

NINE MILE POINT NUCLEAR STATION UNIT #2

OPERATING PROCEDURE

PROCEDURE NO. N2-OP-83

PRIMARY CONTAINMENT ISOLATION SYSTEM

DATE AND INITIALS

<u>APPROVALS</u>	<u>SIGNATURES</u>	<u>REVISION 0</u>	<u>REVISION 1</u>	<u>REVISION 2</u>
Superintendent Operations NMP Unit #2 M.D. Jones	<u>M.D. Jones</u>	8/27/86 <u>EM</u>	1/28/87 <u>MA</u>	
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FOR INFORMATION ONLY

Summary of Pages (Continued on Cover Sheet #2)

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<u>NIAGARA MOHAWK POWER CORPORATION</u>	

THIS PROCEDURE NOT TO BE USED
AFTER December 1992
SUBJECT TO PERIODIC REVIEW.

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NINE MILE POINT NUCLEAR STATION UNIT #2

OPERATING PROCEDURE

PROCEDURE NO. N2-OP-83

PRIMARY CONTAINMENT ISOLATION SYSTEM

Cover Sheet Continuation

Summary of Pages

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*Changes per Section 11.5, AP-2.0


Signed

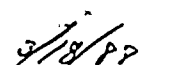

Date

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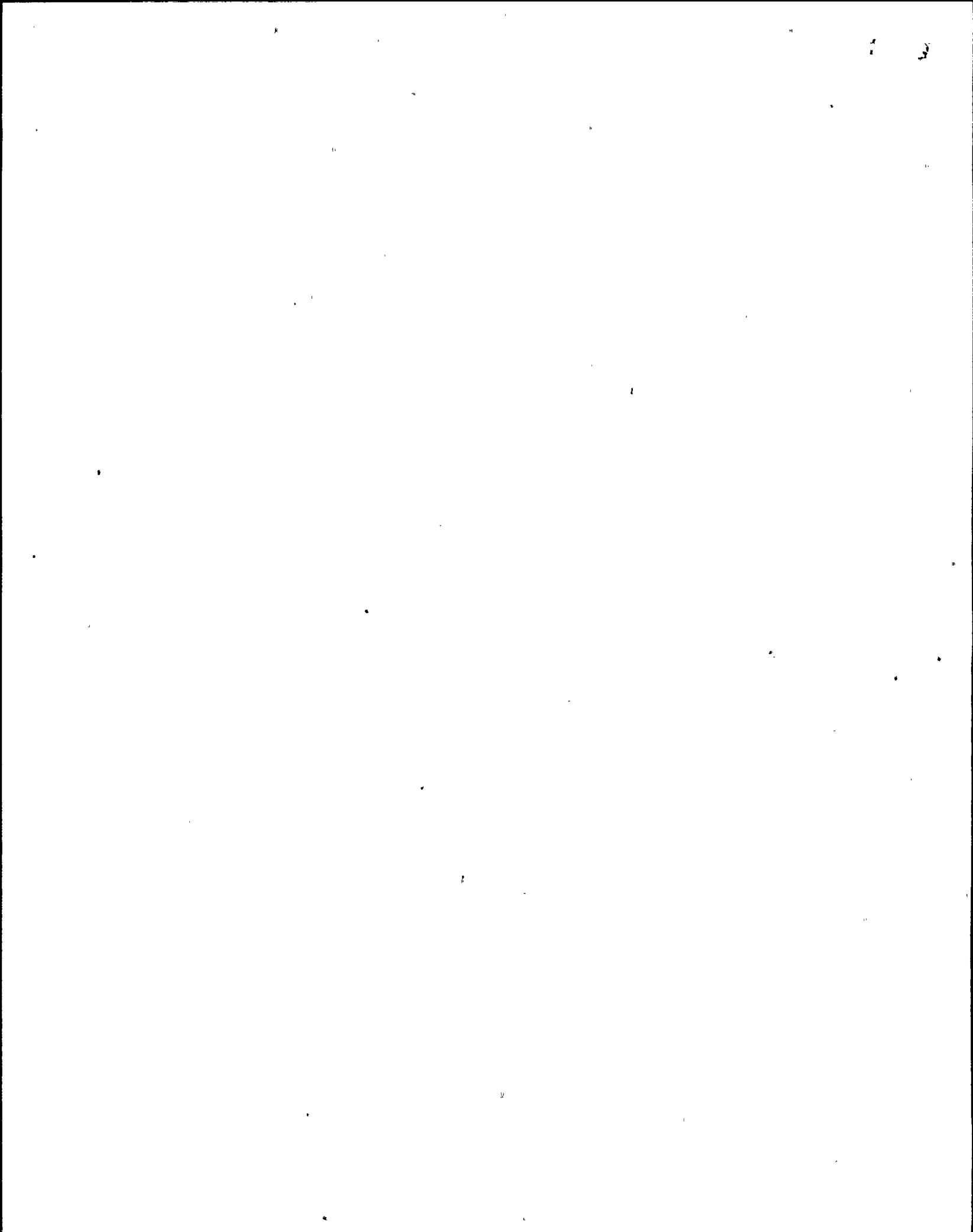
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REFERENCES

- 1.0 FSAR Sect. 6.2.4, 7.3.1.1.2, and 14.2.12 - February 86
- 2.0 Flow Diagrams
- FSK 27-19.0 Nuclear Boiler System Instrumentation
 - FSK 27-19A
 - FSK 27-19B
 - FSK 27-19C
- 3.0 Logic Diagrams
- LSK 27-19A Containment Isolation
 - LSK 27-19B
 - LSK 27-19C
 - LSK 27-19D
 - LSK 27-19E
 - LSK 27-19F
- 4.0 Electrical Elementary Diagrams
- ESK 7ISC01 Containment Isolation Logic
 - ESK 7ISC02 High Radiation Isolation Logic
 - ESK 11ISC01 Containment Isolation Logic
 - ESK 11ISC02
 - ESK 11ISC03
 - ESK 11ISC04
 - ESK 11ISC05
 - ESK 11ISC06
 - ESK 7SCI01 thru Off Normal Status System
 - 7SCI50
- 5.0 G.E. Drawings
- 807E152TY, Nuclear Steam Supply Shutoff System
 - 807E154TY, Leak Detection System
 - 807E165TY, Traversing Incore Probe System
 - 807E166TY, Reactor Protection System
 - 807E168TY, Process Radiation Monitor System
 - 807E170TY, Reactor Heat Removal System
 - 807E175TY, Reactor Water Cleanup System
- 6.0 2538E 1100 MSIV Elementary Drawing
2538E 1101 MSIV Elementary Drawing
A1234327 MSIV Logic Diagrams
- 7.0 GEK 83328A Nuclear Steam Supply Shutoff System, 5/85

TCN-



PRIMARY CONTAINMENT ISOLATION SYSTEM

A. TECHNICAL SPECIFICATIONS

- 1.0 Section 3/4.3.2, Isolation Actuation Instrumentation
- 2.0 Section 3/4.4.7, Main Steam Line Isolation Valves
- 3.0 Section 3/4.6.3, Primary Containment Isolation Valves

B. SYSTEM DESCRIPTION

- 1.0 Summary: The Primary Containment Isolation System (PCIS) is designed to provide an automatic isolation of the process lines penetrating the Primary containment. The purpose of the PCIS is to limit the release of radioactive materials to less than that specified by regulatory requirements. The PCIS consists of sensors, the control logic for the automatic valve isolation, relays, and switches that initiate valve closure. Relays and switches for the PCIS are prefixed with the designator B22H-.

The isolation valves operated by PCIS are divided into twelve groups:

- Group 1 is the MSIVs and Steam Line Drains;
- Group 2 is the Recirculation System Sample Valves;
- Group 3 is the TIP Isolation valves and N2 Purge Valve;
- Group 4 is the RHR Sample and Radioactive Waste Valves;
- Group 5 is the RHR Shutdown Cooling Valves and Head Spray;
- Group 6 is the RWCU Outboard Isolation Valve;
- Group 7 is the RWCU Inboard Isolation Valve;
- Group 8 is all of the Containment Isolation Valves not assigned to another group (Reactor Building Closed Loop Cooling Water, Containment Atmospheric Monitor, High Pressure Core Spray (test return), Drywell Drains, Drywell Fire Protection, Hydrogen Recombiners, ADS air lines, Instrument Air, Containment Leak Detection, and the Reactor Recirculation HPU lines).
Group 8 also supplies LOCA signals to the Service Water Pump sequencing logic, service water isolation valves for the Turbine Building and Reactor Building, Standby and Emergency AC Distribution Logics, and the Standby Gas Treatment System.
- Group 9 is the Containment Purge Valves;
- Group 10 is the RCIC Steam Supply Valves;
- Group 11 is the RCIC Vacuum Breaker Isolation Valves;
- Group 12 is the Remote Manually Operated Containment Isolation Valves.

2.0

Logic: PCIS is designed to automatically isolate two valves in each process line; an inboard and an outboard isolation valve. The PCIS is arranged into two divisions (I and II), with four logic channels (A, B, C, and D). In General, PCIS is arranged so that all of the outboard valves are controlled by Division I logic (consisting of logic channels A and D) and all of the inboard valves are controlled by Division II logic (consisting of logic channels B and C). The exceptions to this arrangement are: the MSIVs, the H2 Recombiners and the Containment Monitor System. Some process lines have a check valve and the inboard isolation valve.

The MSIVs (Group 1) use a one-out-of-two-taken -twice logic. Anytime a MSIV closure signal is generated, both inboard and outboard MSIVs close. This logic is used only for the MSIVs. Main Steam Line drains use a two out of two taken once logic (B & C for inboard, A & D for outboard). *

For the H2 Recombiners and the Containment Monitor System, the "A" Train is part of Division I and the "B" Train is Division II.

Each division of logic is independent, so that no single failure can prevent the required automatic or manual operation of at least one valve of an inboard/outboard pair of isolation valves.

In general, all systems except for the MSIVs and GTS radiation monitor, require a minimum of two trip signals to cause a valve closure. Trips caused by high temperature signals from the Leak Detection System logic require only a single trip signal.

The logic circuitry maintains a trip condition such that once an isolation is initiated, valves fully close even if the logic initiating signal(s) clear. This logic circuitry causes MOVs to continue to close after power is restored. The isolation signal is sealed in, until the MSIV & DRAIN V MANUAL ISOL RESET pushbuttons on panel P602 (S32 and S33) are depressed.

All PCIS valves, except for nontestable check valves, are capable of remote manual operation from the control room. The automatic closure signals will override any manual control signals and close the valves. The valves receive the closure signal even if normally closed during reactor operation. The valves associated with Containment Monitoring, Containment Purge, Hydrogen Recombiner, and ADS air supply have LOCA Override switches which allow the valves to be opened following a LOCA when the LOCA OVERRIDE switch is placed in OVERRIDE.

3.0

Logic Test Circuits: Logic test switches are located on panels P609 and P611. These switches provide a means for testing the logic circuits for all of the isolation valves except for the MSIVs. These test switches generate an isolation signal in their respective logic channels. Actuating both test switches in a Division will cause the control relays to de-energize and close the valves in the affected group. See Enclosure II for a list of these switches and the valve groups affected. Indicator lights on panels P622 and P623 will energize to show that the affected relays have de-energized.



4.0 Manual Isolation: There are four manual isolation switches, MSIV & DRAIN V MANUAL ISOL (S25A-D) on panel P602. Each switch is associated with one channel of the logic. Actuating any one switch causes a trip of the associated logic channel.

The collar on each switch must be rotated clockwise in order to arm the manual isolation switch. Actuation of any one switch will result in a half isolation signal only, and does not shut any isolation valves. Actuation of S25A and S25C will deenergize the B solenoids for the inboard MSIV's, and the A solenoids for the outboard MSIV's, generating a half isolation signal, but does not shut any isolation valves. Actuation of S25B and S25D will deenergize the A solenoids for the inboard MSIV's, and the B solenoids for the outboard MSIV's, generating a half isolation signal, but does not shut any isolation valves.

Actuation of S25A and S25B or S25C and S25D will shut ONLY the eight main steam isolation valves. *

Actuation of S25A and S25D will isolate all eight MSIV's and the outboard main steam line drains, and will isolate the outboard isolation valves in groups 2, 4, 5, 6, 8 and 9.

Actuation of S25B and S25C will isolate all eight MSIV's and the inboard main steam line drain isolation valve, and will isolate the inboard isolation valves in groups 2, 4, 5, 7, 8 and 9, and will isolate group 3.

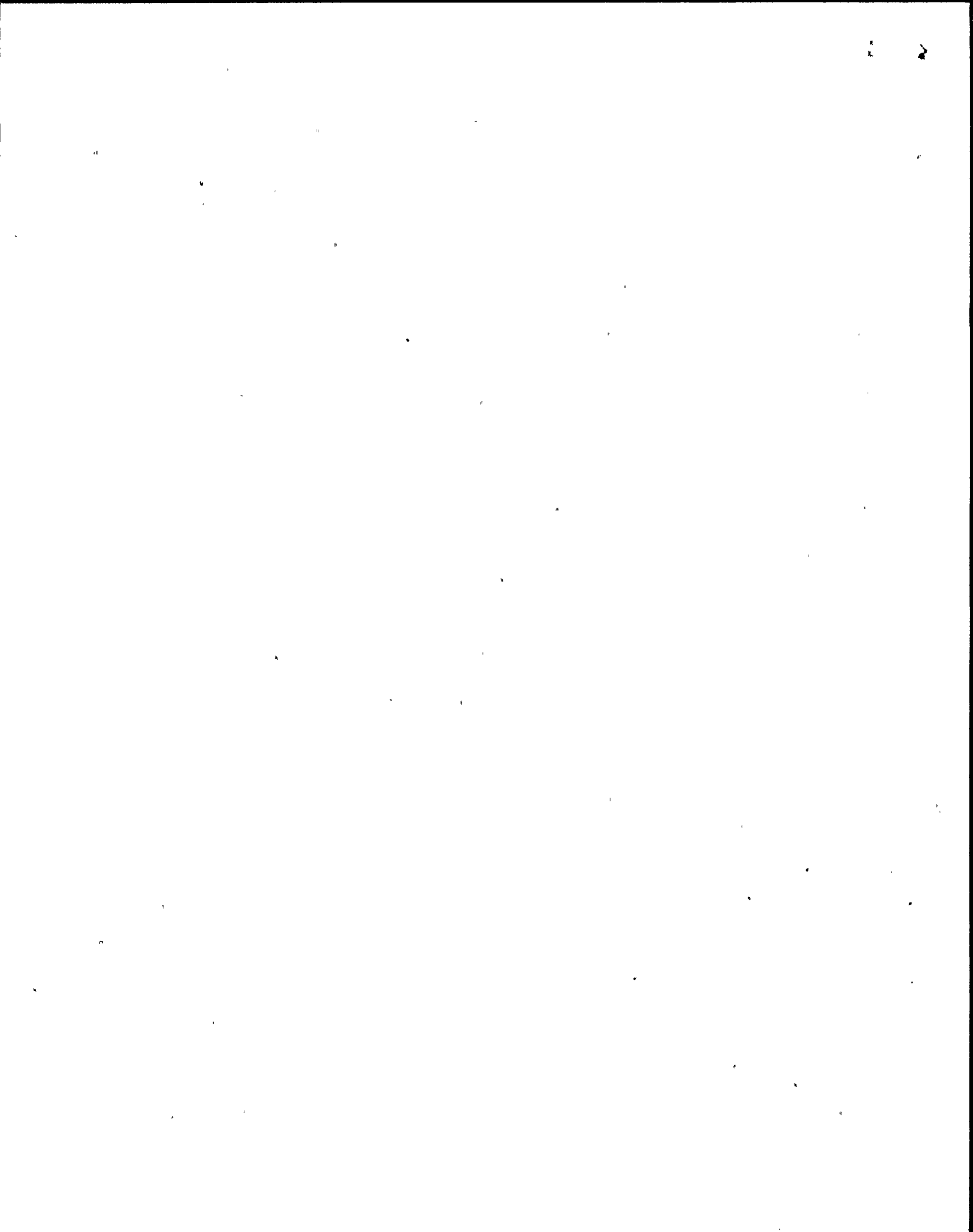
To ensure full isolation of groups 1 through 9, all four switches, S25A, S25B, S25C, and S25D should be actuated.

5.0 Isolation of Specific Systems: Manual isolation of selected systems is also provided by separate switches on panel P602. Although these isolations are not considered part of the PCIS system, they allow a rapid means of isolating specific systems from the primary containment. The isolation switches are armed pushbuttons. When the switch collar is rotated clockwise, it arms the trip circuit (conversely rotating the collar counter-clockwise arms the reset circuit).

The systems are arranged by divisions. Division 1 is the outboard isolation valves, and Division 2 is the inboard isolation valves. The exceptions to this arrangement are the D.B.A. hydrogen recombiner system and the containment monitoring system. These systems are grouped by trains, with the "A" train being Division 1, and the "B" train Division 2. The ADS instrument air lines only have outboard isolation valves. Each of the two lines are divided between Division 1 and Division 2.

Amber lights are provided just above the manual isolation switches to inform the operator that the individual logic channel isolation signal has been initiated and is sealed in.

See enclosure II for specific valves and switches.



6.0 Post Accident Monitoring System (PAMS): An additional function of the PCIS system is the initiation of the Post Accident Monitoring Recorders to fast speed. The recorders monitor the Reactor Water Level and Reactor Wide Range Pressure instrumentation, and shift to fast speed on a Lo-Lo Reactor water level or High Reactor pressure.

7.0 Power Supplies: Power for operation of the two isolation valves in a process line is fed by separate routes from different sources. Thus, a single power failure or a single mechanical failure does not prevent a closure of at least one valve. A loss of all electrical power (or loss of station air pressure for AOVs) results in closure of the valves.

Channels A and C are located in panel P609 and are powered from RPS "A". Channels B and D are located in panel P611 and are powered from RPS "B".

The outboard valve logic is located in panel P623 and is energized from 2VBS Pnl. A103. The inboard valve logic is located in panel P622 and is energized from 2VBS Pnl. B103.

8.0 Off Normal Status Board: The Off Normal Status Board is located on the vertical section of panel P602. This display is a mimic of the containment, showing the respective isolation valves on process lines that penetrate the containment and indicates when a PCIS valve is in an abnormal position. The light for a valve will be on when the valve is not in its normal position.

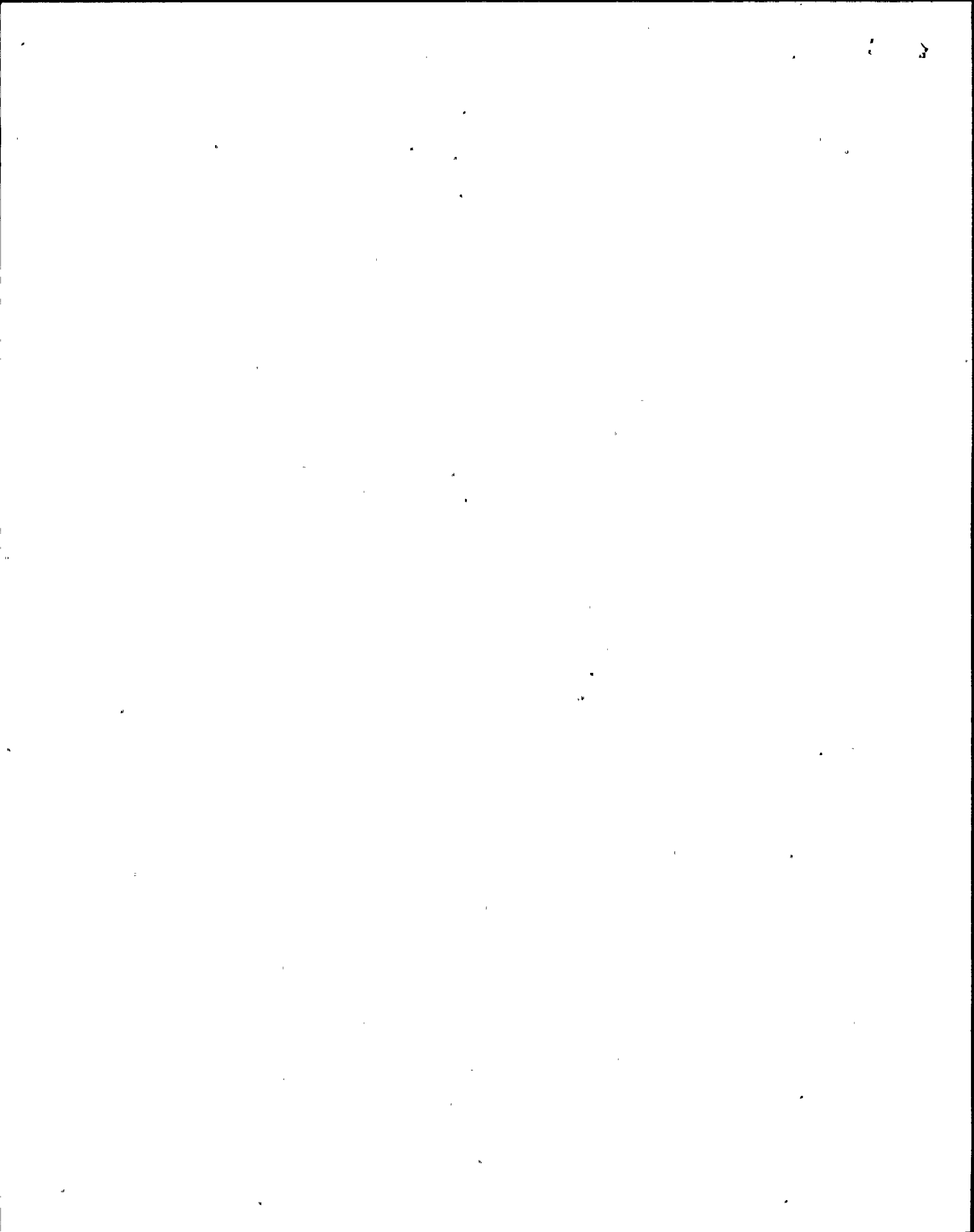
Below the Off Normal Status Board are the position indication lights for the excess flow check valves. These lights indicate when an excess flow check valve on an instrument line penetrating the containment has shut due to excessive flow through the valve. The valves shut when flow exceeds 5 gpm and will reset at less than 1 gpm.

C. OPERATING REQUIREMENTS

1.0 Prerequisites

The following systems will be lined up in accordance with the applicable operating procedure as required to support given plant conditions:

- a. Main Steam (N2-OP-1)
- b. Condensate and Feedwater (N2-OP-3)
- c. Reactor Building Closed Loop Cooling (N2-OP-13)
- d. Instrument and Service Air (N2-OP-19)
- e. Residual Heat Removal System (N2-OP-31)
- f. Low Pressure Core Spray (N2-OP-32)



- g. High Pressure Core Spray (N2-OP-33)
- h. Reactor Core Isolation Cooling (N2-OP-35)
- i. Reactor Water Clean-up (N2-OP-37)
- j. Fire Protection Water (N2-OP-43)
- k. Drywell Cooling (N2-OP-60)
- l. Primary Containment Vent, Purge and Nitrogen (N2-OP-61A) | 1
- m. Reactor Building Drains (N2-OP-63)
- n. Drywell Equipment and Floor Drains (N2-OP-67)
- o. 13.8Kv/4160v/600v A.C. Distribution (N2-OP-71) | 1
- p. Standby and Emergency A.C. Distribution (N2-OP-72)
- q. Emergency DC Distribution (N2-OP-74A)
- r. HPCS 125V DC Distribution (N2-OP-74B) | 1
- s. Radiation Monitoring (N2-OP-79)
- t. Containment Leakage Monitoring (N2-OP-81)
- u. Containment Atmosphere Monitoring (N2-OP-82)
- v. Traversing Incore Probe (N2-OP-94)
- w. Reactor Protection System (N2-OP-97)
- x. Standby Diesel Generators (N2-OP-100A)
- y. HPCS Diesel Generator (N2-OP-100B)
- z. DBA Hydrogen Recombiner (N2-OP-62)
- aa. Standby Gas Treatment (N2-OP-61B)

1.1 Operational Requirements

In general, the PCIS is required to be operational any time primary containment integrity is required (i.e. Operation Conditions 1, 2, & 3). Refer to Tech Specs for specific PCIS operability requirements. | 1

D. PRECAUTIONS/LIMITATIONS

- 1.0 Sample the containment atmosphere prior to unisolating the containment, if an isolation has occurred due to an actual Lo-Lo reactor level or High drywell pressure, unless directed to do otherwise by the Emergency Operating Procedures.
- 2.0 If a system isolation has occurred, the problem must be determined and corrected prior to resetting or bypassing the isolation signal, unless directed to do otherwise by the Emergency Operating Procedures.

E. STARTUP PROCEDURE

- 1.0 PCIS System Startup
- 1.1 Verify the required systems listed in section C are in operation, as required to support plant conditions.
- 1.2 Complete the system electrical lineup per Table II.
- 1.3 Place the COND LOW VAC BYPASS switches (B22-S24A-D) on panels P609 and P611 in BYPASS, if required for plant conditions.
- 1.4 Reset the Main Steam Line High Radiation downscale trips on panels P606 and P633.
- 1.5 Verify the MSIV & DRAIN V MANUAL ISOL pushbuttons on Panel P602 are in the DISARM positions.
- 1.6 Press the MSIV & DRAIN V MANUAL ISOL RESET pushbuttons on panel P602.
- 1.7 Press the PAMS recorder high speed RESET pushbuttons on panel P601, as required.
- 1.8 Reset any gross failure alarms on the PCIS Rosemont trip units on panels P609 and P611.
- 1.9 Lineup the PCIS isolation valves for individual systems in accordance with their operating procedures for the given plant conditions.
- 1.10 Verify there are no PCIS or RRCS trips, and that all applicable annunciator and status lights are normal for the given plant conditions.
- 1.11 Verify all required surveillance tests have been performed.

F. NORMAL OPERATION

Operation of the PCIS system is normally automatic. It is energized from the RPS/VBS power supply and all trips are normally reset and the trip relays energized. The system will respond to any isolation signal, deenergizing the trip relays and if the system logic is satisfied, will cause the respective valves to isolate.

CAUTION

If a system isolation has occurred, the problem must be determined and corrected prior to resetting or bypassing the isolation signal, unless directed to do otherwise by the Emergency Operating Procedures.

Sample the containment atmosphere prior to unisolating the containment, if an isolation has occurred due to an actual Lo-Lo reactor level or High drywell pressure, unless directed to do otherwise, by the Emergency Operating Procedures.

Any isolation may be reset by depressing the MSIV & DRAIN V MANUAL ISOL RESET pushbuttons on panel P602, once the isolation signal has cleared.

G. SHUTDOWN PROCEDURE

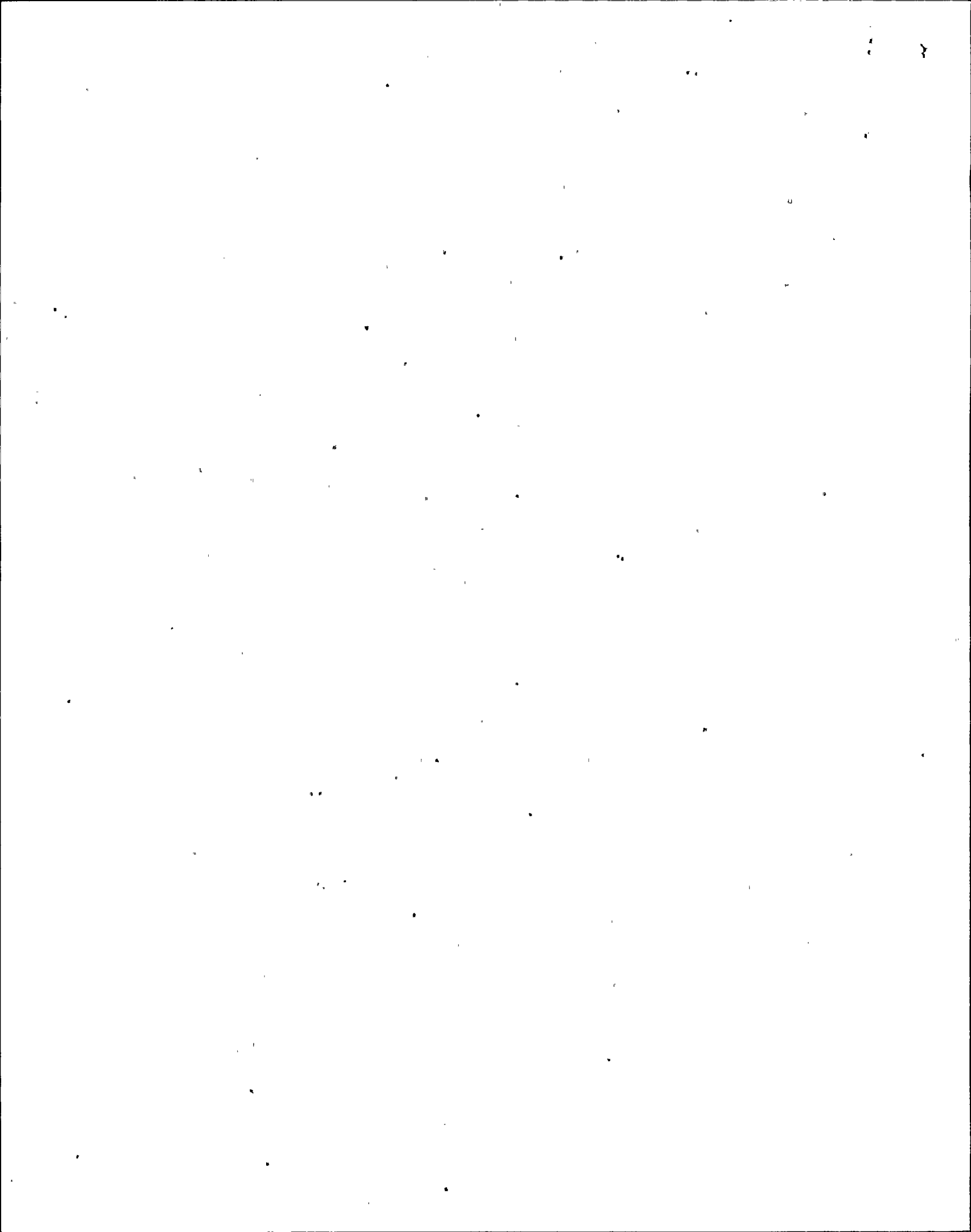
Once the PCIS is placed in operation, it is not normally shutdown. If maintenance is required, AND IF permitted by Tech Specs, portions of the system may be taken out of service. However, ensure that the resulting system isolations will not impact plant operation before deenergizing any portion of the system. Refer to Table II for the list of power supplies for the PCIS logic.

