to service (in-service; I/S).
K	Initials of person who took maintenance action.
L	Time of closeout.
M	Identification of faulty equipment.

CP 4218B

Figure 4. Explanation of Fault Record Log Sheet

FAULT SUMMARY

OFFICE _____ YEAR _____

EQUIPMENT GROUP	PREV YR AVG	PREV YR TOTAL	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR TOTAL

CP 7351

Figure 5. Fault Summary Form

FAULT SUMMARY

OFFICE 323 YEAR 1976

EQUIPMENT GROUP	PREV YR AVG	PREV YR TOTAL	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR TOTAL
LINE PORTS	3	12	2	1	0	0	0	1	3	0	1	0	2	0	10
TRUNK PORTS	.5	6	0	0	2	0	1	0	1	1	0	0	2	0	7
TIMESLOT INTERCHANGE	.25	3	0	0	0	1	0	0	0	0	0	0	0	1	2
PORT CONTROL SYSTEM	.25	3	0	0	1	0	0	1	0	0	0	0	1	0	3
CPU	1.5	8	1	1	2	1	0	0	0	0	0	0	1	0	6
SERVICE CIRCUITS	.25	3	0	0	0	1	0	0	1	0	0	0	1	0	3

CP 4222A

Figure 6. Example of Fault Summary Form

6.02 Individual fault records consist of two or more lines of fault printout entries. The fault record printouts that cannot immediately be analyzed can be separated using a pair of scissors. These are to be filed according to the type of printout they represent and/or similarity of common control printout entries. These printouts are to be retained until periodic comparisons permit recognition of a fault pattern that may lead to identification of the fault, or until it is determined that the probable cause was transient. Usually, retention of fault printouts for 1 month is sufficent for these purposes. The fault printout filing system should be located in the maintenance area near the fault recorder and convenient to the analyst.

PART II. SYSTEM STATUS REPORTS

7. GENERAL

7.01 The system provides various reports indicating the status of the overall system, lines and trunks in lockout, equipment placed out of service both automatically and manually, and port alarm status. Some of these reports are generated automatically and others must be manually requested by the system operator.

7.02 The following paragraphs explain the significance of each report, procedures for requesting each report manually, and suggestions for maintaining each report.

8. PORT STATUS REPORT

8.01 General.

This report is a manually requested display of the status of all ports in the system. The reports can be requested at any time and show the status of the ports at the time the request was entered.

8.02 Administration.

These reports should be generated, as required, by the operating company in order to maintain an indication of port status. Records of equipment out of service, in alarm, and in lockout should be maintained so that a constant indication of office equipment status and maintenance actions is available.

NOTE. The task identification commands shown in the following paragraphs must be preceeded by the operator request $PORTST, and followed by a carriage return (indicated by the symbol ↵). The first two lines in the following displays are the standard identification lines used for all displays. These lines are used to identify the specific report requested.

8.03 Line Ports in Lockout.

This report is requested by the identification command LNLOUT (example 1). The first output (after the standard identification lines) is the values presently assigned to the line lockout high and low threshold limits. The second output displays the current count of line ports in lockout. The final lines are a list of all line ports in lockout. The possible port types (PORT TYPE) for lines are SP, for single-party; 2P, for two-party; 4P, for four-party; 8P, for eight-party; and PX, for PBX lines. The possible lockout status (LO STATUS) for lines are PERM/ANN, line is receiving the permanent signal recorded announcement; ROH, line is receiving receiver-off-hook tone; and LOCKOUT, line is in the lockout condition.

8.04 Trunk Ports in Lockout.

This report is requested by the identification command TKLOUT (example 2). The first output is the values presently assigned to the trunk lockout high and

Example 1. Line Ports in Lockout Report

```
$PORTST LNLOUT↵
    00:03:39  02/10/78 PORT STATUS REPORT     U2

    00:03:40    PORTST  LINE PORTS IN LOCKOUT REPORT

LINE LOCKOUT THRESHOLD LIMITS...HIGH...LOW
                                        20      15

LINE LOCKOUT CURRENT COUNT...5

DIR. NO.   -FR -CELL-PT-   PORT TYPE   LO STATUS   HG#   #HG
 8437673     000  1    1       SP         PERM/ANN
 8437645     000  1    9       SP         PERM/ANN
 3226412     000  1   17       SP         LOCKOUT
 8437637     000  1   18       SP         LOCKOUT
             000  2    4       4P         LOCKOUT
    00:04:06    PORTST  EXIT
```

