730.04

Installation Engineering Handbook 269
Western Electric
Northern Illinois Works

Section
2-27-81
Replaces: Section 730.04
dated 11-23-79

NO. 3 ESS
CONTROL FRAME 1 AND NETWORK FRAME 8
SYSTEM VERIFICATION

CONTENTS

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1. GENERAL INFORMATION

1.1 Description

1.11 This section provides a method for testing of Control Frame 1 and Network Frame 8.

1.12 The procedure in this section should be followed in a stepwise manner and may be incorporated into an MOP.

1.13 If additional frames are to be added to this lineup, refer to Handbook 269, Section 740 after completion of the tests in this section.

1.2 Sequence

1.21 All preliminary steps in Section 730 should be completed.

1.22 All operations and tests in Sections 730.01, 730.02, and 730.03 should be completed.

1.3 Records

1.31 The results of the tests of this section shall be recorded on Forms SD-97-1313 and SD-97-1315. For detailed information on filling out test records see Section 6B, Handbook 3.

1.4 References

1.41 The following documents will be useful references during the performance of this section.

Code	Title
IM/OM3H300	Input/Output Message Manual
TLM-3H100	FIOC
TLM-3H101	Scanner Controller
TLM-3H102	Peripheral Pulse Distributor
TLM-3H103	Network Controller
TLM-3H115	Test Vertical Test Circuit
PK 3H301-01	Network Troubleshooting Manual
TXXXX-XX-463	Assignment Record Peripheral Decoder Points
TXXXX-XX-463	Master Scanner Assignments
TXXXX-XX-464	Peripheral Pulse Distributor Assignments
SD/CD-3H110-01	Peripheral Control Circuit
SD/CD-3H120-01	15A Grid

Code	Title (Cont'd)
SD/CD-3H121-01	15B Grid
SD/CD-3H122-01	First and Second Stage Access Circuit
SD/CD-3H130-01	15C Grid
SD/CD-3H131-01	Third Stage Access Circuit
SD/CD-3H200-01	Junctor and Junctor Control Circuit
SD/CD-3H901-01	Network Frame Circuit
SD/CD-3H902-01	Control Frame Circuit
SD-3H912-01	Scanner and PPD Assignment Rules

2. PRELIMINARY STEPS

2.101 Prior to inputting any Recent Change Messages, the installer should perform the operation's outlined in the following paragraphs.

2.102 At Control Frame 1, verify that locations 058-31, 058-32, 058-31, 158-31, 054-38, and 154-38 are equipped with FC206 circuit packs.

NOTE: If Network Frame 8 is the only network frame in this lineup Terminating Resistor Boards (BERGS) must be equipped at locations 058-32-100 and 158-32-100. These resistor boards are part of List 6 on J3H001CD-1 Peripheral Control Unit.

If Network Frame 8 is not the only frame in this line-up, the PPD cable (ZB204) for Network 9 should be connected at this time, they will take the place of the resistor boards.

2.103 Consult office record drawings TXXXX-XX-462 and TXXXX-XX-464 and determine the miscellaneous PPD points that are to be made active.

2.104 In Control Frame 1, verify that the FC206 PPD Matrix Circuit Packs that correspond to the Miscellaneous PPD points to be activated are equipped. See SD-3H912, Figure 1, and Table A.

2.105 Verify that the FC181 Peripheral Decoder Circuit Packs for the Miscellaneous PPD Points are equipped in the correct frames and locations.

2.106 Verify that the cabling to the Miscellaneous Peripheral Decoder packs is connected.

2.107 At Control Frame 1, verify that the FC330 Scanner Interrogate Circuit Packs are equipped in locations 062-2, 162-2, 062-3, 162-3, 062-4, 062-5, and 162-5.

2.108 At Control Frame 1, verify that the FC288 Scanner Interrogate Current Driver Circuit Packs are equipped in locations 062-7 and 162-7.