NOTE: De-energizing the PCIS logic will initiate an isolation of the systems controlled by that logic. Therefore, the system will be placed in a "safe" configuration.

H. OFF NORMAL PROCEDURES

1.0 Manual PCIS Isolation: All of the system valves controlled by PCIS may be shut from panel P602 using the following procedure:

- a. Arm and depress all four MSIV & DRAIN V MANUAL ISOL switches on panel P602.
- b. Verify that all automatic PCIS valves shut. (Refer to Enclosures 1 and 2 for a list of all valves by group.)
- c. Refer to the appropriate operating procedures for recovering from a scram (if applicable), and for securing individual systems.



2.0 Manual Isolation of a Selected System

NOTE: The Division 1 switches control the outboard isolation valves, and Division 2 is the inboard isolation valves (except for Hydrogen Recombiners and Containment Monitoring - for these systems, the "A" train is Division 1 and the "B" train is Division 2). The ADS instrument air lines only have outboard isolation valves. Refer to Enclosure #2 for a list of valves controlled by each switch.

- a. For the system(s) to be isolated, rotate the collar on the respective pushbutton to PRESS TO ISOLATE.
- b. Press the pushbutton and verify that the amber light above the pushbutton is illuminated.
- c. Verify that the appropriate system valves shut.
- d. Refer to the system's operating procedure for securing the system.

3.0 Resetting a Manual Isolation of a Selected System

- a. For the system(s) to be unisolated, rotate the collar on the respective pushbutton to PRESS TO RESET.
- b. Press the pushbutton and verify that the amber light above the pushbutton goes out.
- c. Refer to the system's operating procedure for restoring the system to operation.

4.0 Isolation/Initiation Verification

NOTE: Enclosure 4 is a setpoint oriented listing of System Isolations/Initiations. It is intended to be used when directed by EOPs, or when a setpoint is reached and it is necessary to verify that all requisite Functions/Actions occurred.

- a. Obtain the appropriate Enclosure 4 sheet(s) for setpoints reached.
- b. Verify actions listed on the sheet(s) have occurred.

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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS

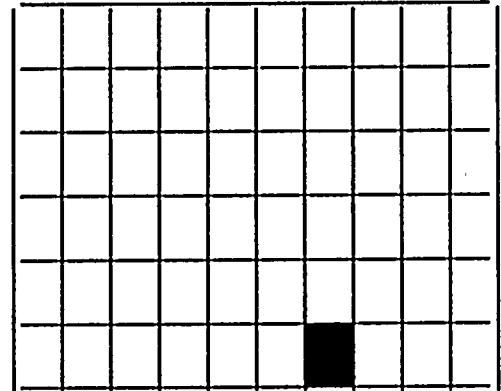
1.0 601157 Reactor Building General Areas Temperature High

Refresh: Yes

TCN-10

REACTOR BLDG
GENERAL AREAS
TEMP
HIGH

601157



601157

1.1	<u>Computer Point</u>	<u>Alarm Number</u>	<u>Trip Unit</u>	<u>Temperature Element (GE)</u>	<u>Temperature Element (SWEC)</u>
	2LDSTC13	0540	E31-N619A	E31-N043A	ICS*TE17A
	2LDSTC14	0541	E31-N619B	E31-N043B	ICS*TE17B
	2LDSTC17	0544	E31-N620A	E31-N044A	ICS*TE18A
	2LDSTC18	0545	E31-N620B	E31-N044B	ICS*TE18B
	2LDSTC21	0548	E31-N621A	E31-N045A	WCS*TE73A
	2LDSTC22	0549	E31-N621B	E31-N045B	WCS*TE73B
	2LDSTC25	0552	E31-N622A	E31-N046A	WCS*TE75A
	2LDSTC26	0553	E31-N622B	E31-N046B	WCS*TE75B
	2LDSTC82	0744	E31-N637→641A	E31-N101→105A	RHS*TE81→85A
	2LDSTC84	0904	E31-N637→641B	E31-N101→105B	RHS*TE81→85B

1.2 Automatic Response

- a. RCIC Division I (II) isolation signal
- b. RHR Division I (II) outboard valves isolation signal
- c. RHR Division I (II) shutdown cooling MOV isolation signal

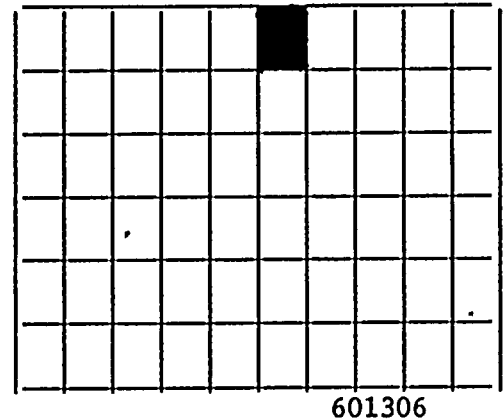
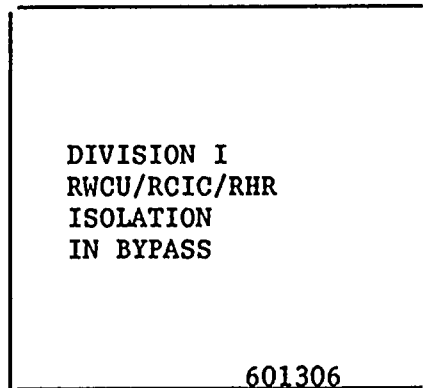
1.3 Corrective Action

- a. Verify automatic response. Respond to Divisional RHR/RCIC isolations per appropriate procedures.
- b. If possible, locally verify high RHR equipment area temperatures.
- c. Determine and correct cause of alarm. Possible causes include - loss of HVAC/Service Water Cooling, pipe leak or high ambient temperatures.
- d. Refer to N2-EOP-SC.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

2.0 601306 Division I RWCU/RCIC/RHR Isolation In Bypass

Refresh: Yes



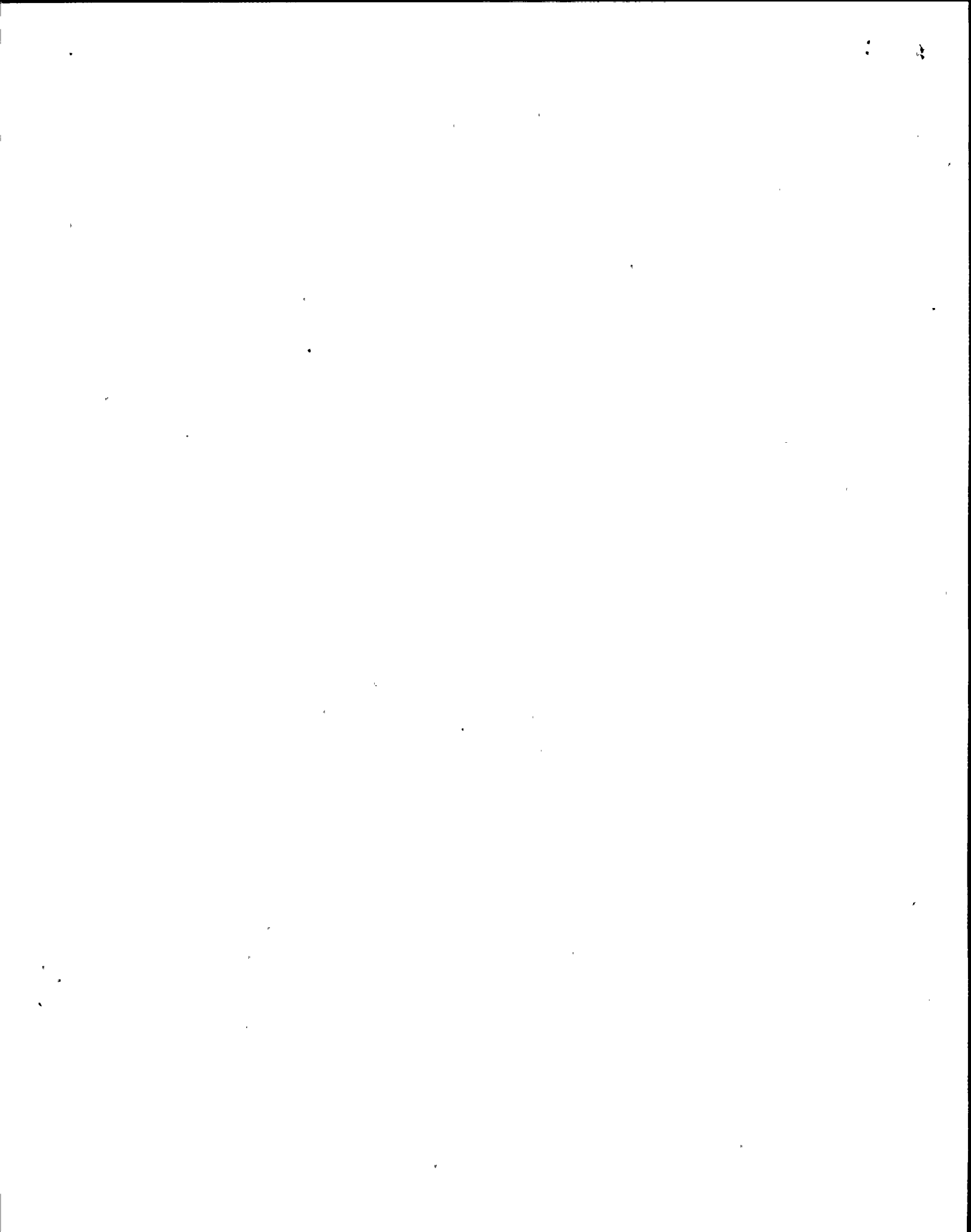
2.1	<u>Computer Point</u>	<u>Computer Printout</u>	<u>Source</u>	
	a. LDSBC01	D1 RWCU ISOL BYP SW POS	RWCU Isolation Bypass keylock switch in "BYPASS" at P632	*5
	b. LDSBC02	D1 RCIC ISOL BYP SW POS	RCIC Isolation Bypass keylock switch in "BYPASS" at P632	*5
	c. LDSBC03	D1 RHR/RCIC ISO BYP SW	RHR/RCIC Isolation Bypass keylock switch in "BYPASS" at P632	*5

2.2 Automatic Response

NONE

2.3 Corrective Action

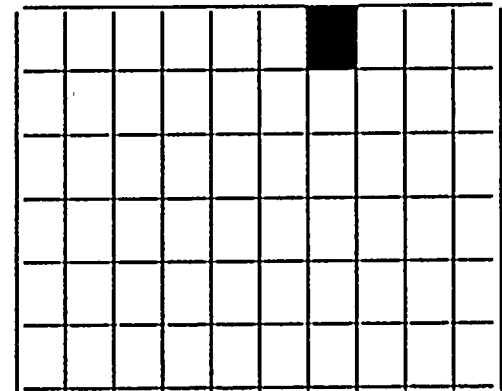
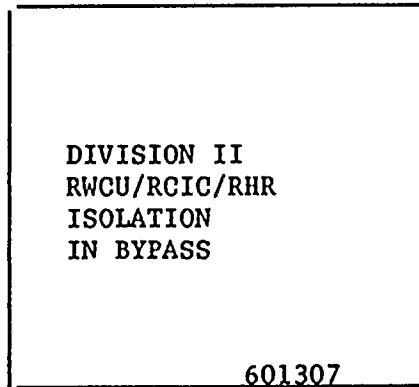
- a. Restore associated Isolation Bypass keylock switch to "NORMAL", as required, at P632.
- b. Refer to Technical Specifications.



I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

3.0 601307 Division II RWCU/RCIC/RHR Isolation In Bypass

Reflash: Yes



*6

3.1	<u>Computer Point</u>	<u>Computer Printout</u>	<u>Source</u>
a.	LDSBC04	D2 RWCU ISOL BYP SW POS	RWCU Isolation Bypass keylock switch in "BYPASS" at P642
b.	LDSBC05	D2 RCIC ISOL BYP SW POS	RCIC Isolation Bypass keylock switch in "BYPASS" at P642
c.	LDSBC06	D2 RHR/RCIC ISOL BYP SW	RHR/RCIC Isolation Bypass keylock switch in "BYPASS" at P642

3.2 Automatic Response

NONE

3.3 Corrective Action

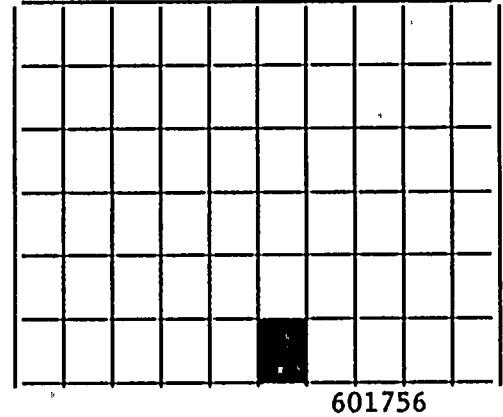
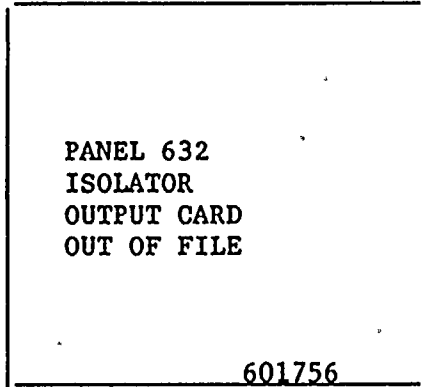
- a. Restore associated Isolation Bypass keylock switch to "NORMAL", as required, at P642.
- b. Refer to Technical Specifications.



I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

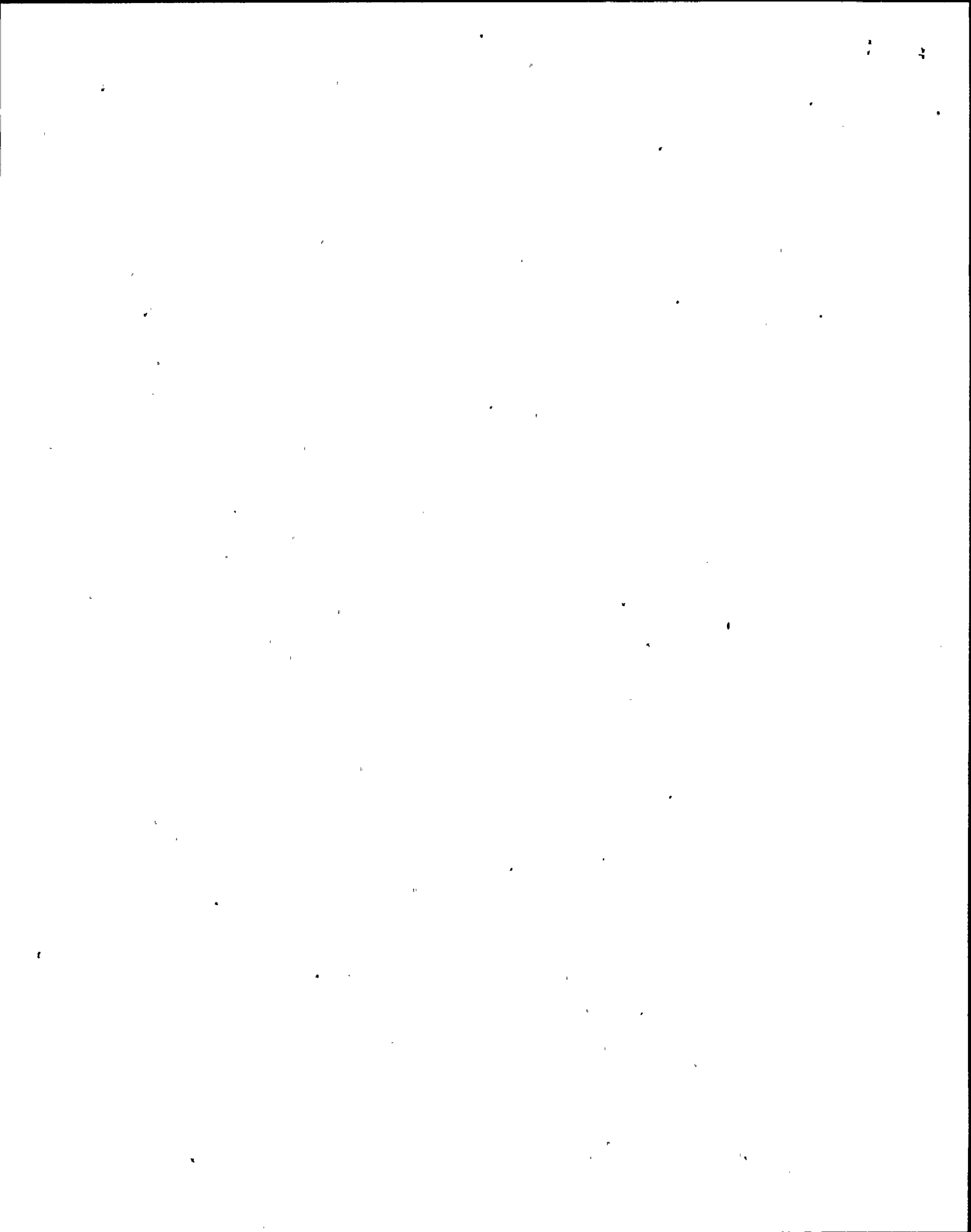
4.0 601756 Panel 632 Isolator Output Card Out of File

Reflash: No



- | 4.1 | <u>Computer Point</u> | <u>Computer Printout</u> | <u>Source</u> |
|-----|---------------------------------------|-----------------------------|---|
| | a. LDSBC09 | PNL632 ISO OUTPUT
CD OOF | One or more isolator
output cards out
of file at P632 |
| 4.2 | <u>Automatic Response</u> | | |
| | NONE | | |
| 4.3 | <u>Corrective Action</u> | | |
| | a. Restore cards to file at P632. | | |
| | b. Notify I&C. | | |
| | c. Refer to Technical Specifications. | | |

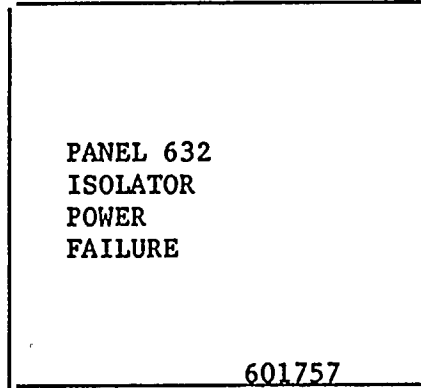
*5



I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

5.0 601757 Panel 632 Isolator Power Failure

Refresh: No



5.1	<u>Computer Point</u>	<u>Computer Printout</u>	<u>Source</u>
	a. LDSBC11	PNL632 ISOL PWR FAIL	One or more isolator cards sensing loss of power at P632

|*5

5.2 Automatic Response

NONE

5.3 Corrective Action

- a. Verify 2RPSA01 power supply lineup at 2VBS*PNLA103, circuit 14.
- b. Verify fuses 2RPSA01-F1 and F29 installed at P632.
- c. Notify I&C.
- d. Refer to Technical Specifications

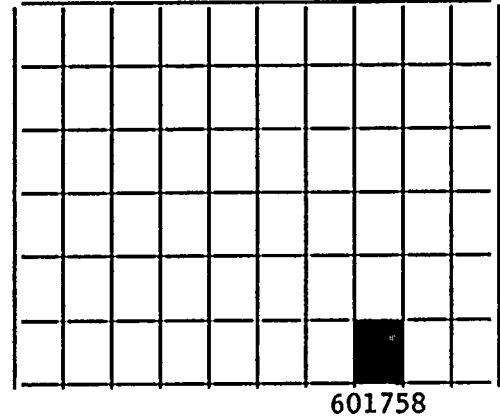
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

6.0 601758 Panel 642 Isolator Output Card Out of File

Refresh: No

PANEL 642
ISOLATOR
OUTPUT CARD
OUT OF FILE

601758

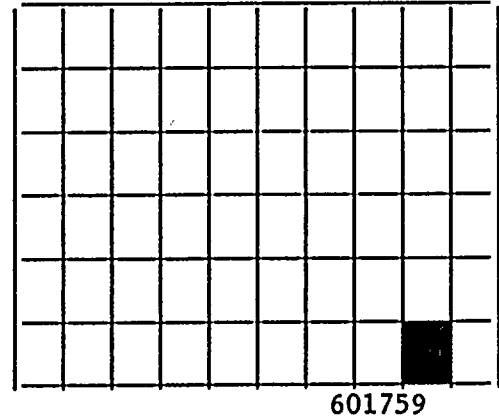
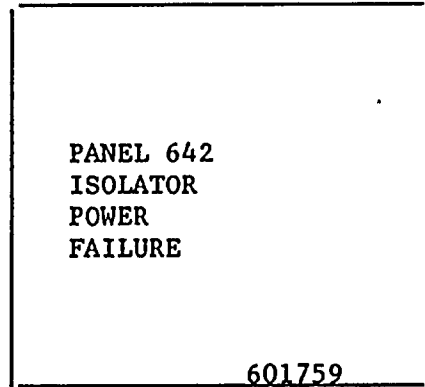


- | 6.1 | <u>Computer Point</u> | <u>Computer Printout</u> | <u>Source</u> | |
|-----|--------------------------------------|------------------------------|---|----|
| a. | LDSBC10 | PNL613 ISOL OUTPUT
CD OOF | One or more isolator
output cards out of
file at P642 | *5 |
| 6.2 | <u>Automatic Response</u> | | | |
| | NONE | | | |
| 6.3 | <u>Corrective Action</u> | | | |
| | a. Restore cards to file at P642. | | | |
| | b. Notify I&C. | | | |
| | c. Refer to Technical Specifications | | | |

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

7.0 601759 Panel 642 Isolator Power Failure

Refresh: No



7.1	<u>Computer Point</u>	<u>Computer Printout</u>	<u>Source</u>
	a. LDSBC12	PNL642 ISOL PWR FAIL	One or more isolator cards sensing loss of power at P642

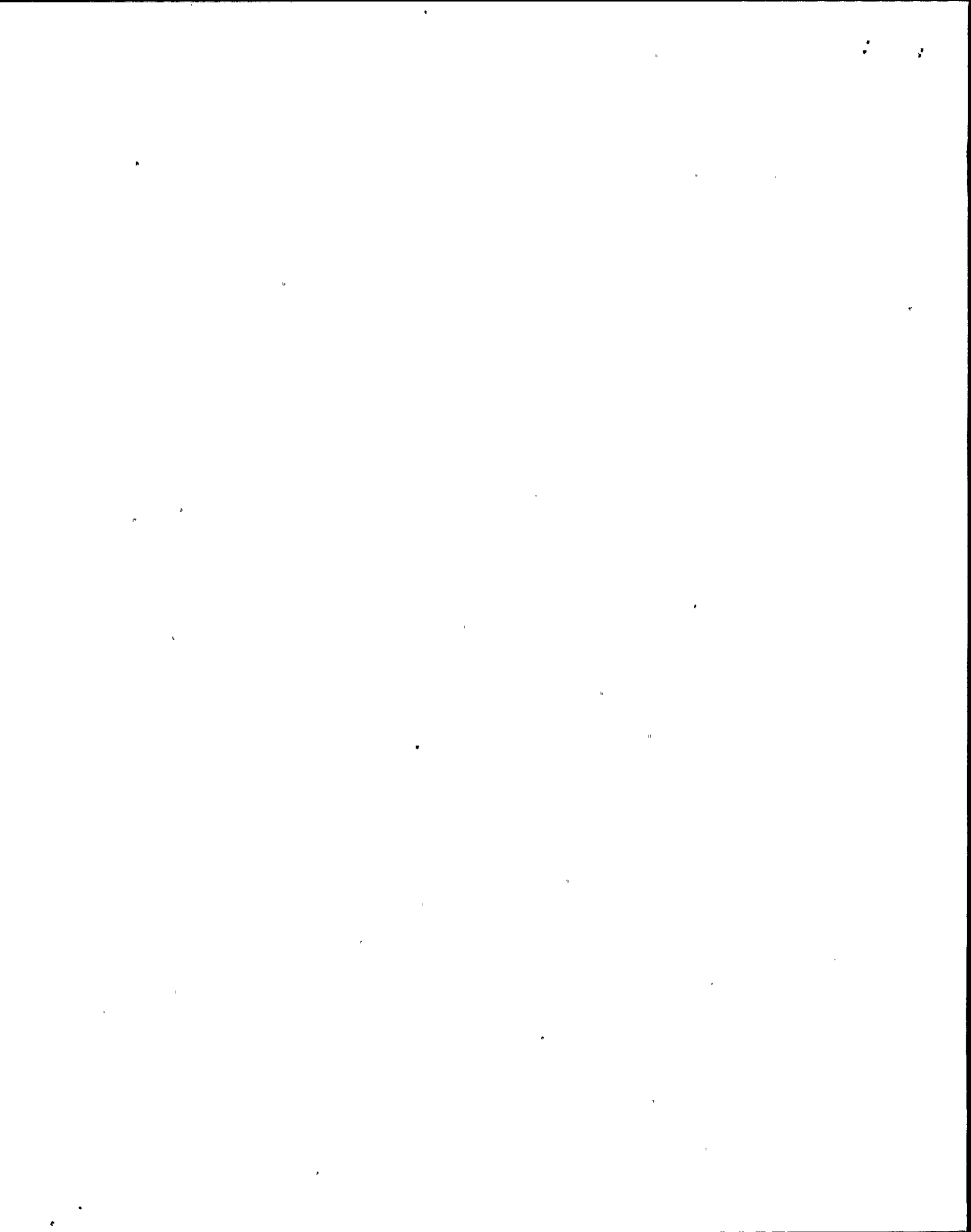
| *5

7.2 Automatic Response

NONE

7.3 Corrective Action

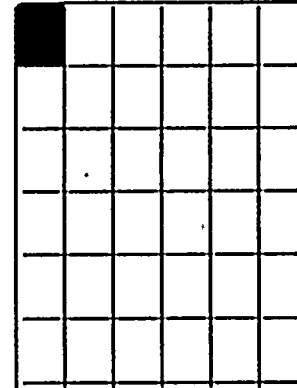
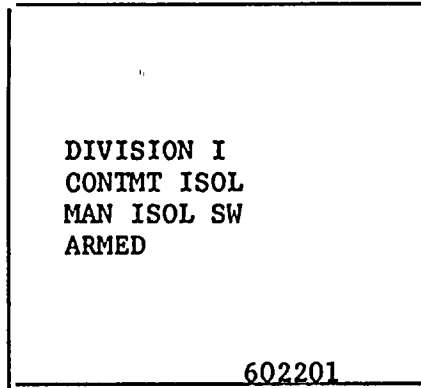
- a. Verify 2RPSB01 power supply lineup at 2VBS*PNLB103, circuit 14.
- b. Verify fuses 2RPSB01-F30 and F36 installed at P642.
- c. Notify I&C.
- d. Refer to Technical Specifications.



I. PROCEDURE FOR CORRECTING ALARMS CONDITIONS (Cont.)

8.0 602201 Division I Containment Isolation Manual Isolation Switch Armed

Refresh: Yes



8.1	<u>Computer Point</u>	<u>Computer Printout</u>	<u>Source</u>	
	a. ISCBC21	CNMT MAN ISO SW RPS A1	Collar on MSIV & DRAIN V MANUAL ISOL pushbutton rotated to the ARMED position at P602.	*5
	b. ISCBC22	CNMT MAN ISO SW RPS A2	Collar on MSIV & DRAIN V MANUAL ISOL pushbutton rotated to the ARMED position at P602.	*5

8.2 Automatic Response

NONE

8.3 Corrective Action

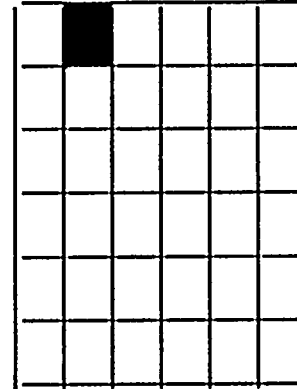
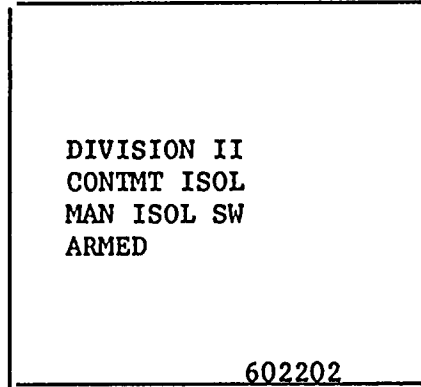
- a. Verify that PCIS isolation is required.
- b. IF PCIS is manually initiated, verify proper system operation and that all valves close as required.
- c. IF manual PCIS isolation is not required, rotate the collar on the Division I MSIV & DRAIN V MANUAL ISOL pushbutton to the DISARM position at P602.



