DIMENSION ®2000 AND CUSTOM PBX

NETWORK FAILURE HISTORY
(PROC 507)

CONTENTS

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1. GENERAL

1.1 This section provides information to interrogate PROC 507, in the event that the craftsperson is directed to this procedure due to a NETWORK-NETWORK FAILURE. Whenever this type of failure occurs, the ALARM PANEL-NETWORK-MINOR and NET LED'S will be lit.

1.2 This procedure can only be used to display the on-line maintenance data.

2. RECORDS

2.1 Form SD 97-1313 is required for recording the results of this test.

3. MAAP DISPLAY FIELDS (PROC 507 FORMAT)

3.1 The following describes each of the display fields for the NETWORK FAILURE HISTORY (PROC 507) format.

FIELD	DESCRIPTION
1	TEST NO - Displays active test number (maximum of 3) per the following encodes.

ENCODE	DESCRIPTION
1	Displays network clock failure history detected by on-line maintenance.
2	Displays network control failure history.
3	Displays shift register failure history.

2 - 6	EQUIPMENT LOCATION - MODULE/CABINET/CARRIER/ SLOT/CKT - TEST 1 displays equipment location of faulty network clock circuit (LC121). TEST 2 displays location of faulty network circuit (LC122). TEST 3 displays equipment location of faulty port shift register. NOTE: TESTS 1 and 2 will only display the MODULE and CABINET location of faulty circuit.
7	TYPE - TEST 3 displays faulty circuit type.
8 - 10	ALARM CAUSE - CLOCK/CONTROL/SHIFT REGISTER - TESTS 1, 2 and 3 display cause(s) of network alarm. A "1" displayed in the field indicates an alarm. A "0" displayed in the field indicates no alarm.
11	FAILURE CODE - Displays a failure code if a fault is detected per the following encodes.

ENCODE	DESCRIPTION
1	(TEST 1) Network clock - self check.
2	(TEST 1) Network clock - no tone interruption.
3	(TEST 1) Network clock - shift registers stuck.
4	(TEST 1) Combination of 2 and 3.
5	(TEST 2) Network control - addressing failure.

6 (TEST 3) Shift register - time stat on wrong buss.
7 (TEST 3) Shift register - stuck at 1.
8 (TEST 3) Shift register - stuck at 0.
9 (TEST 3) Shift register - wrong time slot in shaft register.

12 FAILURE HISTORY - NO. OF FAILURES - (TESTS 1, 2, and 3) displays total number of failures recorded for by on-line maintenance for the circuit displayed in the equipment location (maximum of 6 failures).

13 FAILURE HISTORY - FAILURE INDEX - (TESTS 1, 2, and 3) displays an index which either indicates:
a) Total number of failures recorded per test, index number "0".
b) Failure locations, in descending failure rate order (i.e. index number "1" indicates circuit with highest number of recorded failures) maximum of 6 circuits can be displayed.

14 FAILURE HISTORY - FAILURES PER HOUR - (TESTS 1, 2, and 3) displays either total number of failures for all circuit failures or total number of failures for a particular circuit (maximum of 99 failures).

15 FAILURE HISTORY - FAILURES BEGAN - HOURS AGO - (TESTS 1, 2, and 3) displays number of hours since failures started to the nearest hour (17 hours maximum).

16 - 17 MOST RECENT FAILURE - HOURS AGO/MINUTES AGO - (TESTS 1, 2, and 3) displays time since last failure to the nearest minute (136 hours; 31 minutes maximum).

4. MAAP CONTROL KEY SEQUENCES

4.1 PROC NO, 5, 0, 7, ENTER - Causes program for procedure 507 to be loaded into memory from tape for execution.

4.2 CLEAR DATA, EXECUTE - (TESTS 1, 2, and 3) clears failure history records stored in memory.

4.3 EXECUTE - Starts executing test number display in FIELD 1.

4.4 NEXT CIRCUIT - (TESTS 1, 2, and 3) displays next failure stored in memory.

4.5 NEXT TEST - (TESTS 1, 2, and 3) advances to the next test.

4.6 BUSY OUT - (TEST 3) busies out the circuit displayed in FIELDS 2-6.

4.7 RESET - (TESTS 1, 2, and 3) resets test back to beginning of TEST 1.

5. PROCEDURES

5.1 General

5.1.1 The following describes the repair procedures that should be followed in the event that a NETWORK-NETWORK ALARM occurs.

