

NRC

NUCLEAR STATION PROCEDURE ROUTING

(TRANSMITTAL RECEIPT)

Register No. 72  
41 4-23-93 PC

REMOVE: \*DSSP 0100-A rw04

INSERT: \*DSSP 0100-A rw05  
(posted procedure: please post  
Safe Shutdown (bst))

(Sign and return this form to the DOSR CLERK.)

I hereby acknowledge receipt of the above.

Signed \_\_\_\_\_ Date \_\_\_\_\_

300036

ZW/4940

1 of 1

ADHS 0/1

FORM 9-2B

PROCEDURE HISTORY

Procedure Number: DSSP 0100-A Rev. No.: 05

Posted Procedure Locations: Sate shutdown cart

Supportive References (letters, temporary change request, commitments, analysis):

OPIF 93-77

Subject experts or other personnel contacted:

Description and JUSTIFICATION for procedure or change: This change  
will only correct a typo i.e. changing LI <sup>2-263-1518</sup> ~~2-263-1518~~ to <sup>MR 4-2-93</sup>  
LI <sup>2-263-1518</sup> ~~2-263-1618~~ <sup>NP</sup> ON ATTACHMENT E, page 18 of 19  
Step 1.A. (fourth bullet)

DSSP  
DRESDEN SAFE SHUTDOWN PROCEDURES

<u>Proc.</u>		<u>Rev.</u>	<u>DOSR</u>	<u>Review</u>
<u>No.</u>	<u>Title</u>	<u>No.</u>	<u>Date</u>	<u>Date</u>
010-1	Safe Shutdown Paths for Extensive Plant Damage	Rev. 2	9/89	9/91
*0100-A	Hot Shutdown Procedure - Path A	Rev. 05	4/93	4/95
0100-A1	Hot Shutdown Procedure - Path A-1	Rev. 04	12/92	12/94
0100-B	Hot Shutdown Procedure - Path B	Rev. 04	12/92	12/94
*0100-B1	Hot Shutdown Procedure - Path B1	Rev. 04	12/92	12/94
*0100-A2/B2	Hot Shutdown Procedure - Path A2/B2	Rev. 05	3/93	3/95
*0100-C	Hot Shutdown Procedure - Path C	Rev. 05	12/92	12/94
*0100-CR	Hot Shutdown Procedure - Control Room Evacuation (Safe Shutdown Cart)	Rev. 03	4/93	4/95
*0100-D	Hot Shutdown Procedure - Path D	Rev. 04	2/93	2/95
*0100-E	Hot Shutdown Procedure - Path E	Rev. 06	2/93	2/95
100-E1	Hot Shutdown Procedure Path E1	DELETE	4/88	
0100-F	Hot Shutdown Procedure - Path F	Rev. 04	6/92	6/94
100-F1	Hot Shutdown Procedure Path F1	DELETE	4/88	
*0200-L	LPCI/CCSW Cold Shutdown Method	Rev. 02	2/93	2/95
200-S	Shutdown Cooling Cold Shutdown Method (SDC)	Rev. 1	4/88	4/90

HOT SHUTDOWN PROCEDURE - PATH A

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Requirements:

1. 10 CFR 50, Appendix R.
2. 10 CFR 50.54x.
3. Safe Shutdown Report, Dresden Units 2 and 3 (Fire Protection Program Documentation Package, Volume 3, Book 1).

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Special Controls/Reviews:

Posted Procedure - This is a Controlled Posted Procedure. Any authorized change will be brought to the attention of the Department Supervisor or an Operating Engineer, as applicable.

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A. Regis  
Originator

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N/A  
Independent Reviewer/Verifier (If Applicable)

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J. Fiedler  
Department Procedure Writer

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S. Lawson  
Department Supervisor

**APPROVED**  
**APR 23 1993**  
**D.O.S.R.**

HOT SHUTDOWN PROCEDURE - PATH A

A. PURPOSE:

1. This procedure provides guidelines to achieve Dresden U2 hot shutdown, directed from the Control Room, using Hot Shutdown Path A, following a fire in which critical plant components were rendered inoperable.
2. This procedure uses the following components:
  - Isolation Condenser with makeup from Condensate Storage Tank (CST), firewater, or Service Water (SW).
  - 2/3 D/G and U2 electrical power train.
  - 2A CRD Pump to provide U2 reactor makeup water.
  - 2A Service Water Pump.

B. USER REFERENCES:

1. Procedures:
  - a. DSSP 0010-01, Determining Safe Shutdown Paths.
  - b. DSSP 0100-T11, Cooldown Tables.
  - c. DSSP 0100-T14, Minimum CST Inventory for RPV Makeup.
  - d. DSSP 0200-T3, Diesel Generator 2/3 Local Manual Start.