I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

9.0 602202 Division II Containment Isolation Manual Isolation Switch Armed

Reflash: Yes



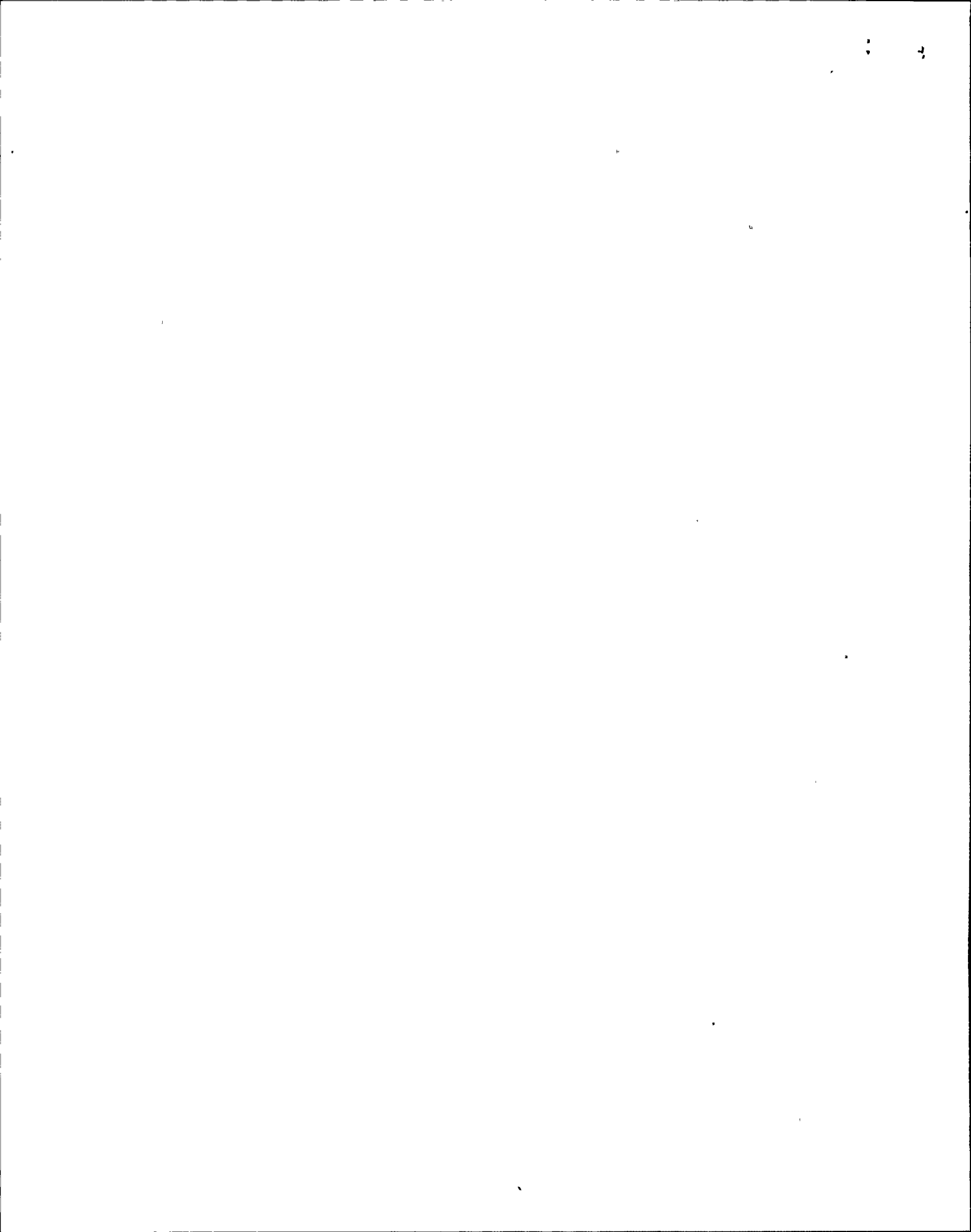
9.1	<u>Computer Point</u>	<u>Computer Printout</u>	<u>Source</u>	
a.	ISCBC27	CNMT MAN ISO SW RPS B1	Collar on MSIV & DRAIN V MANUAL ISOL pushbutton rotated to the ARMED position at P602	*5
b.	ISCBC28	CNMT MAN ISO SW RPS B2	Collar on MSIV & DRAIN V MANUAL ISOL pushbutton rotated to the ARMED position at P602	*5

9.2 Automatic Response

NONE

9.3 Corrective Action

- a. Verify that PCIS isolation is required.
- b. IF PCIS is manually initiated, verify proper system operation and that all valves close as required.
- c. IF manual PCIS isolation is not required, rotate the collar on the Division II MSIV & DRAIN V MANUAL ISOL switches to the DISARM position at P602.



I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

10.0 602203 Containment Isolation Trip Unit Out of File/Power Failure

Refresh: No

CONTMT ISOL
TRIP UNIT
OUT OF FILE/
POWER FAILURE

602203

602203

10.1	<u>Computer Point</u>	<u>Computer Printout</u>	<u>Source</u>
	a. ISCBC30	MSI B TR UNIT OOF/NO PWR	Any of the following Trip units INOP: B22H-N675A thru D N676A thru D N679A thru D N681A thru D N688A thru D E31-N686A thru D N687A thru D N689A thru D Possible Causes: 1. Trip Unit Out of File. 2. Trip Unit Gross Failure. 3. Trip Unit Power Failure.

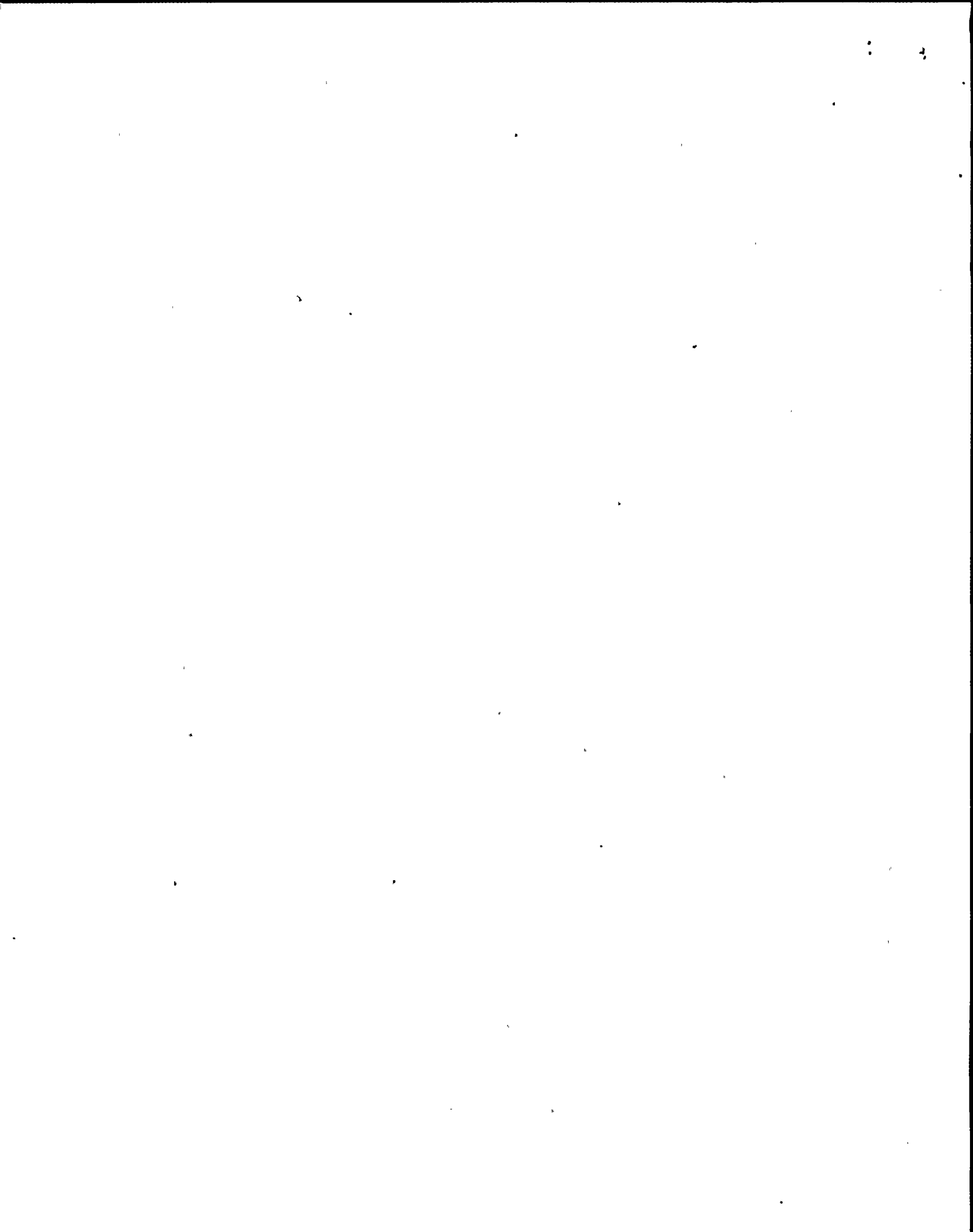
*5

10.2 Automatic Response

NONE

10.3 Corrective Action

- a. Place out of file card back in circuit.
- b. Verify power is available to the trip units.



- c. Reset any Gross Failure alarms on the trip units.
- d. If the alarm does not reset or keeps re-occurring, contact the I&C department to troubleshoot and repair.
- e. Refer to Technical Specifications.

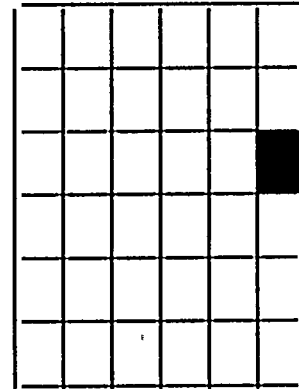
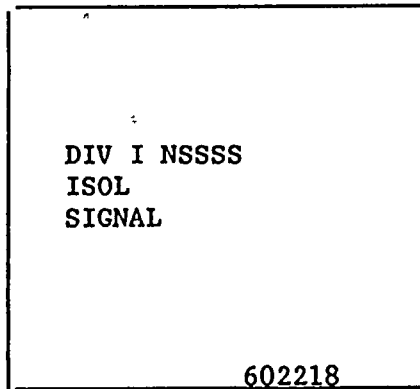


I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

11.0 602218

Div. I NSSSS Isol. Signal

Refresh: Yes



602218

11.1	<u>Computer Point</u>	<u>Computer Printout</u>	<u>Source</u>
a.	NS4BC01	RPS DIA1 MN STM ISOL SIG	DIA1 main steam RPS Relay K7J PNL609
b.	NS4BC02	RPS DIA3 MN STM ISOL SIG	DIA3 main steam RPS Relay K7C PNL609
c.	NS4BC03	D1 NSSS GP 3,8,9 ISO SIG	Div. 1 GP. 3,8,9 RPS Relay K66A PNL623
d.	NS4BC04	D1 NSSS GP 6 ISO SIG	Div. 1 NS4 Gp. 6 RPS Relay K27 PNL623
e.	NS4BC05	D1 NSSS GP 4 ISO SIG	Div. 1 NS4 Gp. 4 RPS Relay K23A PNL623
f.	NS4BC07	D1 NSSS GP 2 ISO SIG	Div. 1 NS4 Gp. 2 RPS Relay K72A PNL623

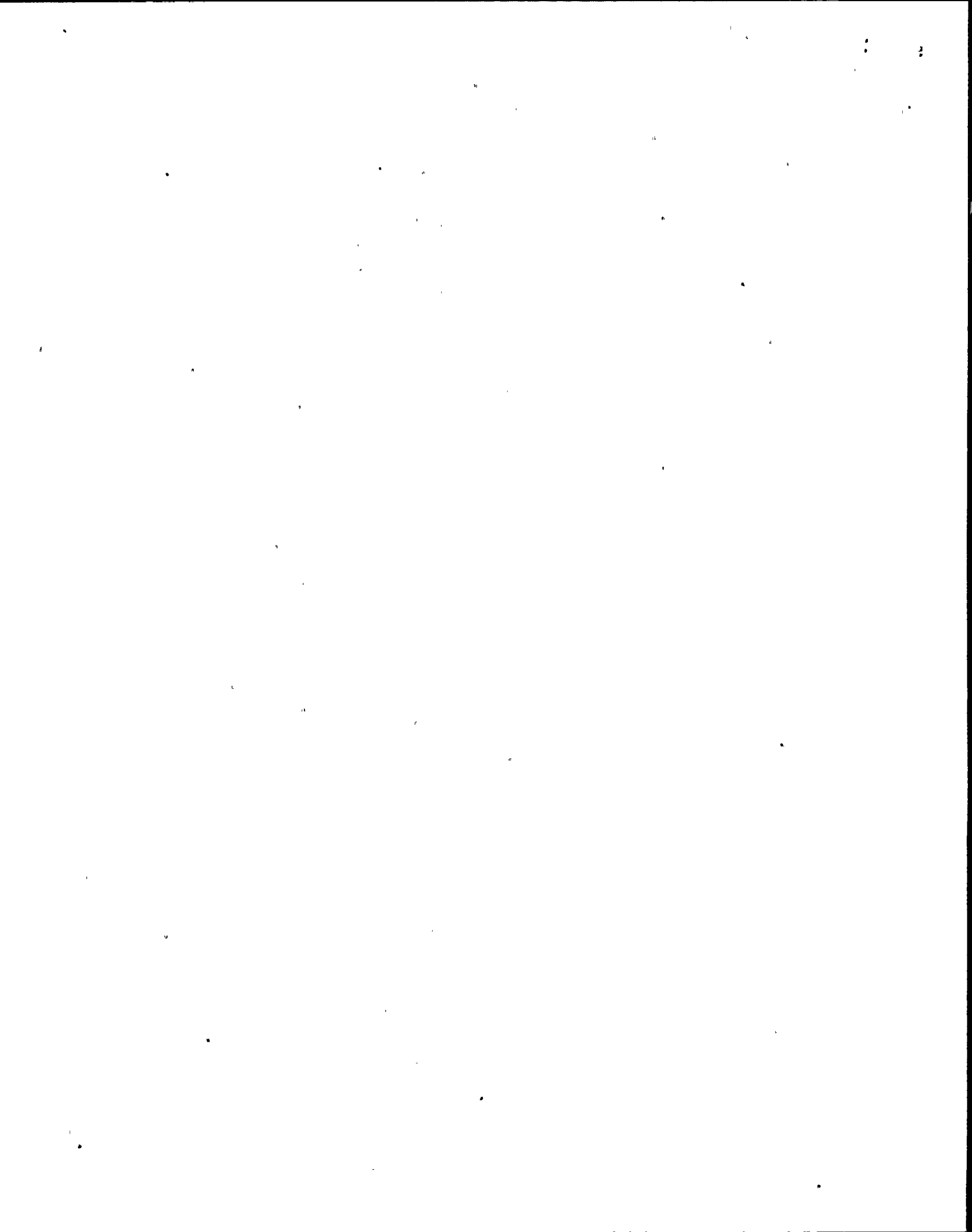
*5

11.2 Automatic Action

This annunciator indicates a Division 1 isolation signal has been initiated from the corresponding Reactor Protection logic group indicated, or by a manual isolation.

11.3 Corrective Action

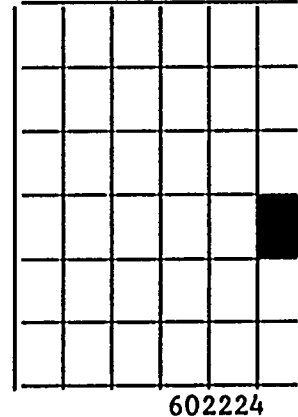
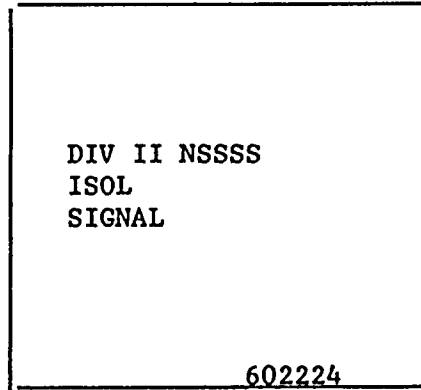
- Check for the NS4 computer point which initiated the isolation signal and take appropriate action.
- Reset the half isolation signal as required when the signal has cleared by pressing the MSIV & DRAIN V ISOL push button on P602, and then reset this annunciator.
- If an MSIV isolation occurs, refer to the Emergency Operating Procedures.



I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

12.0 602224 Div II NSSSS Isol. Signal

Reflash: Yes



12.1	<u>Computer Point</u>	<u>Computer Printout</u>	<u>Source</u>
a.	NS4BC10	RPS D2A2 MN STM ISOL SIG	D2A2 main steam RPS Relay K7K PNL611
b.	NS4BC11	RPS D2A4 MN STM ISOL SIG	D2A4 main steam RPS Relay K7D PNL611
c.	NS4BC12	D2 NSSS GP 3,8,9 ISO SIG	Div. 2 GP. 3,8,9 RPS Relay K66B PNL622
d.	NS4BC13	D2 NSSS GP 7 ISO SIG	Div. 2 NS4 Gp. 7 RPS Relay K26 PNL622
e.	NS4BC14	D2 NSSS GP 4 ISO SIG	Div. 2 NS4 Gp. 4 RPS Relay K23B PNL622
f.	NS4BC16	D2 NSSS GP 2 ISO SIG	Div. 2 NS4 Gp. 2 RPS Relay K72B PNL622

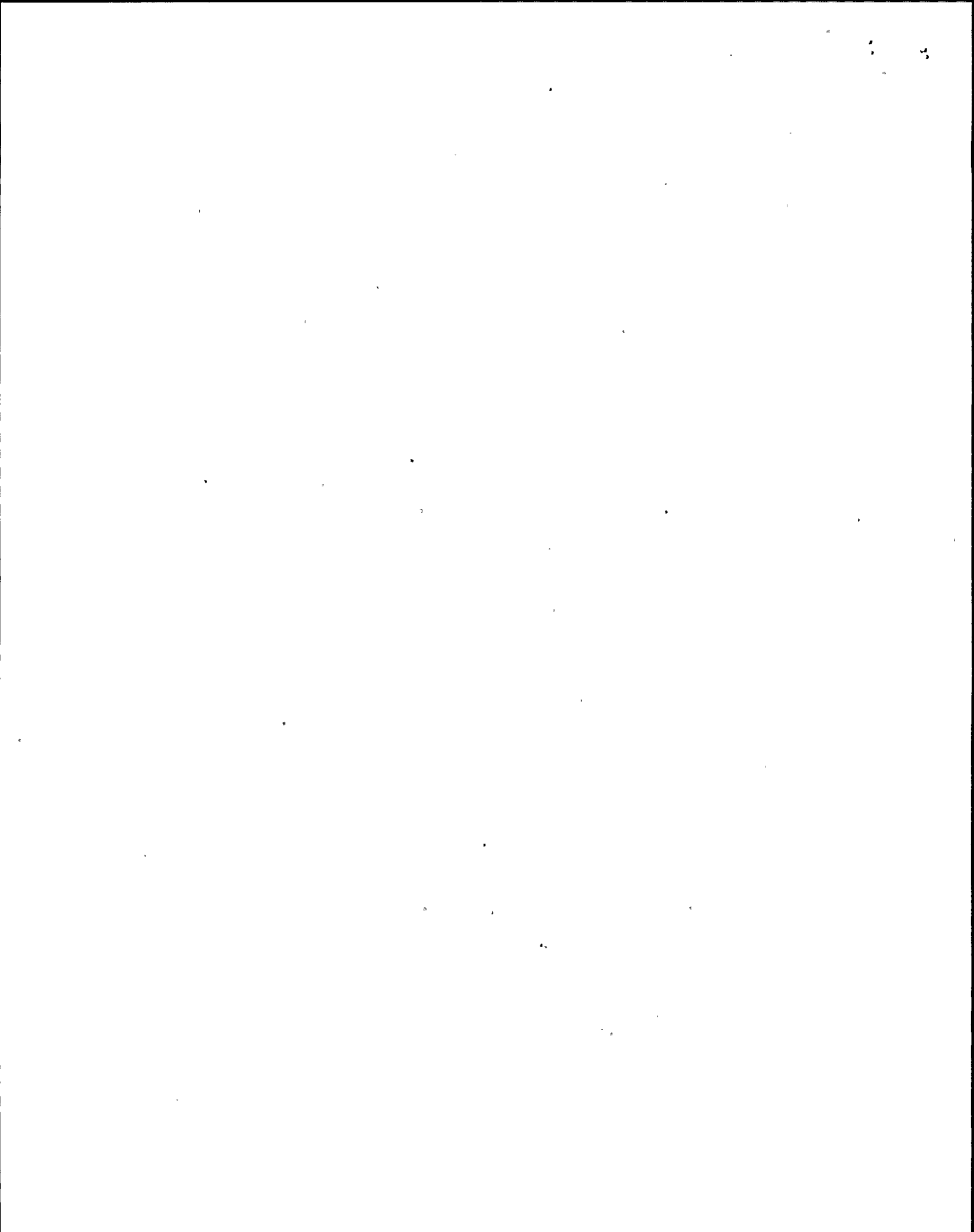
*5

12.2 Automatic Action

This annunciator indicates a Div 2 isolation signal has been initiated from the corresponding Reactor Protection logic group indicated, or by a manual isolation.

12.3 Corrective Action

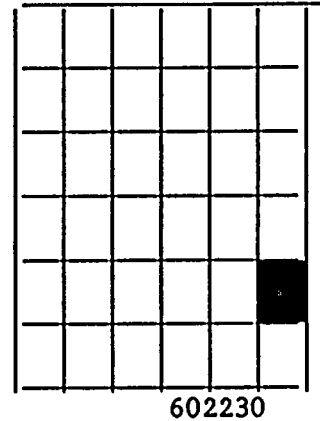
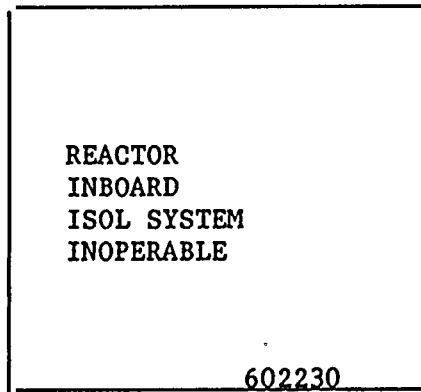
- a. Check for the NS4 computer point which initiated the isolation signal and take appropriate action.
- b. Reset the half isolation signal as required when the signal has cleared by pressing the MSIV & DRAIN V ISOL push button on P602, and then reset this annunciator.
- c. If an MSIV isolation occurs, refer to the Emergency Operating Procedures.



I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

13.0 602230 Reactor Inboard Isolation System Inoperable

Refresh: No



13.1 Computer Point Computer Printout Source

a. ISCBC35 RX INBD ISOL SYS Any of the following
Trip units INOP: |*5

B22H-N678B and C
N679B and C
N680B and C
C72-N650B and C

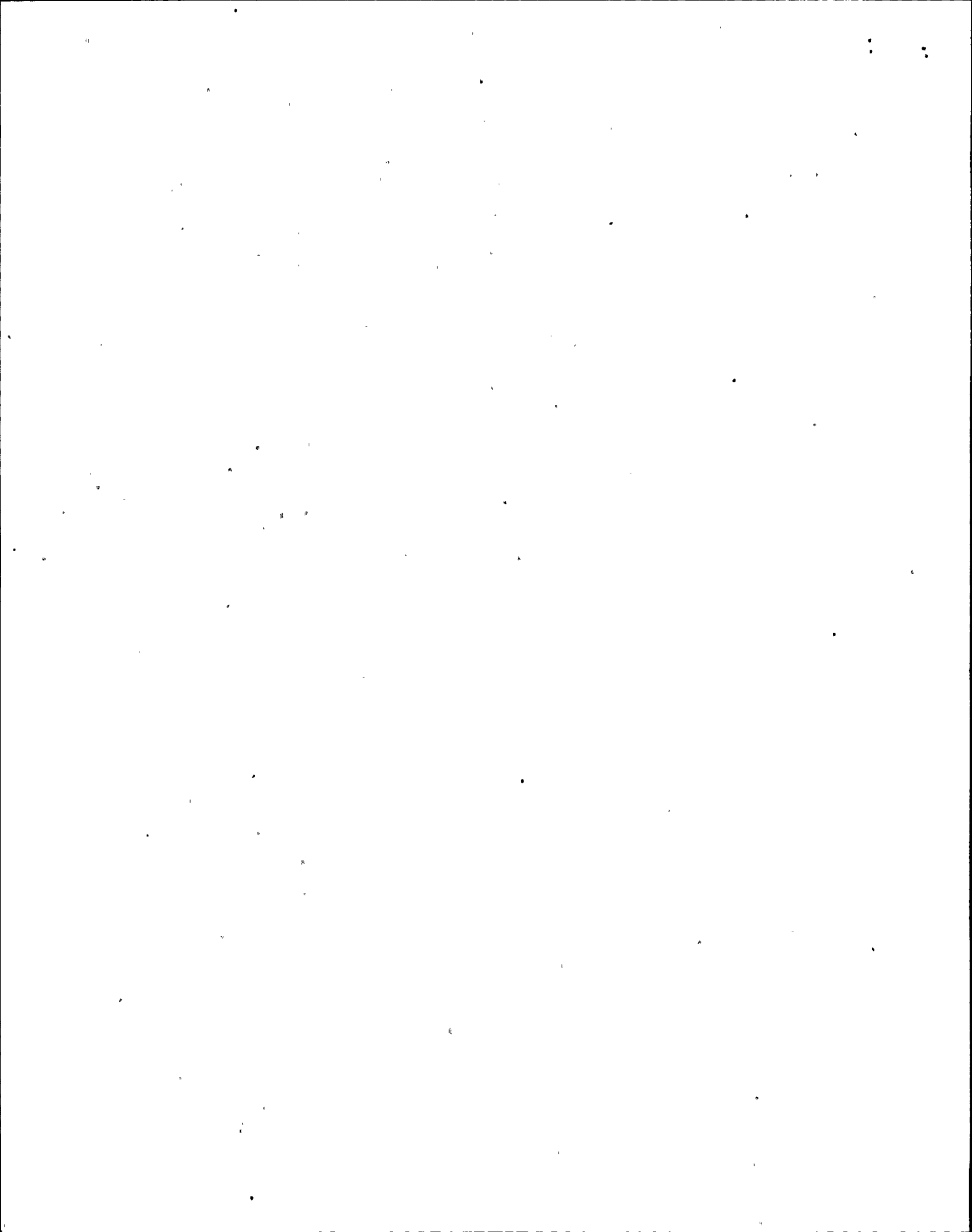
Possible Causes:
1. Trip Unit in Cal.
2. Trip Unit Gross
Failure.

13.2 Automatic Response .

NONE

13.3 Corrective Action

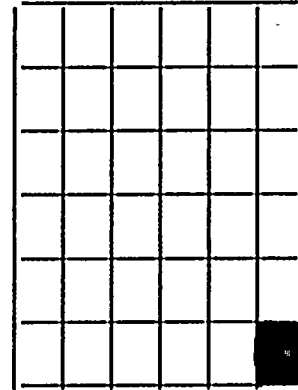
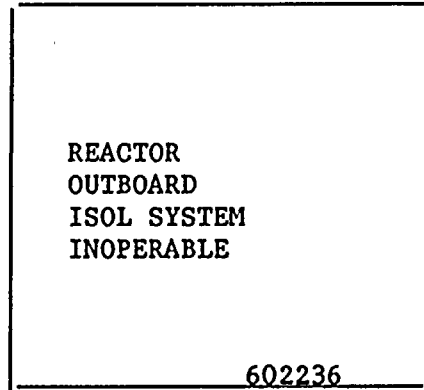
- a. Check to see if the system instrumentation is being calibrated. If not, restore any trip units in CAL back to operate.
- b. If calibration is not in progress, check the trip units on panels P609 and P611 for any gross failure alarms and reset.
- c. If the alarm does not reset or keeps re-occurring, contact the I&C department to troubleshoot and repair the affected trip unit.
- d. Refer to Technical Specifications.



I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

14.0 602236 Reactor Outboard Isolation System Inoperable

Refresh: No



14.1	<u>Computer Point</u>	<u>Computer Printout</u>	<u>Source</u>
a.	ISCBC36	RX OUTBD ISOL SYS	Any of the following Trip units INOP:
			B22H-N678A and D N679A and D N680A and D C72-N650A and D
			Possible Causes: 1. Trip Unit in Cal. 2. Trip Unit Gross Failure.

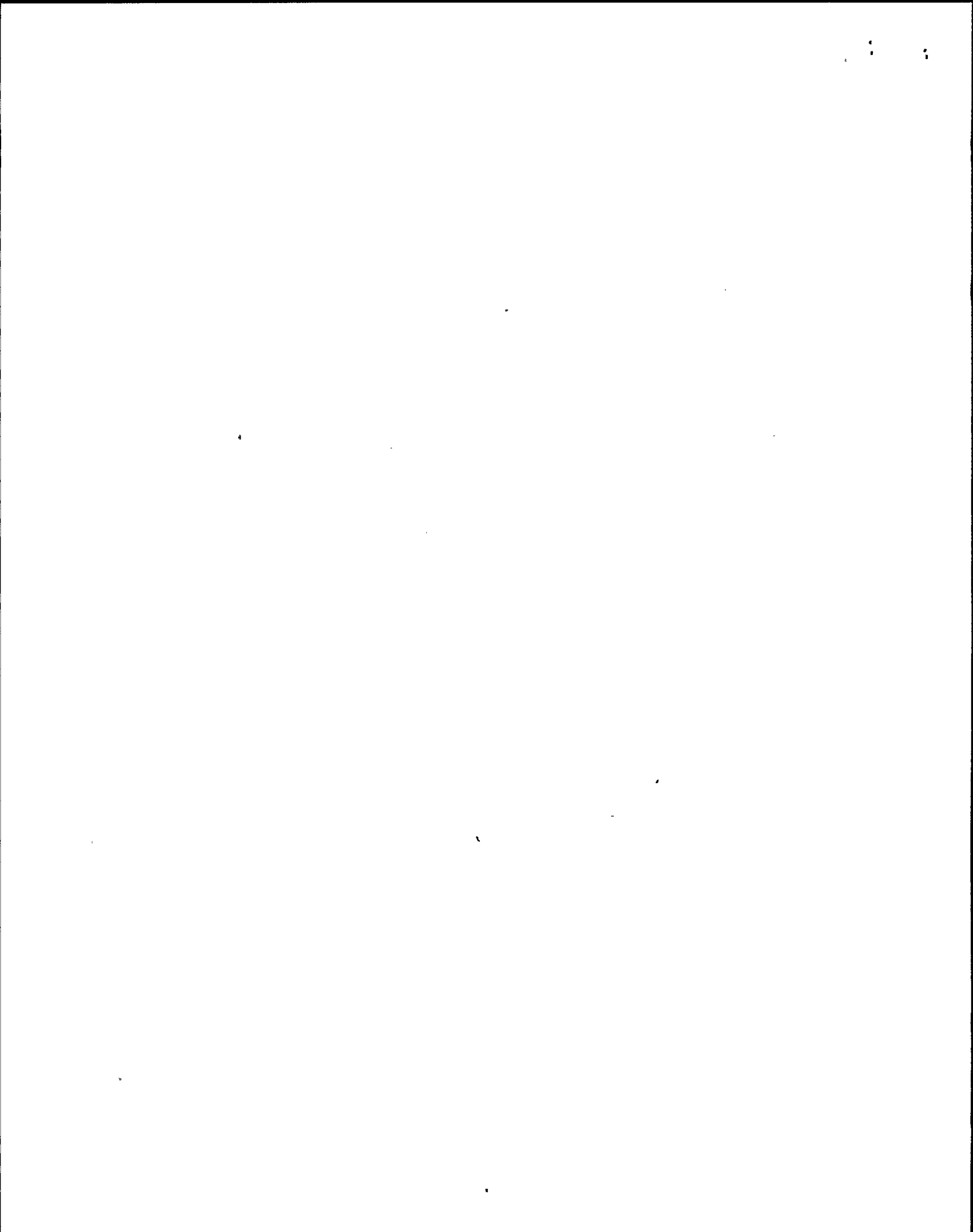
|*5

14.2 Automatic Response

NONE

14.3 Corrective Action

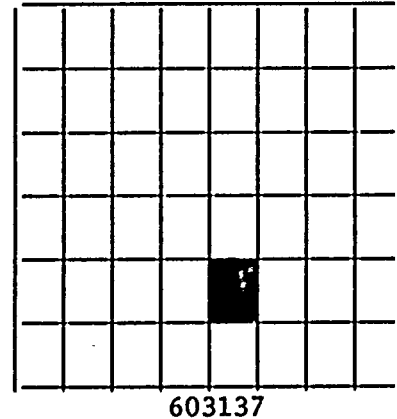
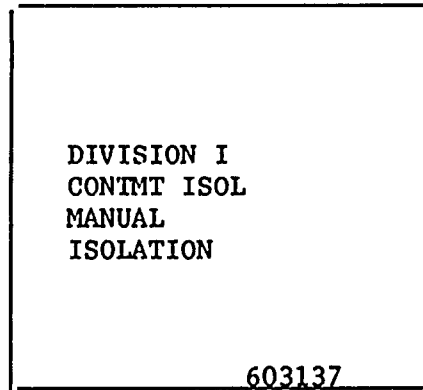
- a. Check to see if the system instrumentation is being calibrated. If not, restore any trip units in CAL back to operate.
- b. If calibration is not in progress, check the trip units on panels P609 and P611 for any gross failure alarms and reset.
- c. If the alarm does not reset or keeps re-occurring, contact the I&C department to troubleshoot and repair the affected trip unit.
- d. Refer to Technical Specifications.