Example 2. Trunk Ports in Lockout Report

```
*PORTST TKLOUT
    00:13:52  02/10/78 PORT STATUS REPORT     U2

    00:13:54    PORTST  TRUNK PORTS IN LOCKOUT REPORT

TRUNK LOCKOUT THRESHOLD LIMITS:::HIGH:::LOW
                                      20      15

TRUNK LOCKOUT CURRENT COUNT:::3

-FR - CELL-PT  PORT TYPE LO STATUS   HG#   #HG
000    0      0    EMTK     LOCKOUT     1     2
000    0      1     EMTK    LOCKOUT     1     3
000    0      3    EMTK     LOCKOUT     2     1
```

low threshold limits. The second output displays the current count of trunk ports in lockout. The final lines are a list of all trunk ports in lockout, including hunt group number (HG#) and number of ports assigned to the hunt group (#HG).

8.05 Lockout Threshold Limits Change.

a. Lockout threshold limits are used in the system to determine the number of line or trunk ports in lockout at which the system automatically displays a message indicating that the upper limit (HI) has been reached or that the number of ports in lockout has fallen below the lower (LO) limit. Each port (line or trunk) entering the lockout state, after the upper limit has been reached, causes a display to inform maintenance personnel of the fact that the upper limit has been exceeded.

b. The lockout limits change function is requested by the identification command LIMITS (example 3). The current values of the line and trunk port lockout limits are displayed first. The system then waits for the operator's response. The operator has the ability, at this time, to change the high and low, high only, low only, or neither high nor low values of the line and/or trunk threshold limits. The required change must be entered below the value to be changed, using the system tabbing function. Any value skipped is not changed. After the change (if any), the limits are again displayed to allow the operator to verify the changes.

8.06 Out-of-Service Ports Report.

This report is requested by the identification command OSPORT (example 4). The output is a list of all ports out of service. The possible out-of-service statuses (O/S STATUS) for this report are:

a. MAN/REQ - A manual request to place an in-use port out of service has been entered.

NOTE. The port is automatically placed out of service when it becomes idle.

b. MAN/ACT - The port is out of service due to a manual request by the system operator.

c. AUTO/REQ – An automatic request to place an in-use port out of service has been made by the system due to a system-detected fault.

NOTE. The port is placed out of service when it becomes idle.

d. AUTO/ACT – The port is out of service due to an automatic request by the system.

8.07 Ports-in-Alarm Report.

This report is requested by the identification command ALPORT (example 5). This report is a listing of all ports currently in the alarm state. Table 1 is a listing of all port-type mnemonics used in this display.

Example 3. Lockout Threshold Limits Change

```
$PORTST LIMITS
   00:28:44  02/10/78  PORT STATUS REPORT  V2

   00:28:44    PORTST    LOCKOUT THRESHOLD LIMITS

       ---LINE---       ---TRUNK---
       HI       LO       HI       LO
       20       15       15       20
       15       10       10       15
   00:29:19    PORTST  LOCKOUT THRESHOLD LIMITS

       ---LINE---       ---TRUNK---
       15       10       10       15
   00:29:25    PORTST    EXIT
```

Example 4. Out-of-Service Ports Report

```
$PORTST OSPORT
    00:05:58  01/10/78 PORT STATUS REPORT    V2

    00:06:00   PORTST  OUT OF SERVICE PORTS REPORT

DIR. NO.   -FR -CELL-PT-  PORT TYPE  O/S STATUS  HG#  #HG
N3241201    000 1   0      PX         MAN/ACT    257   2
 8437603    000 1   2      SP         MAN/ACT
 3231225    000 1   3      SP         MAN/ACT
            000 1   4      SP         MAN/ACT
            000 1   5      TDRC       MAN/ACT
            000 1   6      UN         MAN/ACT
            000 1   7      MFSD       MAN/ACT
 3231210    000 1   8      SP         MAN/ACT
 3226404    000 1   10     SP         MAN/ACT
 3226447    000 1   11     SP         MAN/ACT
            000 1   12     SP         MAN/ACT
            000 1   13     TDRC       MAN/ACT
            000 1   14     UN         MAN/ACT
            000 1   15     MFSD       MAN/ACT
 3231299    000 1   16     SP         MAN/ACT
            000 1   19     UN         MAN/ACT
            000 1   20     SP         MAN/ACT
            000 1   21     MFRC       MAN/ACT
            000 1   22     UN         MAN/ACT
            000 1   23     UN         MAN/ACT
N3241202    000 1   24     PX         MAN/ACT    257   2
 3226459    000 1   25     SP         MAN/ACT
 3226453    000 1   26     SP         MAN/ACT
            000 1   27     UN         MAN/ACT
            000 1   28     SP         MAN/ACT
            000 1   29     MFRC       MAN/ACT
            000 1   30     ????       MAN/ACT
            000 1   31     PGCT       MAN/ACT
    00:07:23   PORTST  EXIT
```

