WATTS BAR NUCLEAR PLANT

EMERGENCY OPERATING INSTRUCTIONS

EOI-1

LOSS OF REACTOR COOLANT (LOCA)

UNIT 1 or 2

CURRENT REVISION LEVEL 10

Prepared By C. Richard Cook

Revised By C. Richard Cook

Submitted By _____ Supervisor

PORC Review Date 5/29/84

Approved By _____ Superintendent

Date Approved 5/29/84

Last page of this instruction: 33

1C	Document Control Unit, 1520 CST2-C
	NRC
1C	Nuclear Safety Review Staff
1C	Plant Master File
1C	Plant Superintendent(Oper & Eng)
1C	Asst. Plant Manager
	Asst. Plant Supt. (Maintenance)
	Adm. Svs. Supervisor
	Asst. Mechanical Maint. Sup.
	Chemical Laboratory
	Chemical Unit Supervisor
1C	Chief, Nuclear Training Branch
1C	Compliance Unit
	DPSO-WBN
	Document Control Supervisor
	Electrical Maint. Supervisor
	Electrical Shop
1C	Engineering Supervisor
	Field Services Supervisor
1C	Health Physicist
	Health Physics Laboratory
	Instrument Engineer
	Instrument Maint. Supervisor
	Instrument Shop
	Janitor & Labor Supervisor
	Management Svs. Supervisor
	Mechanical Maint. Supervisor
	Mechanical Unit Supervisor
1U	Operating Instruction Coord.
2C	Operations Supervisor
1U	Operator Training Classroom
	OPQA - Plant Coordinator
	Plant Services Supervisor
	Plant Training Officer
1U	Plant Training Shift Engineer
	Power Stores Unit Supervisor
1C	Preop Test Supervisor
	Public Safety
	QA Manager, QA and Audit Staff
1C	Quality Assurance Supervisor
1C	Reactor Unit Supervisor
	Safety Engineer
1C	Shift Engineer's Office
	Stationary Equipment Group
1C	Technical Support Center
1C	Unit 1 Control Room
1C	Unit 2 Control Room
1U	Supv., Reactor Systems Group
1C	DNPEC Assessment Team
1C	John A. Raulston, NEB

HISTORY OF REVISION/REVIEW

REV. NO.	DATE	REVISED PAGES	REASON FOR CURRENT REVISION (INCLUDE ALL TEMPORARY CHANGE NUMBERS)
3	06/10/81	All	N/A
4	10/30/81	Pgs. 2,3,4,12, 17,18,26,29 & 30	N/A
5	11/09/82	Punchlist, 1-18, 25, 26, 28	Add general info on page 1, change AFW Flow Req., change S/G WR level, correct SI no., typos, PZR heaters
6	03/08/83	Pgs. 5,14,26,35	Correct PZR lvl on P.5 (L28-820920-820); Add info to MM on P. 14; cleanup P. 26 & 35
7	08/23/83	All	Gen Rev; added PHMS step (L33-830419-801); change AFW flow req; change RCP trip criteria & remove 5 min TD from ΦB RCP trip; close CCP miniflow (step FF.3); correct FCV-63-93 in App E; Human Factor rev; SNP R30.
8	10/04/83	11	Rearranged CCP miniflow steps; 2 years review.
9	12/27/83	All	Move Recirc to Appendix E & H; Punchlist; close 5 gpm orifice; minor clarifications
10	5-29-84	2, 3, 5-7, 10-12, 16, delete Punch-list	Correct D/G OL rating; place H_2 analyzers in on P3; minor corrections and clarifications; 2-year review

PUNCHLIST

1. Appendix H, first CAUTION - Identified (SQN) cavitation problem to be checked during Preop.

Guy T. Stanton 12/27/83
Signature Date

CONTENTS

PURPOSE

To provide operator response to a LOCA that is large enough to initiate Safety Injection to ensure short-term core-cooling to prevent damage to the fuel clad, and maintain long-term shutdown and core-cooling by recirculation of spilled coolant, melted ice, and CNTMT Spray drainage.

LOSS OF REACTOR COOLANT

I. IMMEDIATE OPERATOR ACTION

IF NOT performed, THEN go to EOI-0, "Safety Injection."

