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Form SPD-1002-1

INFORMATION ONLY

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: EP/1/A/5000/0
Change(s) 0 to
0 Incorporated

(2) STATION: McGuire Nuclear Station

(3) PROCEDURE TITLE: Loss of Reactor Coolant

(4) PREPARED BY: Sam Horn DATE: 2/29/80

(5) REVIEWED BY: Neal McCrain DATE: 3-5-80

Cross-Disciplinary Review By: _____ N/R: 2011

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: [illegible] Date: [illegible]

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

INFORMATION ONLY

DUKE POWER COMPANY
McGUIRE NUCLEAR STATION
LOSS OF REACTOR COOLANT

CASE I: Leak or rupture within the capability of both Centrifugal Charging Pumps

CASE II: Leak or rupture from the vapor space of the pressurizer.

CASE III: Leak or rupture of such magnitude that the charging pumps cannot maintain pressurizer level and pressure.

CASE "I"
LEAK OR RUPTURE WITHIN THE CAPABILITY OF BOTH CENTRIFUGAL CHARGING PUMPS

1.0 Symptoms

1.1 VCT level decrease or abnormal increase in frequency of auto makeup.

1.2 Possible pressurizer level decrease initially.

1.3 Possible pressurizer pressure decrease initially.

1.4 If in containment:

1.4.1 Containment sump level increase.

1.4.2 Containment temperature increase.

1.4.3 Containment humidity increase.

1.4.4 EMF-38 "Containment Hi Part. Rad." alarm.

1.4.5 EMF-39 "Containment Hi Gas. Rad." alarm.

1.4.6 EMF-40 "Containment Hi Iod. Rad." alarm.

2.0 Immediate Action

2.1 Automatic

2.1.1 Charging flow increases.

2.1.2 Pressurizer backup heaters energize.

2.1.3 Containment ventilation isolation if EMF-38, 39, or 40 Hi Rad alarm.

2.1.4 Possible safety injection actuation and Phase "A" Isolation.

2.2 Manual

2.2.1 Ensure all necessary automatic actions occur.

2.2.2 If pressurizer level is decreasing, or if normal charging is at maximum flow, change from 75 gpm to 45 gpm orifice.

2.2.3 Start additional charging pumps as necessary to maintain pressurizer level if SI has not actuated.

2.2.4 Isolate all UHI Accumulator discharge valves.

CAUTION: Inaccurate Pressurizer and S/G Level Readings will occur during accident conditions involving breaks inside containment. (This is caused by depressurization and or reference leg heatup). Refer to McGuire Data Book Curves _____, _____, and curves _____

for correct conversions for actual level. Use backup instrumentation (i.e.: CA Flow, SM Pressure, NC Pressure and Wide Range Th, Tc).

3.0 Subsequent Action

CAUTION: Do not place systems in manual unless misoperation in automatic is apparent. If any system is placed in manual, make frequent checks for proper operation.

3.1 Identify and isolate leak if possible.

3.1.1 Close all pressurizer PORV's and their associated isolation valves.

3.2 If SI actuated, trip all reactor coolant pumps before reaching 1250 psig.

3.3 If containment pressure is <1 psig, but not before 10 minutes after actuation, reset the SI signal, reset the D/G load sequencers and stop ECCS pumps only if the following conditions exist:

3.3.1 Pressurizer Pressure $\geq$2000 psig and increasing, and:

3.3.2 Pressurizer Level $\geq$50%, and:

3.3.3 At least one S/G has an indicated level in the narrow range, and:

3.3.4 The NC System is subcooled by $\geq$30°F.

CAUTION: Manually re-initiate safety injection if pressurizer pressure decreases to 1845 psig or pressurizer level decreases below 20% or highest NC Loop Th is >618°F.

3.4 Energize pressurizer heaters as necessary to maintain NC System pressure.

3.5 If for any reason all reactor coolant pumps are tripped, ensure that core decay heat is being removed by natural circulation. Refer to OP/0/A/6150/14 (Decay Heat Removal By Natural Circulation).

3.6 If Phase "A" containment isolation and/or containment ventilation isolation occured contact the HP Department to sample the containment atmosphere for gaseous, particulate, and iodine levels. If recommended by the HP Department after sample analysis reset Phase "A" containment isolation and verify containment monitors 1EMF-38 (Containment Particulate-Low Range), 1EMF-39 (Containment Gas-Low Range) and 1EMF-40 (Containment Iodine-Low Range) are not in an alarm condition, reset Containment Ventilation Isolation signals.

3.7 Realign systems to normal when conditions warrant.

3.8 Perform a Reactor Coolant System leakage calculation to determine the magnitude of the leak (if leak has been isolated).