Example 5. Port-in-Alarm Report

```
$PORTST ALPORT
    00:30:49  02/10/78 PORT STATUS REPORT     V2

    00:30:50   PORTST  PORTS IN ALARM REPORT

DIR. NO.   -FR -CELL-PT-  PORT TYPE  HG#  #HG
             0   0   3      EMTK     11    1
             0   0   4      UN
             0   0   5      UN
             0   0   6      EMTK     8     1
             0   0   7      UN
             0   0   11     LPTK
             0   0   12     LPTK     5     2
             0   0   13     LPTK     4     1
             0   0   15     LPTK     7     2
             0   0   19     LPTK
             0   0   27     UN
             0   0   29     UN
             0   0   30     ????
 3231225     0   1   3      SP
             0   1   4      SP
 3226447     0   1   11     SP
             0   1   12     SP
             0   1   19     UN
             0   1   20     SP
             0   1   21     MFRC
             0   1   27     UN
             0   1   28     SP
             0   1   29     MFRC
             0   1   30     ????
             0   2   2      UN
             0   2   3      UN
             0   2   10     UN
             0   2   11     UN
             0   2   18     UN
             0   2   19     UN
             0   2   30     ????
             0   3   0      UN
             0   3   1      UN

    00:32:25   PORTST  EXIT
```

Table 1. Port-Type Mnemonics

MNEMONIC	*PORT TYPE*
UN	Unequipped
SP	Single-party line
2P	Two-party line
4P	Four-party line
8P	Eight-party line
PX	PBX line
SLLN	Sleeve-lead line
MFSD	MF sender
TDSD	TD sender
MFRC	MF receiver
TDRC	TD receiver
LPTK	Loop trunk
EMTK	E&M trunk
SSTK	Step-by-step trunk
PGCT	Port group control
UVAD	Universal adapter interface
CONF	Conference circuit
? ? ? ?	Spare or unassigned

8.08 Port Status Display.

a. The port status display is used to determine the out-of-service status (O/S STATUS), call state (CST), port command (PORT CMD), and port identity (PID) of the selected port. Refer to table 2 for definitions of the various port call states. Refer to DS-814027, referenced in paragraph 2.02, for explanations of the port command and port identity fields.

b. The display is requested by the identification command DISP (example 6). The sytem displays the header information first, and then pauses to allow the operator to enter the equipment number (FR-CELL-PT) of the port to be displayed. After each port is displayed the system pauses again to allow the operator to enter another equipment number or exit from the function by striking the RETURN key.

Table 2. Call-State Definitions

CALL STATE (CST)	*DEFINITION*
0	Equipment idle
1	Receive equipment-busy tone (EBT)
2	Receive dial tone (DT), dial-pulse (DP) line
3	Receive DT, DTMF line
4	Lockout
5	Dialing, DP
6	Dialing, DTMF
7	Receive busy tone (BT)
8	Receive ringing, line
9	Circle digit, DP
10	Talking, line-to-line
11	Ringing, revertive call (RV)
12	Release timeout
13	Receive tick-tone, RV
14	Sending, DP
15	Seize out, multifrequency (MF)
16	Await answer, line-to-trunk
17	Talking, line-to-trunk
18	CAMA sending
19	Receiving DP, incoming trunk
20	Receiving MF, incoming trunk
21	Lockout trunk
22	Ringing, trunk-to-line
23	Receive BT, incoming trunk
24	Talking, tandem
25	Receive EBT, incoming trunk
26	Trunk guard time
27	Circle digit, DTMF
28	Await release, RV
29	Sending MF, outgoing trunk
30	Await CAMA answer
31	Tandem, send DP
32	Tandem, seize out MF