II. SUBSEQUENT OPERATOR ACTIONS

NOTES: o Use redundant instruments to monitor parameters
Use PAM instruments where provided.

o Use RCS Narrow Range pressure instruments (1700 - 2500 psig) when on scale, since the Wide Range (0-3000 psig) may have errors up to 390 psi under ADVERSE CNTMT Conditions.

o ADVERSE CNTMT instrument errors must be used if ΦB CNTMT Isolation (Hi-Hi pressure) occurs.

CAUTION: IF LOCA occurs when on RHR cooling, THEN FCV-63-1 must be opened, then FCV-74-1 and 2 (or FCV-74-8 & 9) must be closed.

_____A. Monitor RWST level. IF the RWST low level alarm appears imminent (≅29%, 120,000 gal), THEN go to step "U."

_____B. As RWST level decreases, ensure that Cntmt sump level increases. With no increase in Cntmt sump level, THEN return to EOI-0 step IV.F to rediagnose the event.

_____C. Regulate AFW to maintain S/G levels as follows:

CAUTION: DO NOT rely on level indications on depressurized S/Gs

_____1. S/G levels in the Narrow Range (40-71%, ADVERSE CNTMT).

_____2. Use the following backup variables to ensure level in one or more S/Gs:

- o AFW flow
- o Steamline pressure
- o Wide range T-hot and T-cold

LOSS OF REACTOR COOLANT

_____D. IF any S/G level increases in an unexplained manner, THEN go to EOI-3 "S/G Tube Rupture".

_____E. Monitor Condensate Storage Tank level. (AFW Pumps' supply)

____ 1. IF CST level <16 ft, THEN initiate makeup to CST.

____ 2. IF level drops to <0.5 ft, THEN verify auto switch-over to ERCW.

_____3. IF auto switch-over does not occur, THEN manually switch-over.

_____F. Check PZR PORV status:

____ ____ 1. Verify PORVs are closed or close when RCS pressure
Yes no drops below 2335 psig.

____ ____ 2. Verify PORV block valves open and power available
Yes no (indicating lights).

3. IF any PORV does NOT reclose, THEN close its block valve.

_____G. Ensure CNTMT Isolation is maintained:

_____1. Do NOT reset until required on necessary processes.

_____2. IF CNTMT Isolation is reset, THEN start sampling CNTMT liquid and gaseous effluents.

_____3. Implement CNTMT Hydgrogen Control Measures:

_____a. Open the Ice Condenser AHU ACBs:

- o Rx Vent Bd A-A, compts 13D and 14D
- o Rx Vent Bd B-B, compts 13D and 14D

_____b. Energize the Permanent H_2 Mitigation System (Pnl M-10):

- o Place HS-268-73 to ON
- o Place HS-268-74 to ON

* _____c. Place H_2 analyzers in ANALYZE

LOSS OF REACTOR COOLANT

_____H. Monitor the following SI termination criteria continuously; SI can be terminated IF:

_____1. RCS pressure >2000 psig and increasing

AND

_____2. PZR level >20% (>50% for ADVERSE CNTMT)

AND

_____3. RCS subcooling >40°F

AND

_____4. AFW flow ≥ 470 GPM (total) is injected into intact S/G(s)

OR

S/G level is in the Narrow Range (>40% for ADVERSE CNTMT) in at least one intact S/G.

THEN

_____5. Reset SI.

CAUTION:
- o Auto SI is not available until reactor trip breakers reclose.
- o Subsequent to this step, should loss of offsite power occur, manual SI initiation is required to load safeguards equipment onto the DG powered shutdown boards.

_____6. Place all ECCS Pumps not needed for charging and seal injection in standby and maintain operable ECCS flowpaths.

_____7. Establish charging flow, then isolate the BIT.

_____8. Monitor RCS at all times for of INADEQUATE CORE COOLING:

INADEQUATE CORE COOLING EXISTS WHEN:

≥ 5 Incore TCs exhibit readings ≥ 1200°F.

OR

RCS Wide-range T-hot indication is pegged high

_____9. IF conditions indicate Inadequate Core Cooling exists, THEN implement APPENDIX D to restore core cooling.

_____10. Use computer subcooling program and APPENDIX A to ensure RCS subcooling is being maintained.

LOSS OF REACTOR COOLANT

_____11. Monitor manual SI re-initiation criteria:

MANUALLY RE-INITIATE SI IF:

_____a. RCS pressure < 1870 psig.

OR

PZR level < 20%

OR

RCS subcooling < 40°F.

* * ____ Yes _____ no b. IF manual SI re-initiation is required, THEN go to EOI-0 step IV.F to re-evaluate the event, unless this re-evaluation has already been performed.