NOTE: Makeup to the Volume Control Tank must be stopped during the calculation interval.

3.9 Consult McGuire Technical Specifications (3.4.6.2), considering both the magnitude and nature of the leak, and determine if operation may continue.

3.10 Refer to EP/0/A/5000/21 (Notification of Unusual Events).

3.11 If shutdown is required, begin unit shutdown per OP/1/A/6100/02 (Controlling Procedure for Unit Shutdown).

3.12 If for any reason pressurizer level cannot be maintained, open UHI Accumulator Isolation valves and manually actuate SI. Refer to CASE III of this procedure.

CASE II

LEAK OR RUPTURE FROM THE VAPOR SPACE OF THE PRESSURIZER

1.0 Symptoms

1.1 "PZR Safety Discharge Hi Temp" alarm.

1.2 "PZR PORV Disch. Hi Temp" alarm.

1.3 PZR Lo Pressure.

1.4 Increasing PRT temp.

1.5 Increasing PRT pressure.

1.6 Increasing PRT level.

1.7 Decreasing pressurizer pressure without expected level decrease.

2.0 Immediate Action

2.1 Automatic

2.1.1 Safety injection actuation and Phase "A" Isolation.

2.1.2 Reactor trip-turbine trip.

2.1.3 E/S Sequencer actuation.

2.1.4 CA pumps start and feed steam generators.

2.1.5 Feedwater Isolation.

CAUTION: Inaccurate Pressurizer and S/G Level readings will occur during accident conditions involving breaks inside containment. (This is caused by depressurization and/or reference leg heatup). Refer to McGuire Data Book Curves _____, _____, and curves _____ for correct conversions for actual level. Use backup instrumentation (i.e.: CA Flow SM Pressure, NC Pressure and Wide Range Th, Tc).

2.2 Manual

2.2.1 Ensure all automatic actions occur.

2.2.2 If reactor fails to trip, refer to Reactor Trip Procedure (EP/1/A/5000/01).

2.2.3 If Turbine fails to trip, refer to Turbine Trip Procedure (EP/1/A/5000/02).

2.2.4 If CA fails to start, manually start pumps and establish flow to S/G's.

2.2.5 Determine from alarms/indications if a pressurizer PORV is failed open or has failed to reseat at 2315 psig after relieving on high pressurizer pressure.

2.2.6 Close all pressurizer PORV's and their associated isolation valves.

2.2.7 Verify pressurizer spray valves are closed.

3.0 Subsequent Action

CAUTION: Do not place systems in manual unless misoperation in automatic is apparent. If any system is placed in manual, make frequent checks for proper operation.

3.1 If it is determined that a pressurizer safety valve has failed open or if the failed open pressurizer PORV's isolation valve cannot be closed, refer to CASE III of this procedure.

3.2 Verify all ECCS components have assumed their safeguards status. Manually align any that did not.

3.3 If SI actuated, trip all reactor coolant pumps before reaching 1250 psig or within 5 minutes after Phase B isolation.

3.4 If containment pressure is FI psig, but not before 10 minutes after actuation, reset the SI signal and the D/G load sequencers only if the following exist:

Reset SI and stop ECCS pumps as necessary if:

Pressurizer pressure ≥2000 psig and increasing, and:

Pressurizer level ≥50%, and:

At least one S/G has an indicated level in the narrow range and:

The NC System is subcooled by ≥32°F.

CAUTION: Manually re-initiate safety injection if pressurizer pressure decreases to 1843 psig or pressurizer level decreases below 20% or highest NC Loop Th >618°F.

3.5 Energize pressurizer heaters as necessary to maintain NC System pressure.

3.6 Reset Phase "A" Isolation and verify that containment monitors 1EMF-38 (Containment Particulate-Low Range), 1EMF-39 (Containment Gas-Low Range) and 1EMF-40 (Containment Iodine-Low Range) are not in an alarm condition.

3.7 Reset containment ventilation isolation signals.

3.8 Re-establish normal charging and letdown per OP/1/A/6200/01 (Chemical and Volume Control System).

3.9 Realign systems to normal when conditions warrant.

3.10 Refer to EP/0/A/5000/32 (Alert).

CASE III

LEAK OR RUPTURE OF SUCH MAGNITUDE THAT THE CHARGING PUMPS CANNOT MAINTAIN PRESSURIZER LEVEL

1.0 Symptoms

1.1 Rapid decrease in RCS pressure and level.

1.2 "Ice Condenser Doors Open" alarm.