C. SUPPLEMENTS:

1. Attachment A, U2 NSO Actions.
2. Attachment B, U2 SS Actions.
3. Attachment C, U2 EA Actions.
4. Attachment D, Inside HVO Actions.
5. Attachment E, Center Desk NSO Actions.
6. Checklist A, Shift Engineer Tracking.

D. PREREQUISITES:

1. Applicable portion of DSSP 0010-01 has been completed.
2. Shift Engineer has directed performance of this procedure.

E. PRECAUTIONS:

1. Fire damage may cause spurious events to occur and/or require the manual operation of various components.
2. In worst case conditions, reactor vessel makeup and decay heat removal must be initiated within 30 minutes of initiating event.

- E.
3. When using radios, radio should be held in hand. Using coil-cord microphone may impair reception.
    - Direct radio contact may not be possible. In such cases, required communications must be relayed.
  4. Due to damage to security multiplexer cables, normal entrance through security doors may be prevented.
  5. This procedure should be followed only in the event that normal or emergency procedures are insufficient.

F. LIMITATIONS AND ACTIONS:

1. Keys for high rad areas, CB locks, and security doors are obtained from the Shift Engineer's office as necessary.
2. Keys for high-high rad areas are obtained from the Rad-Chem office as necessary.
3. Copies of DSSPs, radios, flashlights, protective clothing, masks or air packs, pyrometers, etc., are obtained from Safe Shutdown Equipment Cart (near BUS 25, north of Auxiliary Electric Equipment Room).
4. Steps in this procedures are based on analysis of each component used considering severe fire damage in any fire area of the plant.
  - Under any given fire situation, total functional loss of all equipment in a fire area may not occur.
  - This procedure should be performed at the discretion of the Shift Engineer, or other qualified Senior Reactor Operator serving as the Controlling Supervisor.
5. Certain steps or conditions within this procedure may contradict normal license conditions or Technical Specification requirements, as stated in 10 CFR 50.54x:

"A licensee may take reasonable action that departs from a license condition or Technical Specification requirements in an emergency when this action is immediately needed to protect the public health and safety and no action consistent with the license conditions and Technical Specifications that can provide adequate or equivalent protection is immediately apparent."

This action "shall be approved, as a minimum, by a licensed Senior Reactor Operator (SRO) prior to taking the action."

G. PROCEDURE:

NOTE

1. U2 Nuclear Station Operator (NSO) will normally coordinate actions of other shift personnel, under direction of the Shift Engineer, after initial actions are complete.
2. Initial actions of U2 NSO (Nuclear Station Operator), U2 Shift Supervisor (SS), and U2 Equipment Assistant (EA) are performed concurrently.
3. Checklist A, Shift Engineer Tracking, is provided to assist in tracking procedure progress.

1. Direct U2 NSO to enter Attachment A, U2 NSO Actions, and perform required actions.
2. Direct U2 SS (Shift Supervisor) to enter Attachment B, U2 SS Actions, and perform required actions.
3. Direct U2 EA (Equipment Assistant) to enter Attachment C, U2 EA Actions, and perform required actions.
4. Direct Inside High Voltage Operator (HVO) to obtain a copy of Attachment D, Inside HVO Actions, in preparation for possible actions.
5. Direct Center Desk NSO to obtain a copy of Attachment E, Center Desk NSO Actions, in preparation for possible actions.
6. Check procedure progress on Checklist A, Shift Engineer Tracking.

H. DISCUSSION:

1. This procedure is developed with attachments for shift personnel having actions to perform, with the main procedure body developed for the Shift Engineer or other qualified, licensed Senior Reactor Operator in control of evolutions performed.
2. Checklist A, Shift Engineer Tracking, provides checkoffs for the Shift Engineer to assist in tracking plant conditions and status of major evolution completion during the performance of the procedure.
3. Attachment A, U2 NSO Actions, provides an overview of the evolutions being performed and the approximate sequence, once initial actions have been performed. Details of specific actions are given in the appropriate shift personnel attachments.

W. WRITER'S REFERENCES:

1. NRC Information Notice No. 87-50, Potential LOCA at high and low pressure interfaces from fire damage.
2. Title 10 Code of Federal Regulations (CFR):
  - a. 10 CFR 50, Appendix R.
  - b. 10 CFR 50.54.
3. Safe Shutdown Report, Dresden Units 2 and 3 (Fire Protection Program Documentation Package, Volume 3, Book 1).

ATTACHMENT A  
U2 NSO ACTIONS

UNIT 2  
\*DSSP 0100-A  
REVISION 05

1. Manually scram reactor by depressing MANUAL SCRAM CH A AND MANUAL SCRAM CH B pushbuttons.
  - DO NOT reset scram until RPV makeup source other than CRD is available.