2.109 At Control Frame 1, verify that a FC135 circuit pack is equipped at locations 058-04 and 158-4.

2.110 At Control Frame 0, mount the four 15c Grids. Do not connect any cables to these grids at this time.

2.111 At Network Frame 8, disconnect the T and R cables to the HCDF. This is done by removing their associated 951A connectors on the front of the 15A Grids.

3. SCAN POINT VERIFICATION

3.1 Recent Change all scan points in Table A to the inactive state.

Example:

```
RC:SP /
TYP CHG /
SP 00 19 11 /
ACT NO!
```

TABLE A

CONTROLLER	DESCRIPTION	SP
10	REQUEST	00 19 11
10	Minor Power	00 19 12
10	Major Power	00 19 13
11	REQUEST	00 21 00
11	Minor Power	00 21 01
11	Major Power	00 21 02
1	FCG CKT	00 23 10
1	FCG CKT	00 23 11
1	Power Cross Ckt	00 24 10
1	FCG WIRE	00 25 08
1	FCG WIRE	00 25 09
1	Power Cross	00 27 07

4. SCAN POINT TABLE REALLOCATION

4.1 With the addition of network frame 8, it will be necessary to reallocate memory to create a scan point number translator for Network Frame 8. Execute the following steps to perform the reallocation.

STEPS

1. Verify that the offline SYC is in Standby.

2. Depress the Lock key on the System Status Panel.

   System responds:

   XX REPT STAT CU X UAV.

3. Input the following message to activate the Administrative Control Program.

   ALW:ADM!

   System responds with an WT-IP and prints:

   XX ADM PROG READY

4. Input the following message to perform the reallocation.

   DIST:SCAN 8!

   System responds IP, and prints:

   M XX DIST COMPL.

5. At the SSP, release the LOCK key.

   System responds:

   XX REPT STAT CU X AVL.

6. Input the following message to switch SYCs.

   DIST:SW!

   System responds with OK, and prints:

   XX REPT SYC X ACT

7. Update the OFFLINE Main Store with the following message:

   DIST:UPD!

   System responds with OK and prints:

   XX ADM PROG ABT

   XX UPD OMAS COMPL.

   The Reallocation is now complete.

5. RECENT CHANGE FOR MAINTENANCE

5.1 Recent Change the office to equip the added equipment for maintenance. Follow the steps in the appropriate paragraphs below:

NOTE: If more information is desired on the Recent Change messages, consult BSP 233-154-135.

5.2 Issue 4A Offices

STEPS:

1. Verify the system is normal, offline system in standby.

2. Recent Change the office to equip Network Frame 8 and Control Frame 1 for maintenance with the following message:

   RC:OFFICE /
   NETS 1 /
   MFEM XXXXXX!

NETS = The highest equipped control frame for maintenance.

MFEM = Each bit 1 - 15 indicates which networks are equipped for access by maintenance. Bit 0 is always set.

3. Use the RC:DP XXXX! message to activate points 1000 through 1015 for Network Frame 8, 1252 through 1254 for Control Frame 1 and the miscellaneous points specified on the office record drawings.

5.3 Issue 3E3 Offices

STEPS:

1. Verify the system is normal, offline system in standby.

2. Recent Change the office to equip Network Frame 8 and Control Frame 1 for maintenance with the following message:

   RC:OFFICE /
   NETM 1 /
   MFEM XXXXXX!

NETM = The highest equipped control frame for maintenance.

MFEM = Each bit 1 - 15 indicates which networks are equipped for access by maintenance. Bit 0 is always set.

3. Use the RC:DP XXXX! message to activate points 1000 through 1015 for Network Frame 8, 1252 through 1254 for Control Frame 1 and the miscellaneous points specified on the office record drawings.

6. FIOC TESTS

6.1 Make SYC 0 active.

6.2 Connect the coaxial serial input/output cables between CU-1 and Control Frame 1, Controller 1. This cable assembly is designated ZC28. Refer to Section 730.01, Table No. 9 for connecting information.

6.3 Switch systems.

> NOTE: Monitor the Maintenance TTY for possible interference with normal traffic and resolve any troubles before proceeding.