____ Yes _____ no c. Add 15°F to the sub-cooling requirements prior to the second termination of the ECCS Pumps. This can be achieved by terminating SI 200 psi higher.

_____12. IF not the leakage path, THEN re-establish charging and letdown:

NOTE: The following requires resetting ϕA Isolation.

_____a. Determine RCS C_B and set blender accordingly.

_____b. Maintain PZR level at ~ 25% (50% for ADVERSE CNTMT).

_____c. Ensure charging flow established and RCP seal return FCV-62-61 and 63 are open.

_____d. Maintain RCS pressure stable.

_____e. Open RCS loop 3 letdown FCV-62-69 and 70.

_____f. Open letdown line isolation FCV-62-77.

_____g. Manually open PCV-62-81 ≅ 25%, then open FCV-62-76 (5 gpm orifice); when letdown pressure is stable, open a 45 gpm orifice.

_____h. Adjust PCV-62-81 for desired pressure then place on AUTO. (≅320 psig at normal letdown temperature).

_____i. Close the 5 gpm orifice FCV-62-76.

LOSS OF REACTOR COOLANT

_____13. Re-establish PZR heater operation (see APPENDIX B for heater availability). WHEN RCS pressure can be controlled by PZR heaters alone, return charging to PZR water level control.

_____14. Verify S/G NR levels controlling to ~25% (40%, ADVERSE CNTMT).

_____15. Monitor the AFW normal water supply (CST).

____ a. IF CST level < 16 ft, THEN initiate normal makeup to CST.

____ b. IF level drops to <0.5 ft, verify auto switch-over to ERCW.

_____c. IF auto switch-over does not occur, THEN manually switch over.

* ___ ___16. Verify the RCS subcooled >50°F:
Yes No

____a. Incore TCs.

OR

All wide range RCS T-hot.

* _____b. With <50°F subcooling, attempt to establish by:

_____1) Condenser Steam dump

OR

SG PORVs

_____2) Reduce S/G pressure to maintain RCS cooldown rate ≤ 50°F/hr, consistent with plant makeup capability, until 50°F subcooling is established.

_____c. IF 50°F subcooling NOT maintained:

_____1) Manually initiate SI.

_____2) Go to section IV.F of EOI-0 to re-evaluate the event, unless re-evaluation has already been performed.

_____17. Perform a controlled cooldown to COLD SHUTDOWN using normal cooldown procedures if required to effect repairs. (See AOI-1 for "Natural Circulation Cooldown," if required.)

LOSS OF REACTOR COOLANT

* _____I. If the SI termination criteria (step H) are NOT met:

_____1. Maintain necessary ECCS Pumps operating.

_____2. IF equipment is not operating, THEN attempt to operate the equipment manually or locally.

_____3. Effect repairs if necessary.

_____4. IF RCS pressure stabilizes above the SI Pumps' shut-off head (≅1500 psig), THEN reset SI to allow safeguards equipment to be controlled manually.

_____a. Stop the RHR Pumps and place in STANDBY.

_____b. IF RCS pressure decreases uncontrollably below the SI Pumps' shutoff head (≅1500 psig), THEN restart the RHR Pumps.

_____J. IF RHR Pumps remain in service, THEN place CCS water on the RHR HXs.

* _____K. Notify the Chem Lab to initiate SI-11.7 and inform Health Physics of conditions.

_____L. Shutdown DGs as soon as possible after plant conditions stabilize.

_____1. Remove DGs from service per SOI-82, "Shutdown After Emergency Start."

_____2. Place DGs in standby per SOI-82.

_____3. Use EOI-1B in conjunction with this procedure to re-establish operation of safety equipment should a loss of offsite power occur during injection mode.

_____M. Transfer NR-45 to one SR and one IR channel.

_____N. Verify MCR Isolation (SOI-31.1B)

_____O. Verify Aux Bldg Isolation (SOI-30.6) and Close U-2 CNTMT equipment hatch temporary doors and check equipment transfer hatch cover in place (El 757 to lower elevation).

_____P. IF SI will not reset, THEN request performance of SI-3.1.37 to verify P-4 contact position (failure may prevent resetting SI signal).