CAUTION

Open relief valves cause a loss of reactor vessel inventory.

2. Place ADS INHIBIT switch in INHIBIT.
3. Place Electromatic Relief Valve control switches in OFF:
  - 2-203-3B, 2B ERV.
  - 2-203-3C, 2C ERV.
  - 2-203-3D, 2D ERV.
  - 2-203-3E, 2E ERV.
  - 2-203-3A, 2A TARGET ROCK.
4. Close Main Steam Isolation Valves (MSIVs):
  - AO 2-203-1A, MSIV.
  - AO 2-203-1B, MSIV.
  - AO 2-203-1C, MSIV.
  - AO 2-203-1D, MSIV.
  - AO 2-203-2A, MSIV.
  - AO 2-203-2B, MSIV.
  - AO 2-203-2C, MSIV.
  - AO 2-203-2D, MSIV.

NOTE

Makeup to the shell side of the Isolation Condenser must be initiated within 20 minutes of Isolation Condenser operation.

5. Open MO 2-1301-3, RX INLET ISOL, to initiate Isolation Condenser.
6. Verify Isolation Condenser valve lineup:
  - AO 2-1301-17, VENT VLV           closed.
  - AO 2-1301-20, VENT VLV           closed.
  - MO 2-1301-2, RX OUTLET ISOL   open.
  - MO 2-1301-1, RX OUTLET ISOL   open.
  - MO 2-1301-4, RX INLET ISOL   open.

## U2 NSO ACTIONS (Continued)

7. Report completion of initial actions to Shift Engineer.

NOTE

U2 EA initial actions are to open the supply breakers to MO 2-... 1.  
RX OUTLET ISOL, and MO 2-1201-1A, RX OUTLET BYP, at MCC 28-1.

CAUTION

Automatic RWCU isolation may not occur.

8. <sup>©</sup> Ensure RWCU Isolation by verifying ONE of the following valve lineups:
- A. MO 2-1201-1, RX OUTLET ISOL, closed,  
AND  
MO 2-1201-1A, RX OUTLET BYP, closed.
- OR
- B. MO 2-1201-2, INLET ISOL, closed,  
AND  
MO 2-1201-3, AUX PP SUCT, closed. <sup>©</sup> (W-1).
9. IF RWCU valve positions cannot be verified from Control Room, OR RPV level cannot be maintained, THEN, direct Inside HVO (High Voltage Operator) to verify MO 2-1201-2, U2 AUX PMP BYP MOV, closed locally.
10. Notify Shift Engineer of RWCU isolation verification.
11. While monitoring RPV Level and Pressure using multiple indication, throttle MO 2-1301-3, RX INLET ISOL, to minimize shrinkage and loss of reactor vessel inventory through open safety/relief valve(s).
- Establish and maintain a cooldown rate of  $\leq 15^{\circ}\text{F}/\text{hour}$  (use DSSP 0100-T11, Cooldown Tables).
  - Record level and pressure at 10 minute intervals on DSSP 0100-T11.
12. IF Control Room RPV Pressure and Level indication is NOT available, THEN direct Center Desk NSO to monitor reactor pressure and level locally per Attachment E, Center Desk NSO Actions.
13. IF offsite power is not available, THEN verify D/G 2/3 auto-start and D/G 2/3 TO BUS 23-1 ACB closed using Control Room indication and alarms.
- IF Control Room Indication is not available, THEN direct Inside HVO to verify D/G 2/3 auto-start and auxiliaries.
14. Place control switches in PULL-TO-LOCK to remove loads from BUS 23-1:
- 2A SDC PP.
  - 2C SDC PP.
  - 2A LPCI PP.
  - 2B LPCI PP.
  - 2A CORE SPRAY PP.
  - 2A RWCU RECIRC PP.
  - 2A RBCCW PP.