I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

15.0 603137 Division I Containment Isolation Manual Isolation

Refresh: Yes



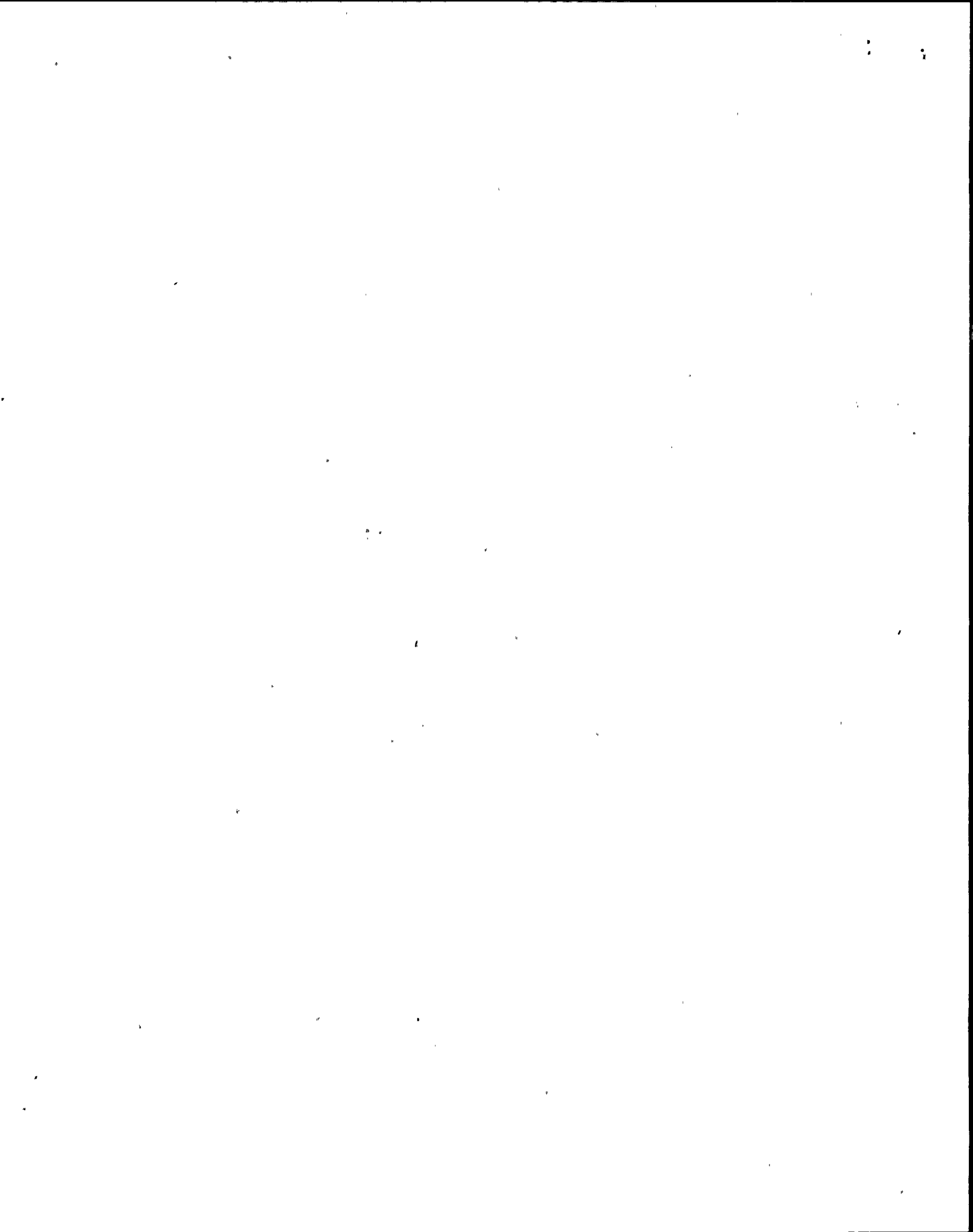
15.1	<u>Computer Point</u>	<u>Computer Printout</u>	<u>Source</u>	
	a. ISCBC23	CNMT ISO MAN ISO RPS A1	MSIV & DRAIN V MANUAL ISOL Switches on Panel P602 ARMED and DEPRESSED	*5
	b. ISCBC24	CNMT ISO MAN ISO RPS A2	as sensed by relays B22H-K35A or C	*5

15.2 Automatic Response

- a. Possible full Reactor and Containment Isolation, depending on the number of manual isolation switches that are armed and depressed.
- b. Possible reactor scram.

15.3 Corrective Action

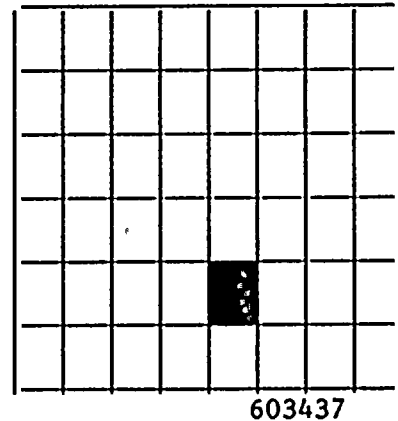
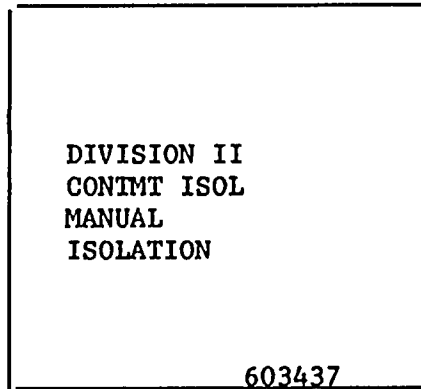
- a. Verify the status of the MSIVs and inboard and outboard isolation valves of groups 1-9.
- b. Is MSIV isolation has occurred and the reactor has scrammed, take the actions for a scram per N2-OP-101B, section H.
- c. If an MSIV isolation and a reactor scram have not occurred, but the inboard or outboard isolation valves of groups 2-9 have shut:
 - 1. Determine the reason for isolating those systems and correct the problem.
 - 2. Take action to restore those systems to operation per their respective operating procedures.



I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (Cont.)

16.0 603437 Division II Containment Isolation Manual Isolation

Refresh: Yes



16.1	<u>Computer Point</u>	<u>Computer Printout</u>	<u>Source</u>	
a.	ISCBC25	CNMT ISO MAN ISO RPS B1	MSIV & DRAIN V MANUAL ISOL Switches on Panel P602 ARMED and DEPRESSED	*5
b.	ISCBC26	CNMT ISO MAN ISO RPS B2	as sensed by relays B22H-K35B or D	*5

16.2 Automatic Response

- a. Possible full Reactor and Containment Isolation, depending on the number of manual isolation switches that are armed and depressed.
- b. Possible reactor scram.

16.3 Corrective Action

- a. Verify the status of the MSIVs and inboard and outboard isolation valves of groups 1-9.
- b. If MSIV isolation has occurred and the reactor has scrammed, take the actions for a scram per N2-OP-101B, section H.
- c. If an MSIV isolation and a reactor scram have not occurred, but the inboard or outboard isolation valves of groups 2-9 have shut:
 - 1. Determine the reason for isolating those systems and correct the problem.
 - 2. Take action to restore those systems to operation per their respective operating procedures.

TABLE II

SYSTEM POWER SUPPLIES LINEUP

Component Numbers	Component Description	POWER SUPPLY Bus Number	Cubicle/ Breaker	Normal Position	Actual Position	Initials & Date	Remarks
2RPSA01	PCIS A Logic, Pnl. 609	2VBS*PNLA103	14	On			
2RPSB01	PCIS B Logic, Pnl. 611	2VBS*PNLB103	14	On			
2RPSC01	PCIS C Logic, Pnl. 609	2VBS*PNLA104	13	On			
2RPSD01	PCIS D Logic, Pnl. 611	2VBS*PNLB104	13	On			
2MSSN25	Outboard Valve Logic, Pnl. 623	2VBS*PLNA103	2	On			
2MSSN24	Inboard Valve Logic, Pnl. 622	2VBS*PLNB103	4	On			
2MSSA20	Outboard MSIV Position Mon.	2VBS*PNLA105	8	On			
2MSSB20	Inboard MSIV Position MON.	2VBS*PNLB106	8	On			
2WCSN22	Temperature Switch G33N008	2VBS*PNLA103	3	On			

TCN-2

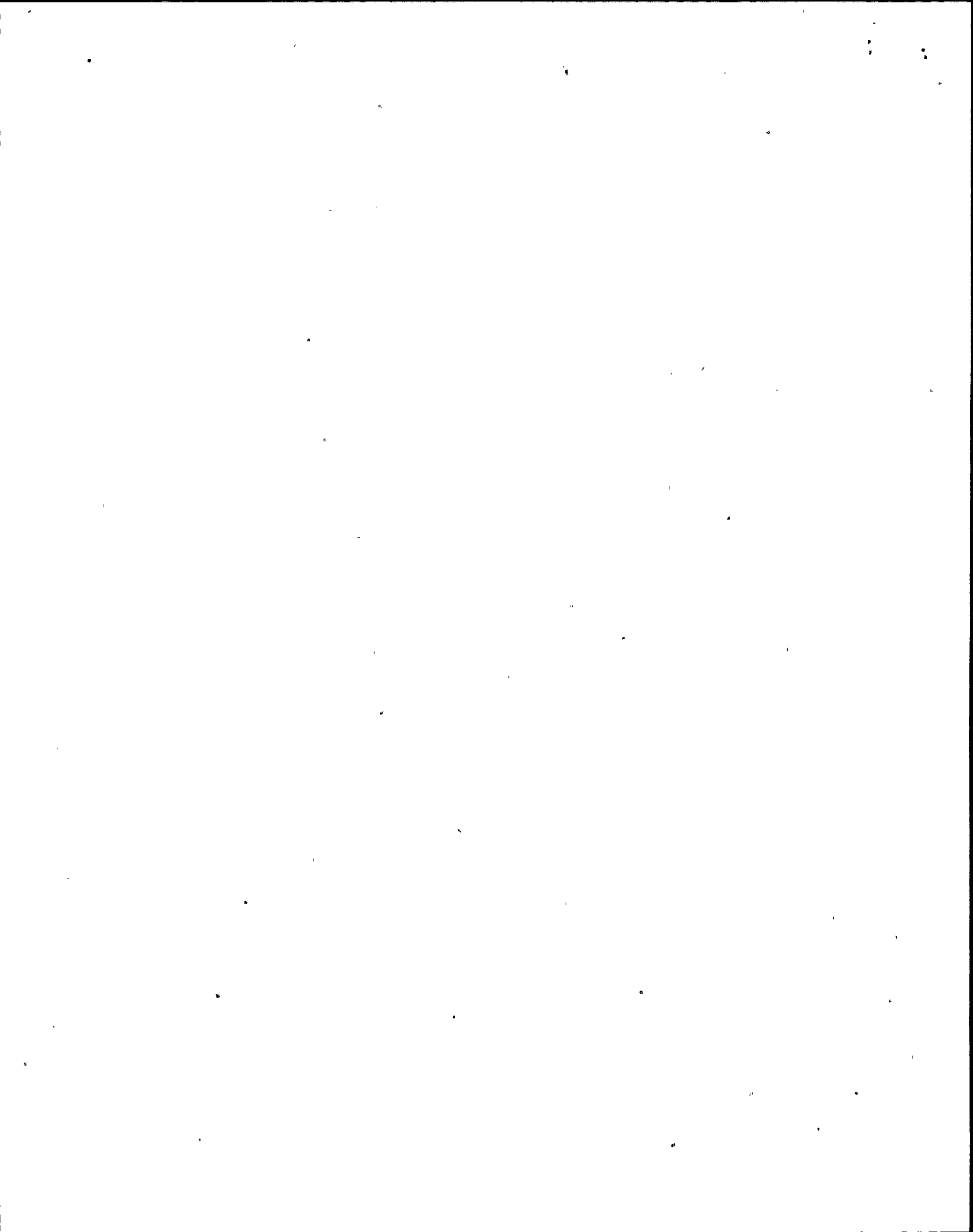


TABLE II
SYSTEM POWER SUPPLIES LINEUP

Component Numbers	Component Description	POWER SUPPLY Bus Number	Cubicle/ Breaker	Normal Position	Actual Position	Initials & Date	Remarks
2RHSB31	Post Accident Monitor System Recorders, B Sys.	2VBS*PNL301B	6	On			
2CSL-N08	Post Accident Monitor System Recorders, A Sys.	2VBS*PNL101A	23	On			
2MSSN43	Inboard MSIV Solenoids 'B' & Test Solenoids (RPS DIV 1)	2VBS*PNLA106	5	On			
2MSSN42	Inboard MSIV Solenoids 'A' (RPS DIV 2)	2VBS*PNLB106	5	On			
2MSSN44	Outboard MSIV Solenoids 'A' (RPS DIV 1)	2VBS*PNLA105	5	On			
2MSSN45	Outboard MSIV Solenoids 'B' & Test Solenoids (RPS DIV 2)	2VBS*PNLB105	5	On			
2SCIB09/ 2SCIB10	Inboard MSIV Off Normal Status (RPS DIV 2)	2VBS*PNLB106	6	On			

TCN-2

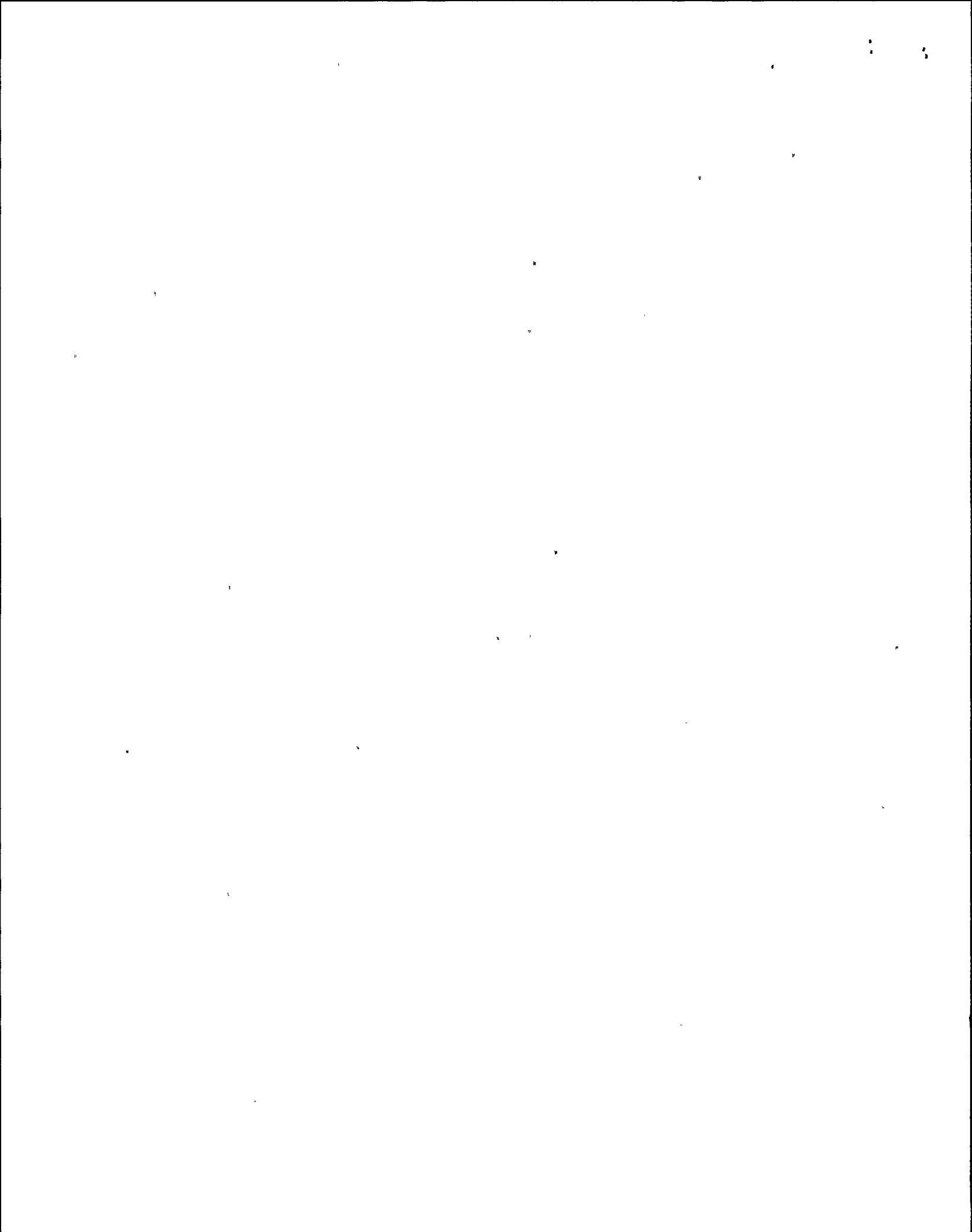


TABLE II

SYSTEM POWER SUPPLIES LINEUP

Component Numbers	Component Description	POWER SUPPLY Bus Number	Cubicle/ Breaker	Normal Position	Actual Position	Initials & Date	Remarks
2ISCA01	MSIV Off Normal Status (RPS DIV 1)	2VBS*PNLA103	1	On			TCN-2
2ISCB01	MSIV Off Normal Status (RPS DIV 2)	2VBS*PNLB103	1	On			
2SCIA03/ 2SCIB03	MSIV Off Normal Status Lights (Black)	2SCI PNLB101	35	On			
2SCIA09/ 2SCIA10	Off Normal Indication	2VBS*PNLA105	6	On			
2SCIA11	Off Normal Indication	2BYS*PNL201A	19	On			
2SCIN01	Off Normal Indication	2SCI-PNLB101	35	On			
2SCIA08	Off Normal Indication	2VBS*PNLA105	7	On			
2SCIA06	Off Normal Indication	2BYS-PNLB101	14	On			

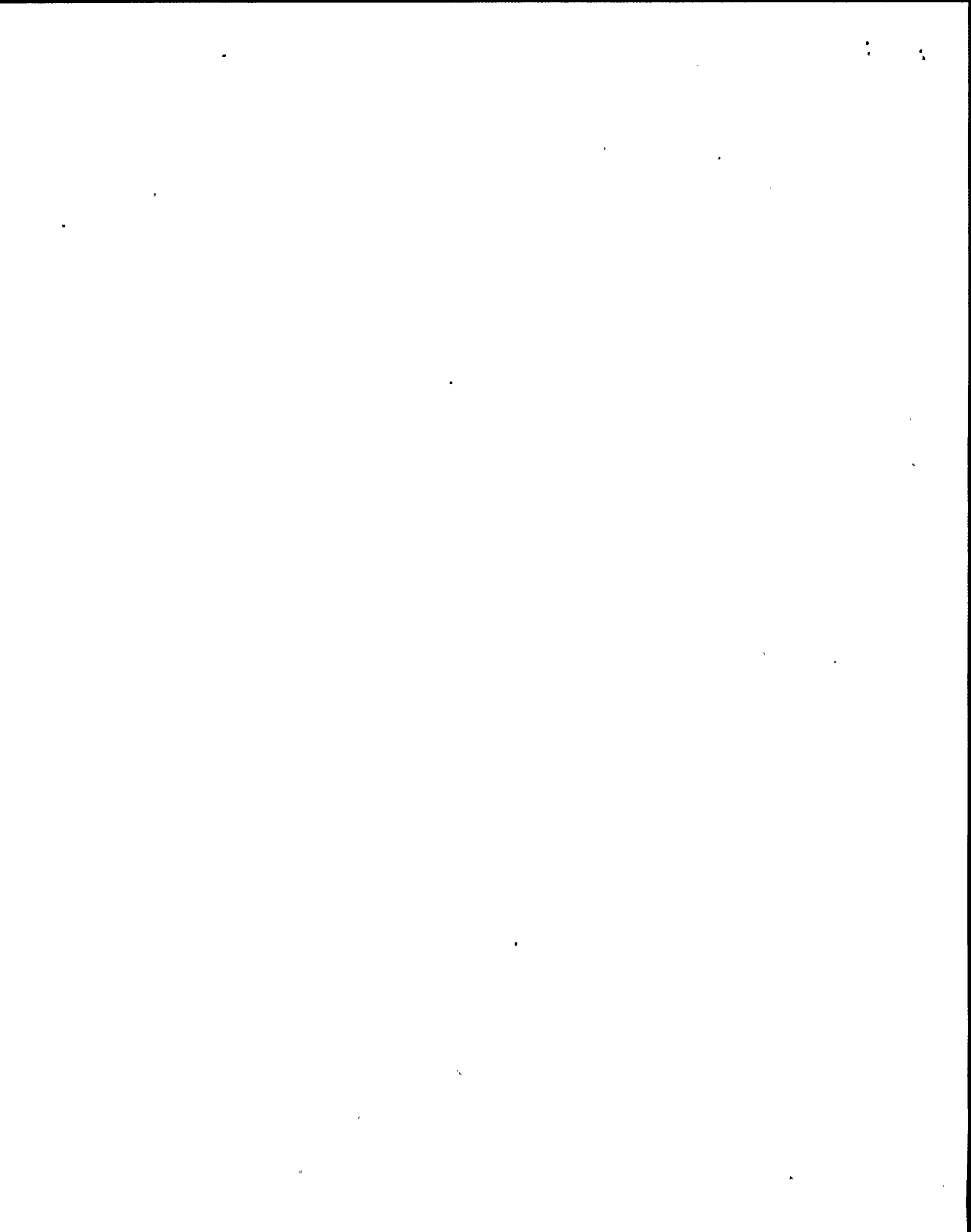


TABLE II

SYSTEM POWER SUPPLIES LINEUP

Component Numbers	Component Description	POWER SUPPLY		Normal Position	Actual Position	Initial & Date	Remarks
		Bus Number	- Cubicle/ Breaker				
2SCIB02	Off Normal Indication	2BYS-PNL201B	21	On			
2SCIB10	Off Normal Indication	2VBS*PNLB106	6	On			
2SCIB08	Off Normal Indication	2VBS*PNLB106	7	On			
2SCIB06	Off Normal Indication	2BYS*PNLA102	8	On			
2SCIA04	Off Normal Indication	2VBS*PNLA103	4	On			
2SCIN05	Off Normal Indication	2SCI-PNLB102	3	On			



ENCLOSURE #1

Group Isolation Descriptions

1. GROUP 1 VALVE ISOLATION SIGNALS

Group 1 Valves: 2MSS*A0V6A thru D
 2MSS*A0V7A thru D
 2MSS*MOV111
 2MSS*MOV112
 2MSS*MOV208

<u>ISOLATION PARAMETER</u>	<u>SETPOINT</u>	<u>ANNUNCIATOR</u>	<u>TRIP UNIT</u>
Main Steam Line High Radiation	3 X Normal Full Power Background	603107 603407	D13-N003A thru -N003D
Reactor Water Level LO-LO-LO	17.8 inches decreasing		B22-N684A thru -N684D
Steam Tunnel High Temperature	165.7°F	602228	E31-N604A thru -N604D
Turbine Bldg. Main Steam Line Lead Enclosure High Temp	146.7°F	602227	E31-N616A-D E31-N617A-D E31-N618A-D
Main Steam Line Tunnel Ventilation Delta-T	66.7°F	602228	E31-N615A-D
Low Condenser Vacuum	8.5" Hg	603128 603428	B22-N675A thru -N675D
Main Steam Line Low Pressure	766 psig	603127 603427	B22-N676A thru -N676D
Main Steam Line High Flow	103 psid (140%)	603126 603426	E31-N686A-D E31-N687A-D E31-N688A-D E31-N689A-D

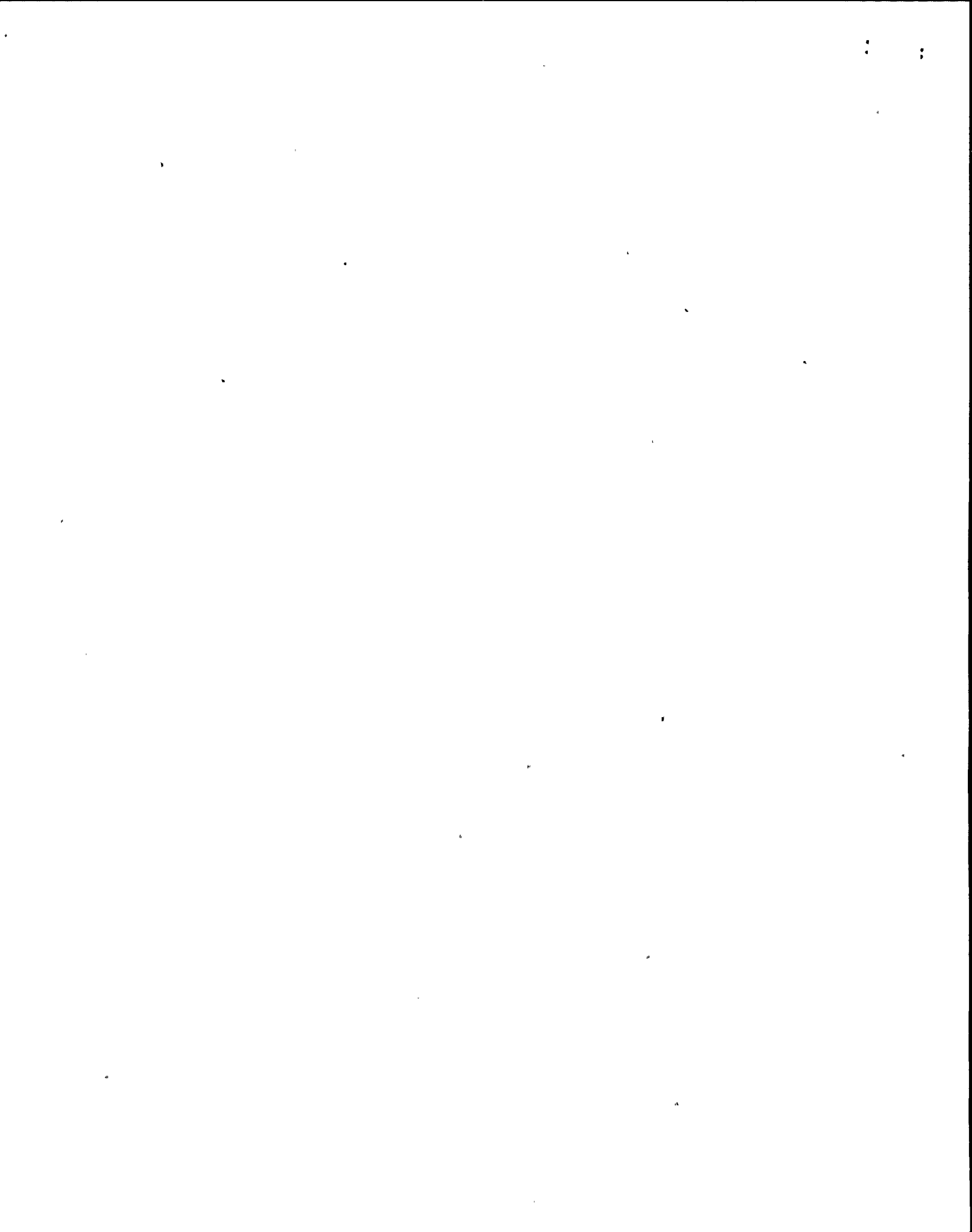
* 4



ENCLOSURE #1 (Cont.)

<u>ISOLATION PARAMETER</u>	<u>SETPOINT</u>	<u>ANNUNCIATOR</u>	<u>TRIP UNIT</u>
Manual Isolation	Switch is ARMED and DEPRESSED	603137 603437	B22-S25A thru -S25D
Logic Test	MAIN STEAM LINE DRAIN LOGIC TEST keylock switches in TEST	NONE	B22-S20A thru -S20D

- NOTES:
1. Main Steam Line High Radiation trip also trips the Main Condenser air removal pumps.
 2. The Low Condenser Vacuum trip is bypassed with the Rx mode switch NOT in RUN, the COND LOW VAC BYPASS switches in BYPASS, and the Turbine Stop Valves closed (< 90% open). *
 3. The Main Steam Line Low Pressure is bypassed with the Rx mode switch NOT in RUN.
 4. A High Main Steam Line Flow condition in any one steam line will initiate a Group 1 isolation.
 5. The Logic Test switches are for testing the Main Steam Line drain valves only..