_____Q. Implement the REP per IP-1 relative to primary coolant leakage and ECCS actuation.

LOSS OF REACTOR COOLANT

_____R. Leave both trains of EGTS in service till recovery portion of procedure is carried out.

_____S. Verify A-A and B-B CNTMT Air Return Fans in service (10 min after phase B) and suction dampers ZS-30-72 and ZS-30-73 open.

_____T. IF in service, stop PD Charging Pump.

_____U. **IF either condition below exists, THEN stop all RCPs:**

_____1. **IF ϕB CNTMT Isolation occurs (loss of motor bearing cooling).**

OR

AFTER verifying at least 1 CCP or SI Pump running THEN IF RCS pressure decreases below 1400 psig.

_____2. Monitor RCP trip criteria periodically.

_____3. If RCPs are tripped use APPENDIX C for natural circ guidelines.

_____V. IF any steps were skipped getting to this point, (due to imminent low RWST level) THEN continue with Step W. Verify here when skipped steps are completed.

_____W. Verify UHI isolation valves close on low level.

_____X. IF RCS pressure decreases below ≅ 400 psig, THEN verify CL Accumulators dump their contents.

_____Y. Monitor RCS pressure:

____ ____ 1. IF the break is characterized by RCS pressure quickly
Yes no decreasing below S/G pressure, THEN go to step BB.

NOTE: If the RCS goes into a saturated condition, see APPENDIX C for two-phase natural circ guidelines.

____ ____ 2. IF the break is characterized by a slowly decreasing or
Yes no stabilized RCS pressure above the lowest S/G safety (1185 psig), the following additional manual actions should be taken to aid RCS cooldown and depressurization.

MAIN CONDENSER IN SERVICE

_____a. Check pressure equalized across the MSIVs or equalize by use of MSIV bypass, then open at least one MSIV.

_____b. Transfer steam dump control to PRESSURE mode.

LOSS OF REACTOR COOLANT

_____c. Dump steam to the condenser to lower the RCS temperature and consequently RCS pressure.

MAIN CONDENSER NOT IN SERVICE

_____a. Dump steam with the S/G PORVs to lower the RCS temperature and consequently, RCS pressure.

_____**3. Reduce S/G pressure to 985 psig (200 psi below lowest safety).**

_____**4. Maintain RCS coldown rate ≤ 50°F/hr, consisten with plant make-up capability.**

_____Z. IF RWST low level alarm (≅29%) is NOT imminent, THEN perform a preliminary evaluation of the plant status:

_____1. Periodically check Aux Bldg area radiation monitor for detection of leakage.

_____2. IF significant leakage is detected, THEN attempt to isolate the leakage and implement the necessary radiation protection.

_____3. Maintain ECCS injection flow to the RCS at all times.

_____4. While the plant is in Cold Leg (CL) Injection mode:

_____a. Evaluate plant equipment per APPENDIX G. Follow radiation control methods while performing evaluations.

_____b. Look over CL Recirc procedure in Appendix E.

_____c. Close ACB for FCV-63-1.

_____AA. IF CNTMT pressure is near normal (-0.1 to +0.3 psid):

_____1. Reset Cntmt Spray (HS-72-42 & 43 on M-6)

_____2. Stop CS Pumps A-A & B-B and leave in standby.

_____3. Maintain operable Cntmt Spray flow paths.

LOSS OF REACTOR COOLANT

_____BB. Prior to going to CL recirc, establish CCS water to the RHR HXs:

NOTE: During a loss of power train situation it may be necessary to throttle the unaffected unit's CCS water. Do NOT let unaffected unit's CCS temperature go above 120°F.

_____1. Open the following CCS valves: (Panel M-27B)

_____a. Open FCV-70-156, RHR HX A outlet (60 sec to open)

_____b. Open FCV-70-153, RHR HX B outlet (60 sec to open)

_____2. Monitor ECCS Pump operation:

_____a. Verify all ECCS Pumps (Hi & Lo head) are operating.

_____b. Verify the SI Pumps are delivering flow to the RCS cold legs.

_____c. IF SI Pumps are not delivering flow due to RCS pressure being higher than SI Pump pressure, THEN Stop the SI Pumps and return to standby.

*

_____CC. If a loss of offsite power occurs after switching to CL recirc see EOI-1B to establish pre-loss of offsite power conditions, then return to this procedure to continue cooldown.