Table 2. Call-State Definitions (Cont)

CALL STATE (CST)	*DEFINITION*
33	Tandem, send MF
34	Await answer, tandem
35	Tone paths blocked, line
36	Ring halt
37	Recorded announcement, line
38	Recorded announcement, incoming trunk
39	Verifying, incoming trunk
40	Keystation disconnect
41	Tone paths blocked, trunk
42	Paystation tone
43	Talking, revertive
44	Talking, trunk-to-line
45	Timed disconnect, trunk
46	Hold, trunk-to-line
47	Permanent signal announcement
48	Receiver off-hook tone applied
49	DT to direct inward dialing (DID) trunk
50	TD from DID trunk
51	Await CAMA answer, DID
52	CAMA sending, DID
53	Await answer, ringback tone (RBT)
54	Await answer, RBT tandem
55	Recorded announcement circuits
56	Talk, inspectors test terminal
57	Alarm
58	Stuck coin alarm
59	Coin check
60	Final coin deposit
61	Await alarm, send answer
62	Alarm send tone
63	Tone paths blocked for alarm send
64	Receiver off-hook tone
65	Alarm check tone
66	Await test access
67	Test access
68	Test termination
69	Receive RFS
70	Originating setup path
71	Await originating setup path
72	Await cross path
73	Send marker release
74	Expanded line circuit
75	Terminating setup path
76	Await terminating setup path

Table 2. Call-State Definitions (Cont)

CALL STATE (CST)	*DEFINITION*
77	XIOP release
78	Disconnect XIOP
79	Await LAMA party test
80	Prepay control halt
81	Talking hold
82	Set up 911
83	Talking 911
84	Busy tone 911
85	Emergency rering 911
86	Camp on sender
87	Hold, line-to-line
88	Hold, tandem
89	Reserved
90	Reserved
91	Reserved
92	Reserved
93	Conference tone
94	Ring business line, call forwarding
95	Await CAMA whistle-thru answer
96	Await tandem CAMA whistle-thru answer
97	Improved mobile telephone service ringing
98	Loop-around initial
99	Loop-around milliwatt
100	Loop-around frequency cycling device
101	Loop-around balanced termination initial
102	Loop-around balanced termination
103	Loop around
104	Clear sender alarm
105	Camp on receiver
106	CAMA receiving
107	ONI dial
108	ONI wait
109	Custom calling, dial tone-dial pulse
110	Custom calling, dial tone-DTMF
111	Custom dialing, dial pulse
112	Custom dialing, DTMF
113	Custom dialing, confirmation tone
114	Talking, three-way calling
115	Holding, three-way calling
116	OG relay hold
117	Call waiting, ringing
118	Call waiting, talking
119	Call waiting, release
120	Call waiting, ringing line-to-trunk

Table 2. Call-State Definitions (Cont)

CALL STATE (CST)	*DEFINITION*
121	Call waiting, ringing line-to-line
122	10X initial attempt
123	Test tone, 100-, 102-type test
124	Ring test line
125	Supervisory test
126	DSI delay timer
127	(Spare)
128	(Spare)
129	(Spare)
130	CAMA loop-around, receiving MF
131	CAMA loop-around, receiving DP
132	CAMA loop-around test
133	CAMA loop-around, milliwatt test
134	CAMA loop-around, frequency cycling service
135	CAMA loop-around, balance termination test
136	CAMA loop-around, busy
137	Line load control
138	Await digital satellite interface
139	Digital satellite interface automatic test
140	Digital satellite interface alarm
141	Call processor timer
142	Usage sensitive recording party test
143	IDDD sending
144	Await second stage answer
145	Line service observing initialize
146	CCITT #5 trunk glare
147	Seize out sending transfer
148	Sending forward transfer
149	Await answer forward transfer
150	Talk forward transfer
151	Unanswered forward transfer
152	Timed disconnect forward transfer
153	CCITT #5 sender alarm
154	Malicious call trap and trace equipment busy tone
155	Nailed-up trunk
156 to 172	(Spare)
173	DSI pre-pay paystation control