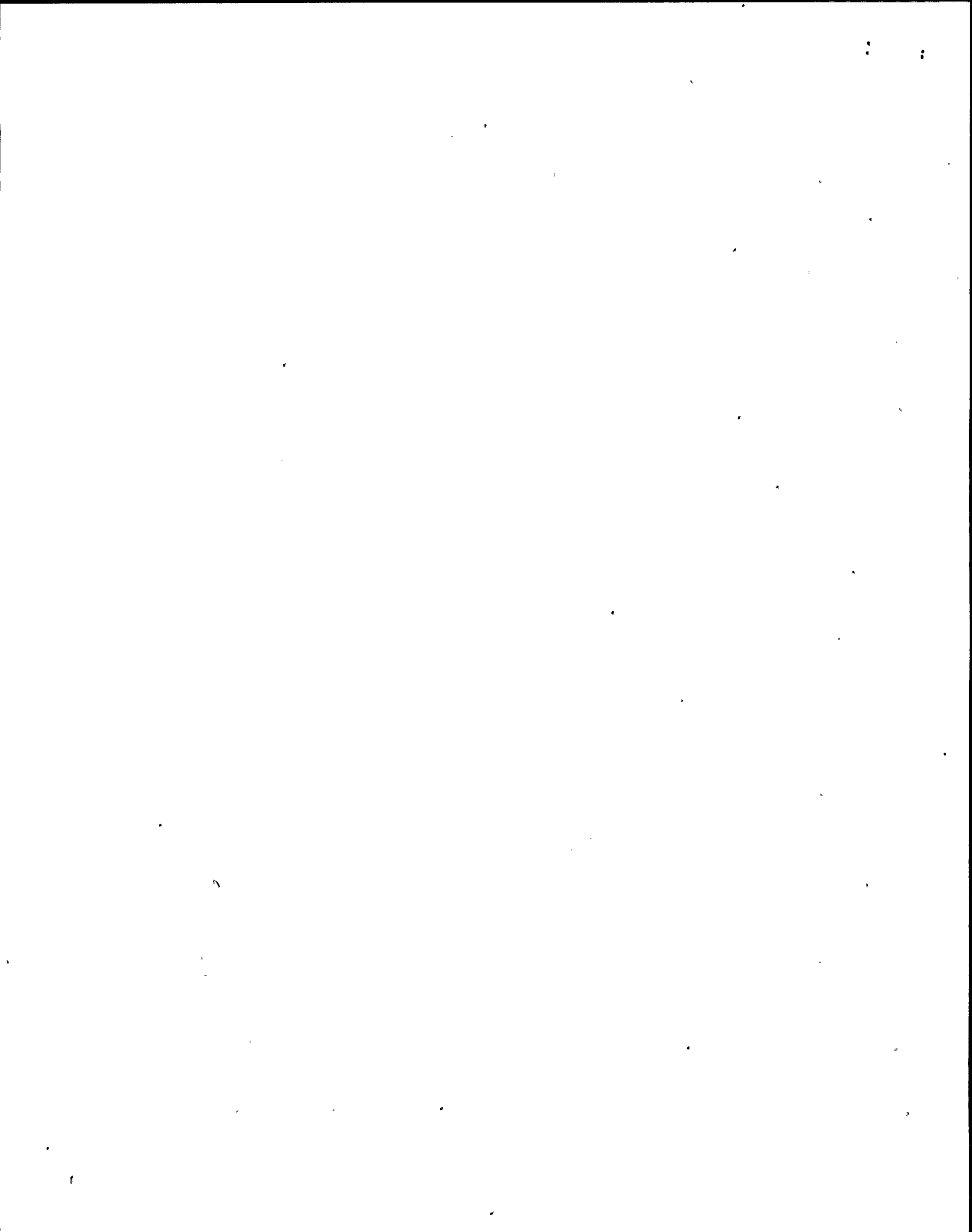
ENCLOSURE #1 (Cont.)

1. GROUP 2 VALVE ISOLATION SIGNALS

Group 2 Valves: 2RCS*SOV104
2RCS SOV105

<u>ISOLATION PARAMETER</u>	<u>SETPOINT</u>	<u>ANNUNCIATOR</u>	<u>TRIP UNIT</u>
Main Steam Line High Radiation	3 X Normal Full Power Background	603107 603407	D13-N003A thru -N003D
Reactor Water Level LO-LO	108.8 inches decreasing	603125 603425	B22-N681A thru -N681D
Manual Isolation	Switch is ARMED and DEPRESSED	603137 603437	B22-S25A thru -S25D
Logic Test	MAIN STEAM LINE DRAIN LOGIC TEST keylock switches in TEST	NONE	B22-S71A thru -S71D

- NOTES:
1. Main Steam Line High Radiation trip also trips the Main Condenser air removal pumps.
 2. The Outboard sample valves isolate when the "A" and "D" logic is tripped.
 3. The Inboard sample valves isolate when the "B" and "C" logic is tripped.



ENCLOSURE #1 (Cont.)

1. GROUP 3 VALVE ISOLATION SIGNALS

Group 3 Valves: 2NMS*SOV1A
 2NMS*SOV1B
 2NMS*SOV1C
 2NMS*SOV1D
 2NMS*SOV1E
 2GSN*SOV166

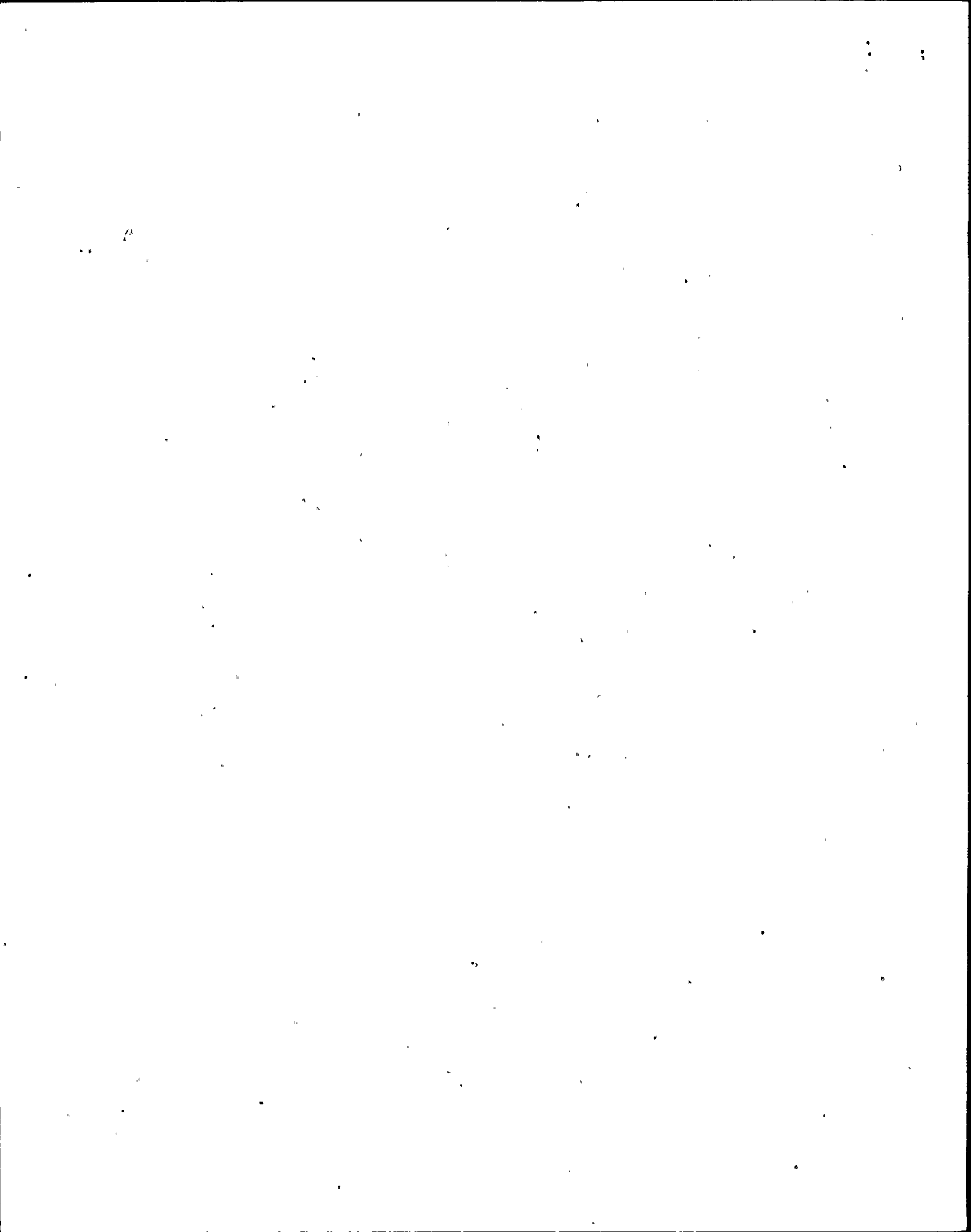
<u>ISOLATION PARAMETER</u>	<u>SETPOINT</u>	<u>ANNUNCIATOR</u>	<u>TRIP UNIT</u>
Reactor Water Level LO-LO	108.8 inches decreasing	603125 603425	B22-N681B and C
Drywell High Pressure	1.68 psig increasing	603101 603401	C72-N650B and C
Manual Isolation	Switch is ARMED and DEPRESSED	603137 603437	B22-S25B and C
Logic Test	MAIN STEAM TEST keylock switches in TEST	NONE	B22-S19B and C

TCN-6

NOTES:

1. An isolation initiates an automatic withdrawal of the TIP detectors and closure of the ball isolation valves.
2. TIP Isolation only uses the Inboard isolation logic (i.e. channels "B" and "C".)
3. The ISOL LOGIC TEST switches are also used to test the group 8 and 9 isolation logic.
4. In order to open the TIP ball valves once an isolation has cleared and has been reset on Panel 2CEC*PNL602, the ISOLATION RESET pushbuttons on the TIP CONTROL AND MONITORING INSTRUMENT PANEL, must be pressed.

TCN-6



ENCLOSURE #1 (Cont.)

1. GROUP 4 VALVE ISOLATION SIGNALS

Group 4 Valves: 2RHS*MOV142
2RHS*MOV149
2RHS*SOV35A
2RHS*SOV35B
2RHS*SOV36A
2RHS*SOV36B

<u>ISOLATION PARAMETER</u>	<u>SETPOINT</u>	<u>ANNUNCIATOR</u>	<u>TRIP UNIT</u>
Reactor Water Level LO	159.3 inches decreasing	603105 603405	B22-N680A thru D
Drywell High Pressure	1.68 psig increasing	603101 603401	C72-N650A thru D
Manual Isolation	Switch is ARMED and DEPRESSED	603137 603437	B22-S25A thru D
Logic Test	RHS SYSTEM LOGIC TEST keylock switches in TEST	NONE	B22-S21A thru D

NOTES: NONE



ENCLOSURE #1 (Cont.)

1. GROUP 5 VALVE ISOLATION SIGNALS

Group 5 Valves: 2RHS*MOV112
 2RHS*MOV113
 2RHS*MOV104
 2RHS*MOV40A
 2RHS*MOV67A
 2RHS*MOV67B
 2RHS*MOV40B

<u>ISOLATION PARAMETER</u>	<u>SETPOINT</u>	<u>ANNUNCIATOR</u>	<u>TRIP UNIT</u>	
Reactor Water Level LO	159.3 inches decreasing	603105 603405	B22-N680A thru D	
RHS Pump Room A/B High Temperature	135°F Increasing	601457	E31-N608A thru D	
Rx Bldg Gen Area High Temp	130°F Increasing		E31-N637-641A/B	
Rx Bldg Pipe Chase High Temp.	135°F Increasing	601157	E31-N619-622A/B	
Rx Press RHR Interlock	128 psig	601452	B22-N678A thru D	* 4
Manual Isolation	Switch is ARMED and DEPRESSED	603137 603437	B22-S25A thru D	
Logic Test	RHR SYSTEM LOGIC TEST keylock switches in TEST	NONE	B22-S21A thru D	

- NOTES:
1. The Rx. Bldg Pipe Chase High Temperature isolation also isolates RWCU and RCIC.
 2. The High area temperature isolations can be bypassed for testing using the Test Switches on panels P632 and P642.
 3. Any single area temperature trip will result in isolating the group 5 valves.

ENCLOSURE #1 (Cont.)

1. GROUP 6 VALVE ISOLATION SIGNALS

Group 6 Valves: 2WCS*MOV112

<u>ISOLATION PARAMETER</u>	<u>SETPOINT</u>	<u>ANNUNCIATOR</u>	<u>TRIP UNIT</u>	
Reactor Water Level LO-LO	108.8 inches decreasing	603125 603425	B22-N681A thru D	
RWCU Room High Temperature	135°F (Pump Rm A) 150°F (Pump Rm B) 135°F (Hx Rm)	602309 602310 602307	E31-N601A&C and E E31-N603A&C and E	*4 *4
Rx Bldg Pipe Chase High Temp.	135°F Increasing	601157	E31-N619-622A	
RWCU Differential Flow High	150.5 gpm (45 sec. TD)	602313	E31-N605A E31-R621A	
Standby Liquid Control Sys Initiation	SLC P1A Start /RRCS Initiation	601731	C41A-K8	
NonRegenerative Heat Exchanger High Outlet Temperature	140°F	602319	G33-N007	
Manual Isolation	Switch is ARMED and DEPRESSED	603137 603437	B22-S25A, D	
Logic Test	RWCU VLVE LOGIC TEST keylock switches in TEST	NONE	B22-S76A, D	

- NOTES:
- The Rx. Bldg. Pipe Chase High Temperature isolation also isolates RHR and RCIC.
 - The High area temperature isolations can be bypassed for testing using the Test Switches on panels P632 and P642.
 - Any single trip signal from the following will result in isolating the valve:

High Area Temperature
High Differential Flow
SLS/RRCS Initiation
NRHX Inlet High Temperature



ENCLOSURE #1 (Cont.)

1. GROUP 7 VALVE ISOLATION SIGNALS

Group 7 Valves: 2WCS*MOV102

<u>ISOLATION PARAMETER</u>	<u>SETPOINT</u>	<u>ANNUNCIATOR</u>	<u>TRIP UNIT</u>	
Reactor Water Level LO-LO	108.8 inches decreasing	603125 603425	B22-N681B and C	
RWCU Room High Temperature	135°F (Pump Rm A) 150°F (Pump Rm B) 135°F (Hx Rm)	602309 602310 602307	E31-N601B,D and F E31-N603B,D and E	* 4 * 4
Rx Bldg Pipe Chase High Temp.	135°F Increasing	601157	E31-N619-622B	
RWCU Differential Flow High	150.5 gpm (45 sec. TD)	602313	E31-N605A E31-R621A	
Standby Liquid Control Sys Initiation	SLC P1B Start /RRCS "B" Initiation	601732	C41A-K7	
Manual Isolation	Switch is ARMED and DEPRESSED	603137 603437	B22-S25B,C	
Logic Test	RWCU VLVE LOGIC TEST keylock switches in TEST	NONE	B22-S76B,C	

- NOTES:
- The Rx. Bldg. Pipe Chase High Temperature isolation also isolates RHR and RCIC.
 - The High area temperature isolations can be bypassed for testing using the Test Switches on panels P632 and P642.
 - Any single trip signal from the following will result in isolating the valve:

High Area Temperature
High Differential Flow
SLS/RRCS Initiation



ENCLOSURE #1 (Cont.)

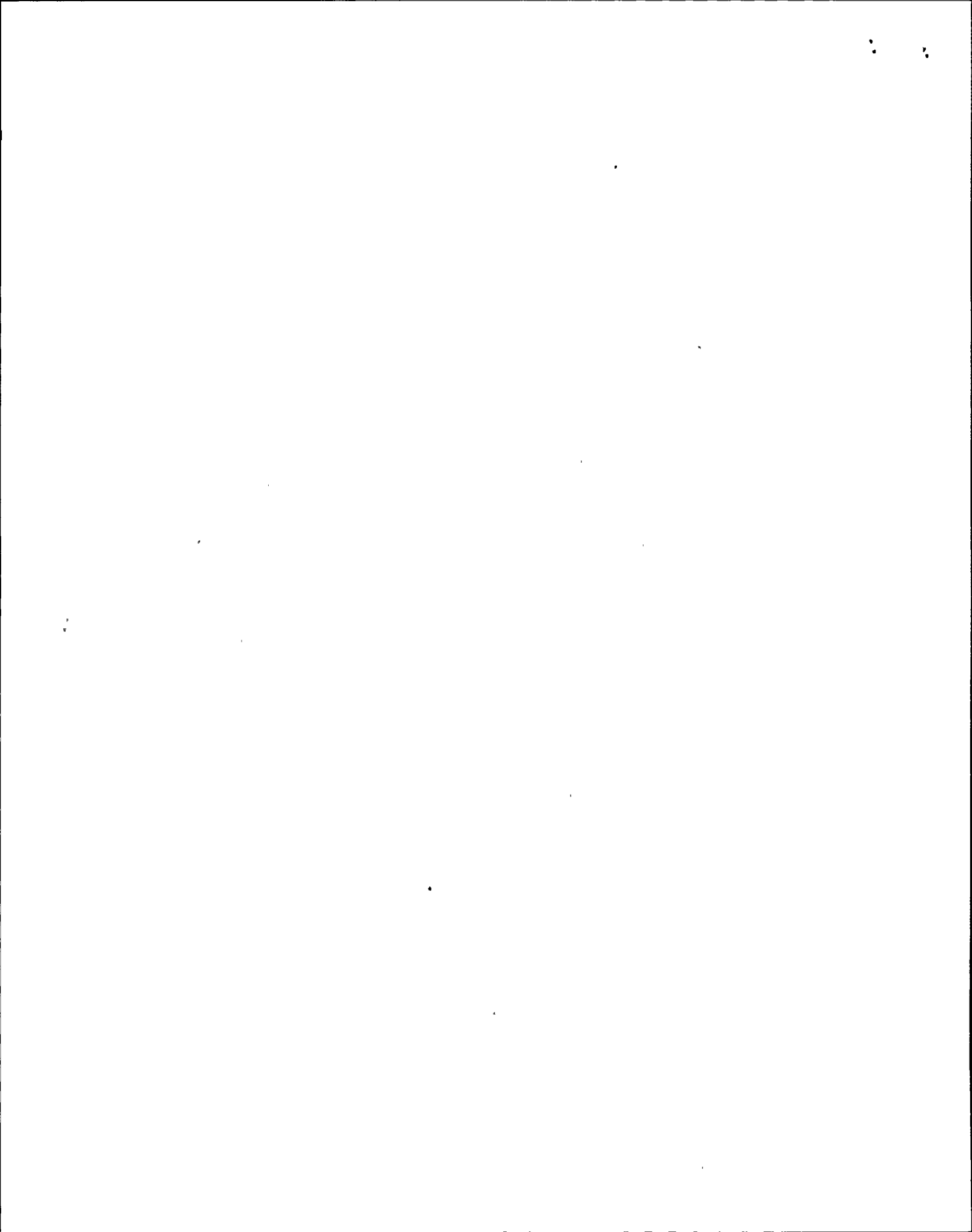
1. GROUP 8 VALVE ISOLATION SIGNALS

Group 8 Valves:	2CCP*MOV15A/B	*2CMS*SOV24A-D	2RCS*SOV65A/B
	*2CCP*MOV265	*2CMS*SOV26A-D	2RCS*SOV66A/B
	2CCP*MOV16A/B	*2CMS*SOV32A/B	2RCS*SOV67A/B
	2CCP*MOV17A/B	*2CMS*SOV33A/B	2RCS*SOV68A/B
	2CCP*MOV94A/B	*2CMS*SOV34A/B	2RCS*SOV79A/B
	*2CCP*MOV122	*2CMS*SOV35A/B	2RCS*SOV80A/B
	*2CCP*MOV124	*2CMS*SOV60A/B	2RCS*SOV81A/B
			2RCS*SOV82A/B
	*2CCP*MOV273	*2CMS*SOV61A/B	#2FPW*SOV218
		*2CMS*SOV62A/B	#2FPW*SOV219
	2DER*MOV119	*2CMS*SOV63A/B	#2FPW*SOV220
	2DER*MOV120		#2FPW*SOV221
	2DER*MOV130	*2HCS*MOV1A/B	
	2DER*MOV131	*2HCS*MOV2A/B	2DFR*MOV120
		*2HCS*MOV3A/B	2DFR*MOV121
	*2IAS*SOV164	*2HCS*MOV4A/B	2DFR*MOV139
	*2IAS*SOV165	*2HCS*MOV5A/B	2DFR*MOV140
	*2IAS*SOV166	*2HCS*MOV6A/B	
	2IAS*SOV167		2IMS*SOV152
	2IAS*SOV168		2IMS*SOV153
			2IMS*SOV156
			2IMS*SOV157
	2IAS*SOV180		
	*2IAS*SOV184		
	2IAS*SOV185		

("*" in front of valve number indicates valves which have LOCA override capability)

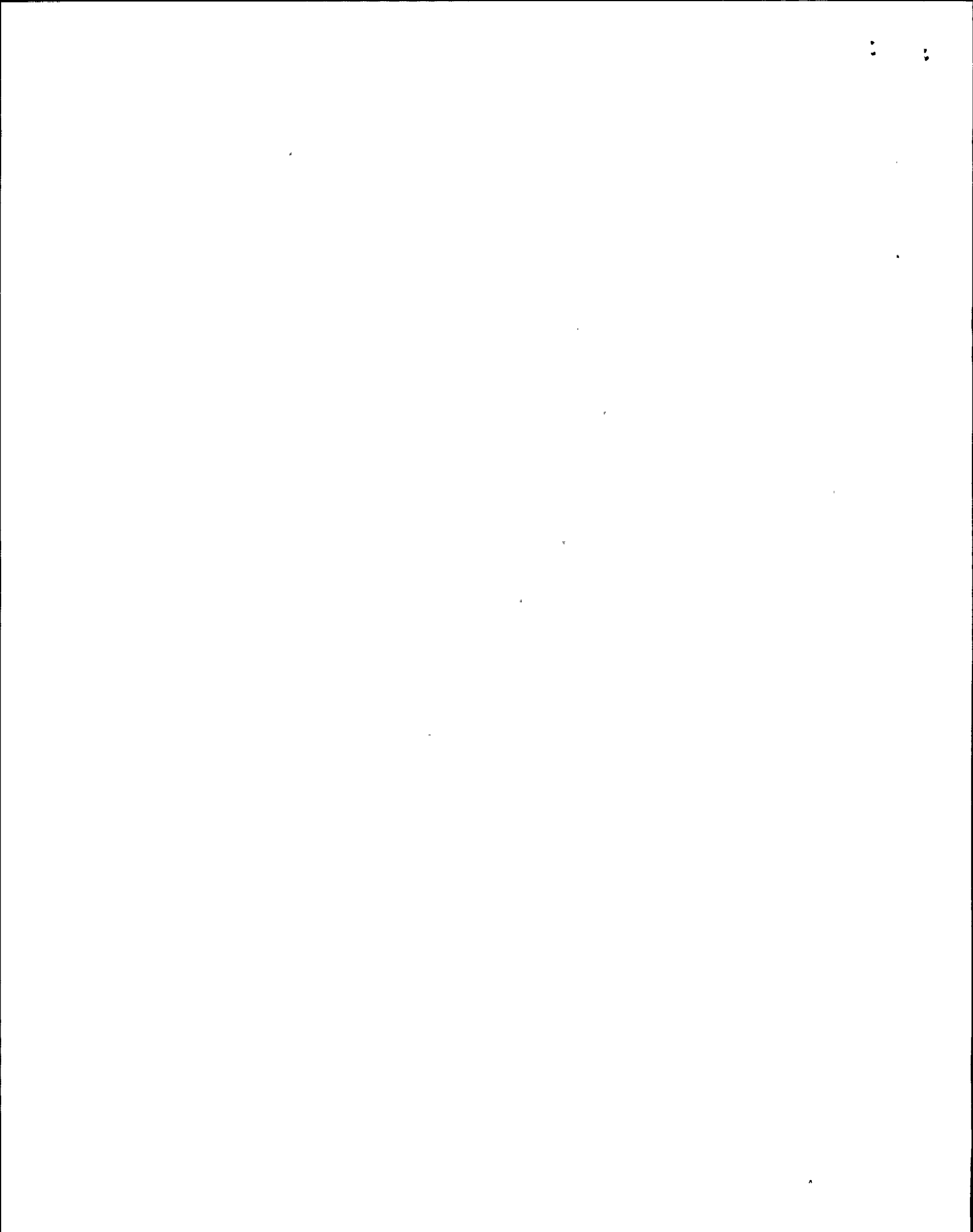
Valves are Gp. 8 containment boundary valves, but are abandoned in place and electrically deactivated. *

<u>ISOLATION PARAMETER</u>	<u>SETPOINT</u>	<u>ANNUNCIATOR</u>	<u>TRIP UNIT</u>
Reactor Water Level LO-LO	108.8 inches decreasing	603125 603425	B22-N681B and C
Drywell High Pressure	1.68 psig increasing	603101 603401	C72-N650A thru D
Manual Isolation	Switch is ARMED and DEPRESSED	603137 603437	B22-S25A thru D
Logic Test	ISOL LOGIC TEST keylock switches in TEST	NONE	B22-S19A thru D



- NOTES:
1. The ISOL LOGIC TEST switches are also used to test the Group 3 isolation valves.
 2. For valves with an "*", the LOCA isolation signals may be overridden to permit post LOCA venting of the containment using the LOCA OVERRIDE keylock switches on panels P870 and P875.

|*



ENCLOSURE #1 (Cont.)

1. GROUP 9 VALVE ISOLATION SIGNALS

Group 9 Valves:	2CPS*AOV104	*2CPS*AOV108	2CPS*AOV119
	2CPS*AOV105	*2CPS*AOV109	2CPS*AOV120
	2CPS*AOV106	*2CPS*AOV110	2CPS*AOV121
	2CPS*AOV107	*2CPS*AOV111	2CPS*AOV122

("*" in front of valve number indicates valves which have LOCA override capability)

<u>ISOLATION PARAMETER</u>	<u>SETPOINT</u>	<u>ANNUNCIATOR</u>	<u>TRIP UNIT</u>
Reactor Water Level LO-LO	108.8 inches decreasing	603125 603425	B22-N681B and C
Drywell High Pressure	1.68 psig increasing	603101 603401	C72-N650A thru D
Standby Gas Exhaust Radiation High	5.7 x 10 ⁻³ uCi/cc	851254	2GTS-RU105
Manual Isolation	Switch is ARMED and DEPRESSED	603137 603437	B22-S25A thru D
Logic Test	ISOL LOGIC TEST keylock switches in TEST	NONE	B22-S19A thru D

- NOTES:
1. The ISOL LOGIC TEST switches are also used to test the Group 3 isolation valves.
 2. For the SGTS High Radiation trip - one sensor trips all four logic channels to provide isolation of the vent and purge valves.
 3. For valves with an "*", the LOCA isolation signals may be overridden to permit post LOCA venting of the containment using the LOCA OVERRIDE keylock switches on panels P870 and P875; it may also be necessary to install jumpers to reopen nitrogen supply valves - in accordance with N2-OP-61A. *

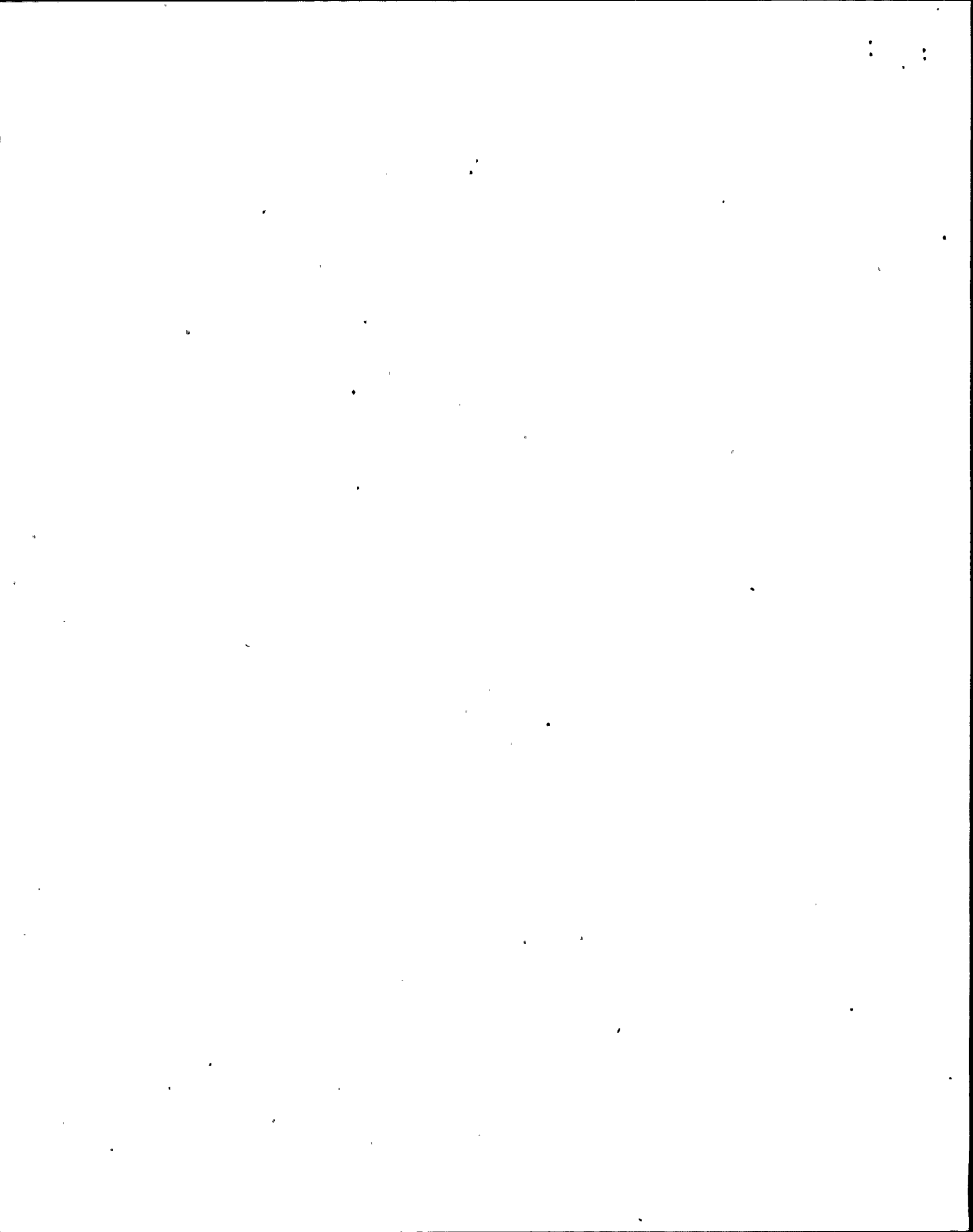


ENCLOSURE #1 (Cont.)