6.4 Connect the coaxial serial input/output cable assembly between CUO and Control Frame 1, Controller 0. This cable assembly is designated ZC27. Refer to Section 730.01, Table 8 for connecting information.

6.5 Execute FIOC diagnostics and resolve any problems.

INPUT MESSAGE	RESPONSE
DGN:FIOC 10!	IP

> NOTE: If FIOC diagnostics fail in Phase 4, diagnose the PPD in the unconditional mode. Then retry the FIOC diagnostic.

6.6 Switch systems.

6.7 Execute FIOC diagnostics and resolve any problems.

INPUT MESSAGE	RESPONSE
DGN:FIOC 11!	IP

7. MAJOR CONTROLLER TESTS

7.1 Execute Network Controller Diagnostics on NWC 10 and NWC 11. Both controllers must ATP before proceeding.

7.2 Execute Scanner Controller Diagnostics on SC 10 and SC 11. Both controllers must ATP before proceeding.

7.3 Execute Peripheral Pulse Distributor Controller Diagnostic on PPD 10 and PPD 11. Both controllers must ATP before proceeding.

8. RINGING AND TONE MULTIPLE

8.1 Make ringing and tone plant 0 active.

8.2 At Network Frame 7 connect the following leads from the ZB420 cable. At location 047-06-TSA as shown below.

LEAD	COLOR	TERM
AR10-T1	BL1W	21
R1	BL2W	22
BT120-T1	G1W	01
R1	G2W	02

8.3 Diagnose ringing and tone plant 1.

INPUT MESSAGES	RESPONSE
RMV:RT 1!	IP
	RMV RT 1 000000
RST:RT 1!	IP
	DGN:RT 1 ATP
	RST:RT 1 COMPL

8.4 Switch ringing and tone plants.

INPUT MESSAGE	RESPONSE
SW:RT!	OK
	REPT RT 1ACT

8.5 At Network Frame 7 connect the remaining leads from the ZB420 cable at location 046-06-TSA as shown below.

LEAD	COLOR	TERM
AR10-TO	01W	23
RO	02W	24
BT120-TO	BR1W	03
RO	BR2W	04
TRFR	S1W	53

8.6 Diagnose ringing and tone plant 0.

INPUT MESSAGE	RESPONSE
RMV:RT 0	IP
	RMV RT 0 000000
RST:RT 0	IP
	DGN:RT 0 ATP
	RST:RT 0 COMPL.

9. RECENT CHANGE FOR CALL PROCESSING

9.1 Recent Change the office to equip the added equipment for Call Processing. Follow the steps in the appropriate paragraph below:

9.2 Issue 4A Offices

9.21 A translation overwrite will
      have to be done to equip the
added control frame for call processing and
change the MTI entries LOG_ SCAN_ and BO_
SCAN. Follow the steps below.

1. Dump store at the following
    locations and record the data,
    This data will be used as the old
    data in the overwrite.

    LOG_ SCAN ISS 4A ADDRESS 260565

    BO_ SCAN ISS 4A ADDRESS 260054

2. Input the following overwrite.

ALW:OW!
IN:GENID:S02!
IN:ISSID:ISXXXX! (xxxx = Issue ID)
IN:OW XXXX;TTY!
IN:OWDATA: 0, 0, 260631, 0, 1!
IN:OWDATA: 0, 0, 260565, old data, 10!
IN:OWDATA: 0, 0, 260054, old data, 10!
OP:OW; TTY!
VFY:OW; OLD!
LOD:OW:NEW!
SW:SYC!
LOD:OW:NEW!
STOP:OW!

3. Using THE RC:OFFICE message
    recent network frame 8 for call
    processing.

    RC:OFFICE/
    CFEM XXXXXX!

CFEM = Each bit 1-15 indicates which
       networks are equipped for
       access by call processing.
       Bit 0 is always set.

4. Using the RC:SP input message,
    Recent Change the scan points
    listed in Table A to the Active
    state

5. Zero SEG_STAT ADDRESS 24133 with
    the following message.

    LOD:ST 24133;SGL:0!

6. Update the translation file on
    tape with the following message.

    OP:DATA;CURR!