_____DD. WHEN necessary, implement APPENDIX E to change-over to CL Recirc.

_____EE. With the ECCS in the CL recirc mode:

_____1. Make plant equipment evaluation if not previously done.

_____2. Request sample of Cntmt sump and adjust pH if required.

_____FF. Monitor area radiation monitors to detect ECCS leakage:

_____1. IF ECCS leakage is found, THEN attempt to isolate it.

_____2. Maintain CL recirc flow to the RCS at all times.

_____GG. After ≅ 15 minutes (sooner if possible) stop the DGs if offsite power has not been interrupted, and prepare for restart.

_____HH. >30 minutes after the accident occurs place one of the operating ABGT Systems in standby.

LOSS OF REACTOR COOLANT

_____JJ. ~ 2 hours after a design basis accident, the ice condenser will deplete and CNTMT pressure will increase. IF CNTMT pressure increases to 12.3 psid, THEN PLACE ONE TRAIN OF RHR in CNTMT Spray mode:

Train "A" RHR Spray alignment:

_____1. Close RHR CL injection FCV-63-93,

_____2. Open RHR Spray FCV-73-40.

OR

Train "B" RHR Spray alignment:

_____1. Close RHR CL injection FCV-63-94,

_____2. Open RHR Spray FCV-72-41.

_____KK. ~ 15 hours after transferring to CL Recirc realign ONE train of ECCS for Hot Leg (HL) Recirc per APPENDIX H to assure against an excessive buildup of boric acid in core. This may be required earlier if C_B sampling indicates an unexplained RCS C_B decrease. Consult Tech Support Center.

_____LL. Monitor CNTMT H_2 concentration:

_____1. Ensure the Permanent H_2 Mitigation System is ON.

_____2. Determine H_2 gas monitors are in service and switches in ANALYZE.

_____3. Monitor the H_2 gas monitor indication on M-9.

_____4. Have CNTMT air sampled by Chem-Lab once/shift (sample frequency may be changed based on rate of change of H_2 concentration and radiation dose received drawing the sample).

_____5. Keep CNTMT Air Return Fans in service for duration of H_2 buildup problem.

_____6. Place H_2 recombiners in service as follows:

_____a. If CNTMT H_2 concentration reaches ½%:

_____1) IF DGs are carrying the electrical load, THEN ensure they do NOT exceed 4400 KW continuous or 4840 KW for two hours (recombiners are 75 KW each).

LOSS OF REACTOR COOLANT

_____2) If maximum DG load is reached, notify the SRO and make evaluation on which equipment may be removed from service to allow loading of recombiner.

_____3) Then place one Recombiner in service (SOI-83.1).

_____b. If CNTMT H_2 concentration reaches 1%:

_____1) **IF DGs are carrying the electrical load, THEN ensure they do NOT exceed 4400 KW continuous or 4840 KW for two hours (recombiners are 75 KW each).**

_____2) If maximum DG load is reached, notify the SRO and make evaluation on which equipment may be removed from service to allow loading of recombiner.

_____3) Then place additional Recombiner in service (SOI-83.1).

_____c. Place one Recombiner in service within 24 hours after the accident to ensure a mixture of <4% by volume in CNTMT:

_____1) IF DGs are carrying the electrical load, THEN ensure they do NOT exceed 4400 KW continuous or 4840 KW for two hours (recombiners are 75KW each).

_____2) If maximum DG load is reached, notify the SRO and make evaluation on which equipment may be removed from service to allow loading of recombiner.

_____3) Then place one Recombiner in service (SOI-83.1).

_____MM. Guidelines for removing H_2 and other non-condensables from the primary system when trapped and cannot escape to CNTMT:

_____1. Ensure the Permanent H_2 Mitigation System is ON.

_____2. Keep RCS pressure as high as possible to prevent bubble from enlarging and also to entrain more non-condensables in the RCS water.

_____3. With RCPs operating (RCP 1 or 2):

_____a. Verify PZR heaters operable.

_____b. Use PZR sprays periodically to strip noncondensables from water to PZR vapor space.

LOSS OF REACTOR COOLANT

_____c. Then open a PZR PORV momentarily to vent non-condensables to the PRT where it can be vented to the waste gas system or to CNTMT if the PRT rupture disc is blown.

_____d. Verify the PRZ PORV closed after each use.

_____4. With RCPs not operating:

Use Aux Spray and follow guidelines for RCPs operating, (step MM.3 above).