## U2 NSO ACTIONS (Continued)

15. Verify BUS 23-1 TO TR 28 ACB and TR 28 To BUS 28 breakers closed.
16. Direct U2 SS to verify BUS 23-1 configuration locally.
17. IF offsite power is not available, THEN verify the following breakers on BUS 23 are open:
  - TR 21 TO BUS 23 ACB.
  - TR 22 TO BUS 23 ACB.
18. Place control switches in PULL-TO-LOCK to remove BUS 23 loads:
  - 2A CCSW PP.
  - 2B CCSW PP.
  - 2A COND/BOOST PP.
  - 2B COND/BOOST PP.
  - 2A CIRC WTR PP.
  - 2B CIRC WTR PP.
  - BUS 23 TO TR 25 ACB.
19. Close BUS 23 & BUS 23-1 TIE ACB.
20. Direct U2 SS to verify proper BUS 23 configuration locally.
21. Notify Shift Engineer BUS 23-1 and BUS 23 aligned.
22. Maintain Isolation Condenser shell side level as follows:
  - A. Start 2A COND TRANSFER PP.
  - B. Monitor ISOL CONDR LVL, LI 2-1340-2.
  - C. IF Control Room isolation condenser level indication is not available, THEN direct U2 EA to monitor Isolation Condenser Level locally.
  - D. Throttle MO 2-1301-10, COND FILL INLET, as necessary to maintain Isolation Condenser level.
23. Prepare 2A CRD PP for RPV Makeup water as follows:
  - A. IF U3 Turbine Building Closed Cooling water (TBCCW) is NOT available, THEN direct Inside HVO to align valves for alternate cooling of 2A CRD Pump from Service Water.
  - B. WHEN alternate cooling valves are aligned, THEN close MO 2-301-2A, 2A PP DISCH VLV.
    - (1) IF control and/or indication is not available from the Control Room, THEN direct Inside HVO to check MO 2-0301-2A, 2A CRD PMP DISCH VLV, closed at 2A CRD Pump.
    - (2) IF MO 2-0301-2A is not closed, THEN direct Inside HVO to manually close MO 2-0301-2A, 2A CRD PMP DISCH VLV, per Attachment D, Inside HVO Actions.

## U2 NSO ACTIONS (Continued)

24. IF MO 2-301-2A, 2A PP DISCH VLV has remote control, THEN perform the following:
- A. Start 2A CRD PP.
  - B. Open MO 2-301-2A, 2A PP DISCH VLV.
    - (1) Monitor 2A CRD Pump amps.
    - (2) Ensure 2A CRD Pump motor current does not exceed 34 amps.

CAUTION

IF control of MO 2-301-2A, 2A PP DISCH VLV, is NOT available from the Control Room, THEN careful coordination between U2 NSO and Inside HVO is required to start 2A CRD Pump.

25. IF MO 2-301-2A, 2A PP DISCH VLV, does NOT have remote control and/or indication, THEN perform the following:
- A. Start 2A CRD PP from the Control Room.
  - B. Direct Inside HVO to:
    - (1) Manually open MO 2-0301-2A, 2A CRD PMP DISCH VLV.
    - (2) Monitor amp meter on local panel 2252-76, (on wall north of CRD pump).
    - (3) Ensure CRD Pump motor current does not exceed 34 amps.
26. Notify Shift Engineer that 2A CRD Pump started.
27. Direct U2 EA to manually throttle 2-0301-9A, 2A CRD FILTER INLET VLV, or 2-0301-9B, 2B CRD FILTER INLET VLV, to maintain reactor level at +8 inches to +40 inches.
- Center Desk NSO will direct operation from local indication if Control Room instrumentation is not available.

CAUTION

Service Water must be initiated within 1 1/2 hours after CRD Pump start.

28. IF no Service Water Pumps are running, THEN direct Inside HVO to align Service Water valves to preclude Service Water Pump runoff.
29. IF no Service Water Pumps are running, WHEN notified by Inside HVO that Service Water valves are aligned, THEN perform the following:
- A. Start 2A SW PP.
  - B. Notify Shift Engineer that 2A SW PP is in operation.

## U2 NSO ACTIONS (Continued)

NOTE

CST level can be monitored in U2 RX Feed Pump Room if Control Room indication is not available.

30. Continue to provide Isolation Condenser makeup by monitoring CST level:
- A. IF CST level approaches 12 ft, THEN direct Inside HVO to align CST to 2/3 B Contaminated Condensate Storage Tank and 1A CST.
  - B. IF CST inventory is approaching the appropriate line on the DSSP 0100-T14, Minimum CST Inventory for RPV Makeup graph, THEN perform the following:
    - (1) Open MO 2-4102, SERV WTR VLV, to maintain Isolation Condenser shell side level.
    - (2) Stop 2A COND TRANSFER PP.
  - C. IF additional Isolation Condenser make-up water is required, THEN direct Inside HVO to open 2-3906, SW SUPPLY TO FIRE PROTECTION, in the Cribhouse.
31. Notify Shift Engineer after stable Hot Shutdown conditions have been established.