5.1.2 EXECUTE TESTS 1, 2, and 3, and record the failure history generated by on-line maintenance.

5.1.3 Depending upon the type of failure detected, perform Step 5.2 for Clock failure, Step 5.3 for Network Control failure, and 5.4 for Shift Register failure.

5.2 Clock Failures (FIELD 8 = 1)

5.2.1 Replace defective LC121's as indicated by FIELDS 2 and 3. If the replaced LC121 is the off-line clock, force it to be on-line by pulling the on-line clock in that module.

5.2.2 Clear the on-line maintenance fault records by operating the CLEAR DATA-EXECUTE keys.

5.2.3 After one minute, execute TEST 1. If a failure still exists refer to Paragraph 6 for further information.

5.2.4 If TEST 1 passes, then force all off-line clocks on-line and then repeat Steps 5.2.2 and 5.2.3.

5.2.5 If Steps 5.2.3 and 5.2.4 are completed without Clock failures, then all clocks should be good.

5.3 Network Control Failures

5.3.1 In TEST 2, if FIELD 0 indicated a 1, go to Procedure 581.

5.4 Network Shift Register Failures

5.4.1 In TEST 3, if FIELD 10 indicates a 1, go to Procedure 581.

6. TROUBLESHOOTING AIDS

6.1 General Test Information

6.1.1 TEST 1 - Test is the default test when the procedure is first read in from the tape or when the MAAP-RESET key is operated. In either case, FIELD 1 will display a 1 and FIELDS 8, 9 or 10 will display a 1 if either a Network Control or a Shift Register failure is detected, respectively. When the MAAP-EXECUTE key is operated, data accumulated by on-line maintenance is displayed. FIELD 13 will display a "0" and if there are one or more failures FIELD 12, 14, 15, 16 and 17 will display the appropriate failure information. If no failures were detected, FIELDS 12, 14, 15, 16 and 17 will contain "0's". In either case, FIELDS 2 thru 6 will be dashed since the total failure is being displayed.

If failures were detected by on-line maintenance, operation of the MAAP-NEXT CIRCUIT key displays the clock circuit (FIELDS 2 and 3) with the highest number of failures. FIELD 13 will display a "1" and FIELDS 12, 14, 15, 16 and 17 will display the appropriate information. Continued operation of the MAAP-NEXT CIRCUIT key displays clock circuits with the next highest number of failures until either a total of 6 (maximum) failed clock circuits have been displayed.

Operation of the MAAP-CLEAR DATA, EXECUTE keys clears the on-line maintenance clock failure records, and NET alarms due to clock failures.

6.1.2 TEST 2 - The purpose of TEST 2 is to display the Network Control failures (LC122) detected by on-line maintenance. If FIELD 1 does not display a 2, operation of the MAAP-NEXT TEST key until it does will enable TEST 2 to be executed. When the MAAP-EXECUTE key is operated, data accumulated by on-line maintenance will be displayed as it was in TEST 1.

Procedure 581 should be used to test the Network Control circuits when the failed ones have been replaced and operation of MAAP-CLEAR DATA, EXECUTE keys should be used to clear the on-line maintenance records.

6.1.3 TEST 3 - The purpose of TEST 3 is to display the Shift Register failures detected by on-line maintenance. If FIELD 1 does not display a 3, continued operation of the MAAP-NEXT TEST key until it does will enable TEST 3 to be executed. When the MAAP-EXECUTE key is operated, data accumulated by on-line maintenance will be displayed similarly as it was in TEST 1; however, in this case, FIELDS 4, 5, and 6 will now display the appropriate data.

Procedure 581 should be used to test the Network Shift Registers when the faulty ones have been replaced and then the data accumulated by on-line maintenance should be cleared by operation of the MAAP-CLEAR DATA, EXECUTE keys via this procedure.

6.2 General Troubleshooting Information

6.2.1 PROC 507 is used only to display detected on-line maintenance information for Clock, Network Control and Shift Register Circuit failures. Alarms associated with Network Control (LC122) and Shift Register (port) should be cleared using PROC 581. Alarms associated with Clock (LC121) failures can only be cleared thru on-line maintenance.

6.2.2 Clock failures are detected by checking the NCKSCN lead from the LC121. Dimension software does this via the Maintenance Board (LC105). When the clock board is bad, the NCKSCN (TP8 on LC121) will pulse or be a steady high. Also, the CLK LED on the LC105 will be lit or pulsing if a failure is detected.