_____5. With CVCS letdown operable:

_____a. Monitor CVCS closely for leakage.

_____b. Set up proper radiation protection measures

_____c. Letdown through CVCS at desired rate.

_____d. As non-condensables are stripped in the VCT vapor space vent them to the waste gas system.

_____6. Burp non-condensables from vessel head area with RCPs running:

_____a. Obtain SRO approval.

_____b. Slowly decrease RCS pressure (≅10 psig/min), maintain 50°F subcooling if possible.

_____c. Monitor excore nuclear instruments for indication of increased neutron leakage.

_____d. Monitor Incore TCs for increased temperature readings.

_____e. If during controlled depressurization, flow blockage occurs as indicated by increasing temperature of the RCS, repressurize and establish flow.

_____f. If RCP cavitation occurs as indicated by following, trip the RCPs

- o Hi vibration
- o Flow surges
- o RCP amperage surges
- o Use of saturation curve

_____g. When the bubble is moved from the upper head through the hot leg 2 into the PZR surge line, the incore TCs should decrease.

_____h. Once the bubble is in the PZR, vent the PZR to the PRT.

LOSS OF REACTOR COOLANT

III. RECOVERY

NOTE: After reaching cold shutdown, deenergize the Permanent H_2 Mitigation System, provided Cntmt H_2 level is acceptable.

The reactor will remain in recirc mode for an indefinite period of time.

Instructions for recovery shall be prepared when the condition of the CNTMT and the accident evaluation is determined.

IV. REFERENCES

FSAR 15.3.1
6.3

LOSS OF OFFSITE POWER WHILE IN RECIRC MODE WITH SI RESET

I. SYMPTOMS

A. Loss of normal control room lights and emergency lights on.

B. Loss of loads connected to the 6.9-KV and 480-V Unit and SD Bds.

C. ALARMS

1. 6900V UNIT BD A (B, C, D) FAILURE OR UNDERVOLTAGE
2. 480V UNIT BD A (B) FAILURE, UV, OR TRANSFER
3. 6900V SD BD A-A (B-B) FAILURE OR UNDERVOLTAGE
4. 480V SD BD A1-A OR A2-A (B1-B OR B2-B) FAILURE OR UNDERVOLTAGE
5. 6900V START BUS FAILURE OR UV (elect control bd alarm - printer)

II. AUTOMATIC ACTION

A. Blackout sequence initiates for boards that lost voltage.

B. DGs 1A-A, 1B-B, 2A-A, and 2B-B start and energize 6900V SD Bds that lost voltage.

III. OPERATOR ACTIONS

____ A. If a loss of offsite power happens after a LOCA when the ECCS is in the recirc mode and the SI has been reset, proceed as follows (only for the unit with the LOCA):

_____1. DO NOT REINSTATE SI; This would cause repositioned valves or other equipment to return to the injection mode.

_____2. Verify the DGs energize the 6.9kV SD Bds and the "Blackout Sequencer" starts sequencing loads for boards that lost voltage.

_____3. LOCKOUT the CCPs prior to (preferred) or just after they start to prevent cavitation until RHR pumps are restarted.

_____4. Secure all PZR heaters to prevent DG overload.

_____5. Start Air Compressors A and B, locally.

CAUTION: D/G rating: 4400 kW continuous or 4840 kW for 2 hours. Watch DG loads closely, if necessary secure loads listed in step B.

_____6. Start the following as soon as possible without overloading the DGs:

a. RHR Pumps
b. CCPs
c. SI Pumps
d. CS pumps (IF CNTMT pressure $\geq$ 2.81 psid)
e. Air Return Fans (if not running, and Ø B present).

_____7. Announce "loss of offsite power unit _____," on PA system.

LOSS OF OFFSITE POWER WHILE IN RECIRC MODE WITH SI RESET

_____B. Stop the following equipment: (to avoid DG overload)

_____1. Lower compartment fans (won't start if ØB not reset).

_____2. CRDM coolers (won't start if ØB not reset).

_____3. Boric Acid Pumps.

_____C. **Return the following DG loads to service:**

NOTE: **Maximum DG load is 4400 kW continuous or 4840 kW for 2 hrs. If load limits become a problem, the SRO should be notified and a decision made as to which components to remove from service.**

_____1. Control Bldg cleanup fan

_____2. Control Bldg pressurizing fan

_____3. H_2 Recombiner per SOI-83.1 if in service prior to loss of power

_____D. The following DG loads are sequenced on automatically following a blackout signal. Verify equipment operating or start as necessary to reestablish pre-loss of offsite power conditions:

NOTE: Watch total DG loading closely.