ATTACHMENT B  
U2 SS ACTIONS

UNIT 2  
\*DSSP 0100-A  
REVISION 05

1. At Reactor Building 250Vdc MCC 2A, open all load breakers EXCEPT for the following Isolation Condenser valve breakers:
  - Cubicle H-1, 2-1301-3 U2 ISOL CDSR COND OUTLET OTBD ISOL.
  - Cubicle H-2, 2-1301-2 U2 ISOL CDSR STEAM INLET OTBD ISOL.
2. Verify the following breakers are closed at dc MCC 2A:
  - Cubicle H-1, 2-1301-3 U2 ISOL CDSR COND OUTLET OTBD ISOL.
  - Cubicle H-2, 2-1301-2 U2 ISOL CDSR STEAM INLET OTBD ISOL.
3. At Reactor Building 250Vdc MCC 2B, open all load breakers EXCEPT for the following isolation condenser valve breakers:
  - Cubicle M-1, 2-1301-10 U2 ISOL CDSR CNTAM DEMIN WATER FILL STOP VLV.
  - Cubicle N-1, 2-4102 U2 ISOL CDSR FIRE SYSTEM FILL STOP VLV.
4. Verify the following breakers are closed at dc MCC 2B:
  - Cubicle M-1, 2-1301-10 U2 ISOL CDSR CNTAM DEMIN WATER FILL STOP VLV.
  - Cubicle N-1, 2-4102 U2 ISOL CDSR FIRE SYSTEM FILL STOP VLV.
5. At Turbine Building 250Vdc MCC #3, verify breakers are closed:
  - Cubicle A-1, 3-8350-3 U3 250VDC BATTERY TO MAIN BUS #3.
  - Cubicle I-2, U2 250VDC REACTOR BUILDING MCC #2B (MAIN FEED).
6. Report dc Systems aligned to U2 NSO and Shift Engineer.
7. Align SWGR 28 (Reactor Building third floor, southeast corner) as follows:
  - A. Pull all control fuses located in SWGR 28 Cubicles F-1 and F-2.
  - B. Manually trip the following breakers on SWGR 28:
    - Cubicle A-1, 2-5734A 2A DRYWELL COOLER.
    - Cubicle A-2, 2-5734B 2B DRYWELL COOLER.
    - Cubicle A-3, 2-5734F 2F DRYWELL COOLER.
    - Cubicle A-4, 2-5734G 2G DRYWELL COOLER.
    - Cubicle B-1, 2-7828-7 480V REACTOR BLDG MCC 28-7.
    - Cubicle B-3, 2-5702A 2A SOUTH TURBINE BLDG SUPPLY FAN.
    - Cubicle B-4, 2-5701A 2A MOTOR GENERATOR SET SUPPLY FAN.
    - Cubicle C-3, 2-5704A 2A REACTOR BUILDING EXHAUST FAN.
    - Cubicle D-1, 2-1902A 2A FUEL POOL COOLING PUMP.
    - Cubicle D-2, 2-5703A 2A REACTOR BUILDING SUPPLY FAN.
    - Cubicle D-3, 2-5703C 2C REACTOR BUILDING SUPPLY FAN.
    - Cubicle D-4, 2-1206 U2 REACTOR WATER CLEANUP AUXILIARY PUMP.
    - Cubicle E-3, 2-7329 BUS 28-29 TIE.

NOTE

Maintenance handle and ratchet for manually closing 480V breakers are located in Safe Shutdown Equipment box at SWGR 29.

8. C. Verify the following SWGR 28 breakers are closed:
  - Cubicle E-2, MAIN FEED FROM BUS 23-1.
  - Cubicle C-1, 2-7828-1 480V REACTOR BUILDING MCC 28-1.
  - Cubicle C-2, 2-7828-2 480V REACTOR BUILDING MCC 28-2.
  - Cubicle C-4, 2-7828-3 480V REACTOR BUILDING MCC 28-3.
8. Report SWGR 28 aligned to U2 NSO and Shift Engineer.
9. WHEN notified by U2 NSO, THEN verify BUS 23-1 configuration locally:
  - A. IF offsite power is not available, THEN verify Cubicle 14, STAND-BY D/G 2/3 FEED (VIA 4KV BUS 40) breaker is closed.
  - B. Verify the following BUS 23-1 breakers tripped:
    - Cubicle 1, 2-1002C 2C SHUTDOWN COOLING PUMP.
    - Cubicle 2, 2-3701A 2A RBCCW COOLING WATER PUMP.
    - Cubicle 3, 2-1002A 2A SHUTDOWN COOLING PUMP.
    - Cubicle 5, 2-1502B 2B LPCI PUMP.
    - Cubicle 6, 2-1205A 2A REACTOR WATER CLEANUP RECIRCULATION PUMP.
    - Cubicle 10, 2-1401A 2A CORE SPRAY PUMP.
    - Cubicle 11, 2-1502A 2A LPCI PUMP.
  - C. Verify Cubicle 7, 2-7328 REACTOR BUILDING 480V SWGR 28 breaker closed on BUS 23-1.
  - D. Notify U2 NSO BUS 23-1 verification complete.
10. WHEN notified by U2 NSO, THEN verify BUS 23 configuration locally:
  - A. IF offsite power not available, THEN verify BUS 23 breakers tripped:
    - Cubicle 3, MAIN FEED FROM UNIT AUX TRANSFORMER 21.
    - Cubicle 12, RESERVE FEED FROM RESERVE AUXILIARY TRANSFORMER 22.
  - B. Verify BUS 23 Cubicle 2, 2-6763-1 BUS 23-1 FEED, breaker closed.