1. GROUP 10 VALVE ISOLATION SIGNALS

Group 10 Valves:	2ICS*MOV121	2ICS*MOV170	2ICS*MOV128	
<u>ISOLATION PARAMETER</u>	<u>SETPOINT</u>	<u>ANNUNCIATOR</u>	<u>TRIP UNIT</u>	
RCIC Steam Supply Low Pressure	75 psia	601321 601322	E31-N685A,E E31-N685B,F	
RCIC Steam Line Flow High	167.1" H ₂ O or <-275" H ₂ O	601323 601324	E31-N683A/B E31-N690A/B	TCN-7
RHR/RCIC Steam Flow High	37.4" H ₂ O or <-275" H ₂ O	601323 601324	E31-N684A/B E31-N691A/B	TCN-7
RCIC Turbine Exhaust Diaphragm Pressure High	10 psig	601312	E31-N655A,E E31-N655B,F	
RCIC Equip Area High Temperature	135°F	601341	E31-N602A/B	
Rx Bldg Pipe Chase High Temp.	135°F	601157	E31-N619-622A/B	
RCIC Pipe Chase Temp High	135°F	601345	E31-N612A/B	
Rx Bldg Gen Areas High Temp.	130°F	601157	E31-N637-641A/B	
RHR Pump Room A/B High Temperature	135°F	601457	E31-N608A-D	
Manual Isolation	Switch ARMED and DEPRESSED	601337	E51A-S37	

- NOTES:
1. The Rx Bldg Pipe Chase High Temperature isolation also isolates RHR and RWCU.
 2. The High area temperature isolations can be bypassed for testing using the Test Switches on panels P632 and P642.
 3. Any single trip signal from the area temperatures will result in isolating RCIC.
 4. Manual isolation can occur only if initiation signal is sealed in.



ENCLOSURE #1 (Cont.)

1. GROUP 11 VALVE ISOLATION SIGNALS

Group 11 Valves: 2ICS*MOV148 2ICS*MOV164

<u>ISOLATION PARAMETER</u>	<u>SETPOINT</u>	<u>ANNUNCIATOR</u>	<u>TRIP UNIT</u>
RCIC Steam Supply Low Pressure	75 psia	601321 601322	E31-N685A,E E31-N685B,F

AND

Drywell High	1.68 psig	603101 603401	B22-N694 A,E,B,F,
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Manual Isolation N/A

NOTES: 1. Valve isolation will only occur if the High Drywell Pressure and the Low Steam Supply Pressure trips are present at the same time.

1. GROUP 12 ISOLATION SIGNALS

Group 12 Valves:	2RHS*MOV15A,B
	2RHS*MOV1A,B,C
2NMS*VEX1A,	2RHS*MOV30A,B
B,C,D,E	2RHS*MOV25A,B
2FWS*MOV21A,B	2RHS*MOV24A,B,C
2WCS*MOV200	2CSH*MOV118
2RHS*MOV26A,B	2CSH*MOV105
2RHS*MOV27A,B	2CSH*MOV107
2MSS*SOV97A,B,C	2CSH*MOV112
2SLS*MOV5A,B	2CSH*MOV104
	2ICS*MOV136
	2ICS*MOV143
	2ICS*MOV122
	2ICS*MOV126

Group 12 valves are remote manual operated.

ENCLOSURE #2

PCIS CONTROL SWITCHES

A. Control Switches (Panel P602)

<u>Switch</u>	<u>Function</u>	
MSIV & DRAIN V MANUAL ISOL (B22H-S25A-D)	Allows for a rapid means of isolating all PCIS valves. The MSIVs can be isolated by arming and depressing either switches A and B or C and D - both inboard and outboard valves will shut.	TCN-4
	For all other PCIS Valves: The outboard valves can be isolated by arming and depressing switches A & D. The inboard valves can be isolated by arming and depressing switches B & C. The inboard and outboard MSIV's will close in both cases.	TCN-4
MSIV & DRAIN V MANUAL ISOL RESET (B22H-S32 and S33)	Allows the isolation signals for the tripped PCIS logic channels to be reset.	

B. Logic Test Switches (Panels P609 and P611)

These logic test switches provide a means for testing the logic circuits for the PCIS valves in Groups I - IX (except for the MSIVs). These test switches generate an isolation signal in the respective logic channels. These test switches and the groups they affect are:

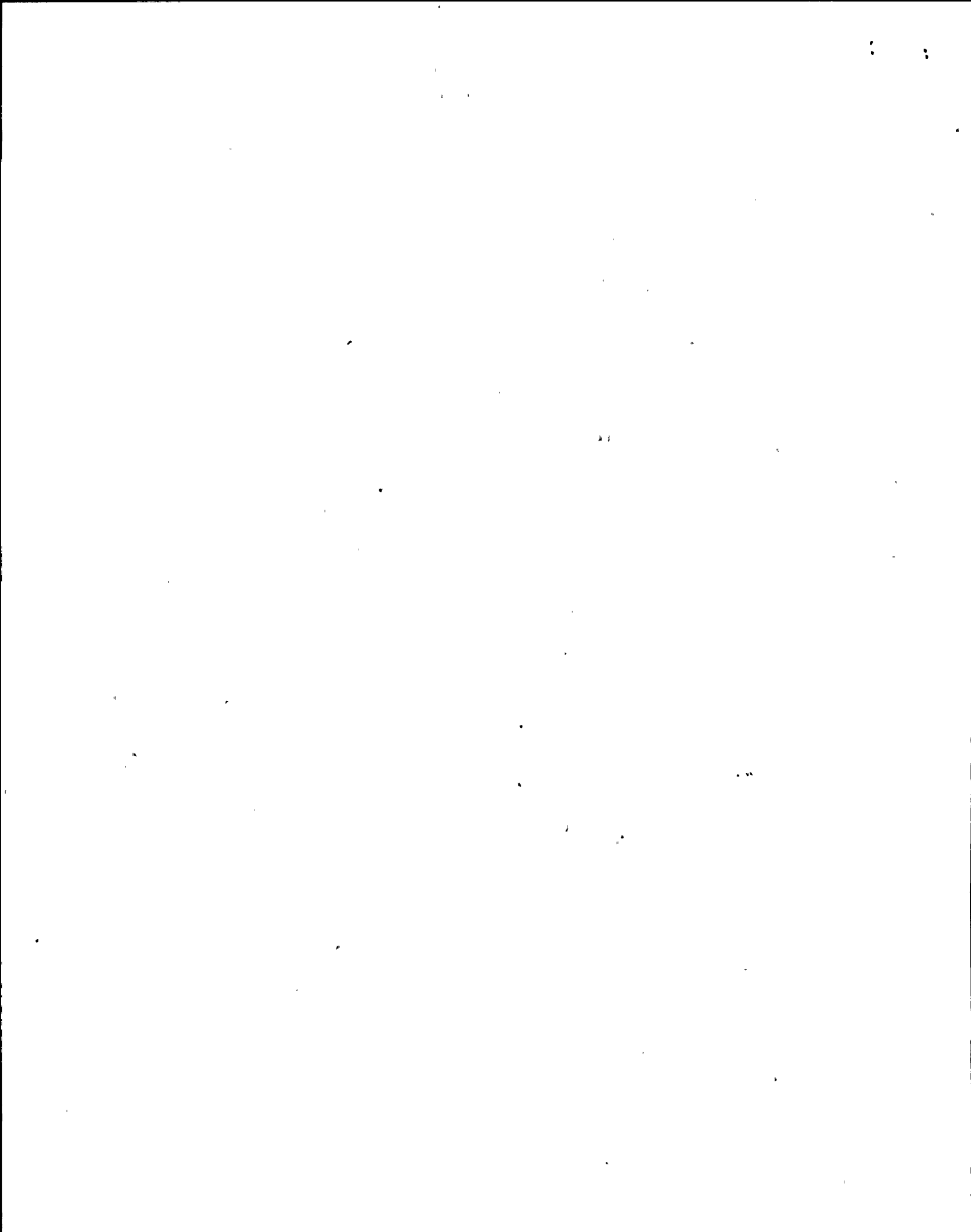
ISOL LOGIC TEST (B22H-S21A-D) - Groups III and VIII MAIN STEAM LINE
DRAIN LOGIC TEST (B22H-S20A-D) - Group I (MSL Drains Only)

RHR SYSTEM LOGIC TEST (B22H-S21A-D) - Groups IV and V REACTOR WATER
SAMPLE VLV LOGIC TEST (B22H-S71A-D) - Group II RWCU VLV LOGIC TEST
(B22H-S76A-D) - Group VI and VII.

C. Individual System Isolation Switches

Division I

<u>Switch</u>	<u>Associated Valves</u>
DIVI INSTRUMENT AIR TO DRYWELL MANUAL ISOL	2IAS*SOV164, 166, 167, 168
DIVISION I HYDROGEN RECOMB MANUAL ISOL	2HCS*MOV1A THRU 6A
DIVISION I DRYWELL EQUIP DR MANUAL ISOL	2DER*MOV120 and 131
DIVISION I MAIN STEAM DRAINS V MANUAL ISOL	2MSS*MOV122 and 208



C. Individual System Isolation Switches (Cont.)

Division I

<u>Switch</u>	<u>Associated Valves</u>
DIVISION I CONTAINMENT ATMOS MONITOR	2CMS*SOV24A&C, 26A&C, 32A, 33A, 34A, 35A, 60A, 61A, 62A, 63A and 2CMS*AIT-6A
DIVISION I LEAKAGE MONITOR MANUAL ISOL	2LMS*SOV153 and 157
DIVISION I DRYWELL FLOOR DR MANUAL ISOL	2DFR*MOV120 and 139
DIVISION I CONTMT PURGE MANUAL ISOL	2CPS*AOV104, 105, 110, 111, and SOV119, 120
DIVISION I FIRE PROT TO RECIRC PUMPS MANUAL ISOL	2FPW*SOV218 and 220
DIVISION I DRYWELL UC CLG WTR MANUAL ISOL	2CCP*MOV265 and 124

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Division 2

DIV2 INSTRUMENT AIR TO DRYWELL MANUAL ISOL	2IAS*SOV165, 180, 184, 185
DIVISION 2 HYDROGEN RECOMB MANUAL ISOL	2HCS*MOV1B THRU 6B
DIVISION 2 DRYWELL EQUIP DR MANUAL ISOL	2DER*MOV119 AND 130
DIVISION 2 MAIN STEAM DRAINS V MANUAL ISOL	2MSS*MOV111
DIVISION 2 CONTAINMENT ATMOS MONITOR	2CMS*SOV24B&D, 26B&D, 32B, 33B, 34B, 35B, 60B, 61B, 62B, 63B and 2CMS*AIT-6B
DIVISION 2 LEAKAGE MONITOR MANUAL ISOL	2LMS*SOV152 and 156
DIVISION 2 DRYWELL FLOOR DR MANUAL ISOL	2DFR*MOV121 and 140
DIVISION 2 CONTMT PURGE MANUAL ISOL	2CPS*AOV106, 107, 108, 109, and SOV121, 122
DIV2 FIRE PROT TO RECIRC PUMPS MANUAL ISOL	2FPW*SOV219 and 221
DIVISION 2 DRYWELL UC CLG WTR MANUAL ISOL	2CCP*MOV122 and 273

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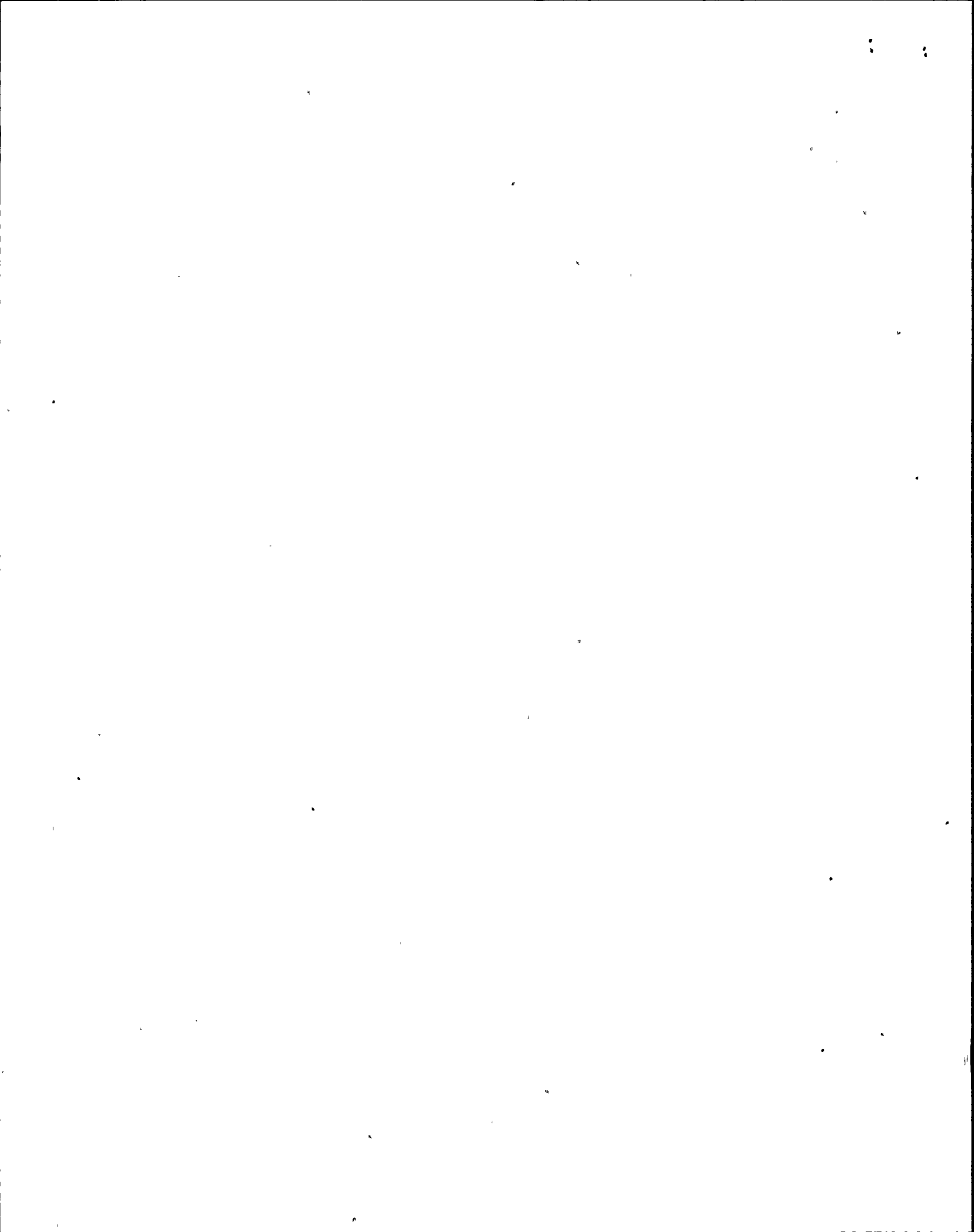


ENCLOSURE 3

OFF NORMAL STATUS INDICATION

NOTE: The Off-Normal Status Light ON indicates the following:

VALVE	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	VALVE GROUP ISOL NO/ REMARKS
2CCP*MOV15A		X	X		8
2CCP*MOV15B		X	X		8
2CCP*MOV16A		X	X		8
2CCP*MOV16B		X	X		8
2CCP*MOV17A		X	X		8
2CCP*MOV17B		X	X		8
2CCP*MOV94A		X	X		8
2CCP*MOV94B		X	X		8
2CCP*MOV122		X	X		8
2CCP*MOV124		X	X		8
2CCP*MOV265		X	X		8
2CCP*MOV273		X	X		8
2CMS*SOV24A			X		8
2CMS*SOV24B			X		8
2CMS*SOV24C			X		8
2CMS*SOV24D			X		8
2CMS*SOV26A			X		8
2CMS*SOV26B			X		8
2CMS*SOV26C			X		8
2CMS*SOV26D			X		8

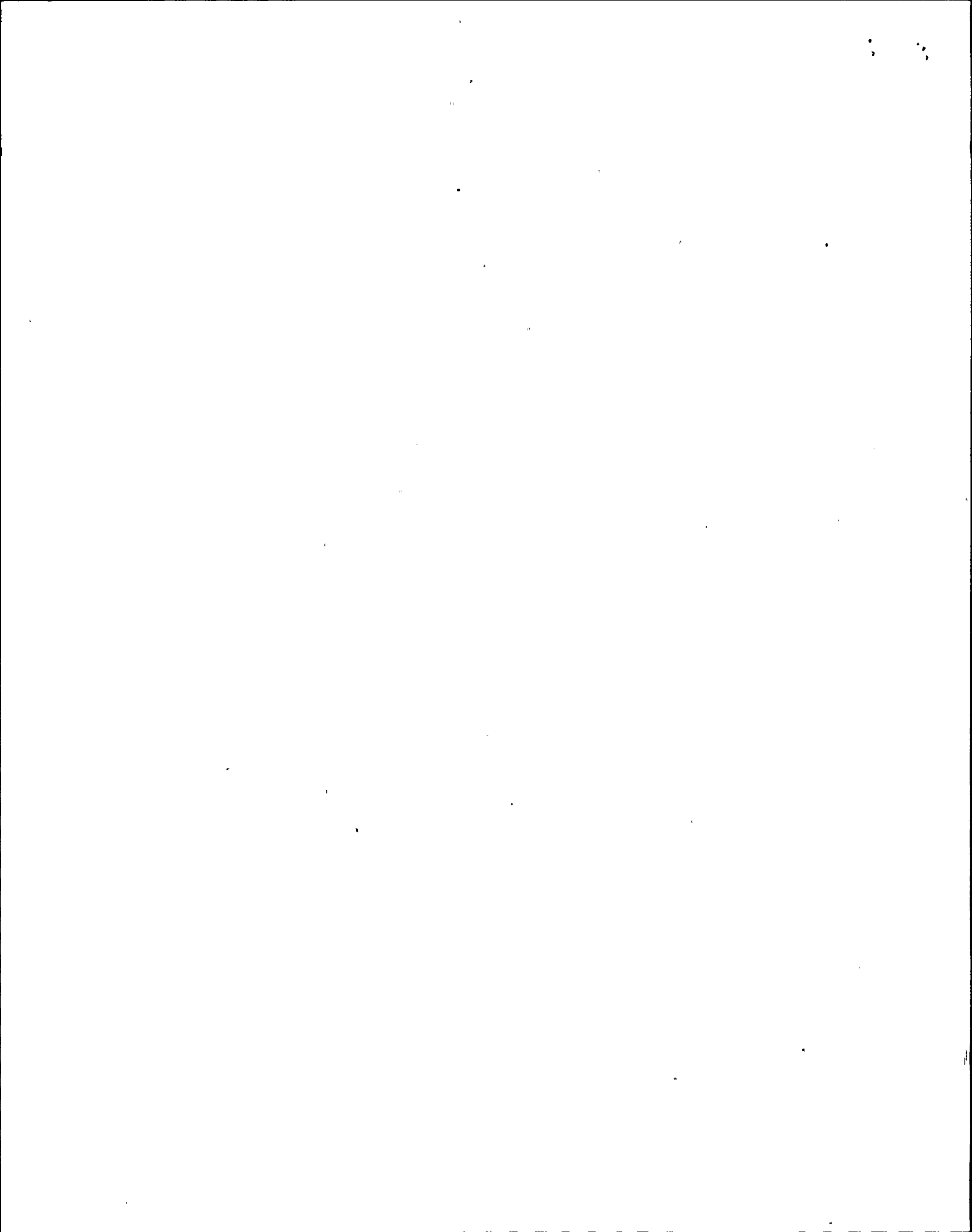


ENCLOSURE 3

OFF NORMAL STATUS INDICATION

NOTE: The Off-Normal Status Light ON indicates the following:

VALVE	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	VALVE GROUP ISOL NO/ REMARKS
2CMS*SOV32A			X		8
2CMS*SOV32B			X		8
2CMS*SOV33A			X		8
2CMS*SOV33B			X		8
2CMS*SOV34A			X		8
2CMS*SOV34B			X		8
2CMS*SOV35A			X		8
2CMS*SOV35B			X		8
2CMS*SOV60A			X		8
2CMS*SOV60B			X		8
2CMS*SOV61A			X		8
2CMS*SOV61B			X		8
2CMS*SOV62A			X		8
2CMS*SOV62B			X		8
2CMS*SOV63A			X		8
2CMS*SOV63B			X		8
2CPS*AOV104			X		9 TCN-
2CPS*AOV105			X		9
2CPS*AOV106			X		9
2CPS*AOV107			X		9



ENCLOSURE 3

OFF NORMAL STATUS INDICATION

NOTE: The Off-Normal Status Light ON indicates the following:

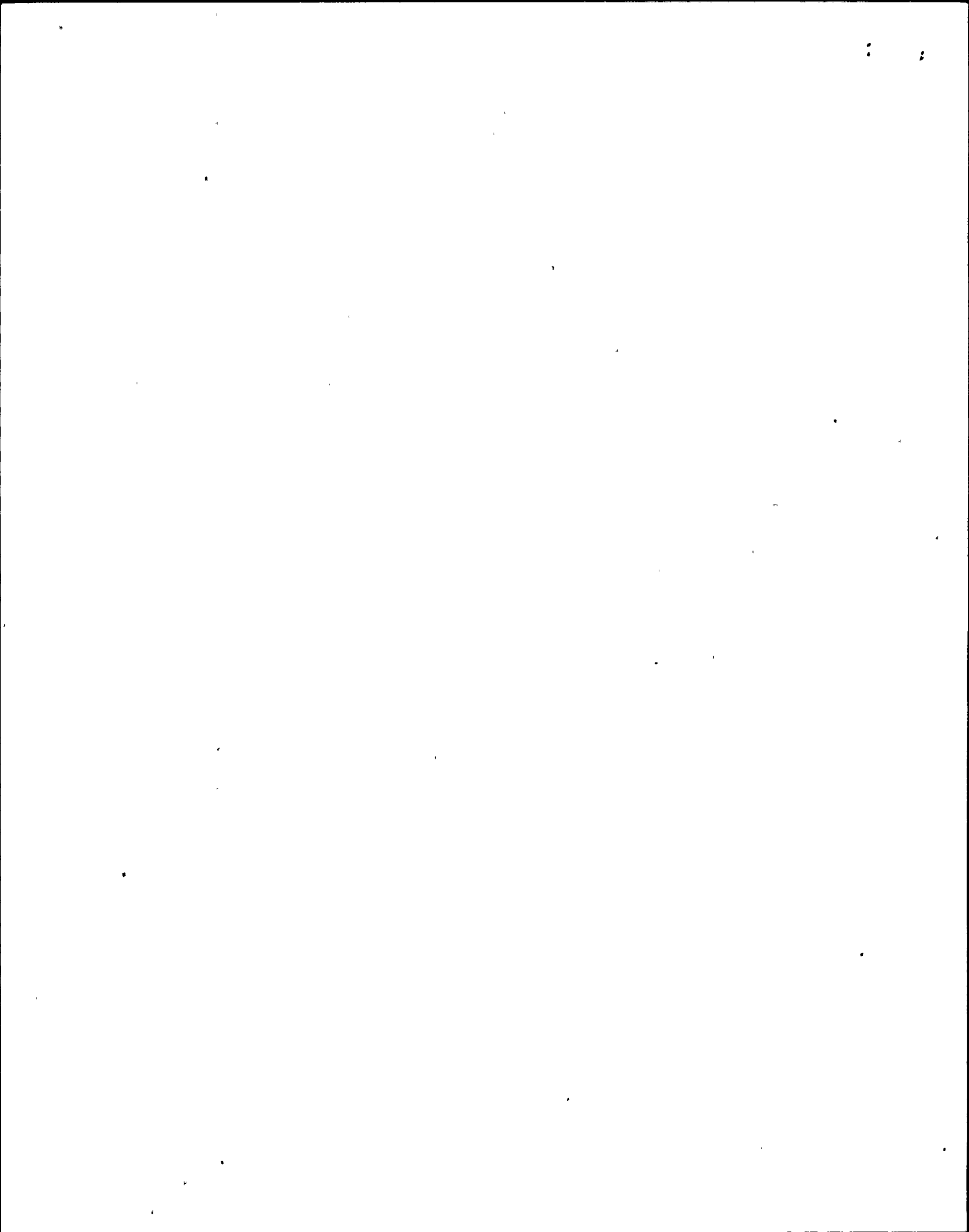
VALVE	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	VALVE GROUP ISOL NO/ REMARKS
2CPS*AOV108			X		9
2CPS*AOV109			X		9
2CPS*AOV110			X		9
2CPS*AOV111			X		9
2CPS*SOV119			X		9
2CPS*SOV120			X		9
2CPS*SOV121			X		9
2CPS*SOV122			X		9
2CPS*SOV132			X		
2CPS*SOV133			X		
2CSH*AOV108	Coincident with 2CSH*MOV107 SHUT	Coincident with 2CHS*MOV107 OPEN			
2CSH*MOV105				X	Level 8 Isolation
2CSH*MOV107			X		Level 8 Isolation
2CSH*MOV111			X		Level 8 Isolation
2CSH*MOV118				X	Level 8 Isolation
2CSL*AOV101	X			X	
2CSL*MOV104	X			X	

ENCLOSURE 3

OFF NORMAL STATUS INDICATION

NOTE: The Off-Normal Status Light ON indicates the following:

VALVE	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	VALVE GROUP ISOL NO/ REMARKS
2CSL*MOV112				X	
2DER*MOV119		X	X		8
2DER*MOV120		X	X		8
2DER*MOV130		X	X		8
2DER*MOV131		X	X		8
2DFR*MOV120		X	X		8
2DFR*MOV121		X	X		8
2DFR*MOV139		X	X		8
2DFR*MOV140		X	X		8
2FPW-SOV218			X		8
2FPW-SOV219			X		8
2FPW-SOV220			X		8
2FPW-SOV221			X		8
2FWS*A0V23A		Mode Switch Startup/Run	X		RWCU Isol & Low Feed Press
2FWS*A0V23B		Mode Switch Startup/Run	X		RWCU Isol & Low Feed Press
2FWS*MOV21A		Mode Switch Startup/Run	X		RWCU Isol & Low Feed Press
2FWS*MOV21B		Mode Switch Startup/Run	X		RWCU Isol & Low Feed Press
2GSN*SOV166		X	X		3

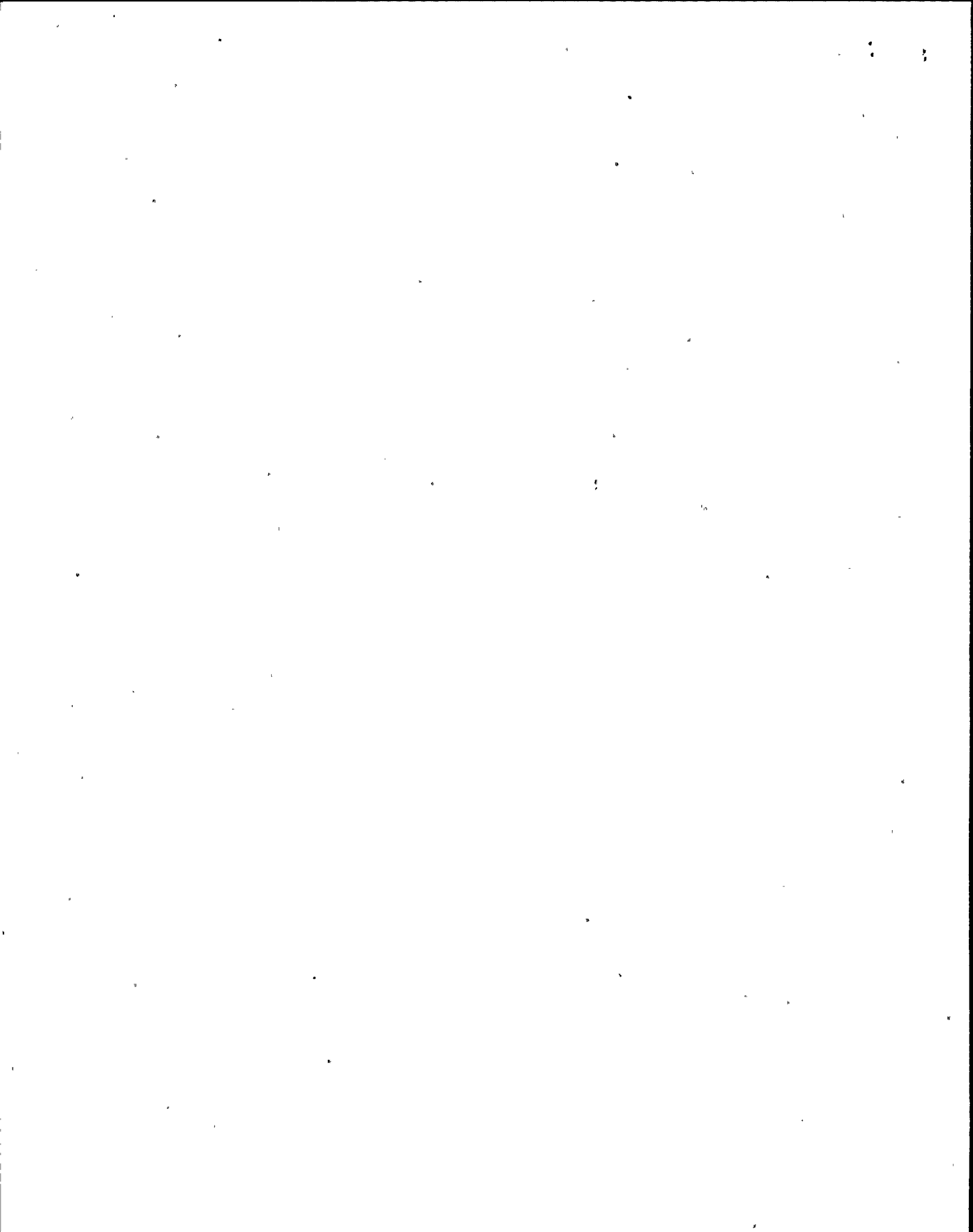


ENCLOSURE 3

OFF NORMAL STATUS INDICATION

NOTE: The Off-Normal Status Light ON indicates the following:

VALVE	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	VALVE GROUP ISOL NO/ REMARKS
2HCS*MOV1A	X		X		8
2HCS*MOV1B	X		X		8
2HCS*MOV2A	X		X		8
2HCS*MOV2B	X		X		8
2HCS*MOV3A	X		X		8
2HCS*MOV3B	X		X		8
2HCS*MOV4A	X		X		8
2HCS*MOV4B	X		X		8
2HCS*MOV5A	X		X		8
2HCS*MOV5B	X		X		8
2HCS*MOV6A	X		X		8
2HCS*MOV6B	X		X		8
2IAS*SOV164			X		8
2IAS*SOV165			X		8
2IAS*SOV166			X		8
2IAS*SOV167			X		8
2IAS*SOV168			X		8
2IAS*SOV180			X		8
2IAS*SOV184			X		8
2IAS*SOV185			X		8



ENCLOSURE 3

OFF NORMAL STATUS INDICATION

NOTE: The Off-Normal Status Light ON indicates the following:

VALVE	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	VALVE GROUP ISOL NO/ REMARKS
2ICS*AOV156				X	
2ICS*AOV157				X	
2ICS*MOV121			X		
2ICS*MOV122			X		
2ICS*MOV128			X		
2ICS*MOV136			X		
2ICS*MOV143				X	
2ICS*MOV148			X		11
2ICS*MOV170			X		
2LMS*SOV152			X		8
2LMS*SOV153			X		8
2LMS*SOV156			X		8
2LMS*SOV157			X		8
2MSS*A0V6A	Mode Switch Shutdown/Refuel	Mode Switch Startup/Run	X		1
2MSS*A0V6B	Mode Switch Shutdown/Refuel	Mode Switch Startup/Run	X		1
2MSS*A0V6C	Mode Switch Shutdown/Refuel	Mode Switch Startup/Run	X		1
2MSS*A0V6D	Mode Switch Shutdown/Refuel	Mode Switch Startup/Run	X		1
2MSS*A0V7A	Mode Switch Shutdown/Refuel	Mode Switch Startup/Run	X		1
2MSS*A0V7B	Mode Switch Shutdown/Refuel	Mode Switch Startup/Run	X		1
2MSS*A0V7C	Mode Switch Shutdown/Refuel	Mode Switch Startup/Run	X		1

TCN-

ENCLOSURE 3

OFF NORMAL STATUS INDICATION

NOTE: The Off-Normal Status Light ON indicates the following:

VALVE	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	VALVE GROUP ISOL NO/ REMARKS
2MSS*A0V7D	Mode Switch Shutdown/Refuel	Mode Switch Startup/Run	X		1
2MSS*MOV111			X		1
2MSS*MOV112			X		1
2MSS*MOV208			X		1
2RCS*SOV65A			X		8
2RCS*SOV65B			X		8
2RCS*SOV66A			X		8
2RCS*SOV66B			X		8
2RCS*SOV67A			X		8
2RCS*SOV67B			X		8
2RCS*SOV68A			X		8
2RCS*SOV68B			X		8
2RCS*SOV79A			X		8
2RCS*SOV79B			X		8
2RCS*SOV80A			X		8
2RCS*SOV80B			X		8
2RCS*SOV81A			X		8
2RCS*SOV81B			X		8
2RCS*SOV82A			X		8
2RCS*SOV82B			X		8

TCN

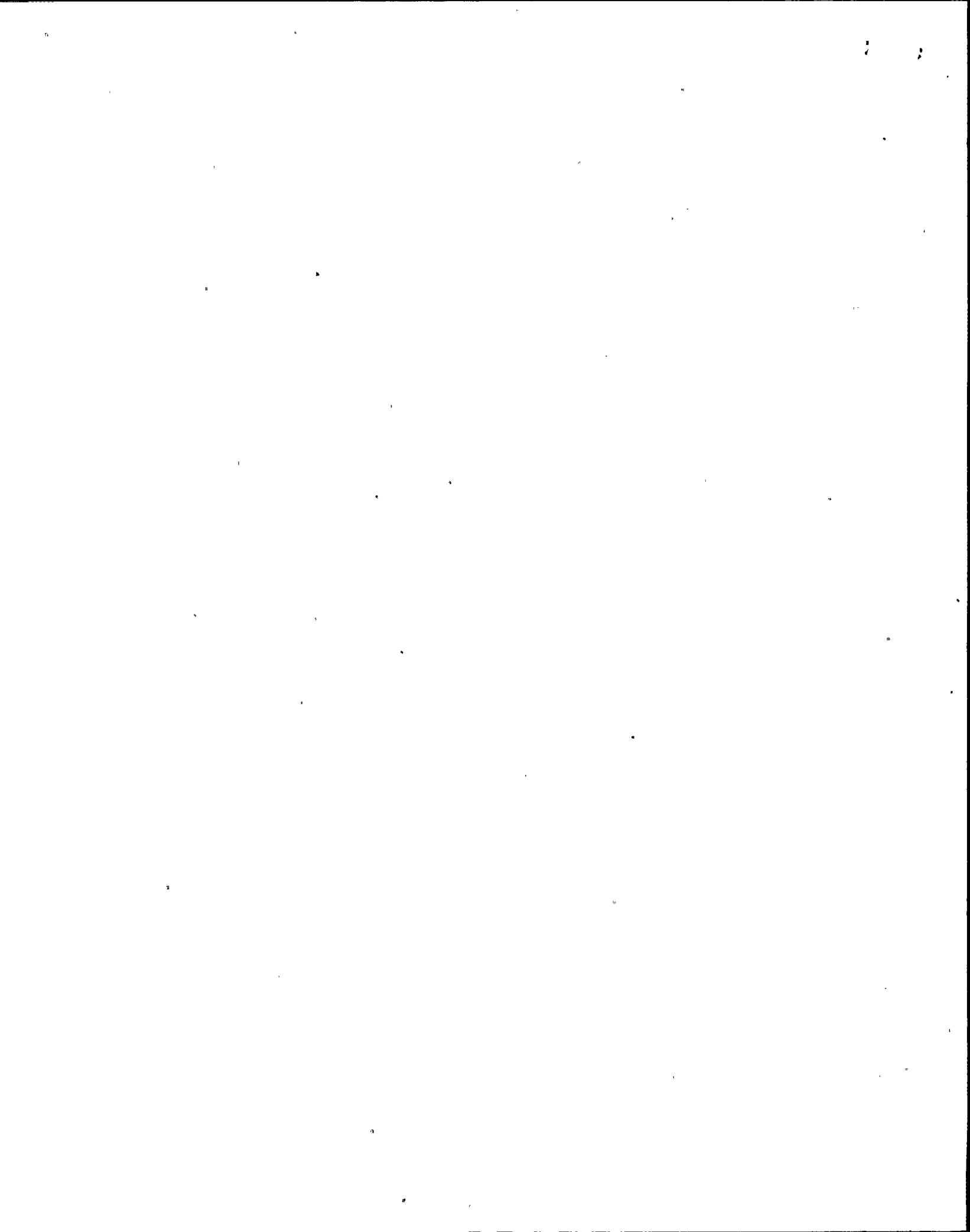


ENCLOSURE 3

OFF-NORMAL STATUS INDICATION

NOTE: The Off-Normal Status Light ON indicates the following:

VALVE	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	VALVE GROUP ISOL NO/ REMARKS
2RCS*SOV104			X		2
2RCS*SOV105			X		2
2RHS*MOV1A		X		X	
2RHS*MOV1B		X		X	
2RHS*MOV1C		X		X	
2RHS*AOV16A	X			X	
2RHS*AOV16B	X			X	
2RHS*AOV16C	X			X	
2RHS*MOV24A	X			X	
2RHS*MOV24B	X			X	
2RHS*MOV24C	X			X	
2RHS*MOV25A	X				
2RHS*MOV25B	X				
2RHS*MOV30A		X		X	
2RHS*MOV30B		X		X	
2RHS*MOV33A	Coincident with 2RHS*MOV24A OPEN	X			
2RHS*MOV33B	Coincident with 2RHS*MOV24B OPEN	X			
2RHS*AOV39A		X			
2RHS*AOV39B		X			
2RHS*MOV40A		Mode Switch Snutdown	Mode Switch Snutdown		5

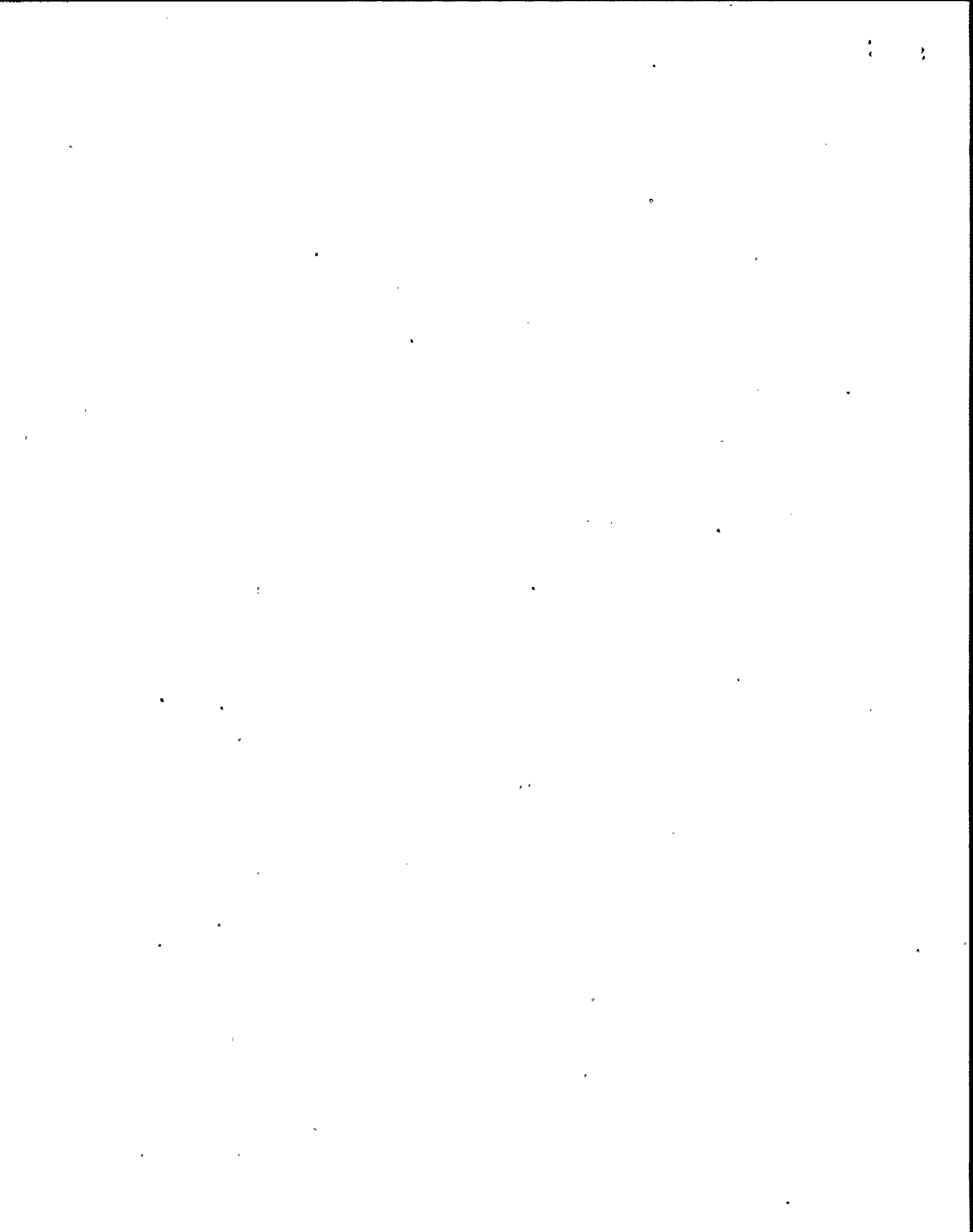


ENCLOSURE 3

OFF NORMAL STATUS INDICATION

NOTE: The Off-Normal Status Light ON indicates the following:

VALVE	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	NO ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	ISOL/INITIATION SIGNAL PRESENT AND VALVE OPEN	ISOL/INITIATION SIGNAL PRESENT AND VALVE SHUT	VALVE GROUP ISOL NO/ REMARKS
2RHS*MOV40B		Mode Switch Shutdown	Mode Switch Shutdown		5
2RHS*MOV67A			X		5
2RHS*MOV67B			X		5
2RHS*MOV112		Mode Switch Shutdown	Mode Switch Shutdown		5
2RHS*MOV113		Mode Switch Shutdown	Mode Switch Shutdown		5
2SLS*MOV5A				X	
2SLS*MOV5B				X	
2WCS*MOV102			X		7
2WCS*MOV112			X		6
2WCS*MOV200			X		
TIP TUBE A			X		3
TIP TUBE B			X		3
TIP TUBE C			X		3
TIP TUBE D			X		3
TIP TUBE E			X		3
PERSONNEL HATCH					HATCH OPEN
PERSONNEL HATCH					HATCH OPEN
EQUIP/ACCESS HATCH					HATCH OPEN
EQUIP/ACCESS HATCH					HATCH OPEN



ENCLOSURE 4
REACTOR VESSEL WATER LEVEL LOW - LEVEL 1 (17.8 INCHES)

TCN-9

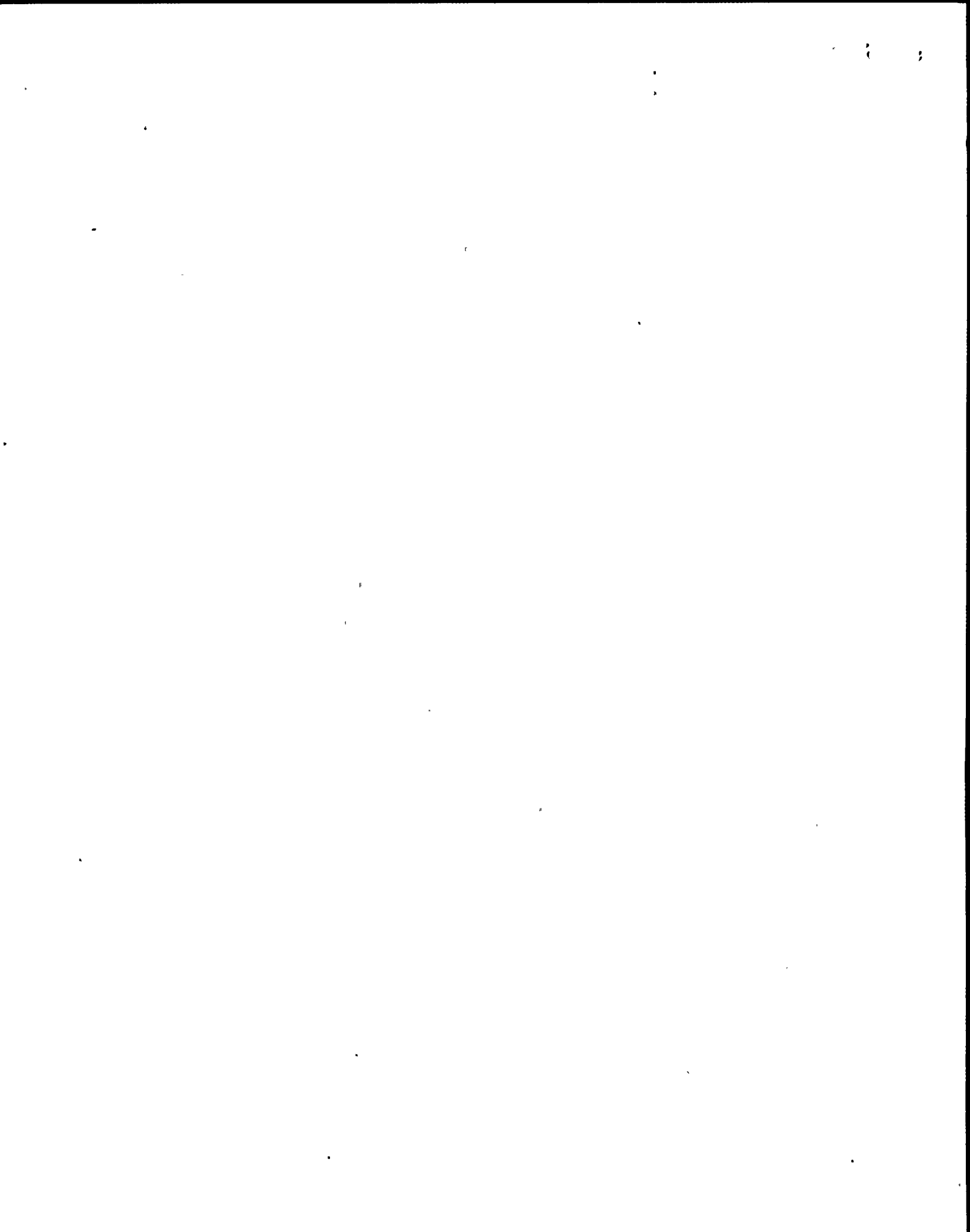
<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. LPCS and RHS "A" Auto Initiation	601403; 601413 601443; 601451	B22-N691A (P629) B22-N691E (P629)
2. RHS "B" and RHS "C" Auto Initiation	601603; 601612 601642; 601651	B22-N691B (P618) B22-N691F (P618)
3. EGS*EG1 Auto Starts	852117	B22-N691A (P629) B22-N691E (P629)
4. EGS*EG3 Auto Starts	852217	B22-N691B (P618) B22-N691F (P618)
5. ADS Logic Initiation	601531; 601532; 601525 and 601526 at Level 1 if associated RHS pump is on. 601523 and 601524 at Level 1 if Level 3 confirmatory is in and 105 second timer is timed out and associated RHS pump is on.	B22-N691A,E (P629) B22-N691B,F (P618)
6. Group 1 Isolation MSS*AOV6A,6B,6C,6D MSS*AOV7A,7B,7C,7D MSS*AOV111,112,208	602218; 602224	B22-N684A,C (P609) B22-N684B,D (P618)

ENCLOSURE 4
REACTOR VESSEL WATER LEVEL LOW - LEVEL 2 (108.8 INCHES)

TCN
-9

603125; 603425; 602218; 602224

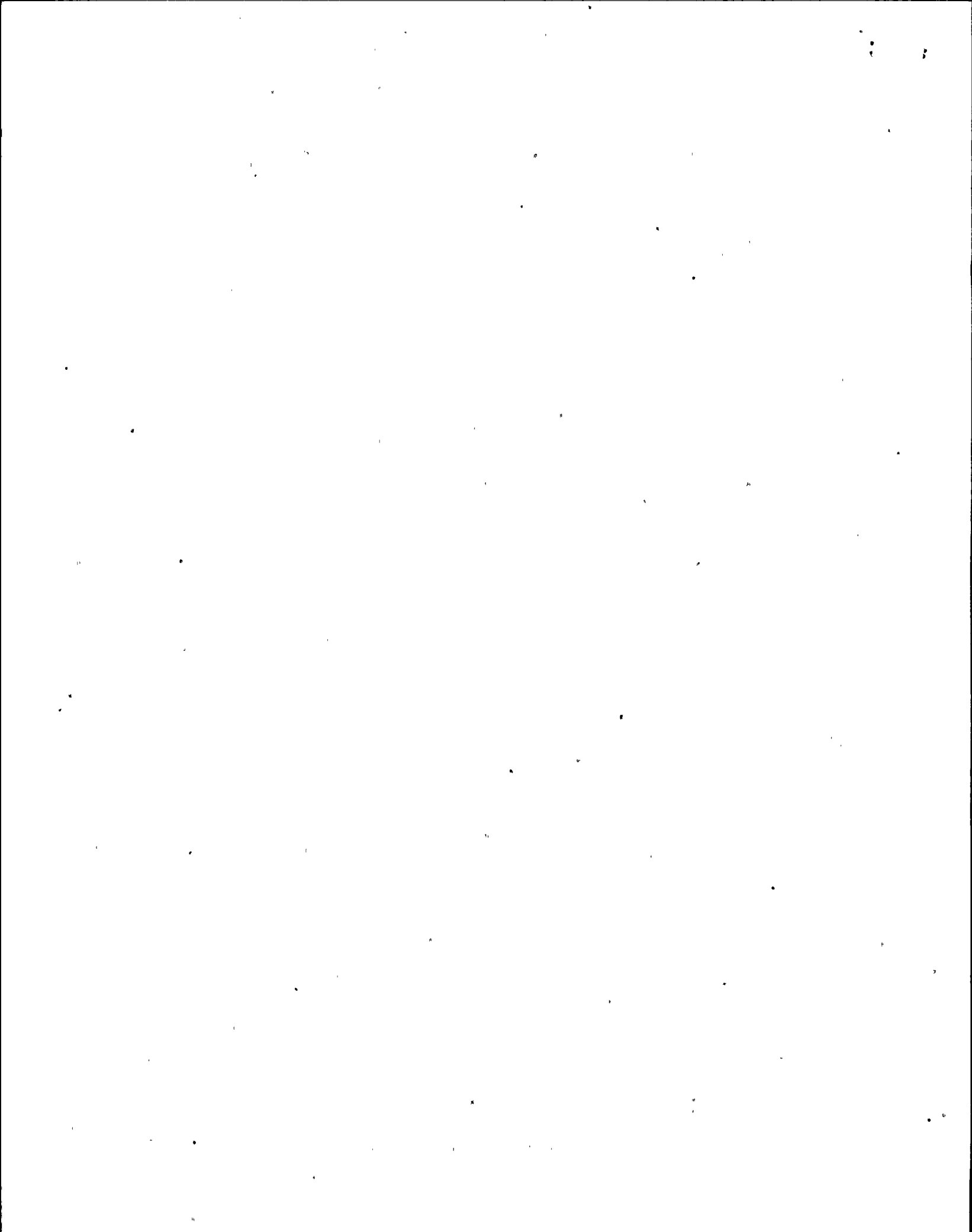
<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. HPCS Initiation	601708	B22-N673C,G,L,R (P625)
2. HPCS Diesel Generator Auto Start	852317	B22-N673C,G,L,R (P625)
3. RCIC System Initiation	PNL601 Valve Positions	B22-N692B,F (P618) B22-N692A,E (P629)
4. Group 2 Isolation RCS*SOV104, 105	PNL602 Valve Positions	B22-N681A,C (P609) B22-N681B,D (P611)
5. Group 3 Isolation NMS*SOV1A through NMS*SOV1E GSN*SOV166	PNL607 Valve Positions PNL603 Valve Positions	B22-N681B (P611) B22-N681C (P609)
6. Group 6 Isolation WCS*MOV112	PNL602 Valve Positions	B22-N681A (P609) B22-N681D (P611)
7. Group 7 Isolation WCS*MOV102	PNL602 Valve Positions	B22-N681B (P611) B22-N681C (P609)
8. Group 9 Isolation CPS*AOV104, 105 CPS*AOV110, 111 CPS*SOV119, 120 CPS*AOV107, 106 CPS*AOV108, 109 CPS*SOV121, 122	PNL873 Valve Positions PNL873 Valve Positions PNL873 Valve Positions PNL875 Valve Positions PNL875 Valve Positions PNL875 Valve Positions	B22-N681B B22-N681C



ENCLOSURE 4
REACTOR VESSEL WATER LEVEL LOW - LEVEL 2 (108.8 INCHES)

603125; 603425; 602218; 602224

<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
9. Group 8 Isolation		B22-N681B (P611) B22-N681C (P609)
IAS*SOV166, 167, 168	PNL851 Valve Positions	
IAS*SOV180, 184, 185	PNL851 Valve Positions	
CCP*MOV15A, 16A, 17A, 94A	PNL602 Valve Positions	
CCP*MOV15B, 16B, 17B, 94B	PNL602 Valve Positions	
RCS*SOV65A, 66A, 67A, 68A	PNL602 Valve Positions	
RCS*SOV65B, 66B, 67B, 68B	PNL602 Valve Positions	
RCS*SOV80A, 79A, 81A, 82A	PNL602 Valve Positions	
RCS*SOV79B, 80B, 81B, 82B	PNL602 Valve Positions	
IAS*SOV164, 165	PNL601 Valve Positions	
CCP*MOV122, 124, 265, 273	PNL873 Valve Positions	
DER*MOV119, 120, 130, 131	PNL873 Valve Positions	
DFR*MOV120, 121, 139, 140	PNL873 Valve Positions	
CMS*SOV24A, 26A	PNL873 Valve Positions	TCN- 12
CMS*SOV24C, 26C	PNL873 Valve Positions	TCN- 12
CMS*SOV32A, 33A, 34A, 35A	PNL873 Valve Positions	
CMS*SOV60A, 60B, 62A, 62B	PNL873 Valve Positions	
HCS*MOV1A, 2A, 3A, 4A, 5A, 6A	PNL873 Valve Positions	
LMS*SOV153, 157	PNL873 Valve Positions	
CMS*SOV24B, 26B	PNL875 Valve Positions	TCN- 12
CMS*SOV24D, 26D	PNL875 Valve Positions	TCN- 12
CMS*SOV32B, 33B, 34B, 35B	PNL875 Valve Positions	
CMS*SOV61A, 61B, 63A, 63B	PNL875 Valve Positions	
HCS*MOV1 thru 6B	PNL875 Valve Positions	
LMS*SOV152, 156	PNL875 Valve Positions	



ENCLOSURE 4
REACTOR VESSEL WATER LEVEL LOW - LEVEL 2 (108.8 INCHES)

603125; 603425; 602218; 602224

<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
10. Control Room Special Filter Initiation	870312; 871312	
HVC*MOV1A shuts	PNL870 Damper Position	
HVC*FN2A starts	PNL870 Fan Status	
HVC*MOV1B shuts	PNL871 Damper Position	
HVC*FN2B starts	PNL871 Fan Status	
11. RRCS Level 2 Logic Initiates	603439 (If APRMs not DNSCL); 603422; 603423; 603445	C22-P001; P002 Panels in Relay Room
Reactor Scrams		
Recirc Pump Trips		
ARI		
SLS Initiator and WCS Isolates (after 98 seconds)		
12. Secondary Contain- ment Isolates		
HVR*AOD1A, 9A, 10A, 34A shut.	PNL870 Valve Positions	
HVR*AOD1B, 9B, 10B, 34B shut.	PNL871 Valve Positions	
HVR*UC413B or 413A starts.	PNL871 or PNL870	
GTS*TRNA auto starts.	PNL870 Train Status	
GTS*TRNB auto starts.	PNL871 Train Status	

*2



ENCLOSURE 4
REACTOR VESSEL WATER LEVEL LOW - LEVEL 3 (159.3 INCHES)

TCN-9

603105; 603405; 602218; 602224; EOP RPV ENTRY CONDITION

<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Reactor Scram	603105; 603110 603405; 603410	B22-N680A,C (PNL609) B22-N680B,D (PNL611)
2. Group 4 Isolation RHS*MOV142 RHS*MOV149 RHS*SOV35A,B RHS*SOV36A,B	Valve Positions on PNL601	B22-N680A,C (PNL609) B22-N680B,D (PNL611)
3. Group 5 Isolation RHS*MOV104 RHS*MOV112 RHS*MOV113 RHS*MOV40A,B RHJS*MOV67A,B	Valve Positions on PNL601	B22-N680A,C (PNL609) B22-N680B,D (PNL611)
4. Recirc Pumps Down shift to LFMG	602225; 602226	None
5. Feed Water Level Control Setpoint Setdown	Amber Light (PNL603) (set point set down)	None
6. ADS Level Low- Confirmatory	601529; 601530	B22-N695A (PNL629) B22-N695B (PNL618)
7. Post Accident Monitor Recorders Shift to Fast Speed.	Recorder running in fast on PNL601.	None

ENCLOSURE 4
REACTOR VESSEL WATER LEVEL LOW - LEVEL 4 (178.3 INCHES)

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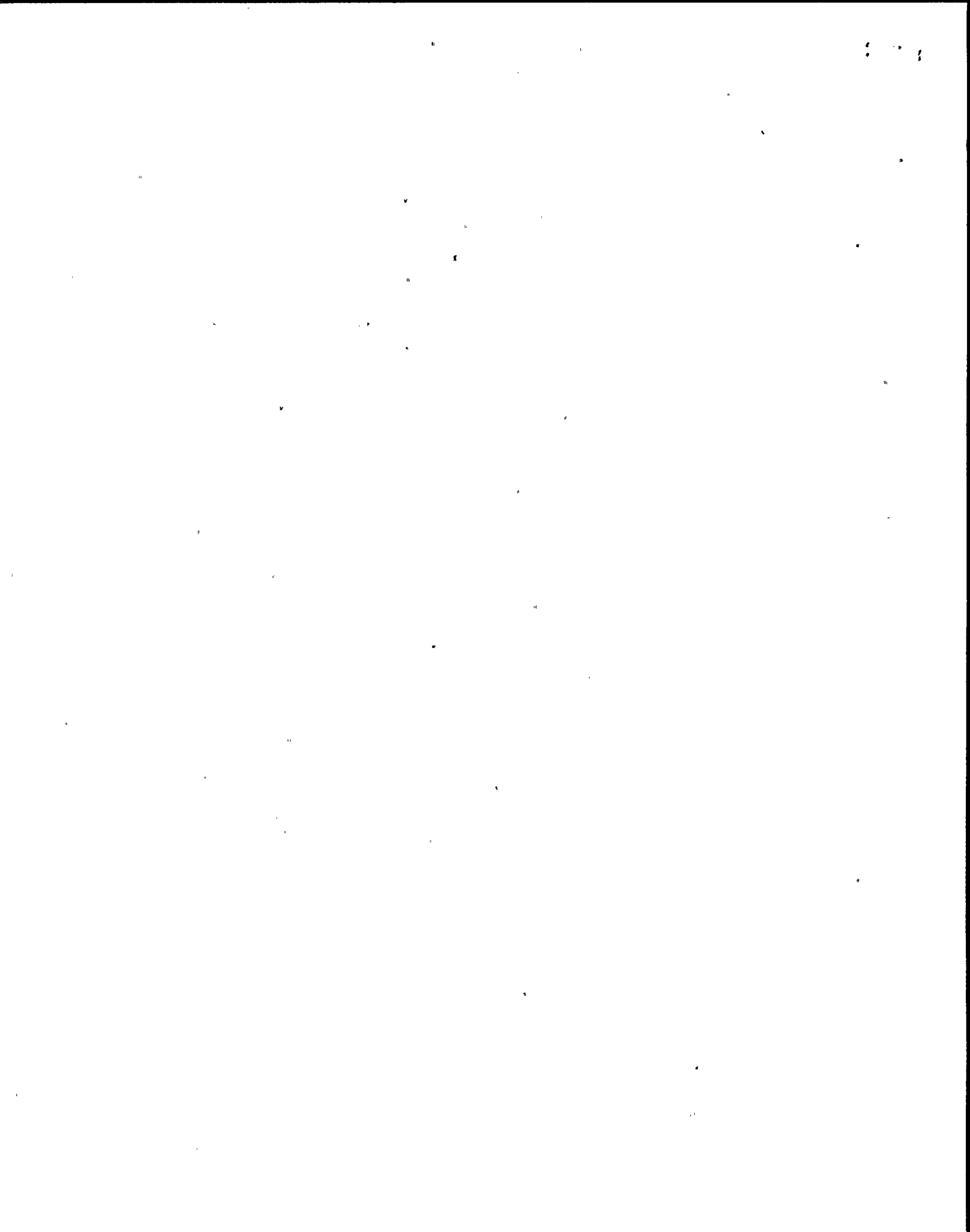
<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Reactor Low Level Alarm	603139	None
2. Recirc Flow Control Runback (see note below)	602210; 602222; PNL602 White lights for Recirc Pump Interlocks.	None