When software interrogates the LC105 for Clock failures, the BBS15* is made low and the SS2* is checked. If the SS2* lead, a failure is indicated.

6.2.3 If a Clock failure is detected, software will de-activate the on-line clock (BKRB3, high, BPS0* and BBS13* low, into LC121). When the on-line clock is de-activated, the off-line clock should then go on-line (LMBF lead low indicates that the clock should be on-line). Also, when the BBS13* and BPS0* lead are simultaneously activated, if the SS0* lead goes low, it indicates that the clock is on-line.

6.2.4 Tables at the end of this Section indicate the cabling required to route the various clock signals between the LC121 and LC122 and LC123 circuit packs.

6.2.5 An Idealized Wave Form is shown on Figure 1 for the Network Clocks.

NETWORK CLOCK CABLING

LEAD	CAB	LC-	TERM	CONN	CONN TERM	CONN	CAB	LC-	TERM
TSCKA00*	0	121	98	--	--	--	0	123	73
TSCKA01*	0	121	48	MC34	7	MC36	1	123	72
TSCKA11*	1	121	98	--	--	--	1	123	73
TSCKA10*	1	121	48	MC34	7	MC36	0	123	72
TSCKA02*	0	121	98	MC32	8	LG23	2	123	73
TSCKA12*	1	121	48	MC32	8	LG26	2	123	72
TSCKA03*	0	121	98	MC30	8	LG23	3	123	73
TSCKA13*	1	121	48	MC30	8	LG26	3	123	72
TSCKA04*	0	121	98	MC33	8	LG23	1/4	123	73
TSCKA14*	1	121	48	MC33	8	LG26	1/4	123	72
TSCKB00*	0	121	97	--	--	--	0	123	71
TSCKB01*	0	121	47	MC34	6	MC36	1	123	70
TSCKB11*	1	121	97	--	--	--	1	123	71
TSCKB10*	1	121	47	MC34	6	MC36	0	123	70
TSCKB02*	0	121	89	MC32	7	LG23	2	123	71
TSCKB12*	1	121	89	MC32	7	LG26	2	123	70
TSCKB03*	0	121	39	MC30	7	LG23	3	123	71
TSCKB13*	1	121	39	MC30	7	LG26	3	123	70
TSCKB04*	0	121	78	MC33	7	LG23	1/4	123	71
TSCKB14*	1	121	78	MC33	7	LG26	1/4	123	70