## U2 SS ACTIONS (Continued)

10. C. Verify BUS 23 breakers tripped:
- Cubicle 5, 2-1501-44B 2B CONTAINMENT COOLING SERVICE WATER.
  - Cubicle 6, 2-4401B 2B CIRCULATING WATER PUMP.
  - Cubicle 7, 2-1501-44A 2A CONTAINMENT COOLING SERVICE WATER PUMP.
  - Cubicle 8, 2-3302A/3401A 2A CONDENSATE PUMP AND CONDENSATE BOOSTER PUMP.
  - Cubicle 10, 2-3302B/3401B 2B CONDENSATE PUMP AND CONDENSATE BOOSTER PUMP.
  - Cubicle 11, 2-4401A 2A CIRCULATING WATER PUMP.
  - Cubicle 13, 2-7325 TURBINE BUILDING 480V SWGR 25.
- D. Notify U2 NSO BUS 23 verification complete.

## U2 EA ACTIONS

1. Align MCC 28-2 (located in Turbine Building by Hydrogen Seal Oil Unit) as follows:
  - A. Rack out all load breakers on MCC 28-2 EXCEPT Cubicle D-5, 2-3319A 2A CONDENSATE TRANSFER PUMP, by
  - B. Verify MCC 28-2 Cubicle D-5, 2-3319A 2A CONDENSATE TRANSFER PUMP, breaker is closed.
2. Align MCC 28-3 (located in Turbine Building by Hydrogen Seal Oil Unit) as follows:
  - A. Rack out all load breakers on MCC 28-3 EXCEPT Cubicle D-1, 2/3-3903 UNIT 2/3 DIESEL GEN COOLING WTR PUMP (NORMAL FEED).
  - B. Verify MCC 28-3 Cubicle D-1, 2/3-3903 UNIT 2/3 DIESEL GEN COOLING WTR PUMP (NORMAL FEED), breaker is closed.
3. Align MCC 28-1 (Reactor Building ground floor by accumulators):
  - A. Rack out all load breakers on MCC 28-1 EXCEPT those listed in Step 3.B.
  - B. Verify the following MCC 28-1 breakers are closed:
    - Cubicle F-1, 2/3-5203 UNIT 2/3 DIESEL OIL TRANSFER PUMP.
    - Cubicle G-3, 2/3 5790 UNIT 2/3 DIESEL GENERATOR ROOM SUPPLY FAN.
    - Cubicle J-3, 2-1301-4 U2 ISOLATION CONDENSER RX INLET ISOL VLV.
    - Cubicle J-4, 2-1301-1 U2 ISOLATION CONDENSER RX OUTLET ISOL VLV.

NOTE

Isolation Condenser water level should be maintained within sightglass viewing range.

4. IF directed by U2 NSO, THEN perform the following at Isolation Condenser:
  - A. Open Isolation Condenser Sightglass Isolation Valves:
    - 2-1301-39, U2 ISOL CDSR SIGHT GLASS HI SIDE SV.
    - 2-1301-40, U2 ISOL CDSR SIGHT GLASS LO SIDE SV.
    - 2-1301-633, U2 ISOL CDSR SIGHT GLASS HI SIDE ROOT.
    - 2-1301-634, U2 ISOL CDSR SIGHT GLASS LO SIDE ROOT.
  - B. Monitor Isolation Condenser level locally and report status to U2 NSO.
5. WHEN directed by U2 NSO (or CENTER DESK NSO), THEN manually throttle 2-0301-9A, 2A CRD FILTER INLET VLV, OR 2-0301-9B, 2B CRD FILTER INLET VLV, (Reactor Building ground floor by drywell personnel access), as directed, to maintain reactor level at +8 inches to +40 inches).