9.3 Issue 3E3 Offices

STEPS

1. Using the RC:OFFICE message equip
    Network Frame 8 and Control Frame 1
    for Call Processing.

    RC:OFFICE /
    NETP 1 /
    CFEM XXXX!

NETP = Highest Control Frame Equipped
       for Call Processing.

CFEM = Call Processing Frame equipped
       mask. Each Bit 1-15 indicates
       which networks are equipped for
       Call Processing. Bit 0 is
       always set.

2. Using the RC:SP input message
    Recent Change the scan points
    listed in Table A to the active
    state.

Example: RC:SP /
          TYP CHG /
          SP 00 19 11 /
          ACT YES!

9.31 A translation overwrite will
      have to be done to change MT1
entries LOG?SCAN and BO_SCAN. Follow the
steps below.

1. Dump store at the following
    addresses and record the data.
    This data will be used as the
    old data in the overwrite.

    LOG_SCAN   ADDRESS   420615

    BO_SCAN   ADDRESS   420101

2. Input the following overwrite:

    ALW:OW!
    IN:GENID:3E3!
    IN:ISSID:ISX!
    IN:OW XXXX;TTY!
    IN:OWDATA:-,0,420615, old data,10!
    IN:OWDATA:-,0,420101, old data,10!
    OP:OW;TTY!
    VER:OW:OLD!
    LOD:OW:NEW!
    SW:SYC!
    LOD:OW:NEW!
    STOP:OW!

9.32 Zero SEG_STAT address with the
      following message:

      LOD:ST 44577 ; SGL:0!

9.33 Update the translation file on tape with the following message:

OP:DATA;CURR!

10. STAGE III BUILDOUT

10.1 With the addition of Control Frame 1, the third state of switching has to be expanded. This is accomplished by adding 4 15c grids and 4 FC190 circuit packs in Control Frame 0 and the T & R pairs from Control Frame 0 to Control Frame 1. The following paragraphs provide a method to expand the third stage network.

NOTE: Monitor the maintenance TTY during the execution of the following paragraphs for possible interference with normal traffic.

10.11 Insure that the system is normal. OFFLINE CU and peripheral controllers in standby.

10.12 Insert the FC190 third stage level select circuit packs in the following locations in Controller Frame 0.

LOCATION	SWITCH GROUP
166-05	2L
166-06	3L
166-27	2H
166-29	2H

10.13 At the rear of Control Frame 0 connect the Network Controller Gate Cables (designated CA09) and the Node and Pulse Cables (designated CA15) to the new 15c grids.

NOTE: These are local cables and should be tied to existing cable forms.

10.14 Reexecute diagnostics on all the network controllers.

10.15 Connect the test vertical test multiple cable between Control Frame 0 and Control Frame 1. This cable is designated ZC19 and connects at Loc. 144-33-100 at both control frames.

10.16 Execute test vertical diagnostics on TV TC 0 and TV TC 1. Resolve any problems.

11. NET FAB, JUNCTOR AND TEST VERTICAL TESTS

11.1 At the front of the Control Frame 0, connect the third stage junctor T & R multiple cables between the existing 15c grids and those added for the network expansion. These are ED-3H046-01, Groups 1 & 2 cables designated and connected as follows:

DESIGNATION	FROM	TO
CA10	SG0L	SG2L
CA11	SG1L	SG3L
CA12	SG0H	SG2H
CA13	SG1H	SG3H

11.11 The T & R cables (ZC15, ZC16, ZC17, ZC18) should now be connected between Control Frame 0 & 1. This should be done using Handbook Section 730.01, Table 3.

11.12 Alternately execute the tests in paragraphs 8.3 through 8.5 until all troubles have been cleared.

11.13 Execute Network Fabric on Frame 8.

MESSAGE

EX:NW 8!