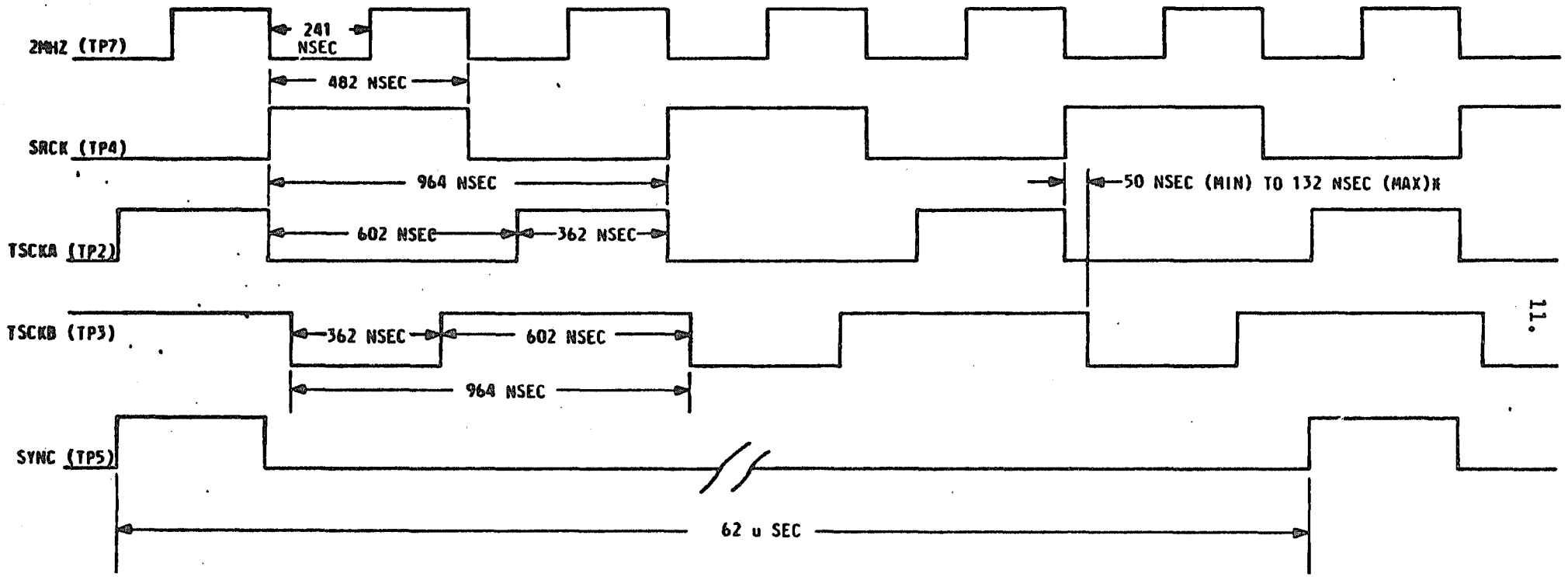
NETWORK CLOCK CABLING

LEAD	CAB	LC-	TERM	CONN	CONN TERM	CONN	CAB	LC-	TERM
SRCK00*	0	121	96	--	--	--	0	123	32
SRCK01*	0	121	46	MC34	5	MC36	1	123	30
SRCK11*	1	121	96	--	--	--	1	123	32
SRCK10*	1	121	46	MC34	5	MC36	0	123	30
SRCK02*	0	121	88	MC32	6	LG23	2	123	32
SRCK12*	1	121	88	MC32	6	LG26	2	123	30
SRCK03*	0	121	38	MC30	6	LG23	3	123	32
SRCK13*	1	121	38	MC30	6	LG26	3	123	30
SRCK04*	0	121	77	MC33	6	LG23	1/4	123	32
SRCK14*	1	121	77	MC33	6	LG26	1/4	123	30
SYNC00*	0	121	95	--	--	--	0	122	27
SYNC01*	0	121	45	MC34	4	MC36	1	122	28
SYNC11*	1	121	95	--	--	--	1	122	27
SYNC10*	1	121	45	MC34	4	MC36	0	122	28
SYNC02*	0	121	87	MC32	5	LG23	2	122	27
SYNC12*	1	121	87	MC32	5	LG26	2	122	28
SYNC03*	0	121	37	MC30	5	LG23	3	122	27
SYNC13*	1	121	37	MC30	5	LG26	3	122	28
SYNC04*	0	121	76	MC33	5	LG23	1/4	122	27
SYNC14*	1	121	76	MC33	5	LG26	1/4	122	28

NETWORK CLOCK CABLING

LEAD	CAB	LC-	TERM	CONN	CONN TERM	CONN	CAB	LC-	TERM
2MHZ00	0	121	93	--	--	--	0	124	33
2MHZ01	0	121	43	MC34	3	MC36	1	124	32
2MHZ11	1	121	93	--	--	--	1	124	33
2MHZ10	1	121	43	MC34	3	MC36	0	124	32
2MHZ02	0	121	85	MC32	4	LG23	2	124	33
2MHZ12	1	121	85	MC32	4	LG26	2	124	32
2MHZ03	0	121	35	MC30	4	LG23	3	124	33
2MHZ13	1	121	35	MC30	4	LG26	3	124	32
2MHZ04	0	121	74	MC33	4	LG23	1/4	124	33
2MHZ14	1	121	74	MC33	4	LG26	1/4	124	32
M25MS00	0	121	94	MC32	9	LG23	2	05	75
M25MS10	1	121	94	MC32	9	LG26	2	05	76
M25MS01	0	121	44	MC30	9	LG23	3	05	75
M25MS11	1	121	44	MC30	9	LG26	3	05	76
M25MS02	0	121	86	MC33	9	LG23	1/4	05	75
M25MS12	1	121	86	MC33	9	LG26	1/4	05	76
M25MS03	0	121	36	MC31	9	LG23	0	05	75
M25MS13	1	121	36	MC31	9	LG26	0	05	76
CKBF0	0	121	15	MC34	2	MC36	1	121	65
CKBF1	1	121	15	MC34	2	MC36	1	121	65

DIMENSION NETWORK CLOCK WAVEFORMS



* CRITICAL

NOTE:
1. TOLERANCES = ± 1%
2. TEST POINTS ( ) ON LC121 CKT PK
3. ALL CLOCKS GO THRU AN INVERTER BEFORE LEAVING LC121

Reason for Issue:
New Section

Manager, Denver PBX PECC