ATTACHMENT D  
INSIDE HVO ACTIONS

UNIT 2  
\*DSSP 0100-A  
REVISION 05

1. <sup>©</sup> IF directed by U2 NSO, THEN verify RWCU Isolation locally.
  - A. IF U2 RBX is accessible, THEN manually close MO 2-1201-2, U2 AUX PUMP BYP MOV, in RWCU pipe chase (entrance on EL 570 ft).
  - B. IF U2 RBX is not accessible, THEN verify closure of PCV 2-1217, U2 RWCU PCV, by removing instrument air to U2 RBX by closing 2-4705-504, INST AIR ISOL VLV TO THE U2 RX BLDG (Turbine Bldg EL 517 ft by instrument air compressor). <sup>©</sup> (W-1)
2. IF offsite power is not available, WHEN directed by U2 NSO, THEN verify emergency power as follows:
  - A. Verify 2/3 D/G auto-start.
    - IF 2/3 D/G did not auto start, THEN start 2/3 D/G per DSSP 0200-T3, Diesel Generator 2/3 Local Manual Start.
  - B. Verify 2/3 VENTILATION FAN started.
  - C. Verify DIESEL COOLING WATER PUMP 2/3 flow on FI 2/3-3941-882A (located on the west end of the north wall of the 2/3 D/G Room). Expected flow rate is approximately 1000 gpm.
3. IF directed by U2 NSO, THEN align valves for alternate cooling of 2A CRD Pump from Service Water:
  - A. Verify valves open:
    - 2/3-3999-348, U2 & U3 CRD PMPS SW ALT CLG SUPPLY SV (Turbine Building ground floor west of MCC 27-1).
    - 2-3999-359, U2 CRD PMPS SW ALT CLG RETURN SV (south of EHC unit).

NOTE

Following valves are located at foot of stairs in CRD Pump Room.

- B. Unlock and close valves:
  - 2-3899-205, U2 CRD PMPS TBCCW SUPPLY HDR SV.
  - 2-3899-204, U2 CRD PMPS TBCCW RETURN HDR SV.
- C. Verify valves closed:
  - 2-3999-360, U2 CRD PMPS SW ALT CLG INLET DRN VLV.
  - 2-3999-361, U2 CRD PMPS SW ALT CLG OUTLET DRN VLV.
- D. Unlock and open valves:
  - 2-3999-357, U2 CRD PMPS SW ALT CLG INLET SV.
  - 2-3999-349, U2 CRD PMPS SW ALT CLG INLET SV.
  - 2-3999-348, U2 CRD PMPS SW ALT CLG OUTLET SV.
  - 2-3999-358, U2 CRD PMPS SW ALT CLG OUTLET SV.
- E. Notify U2 NSO that CRD Cooling Valves aligned.

## INSIDE HVO ACTIONS (Continued)

4. IF directed by U2 NSO, THEN verify MO 2-0301-2A, 2A CRD PMP DISCH VLV, closed at 2A CRD Pump.
- F IF MO 2-0301-2A, 2A CRD PMP DISCH VLV, is not closed, THEN perform the following steps to close MO 2-0301-2A, 2A CRD PMP DISCH VLV:
- (1) Rack out breaker at MCC 25-2 Cubicle J2: 2-0301-2A 2A CRD PUMP DISCHARGE VALVE.
  - (2) Manually close MO 2-0301-2A, 2A CRD PMP DISCH VLV, at 2A CRD Pump discharge.

CAUTION

IF control of MO 2-0301-2A, 2A CRD PMP DISCH VLV, is NOT available from Control Room, THEN careful coordination between U2 NSO and Inside HVO is required to start 2A CRD Pump.

5. IF control of MO 2-0301-2A, 2A CRD PMP DISCH VLV is not available from the Control Room, WHEN U2 NSO starts 2A CRD Pump from the Control Room, THEN perform the following as directed.
- A. Manually open MO 2-0301-2A, 2A CRD PMP DISCH VLV.
  - B. Monitor amp meter at Panel 2252-76, (on wall north of CRD pump).
  - C. Ensure CRD Pump motor current does not exceed 34 amps.
6. IF directed by U2 NSO (CST level falls to 12 ft), THEN align CST to 2/3 B Contaminated Condensate Storage Tank and 1A CST as follows:
- A. Open 2/3-3327-A-500, U2 & U3 HPCI SUCT FROM 2/3A CST DNSTRM SV.
  - B. Open 2/3-3346-500, U1A STG TO 2/3 CST X-TIE VLV.
  - C. Verify 2/3-2301-12, U2 & U3 HPCI SYS SUCT FROM 2/3B CST, is open.
7. IF directed by U2 NSO, THEN open 2-3906, SW SUPPLY TO FIRE PROTECTION, in the Cribhouse.