11.14 Execute Junctor Diagnostics on all junctor in Network Frame 8.

INPUT MESSAGE

DGN: JC 8 XX

XX = 0 through 31

11.15 Execute Test Vertical Test Circuit Diagnostic.

INPUT MESSAGE

DGN:TV TC X

X = 2 and 3

12. REMOTE TEST CONTROL

12.1 At Control Frame 0 connect the ZC21 cable at location 140-42-310.

12.2 Execute junctor diagnostic in the repetitive mode. Use any junctor in Network Frame 8 that has passed diagnostics.

INPUT MESSAGE   RESPONSE

RMV:JC 8 X!   M XX RMV JC 8 X

DGN: JC 8 1,PH 1,TST 102;RPT! PF

12.3 The following system indications
should be observed.

    A. At the system status panel
the execute lamp lights.

    B. The TTY prints;

       XX DGN JC 8 1 ATP

    C. The pass lamp on both con-
trol frames and the system
status panel lights.

12.4 Depress the execute key on
Control Frame 1.

    A. The execute and pass/fail
lamps extinguish.

12.5 Physically remove Junctor 8 XX
circuit pack from Frame 8.
Depress the execute key at Control
Frame 1. Observe the following system
indications.

    A. At the SSP the execute and
fail lamps light.

    B. At both Control Frames the
fail lamp lights.

    C. The TTY prints:

       XX DGN JC 8 X STF

       01-0102-05 0 0000 0000 0000 0001

12.6 Replace the circuit pack and
stop the diagnostics.

    INPUT MESSAGE   RESPONSE

    STOP:RPT!   OK

13. FUSE ALARM AND TEL LINE TESTS

13.01 At Network Frame 7 connect the
Tel Line Cable ZB225 at
location 080-43-300.

13.02 Verify proper operation of the
Tel Line between Network Frame
7 and 8 with a headset.

13.03 At Control Frame 0 connect the
ZC20 cable at location
140-42-110.

13.04 Verify proper operation of the
Tel Line between Control Frame
0 and Control Frame 1 with a headset.

13.05 At the fuse panel in Control
Frame 1 insert a blown fuse
into position TRR0. The following indi-
cations should be received from the system.

    A. Fuse alarm lamp on the fuse
panel lights.

    B. Office minor audible sounds.

    C. At the SSP the minor and fuse
alarm LEDs light.

    D. The TTY prints;

       REPT MISCA 20-12 000000 OFN

13.06 Replace the fuse and retire the
alarm. Observe the following:

    A. Minor and fuse LEDs extinguish.

    B. TTY prints;

       REPT MISCA 20-12 NORM.

13.07 At the fuse panel insert a
blown fuse into position TRR1.
System indications should be the same as in
paragraph 1.5.

13.08 Replace the fuse and retire the
alarm.

13.09 At Network Frame 7 connect the
ZB226 cable at location
080-44-300.

13.10 At the fuse panel in Network
Frame 8 insert a blown fuse
into position 0A2. The following
indications should be received from the
system.

    A. Fuse alarm lamp on the fuse
panel lights.

    B. The FAA relay operates.

    C. Office minor audible sounds.

    D. At the SSP the minor and fuse
LEDs light.

    E. The TTY prints;

       REPT MISCA 20-13 000000 OFN

13.11 Replace the fuse and retire the
alarm. Observe the following:

    A. Minor and fuse LEDs extinguish.

    B. TTY prints:

       REPT MISCA 20-13 000000 NORM.

13.12 At the fuse panel in Network
Frame 8 insert a blown fuse into
position SRRO. The following indication
should be received from the system.

    A. Fuse alarm lamp on the fuse
panel lights.

    B. The FAB relay operates.

    C. Office Minor audible sounds.

    D. At the SSP the minor and fuse
LEDs light.

    E. The TTY prints:

       REPT MISCA 20-12 000000 OFN

13.13 Replace the fuse and retire the
alarm. Observe the following:

    A. Minor and fuse LEDs
extinguish.

    B. TTY prints:

       REPT MISCA 20-12 000000 NORM.

14. FINAL TESTS

14.1 At Network Frame 8, reconnect
the T and R cables.

14.2 Repeat all Peripheral Diag-
nostics and Network Fabric from
both systems. All tests must pass.

Manager, Development Engineering -
2/2B, 3, 4, and 5 ESS

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