Example 6. Port Status Display

```
*PORTST DISP
    00:38:45  02/10/78 PORT STATUS REPORT     02

    00:38:44   PORTST  DISPLAY PORT STATUS

DIR: NO:  -FR -CELL-PT-  PORT TYPE  CST  O/S STATUS  PORT CMD  PID
            0   2   08
            0   2   8      UN        0     NORMAL       0       1

DIR: NO:  -FR -CELL-PT-  PORT TYPE  CST  O/S STATUS  PORT CMD  PID
            0   2   10
            0   2   10     UN        57    ALR/INHB     0       1

DIR: NO:  -FR -CELL-PT-  PORT TYPE  CST  O/S STATUS  PORT CMD  PID

    00:39:24   PORTST  EXIT
```

8.09 Port Storage Area Display.

a. The contents of individual port storage areas can be manually displayed by the system operator as required for maintenance. This display is useful for determining the exact status of, and all information pertaining to, any port, at any time.

b. In order to request this display, the operator must enter the identification command PSSNAP, followed by a carriage return. The system responds with the standard identification lines specifying the function requested. When the system displays FR-CELL-PT, the operator must enter the equipment number of the port to be displayed, under the proper headings (example 7).

c. The system response is the information for the specified port as shown in example 7. Refer to DS-814027, referenced in paragraph 2.02, for descriptions of the information provided for words 00 through 15.

9. HOURLY STATUS REPORT

9.01 The software provides a display indicating the overall status of the operating system. This report is automatically displayed every hour at 2 minutes past the hour, providing no other maintenance actions are in progress. A manual status display can be requested at any time by entering the command $STATUS, followed by a carriage return, at the system console.

10. SYSTEM STATUS REPORT

10.01 The software provides a manual version of the hourly status report that is used to determine the current status of the X and Y clocks, ringing generators, tone generators, traffic-measuring system, routine testing, automatic-recovery system, etc. This report is requested by entering the command $STATUS, followed by a carriage return. This report is also automatically displayed after a system startup.

11. CURRENT-STATE DISPLAY

11.01 A display of the current system state can be requested at any time by entering $STATE, followed by a carriage return, at the system console.

11.02 The various system states are indicated as follows:

a. 4 – Normal and synchronized.

b. 2 – MP running, single call processor.

c. 1 – MP running, both call processors out of service.

Example 7. Port Storage Area Display

```
$PORTST PSSNAP
    00:45:44  02/10/78 PORT STATUS REPORT     V2

    00:45:45   PORTST  PSA SNAPSHOT DUMP

-FR -CELL-PT-  WORD
  0   2   10
WORD 00-  CF1--D C B A  CF0--D C B A  SF1--D C B A  SF0--D C B A
          0 0 0 0       0 0 0 0       0 1 0 0       1 0 1 0
WORD 01-  CS7--6--5--4--3--2--1--0   SS7--6--5--4--3--2--1--0
            0  0  0  0  0  0  0  0     0  0  0  0  0  0  0  0
WORD 02-  TCL  O/S  PTY  SCL-(STATE TIMER)-STPS
            0    0    0    0                 0
WORD 03-  RLE  RSP  THRD  THRE  THSD  THSE  FRZ  FRT  PCT  DCT
            0    0    0     0     0     0    0    0    0    0
WORD 04-  SPI  SZI  ENP  HLT  NWC  PRP  PRF  EVC
            0    0    0    0    0    0    0    0
WORD 05-  CMD  AR1  AR2  AR3  AR4  AR5  AR6
            0    0    0    0    0    0    0
WORD 06-  TIMER1  TIMER2
            0        0
WORD 07-  PLS  RLSC  LL1  LL2  A-CTRL-B  RLST
            0    0    0    0    0       0    0
WORD 08-  PID  PTI  CST
            0    0   0
WORD 09-       FEN#--(CC  MS  PG  TS)
               0        0   0   0   0
WORD 10-  DGT03  DGT02  DGT01  DGT00
            0       0       0      0
WORD 11-  DGT07  DGT06  DGT05  DGT04
            0       0       0      0
WORD 12-  DGT11  DGT10  DGT09  DGT08
            0       0       0      0
WORD 13-  DGT15  DGT14  DGT13  DGT12
            0       0       0      0
WORD 14-  SCR AREA1
            0
WORD 15-  SCR AREA2
            0


-FR -CELL-PT-  WORD

    00:46:53   PORTST  EXIT
```