_____1. CCPs

_____2. SI Pumps

_____3. RHR Pumps

_____4. ERCW Pumps (447 KW each)

_____5. CCS Pumps (261 KW each)

_____6. HPFP Pumps

_____7. AFW Pumps (372 KW each)

_____8. PZR heaters (450KW/BANK)

_____9. CS Pumps (447 KW each)

_____E. Start (or verify) the following DG loads as needed:

NOTE: Watch total DG loading closely.

_____1. Control building MCR chiller

_____2. Control building EBR chiller

LOSS OF OFFSITE POWER WHILE IN RECIRC MODE WITH SI RESET

____B. Stop the following equipment: (to avoid DG overload)

____1. Lower compartment fans (won't start if ØB not reset).

____2. CRDM coolers (won't start if ØB not reset).

____3. Boric Acid Pumps.

____C. **Return the following DG loads to service:**

NOTE: **Maximum DG load is 4400 kW continuously or 4840 kW for 2 hrs. If load limits become a problem, the SRO should be notified and a decision made as to which components to remove from service.**

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NOTE: Watch total DG loading closely.

____1. ERCW Pumps (447 KW each)

____2. CCS Pumps (261 KW each)

____3. CS Pumps (447 KW each)

____4. AFW Pumps (372 KW each)

____5. PZR heaters (≅ 450KW/BANK)

____6. CCPs

____7. SI Pumps

____8. RHR Pumps

____9. HPFP Pumps

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NOTE: Watch total DG loading closely.

____1. Control building MCR chiller

____2. Control building EBR chiller

LOSS OF OFFSITE POWER WHILE IN RECIRC MODE WITH SI RESET

_____3. Auxiliary Air Compressor

_____4. RHR Pump room cooler (verify)

_____5. SI Pump room cooler (verify)

_____6. CCP Pump room cooler (verify)

_____7. CS Pump room cooler (verify, if pump is running)

_____8. 125-V DC Vital Battery Chargers

_____9. Station Air Compressors

_____10. Emergency lighting cabinet

_____11. H_2 Recombiners

_____12. CCS and AFW Pumps' area cooler

_____13. SD Board Room A/C chiller

_____14. SD Board Room el 757 AHU

_____15. Electric Board Room AHU

_____16. Radiation Monitor and Sampling

_____17. DG Starting Air Compressors

_____18. Vent Radiation Monitor

_____19. Control room A/C AHU

_____20. Spent Fuel Pit Cooling Pumps

_____21. Pipe chase cooler

_____22. Penetration rooms el 692, 713, and 737 coolers

_____23. Shutdown transformer room exhaust fans

_____24. Control building cleanup fans

_____25. El 772 board room pressure supply fans

_____26. El 772 board room AHUs

_____27. El 772 board room condenser units

_____28. El 772 board room A/C compressors

LOSS OF OFFSITE POWER WHILE IN RECIRC MODE WITH S[RESET

_____29. Control building battery rooms' el 692 exhaust fans

_____30. EGTS fans and heaters

_____31. ABGT System fans and heaters

_____32. EGTS room cooler

_____33. **Shutdown board room A/C pressure fan**

_____34. **Control building pressure fans**

_____35. Shutdown board room A/C CW pump

_____36. ERCW strainer

_____37. Boric Acid Pump

_____38. Boric Acid Tank heater

_____39. Motor operated valves (480V Rx MOV Boards energized)

_____40. Charging pump auxiliary oil pump

_____41. 24 volt microwave battery charger

_____42. Diesel battery board exhaust fan

_____43. Diesel building exhaust fans

_____44. Diesel building fuel oil transfer pump

_____45. Diesel building lighting cabinet

_____46. DG 125-VDC battery charger

_____47. Diesel engine day tank fuel transfer pump

_____48. DG Room exhaust fan

_____49. IPS fan and heater

_____50. ERCW traveling screen and wash pump

_____51. Spent Fuel Pit Pumps area cooler

_____52. Diesel building electric heat

_____53. Fuel Handling Area Exhaust Fan (After ≅4 hours)

_____54. Air Return Fans

_____55. CCS Booster Pumps

LOSS OF OFFSITE POWER WHILE IN RECIRC MODE WITH SI RESET

IV. RECOVERY

Once the required loads are restarted to establish pre-loss of offsite power conditions, continue RCS cooldown per EOI-1A.

V. REFERENCES

FSAR 6.3