## INSIDE HVO ACTIONS (Continued)

8. IF no service water pumps are running, WHEN directed by the U2 NSO, THEN verify the following valves closed to preclude Service Water Pump runoff:
- 2-3904-500, U2 TBCCW TCV INLET VLV.  
OR  
2-3904-501, U2 TBCCW TCV OUTLET VLV (by U2 TBCCW HX).
  - 2-3924-501, U2 TBCCW TCV BYP VLV.
  - 3-3904-500, U3 TBCCW HX TCV INLET VLV.  
OR  
3-3904-501, U3 TBCCW HX TCV OUTLET VLV (by U3 TBCCW HX).
  - 3-3924-501, U3 TBCCW HX TCV BYP VLV.
  - 2-3906-500, U2 TURB OIL CLR TCV INLET VLV.  
OR  
2-3906-501, U2 TURB OIL CLR TCV OUTLET VLV (at SW Discharge Header South of Turbine Oil Reservoir).
  - 2-3907-500, U2 TURB OIL CLR TCV BYP VLV.
  - 2-3907-A-500, U2 TURB OIL CLR TCV BYP VLV.
  - 3-3906-500, U3 TURB OIL CLR TCV INLET VLV.  
OR  
3-3906-501, U3 TURB OIL CLR TCV OUTLET VLV (South of Turbine Oil Reservoir).
  - 3-3907-500, U3 TURB OIL CLR TCV BYP VLV.
  - 3-3907-A-500, U3 TURB OIL CLR TCV BYP VLV.
  - 2/3-3999-240, 2/3 MAX RECYCLE SERVICE WTR RETURN TO U3 DISCH HDR ISOL VLV.  
OR  
2/3-3999-241, 2/3 MAX RECYCLE SERVICE WTR RETURN TO U2 DISCH HDR ISOL VLV (South of Turbine Oil Reservoir).
9. Continue to monitor the following equipment while in operation:
- 2/3 DG FUEL OIL TRANSFER PUMP.
  - SW PUMP 2A.
  - DIESEL COOLING WATER PUMP 2/3.

ATTACHMENT E  
CENTER DESK NSO ACTIONS

UNIT 2  
\*DSSP 0100-A  
REVISION 05

1. IF directed by U2 NSO, THEN perform the following:
  - A. Monitor RX Pressure and level at one of the following locations:
    - At INSTRUMENT RACK 2202-5 on PI 2-263-60A, U2 REACTOR PRESSURE, and LITS 2-263-59A, U2 REACTOR HIGH WATER LEVEL TRIP.
    - OR
    - At INSTRUMENT RACK 2202-6 on PI 2-263-60B, U2 REACTOR PRESSURE, and LITS 2-263-59B, U2 REACTOR HIGH WATER LEVEL TRIP.
    - OR
    - At INSTRUMENT RACK 2202-7 on PI 2-263-139A, U2 REACTOR PRESSURE JP #1 LP LINE, and LI 2-263-151A, U2 REACTOR WIDE RANGE LEVEL.
    - OR
    - At INSTRUMENT RACK 2202-8 on PI 2-263-139B, U2 REACTOR PRESSURE JP #11 LP LINE, and LI 2-263-151B, U2 REACTOR WIDE RANGE LEVEL.
  - B. Record level and pressure at 10 minute intervals on DSSP 0100-T11, Cooldown Tables.
  - C. Coordinate with U2 NSO to establish and maintain a cooldown rate of  $\leq 15^{\circ}\text{F}/\text{hour}$  (use Saturation Temp/Press and Cooldown Rate Guidelines table of DSSP 0100-T11, Cooldown Tables).
  - D. Direct U2 EA HVO to manually throttle 2-0301-9A, 2A CRD FILTER INLET VLV, or 2-0301-9B, 2B CRD FILTER INLET VLV, as necessary to maintain reactor level at +8 inches to +40 inches.

CHECKLIST A  
SHIFT ENGINEER TRACKING

UNIT 2  
\*DSSP 0100-A  
REVISION 05

RESPONSIBLE	ACTION	
	Initial Actions complete:	
U2 NSO	Manual reactor scram ADS in INHIBIT Safety/relief valves in OFF MSIVs closed Isolation Condenser initiated	
Makeup to shell side of Isolation Condenser must be initiated within 20 minutes of Isolation Condenser operation.		
U2 NSO	RWCU Isolation verified	
U2 NSO	IF offsite power not available, verify D/G 2/3 auto-start	
U2 NSO	Start 2A COND TRANSFER PP	
U2 NSO	Cooldown rate $\leq$ 15°F/hour established and maintained	
U2 SS	dc MCC #2A aligned	
	dc MCC #2B aligned	
	dc MCC #3 aligned	
U2 SS	BUS 28 aligned	
U2 EA	MCC 28-1 aligned	
	MCC 28-2 aligned	
	MCC 28-3 aligned	
U2 NSO	BUS 23-1 aligned	
U2 NSO	BUS 23 aligned	
U2 NSO	Isolation Condenser shell side level maintained	
U2 NSO	CRD Pump 2A started	
Service Water must be initiated within 1 1/2 hours after start of CRD Pump.		
U2 NSO	Service Water Pump 2A started (IF no SW Pumps running)	
U2 NSO	CST Level maintained	
Inside HVO	Service Water to Isolation Condenser make-up (IF required)	
U2 NSO	Stable Hot Shutdown condition	

REMARKS: \_\_\_\_\_

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