NOTE: The Recirc Flow Control Runback will occur if Reactor Vessel Level drops to or below Level 4 (178.3 inches) with less than two Reactor Feed Pump Breakers closed. *

ENCLOSURE 4
REACTOR VESSEL WATER LEVEL HIGH - LEVEL 8 (202.3 INCHES)

TCN-9

<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Main Turbine Trip	603141; 851109	None
2. Reactor Feed Pump(s) Trip	Amber Lights (PNL603) (High Level Trip A) (High Level Trip B) (High Level Trip C)	None
3. RCIC Injection Override ICS*MOV120 ICS*MOV126	601354; (Annunciator will alarm only if steam admission valve is open.) Valve Positions on PNL601.	B22-N693B,F (PNL618) B22-N693A,E (PNL629)
4. HPCS Injection Override CSH*MOV107	601718	B22-N674C,G,L,R (All on PNL625)



ENCLOSURE 4
PRIMARY CONTAINMENT PRESSURE HIGH - 1.68 PSIG

602218; 602224; 603101; 603401;
 EOP RPV and PRIMARY CONTAINMENT CONTROL ENTRY

<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. HPCS Initiation	601707; Pump Starts; Valves (on PNL601) align to inject	B22-N667C,G,L,R (P625)
2. HPCS Diesel Generator Starts (EGS*EG2)	852317	B22-N667C,G,L,R (P625) *3
3. LPCS and RHS "A" Auto Initiation	601402; 601413 601443; 601451	B22-N694A,E (P629)
4. RHS "B" and RHS "C" Auto Initiation	601602; 601612 601642; 601651	B22-N694B,F (P618)
5. EGS*EG1 Auto Starts	852117	B22-N694A,E (P629)
6. EGS*EG3 Auto Starts	852217	B22-N694B,F (P618)
7. Group 3 Isolation		
NMS*SOV1A through NMS*SOV1E	PNL607 Valve Positions	C72-N650B (P611)
GSN*SOV166	PNL603 Valve Positions	C72-N650C (P609)
8. Group 4 Isolation		
RHS*MOV142, 149	PNL601 Valve Positions	C72-N650A,C (P609)
RHS*SOV35A, 36A	PNL601 Valve Positions	C72-N650B,D (P611)
RHS*SOV35B, 36B	PNL601 Valve Positions	

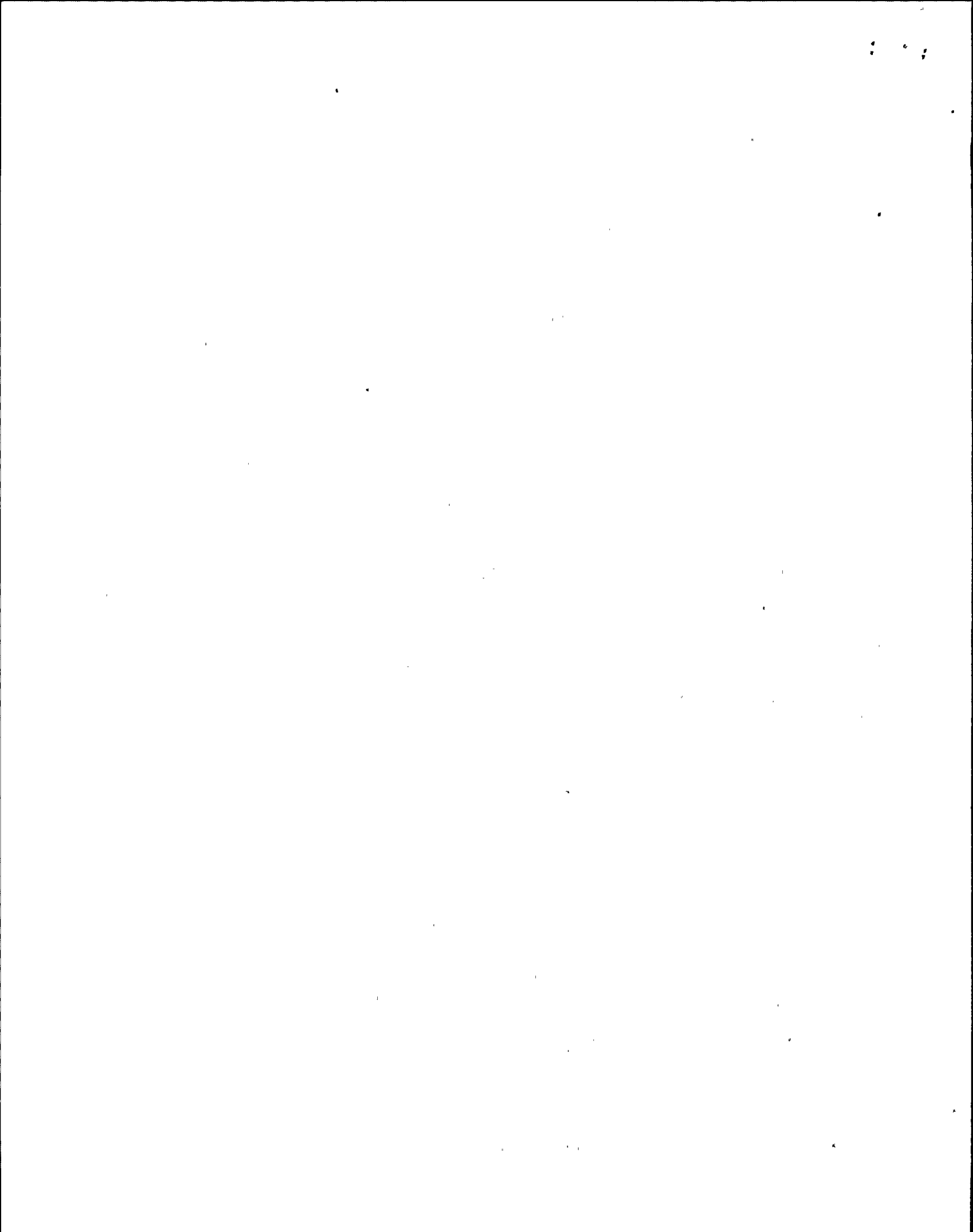


ENCLOSURE 4
PRIMARY CONTAINMENT PRESSURE HIGH - 1.68 PSIG

TCN-9

602218; 602224; 603101; 603401;
 EOP RPV and PRIMARY CONTAINMENT CONTROL ENTRY

<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
9. Group 8 Isolation		
IAS*SOV166, 167, 168	PNL851 Valve Positions	C72-N650A,C (P609)
IAS*SOV180, 184, 185	PNL851 Valve Positions	C72-N650B,D (P611)
CCP*MOV15A, 16A, 17A, 94A	PNL602 Valve Positions	
CCP*MOV15B, 16B, 17B, 94B	PNL602 Valve Positions	
RCS*SOV65A, 66A, 67A, 68A	PNL602 Valve Positions	
RCS*SOV65B, 66B, 67B, 68B	PNL602 Valve Positions	
RCS*SOV79A, 80A, 81A, 82A	PNL602 Valve Positions	
RCS*SOV79B, 80B, 81B, 82B	PNL602 Valve Positions	
IAS*SOV164, 165	PNL601 Valve Positions	
CCP*MOV122, 124, 265, 273	PNL873 Valve Positions	
DER*MOV119, 120, 130, 140	PNL873 Valve Positions	
DFR*MOV120, 121, 139, 140	PNL873 Valve Positions	
CMS*SOV24A, 25A, 26A	PNL873 Valve Positions	
CMS*SOV24C, 25C, 26C	PNL873 Valve Positions	
CMS*SOV32A, 33A, 34A, 35A	PNL873 Valve Positions	
CMS*SOV60A, 60B, 62A, 62B	PNL873 Valve Positions	
HCS*MOV1A, 2A, 3A, 4A, 5A, 6A	PNL873 Valve Positions	
LMS*SOV153, 157	PNL873 Valve Positions	
CMS*SOV24B, 25B, 26B	PNL875 Valve Positions	
CMS*SOV24D, 25D, 26D	PNL875 Valve Positions	
CMS*SOV32B, 33B, 34B, 35B	PNL875 Valve Positions	
CMS*SOV61A, 61B 63A, 63B	PNL875 Valve Positions	
HCS*MOV1B, 2B, 3B, 4B, 5B, 6B	PNL875 Valve Positions	
LMS*SOV152, 156	PNL875 Valve Positions	



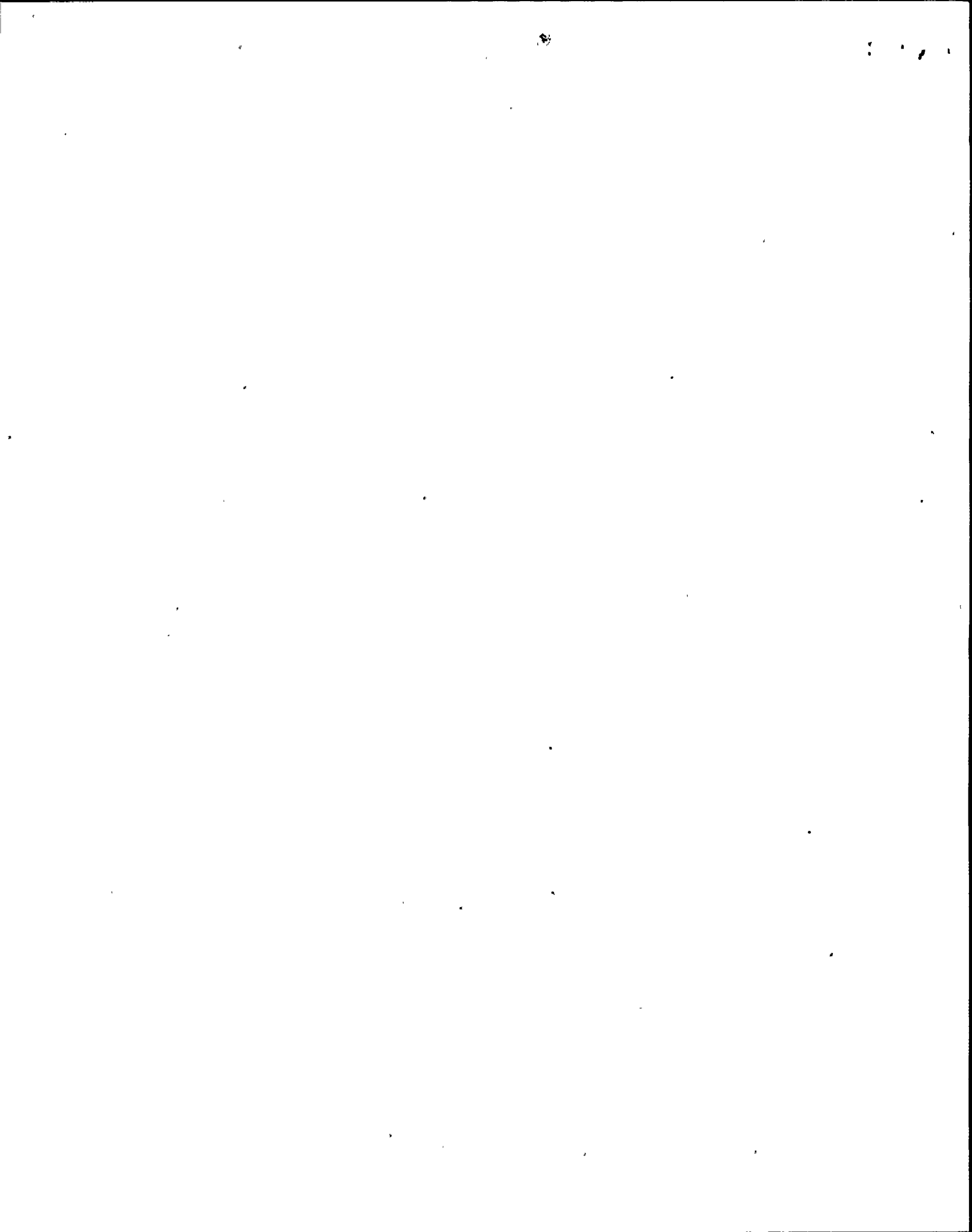
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ENCLOSURE 4
PRIMARY CONTAINMENT PRESSURE HIGH - 1.68 PSIG

602218; 602224; 603101; 603401;
EOP RPV PRIMARY CONTAINMENT CONTROL ENTRY

*

<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
10. Group 9 Isolation		C72-N650A,C (P609) C72-N650B,D (P611)
CPS*AOV104, 105	PNL873 Valve Positions	
CPS*AOV110, 111	PNL873 Valve Positions	
CPS*SOV119, 120	PNL875 Valve Positions	
CPS*AOV107, 106	PNL875 Valve Positions	
CPS*AOV108, 109	PNL875 Valve Positions	
CPS*AOV121, 122	PNL875 Valve Positions	
11. Group 11 Isolation	PNL601 Valve Positions	C72-N650A,C (P609) C72-N650B,D (P611)
ICS*MOV148, 164 shut - if RCIC steam supply pressure is low also.		



ENCLOSURE 4
REACTOR VESSEL PRESSURE HIGH

1050 PSIG

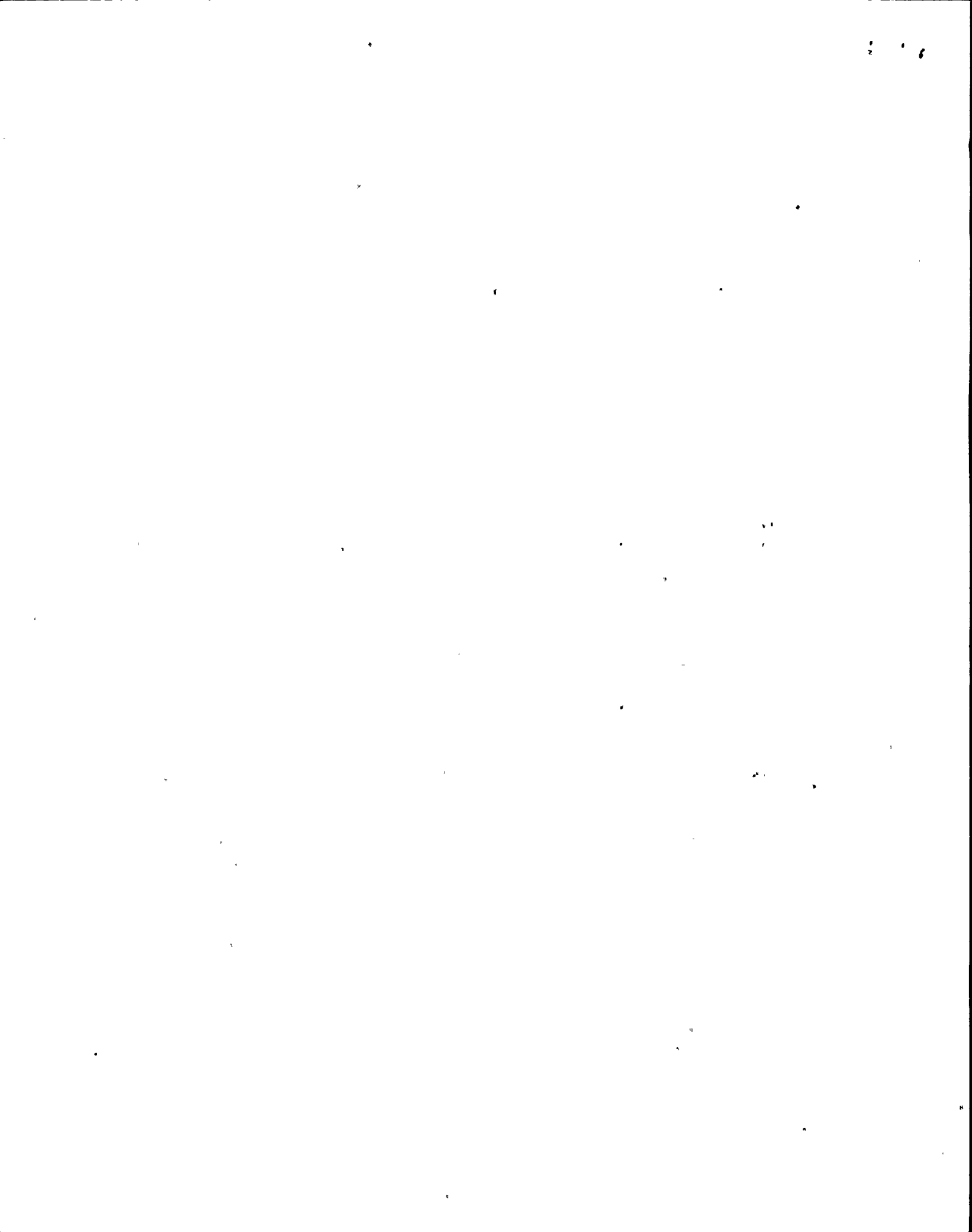
<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. RRCS High Pressure Initiation Reactor Scrams Recirc Pumps Downshift to LFMG ARI LFMG Trips and Feedwater Runback (after 25 seconds) SLS Initiates and WCS Isolates (after 98 seconds)	603422; 603423; 603431; 603445; 603439 if APRMs not downscale or are inop.	C22-P001; P002 Panels in Relay Room
2. P.A.M. Recorders Shift to Fast Speed	P.A.M. Recorder on PNL 601 Running in Fast	

1037 PSIG (EOP RPV ENTRY CONDITION)

<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Reactor Scram	603103; 603403	B22-N678A,C (P609) B22-N678B,D (P611)

128 PSIG

<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Group 5 Isolation RHS*MOV104, 112, 113 RHS*MOV40A, 67A RHS*MOV40B, 67B	601452; 602218; 602224	B22-N679A,C (P609) B22-N679B,D (P611)



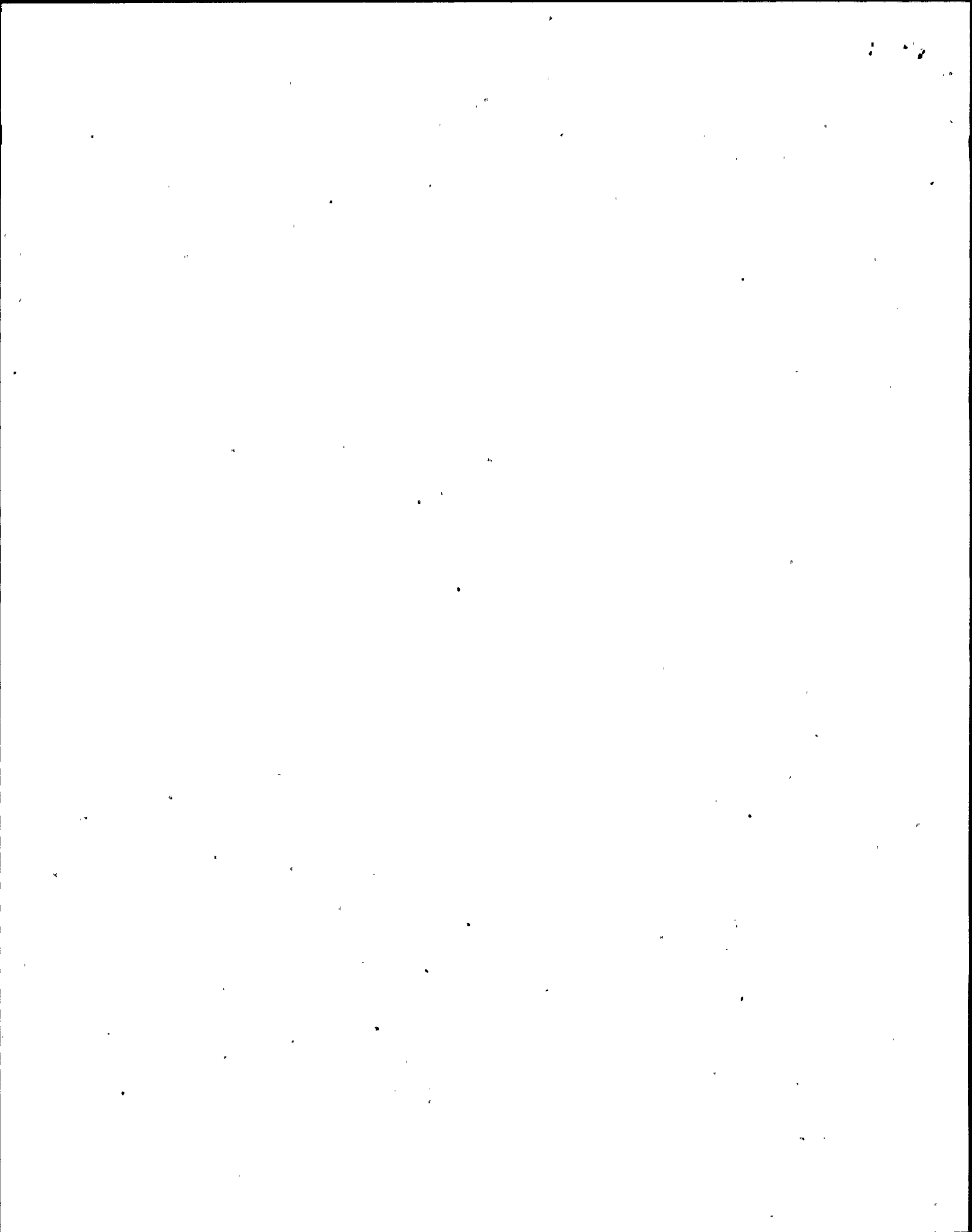
ENCLOSURE 4
REACTOR VESSEL PRESSURE HIGH

766 PSIG EOP RPV ENTRY CONDITION IF MODE SWITCH IS IN RUN.

<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Group 1 Isolation (if mode switch is in RUN). MSS*AOV6A,6B,6C,6D MSS*AOV7A,7B,7C,7D MSS*AOV111,112,208	603127; 603427; 602218; 602224	B22-N676A,C (P609) B22-N676B,D (P611)

60 PSIG (75 PSIA)

<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Group 10 Isolation ICS*MOV121, 128, 170.	601321; 601322; 602218; 602224	E31-N685A,E (P629) E31-N685B,F (P618)
2. Group 11 Isolation ICS*MOV148, 164 shut - if Primary Containment Pressure is also high.	602218; 602224 PNL601 Valve Positions	E31-N685A,E (P629) E31-N685B,F (P618)



ENCLOSURE 4
MAIN STEAM LINE HIGH RADIATION - 3 TIMES NFPB

602218; 602224 EOP RPV ENTRY CONDITION AT 3 TIMES NFPB.

<u>FUNCTION/ACTION</u>	<u>ASSOCIATED INDICATION(S) AND/OR ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Group 1 Isolation MSS*AOV6A,6B,6C,6D MSS*AOV7A,7B,7C,7D MSS*AOV112,111,208	603107; 603407; Valve Positions on PNL602	D13-N003A,C (PNL606) D13-N003B,D (PNL633)
2. Group 2 Isolation RCS*SOV104, 105	603107; 603407; Valve Positions on PNL602	D13-N003A,C (PNL606) D13-N003B,D (PNL633)

ENCLOSURE 4
HIGH TEMPERATURE ISOLATIONS

GROUP 1 ISOLATION: MSS*AOV6A,6B,6C,6D shut (PNL602)
MSS*AOV7A,7B,7C,7D shut (PNL602)
MSS*AOV111,112,208, shut (PNL602)

<u>TEMPERATURE SENSED</u>	<u>ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. MSL Tunnel (165.7 F Setpoint)	602228	E31-N604A (PNL632) E31-N604B (PNL642) E31-N604C (PNL609) E31-N604D (PNL611)
2. MSL Tunnel Leads Enclosure (146.7 F Setpoint)	602227	E31-N616A,N617A,N618A (PNL632) E31-N616B,N617B,N618B (PNL642) E31-N616C,N617C,N618C (PNL609) E31-N616D,N617D,N618D (PNL611)
3. MSL Tunnel DELTA T (Green Highlighted) (66.7 F Setpoint)	602228	E31-N615A (PNL632) E31-N615B (PNL642) E31-N615C (PNL609) E31-N615D (PNL611)

|TCN-11

|TCN-11

GROUP 5 ISOLATION: RHS*MOV104,112,113 shut (PNL601)
and RHS*MOV40A, 67A shut (PNL601)
RHS*MOV40B,67B shut (PNL601)
GROUP 10 ISOLATION: ICS*MOV121,128,170 shut (PNL601)

<u>TEMPERATURE SENSED</u>	<u>ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Rx Bldg Genl Area (Yellow Highlighted) (130 F Setpoint)	601157	E31-N637,638,639,640, 641A (PNL632) E31-N637,638,639,640, 641B (PNL642)
2. Rx Bldg Radioactive Pipe Chase (135 F Setpoint)	601157	E31-N619,620,621,622A, (PNL632) E31-N619,620,621,622B (PNL642)
3. Aux Bay North/ South RHR PMP Room A/B (135 F Setpoint)	601457	E31-N608A,C (PNL632) E31-N608B,D (PNL642)

ENCLOSURE 4
HIGH TEMPERATURE ISOLATIONS

GROUP 6 ISOLATION: WCS*MOV112 shuts (PNL602)

<u>TEMPERATURE SENSED</u>	<u>ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Rx Bldg RWCU PMP Room A (135 F Setpoint)	602309	E31-N601A (PNL632)
2. Rx Bldg RWCU PMP Room B (135 F Setpoint)	602310	E31-N601C (PNL632)
3. Rx Bldg RWCU HX Room (135 F Setpoint)	602307	E31-N601E (PNL632)
4. Rx Bldg Radioactive Pipe Chase (135 F Setpoint)	601157	E31-N619,620,621,622A (PNL632)

GROUP 7 ISOLATION: WCS*MOV102 shuts (PNL602)

<u>TEMPERATURE SENSED</u>	<u>ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Rx Bldg RWCU PMP Room A (135 F Setpoint)	602309	E31-N601B (PNL642)
2. Rx Bldg RWCU PMP Room B (150 F Setpoint)	602310	E31-N601D (PNL642)
3. Rx Bldg RWCU HX Room (135 F Setpoint)	602307	E31-N601F (PNL642)
4. Rx Bldg Radioactive Pipe Chase (135 F Setpoint)	601157	E31-N619,620,621,622B (PNL642)

ENCLOSURE 4
HIGH TEMPERATURE ISOLATIONS

TCN-9

GROUP 1 ISOLATION: MSS*AOV6A,6B,6C,6D shut (PNL602)
MSS*AOV7A,7B,7C,7D shut (PNL602)
MSS*AOV111,112,208, shut (PNL602)

<u>TEMPERATURE SENSED</u>	<u>ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. MSL Tunnel (159 F Setpoint)	602228	E31-N604A (PNL632) E31-N604B (PNL642) E31-N604C (PNL609) E31-N604D (PNL611)
2. MSL Tunnel Leads Enclosure (140 F Setpoint)	602227	E31-N616A,N617A,N618A (PNL632) E31-N616B,N617B,N618B (PNL642) E31-N616C,N617C,N618C (PNL609) E31-N616D,N617D,N618D (PNL611)
3. MSL Tunnel DELTA T (Green Highlighted) (50 F Setpoint)	602228	E31-N615A (PNL632) E31-N615B (PNL642) E31-N615C (PNL609) E31-N615D (PNL611)

GROUP 5 ISOLATION: RHS*MOV104,112,113 shut (PNL601)
and RHS*MOV40A, 67A shut (PNL601)

GROUP 10 ISOLATION: RHS*MOV40B,67B shut (PNL601)
ICS*MOV121,128,170 shut (PNL601)

<u>TEMPERATURE SENSED</u>	<u>ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Rx Bldg Genl Area (Yellow Highlighted) (130 F Setpoint)	601157	E31-N637,638,639,640, 641A (PNL632) E31-N637,638,639,640, 641B (PNL642)
2. Rx Bldg Radioactive Pipe Chase (135 F Setpoint)	601157	E31-N619,620,621,622A, (PNL632) E31-N619,620,621,622B (PNL642)
3. Aux Bay North/ South RHR PMP Room A/B (135 F Setpoint)	601457	E31-N608A,C (PNL632) E31-N608B,D (PNL642)

ENCLOSURE 4
HIGH TEMPERATURE ISOLATIONS

TCN-9

GROUP 6 ISOLATION: WCS*MOV112 shuts (PNL602)

<u>TEMPERATURE SENSED</u>	<u>ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Rx Bldg RWCU PMP Room A (135 F Setpoint)	602309	E31-N601A (PNL632)
2. Rx Bldg RWCU PMP Room B (135 F Setpoint)	602310	E31-N601C (PNL632)
3. Rx Bldg RWCU HX Room (135 F Setpoint)	602307	E31-N601E (PNL632)
4. Rx Bldg Radioactive Pipe Chase (135 F Setpoint)	601157	E31-N619,620,621,622A (PNL632)

GROUP 7 ISOLATION: WCS*MOV102 shuts (PNL602)

<u>TEMPERATURE SENSED</u>	<u>ANNUNCIATOR(S)</u>	<u>ASSOCIATED TRIP UNIT(S)</u>
1. Rx Bldg RWCU PMP Room A (135 F Setpoint)	602309	E31-N601B (PNL642)
2. Rx Bldg RWCU PMP Room B (135 F Setpoint)	602310	E31-N601D (PNL642)
3. Rx Bldg RWCU HX Room (135 F Setpoint)	602307	E31-N601F (PNL642)
3. Rx Bldg Radioactive Pipe Chase (135 F Setpoint)	601157	E31-N619,620,621,622B (PNL642)