1.3 Containment sump level increase.

1.4 Containment temperature increase.

1.5 Containment pressure increase.

1.6 Containment humidity increase.

1.7 "EMF-38 Containment Hi Part Rad" alarm.

1.8 "EMF-39 Containment Hi Gas Rad" alarm.

1.9 "EMF-40 Containment Hi Iod. Rad" alarm.

2.0 Immediate Action

2.1 Automatic

2.1.1 Safety injection actuation and Phase "A" Isolation.

2.1.2 Reactor trip-turbine trip.

2.1.3 Phase B isolation and containment spray at 3 psig Cont. pressure.

2.1.4 E/S Sequencer actuation.

2.1.5 CA pumps start and feed steam generators.

2.1.6 Feedwater Isolation.

2.2 Manual

2.2.1 Ensure all automatic actions occur.

2.2.2 If Reactor fails to trip, refer to Reactor Trip Procedure (EP/1/A/5000/01).

2.2.3 If Turbine fails to trip, go to Turbine Trip procedure (EP/1/A/5000/02).

2.2.4 If CA fails to start, manually start pumps and establish flow to S/G's.

CAUTION: Inaccurate Pressurizer and S/D Level readings will occur during accident conditions involving breaks inside containment. (This is caused by depressurization and/or reference leg heatup). Refer to McGuire Data Book Curves _____, _____ and curves _____ for correct conversions for actual level. Use backup instrumentation (i.e.: CA Flow, SM Pressure, NC Pressure and Wide Range Th, Tc).

3.0 Subsequent Action

CAUTION: Do not place systems in manual unless misoperation in automatic is apparent. If any system is placed in manual, make frequent checks for proper operation.

3.1 Verify all Emergency Core Cooling components have assumed their safeguards status. Manually align any that did not.

3.2 Trip the reactor coolant pumps if SI activated, before reaching 1250 psig.

3.2.1 During Upper Head Injection Groups 3 & 4 completely lighted, Groups 1, 2, 5, 6, & 7 completely dark.

3.2.2 After Upper Head Injection Group 3, 4, & 6 completed lighted, Groups 1, 2, 5, & 7 completely dark.

3.2.3 If either train of the BOP ESF Components monitor lights in Group 1 and Group 4 are out of sequence with the other lights in their respective group, the OAC must be interrogated to obtain a printout of misaligned BOP ESF Components.

NOTE: If the Phase A Containment Isolation Monitor Lights are also out of sequence, manually initiate Phase A Containment Isolation.

3.3 Announce occurrence over plant paging system.

3.4 If Phase B isolation occurs, the RV pumps must be stopped. The Reactor Coolant pumps must be tripped within 5 minutes if not previously tripped.

NOTE: Verify Phase "B" isolation and actuation of containment spray at 3 psig containment pressure if not done previously.

3.5 Verify proper operation of the Annulus Ventilation System (OP/1/A/6450/02).

3.6 Verify Upper Head Injection Accumulator Tank discharge at 1240 psig and discharge isolation valves automatically close and gag after tank contents are discharged.

3.7 Verify all four Cold Leg Accumulators discharge between 400 and 450 psig.

3.8 If the OAC is inoperable, perform BOP ESF Components alignment checklist, Enclosure 5.1.

3.9 Perform Post Accident Checklist, Enclosure 5.2.

3.10 Refer to EP/0/A/5000/33 (Site Emergency).

3.11 If logic test on FWST level is in progress, notify I & E Department to place circuit back to normal.

3.12 Align control board switches to conform with plant status.

3.13 When the FWST level decreases to the low level alarm point (12'6") but not earlier than 10 minutes after safety injection actuation, perform the following to establish containment sump, cold leg recirculation:

3.13.1 Manually reset the Safety Injection signal and the Diesel Generator Load Sequencers.

3.13.2 Change Residual Heat Removal Pumps suction from the FWST to the Containment Recirc. Sump:

NOTE: If manual swap of ND pumps suction is not accomplished prior to 8.0 ft. FWST Lvl., insure automatic swap occurs prior to reaching 7 ft. FWST Lvl.

3.13.2.1 Open LNI-15A (Containment Sump Line 1B Isolation). As it opens, verify the closing of LND-- (NC Loop 3 to ND Pump 1B Containment Isol. Outside).

3.13.2.2 Open 1NI-185 (Containment Sump Line 1A Isolation). As it opens, verify the closing of 1ND-19 (NC Loop 1C to ND Pump 1A Containment Isol. Outside).

NOTE: If FWST emergency Lo Level (0.9 ft.) is reached before change over to the recirculation sump is completed, secure all pumps taking suction on the FWST.

3.13.3 Reinstate control power to 1FW-27 (FWST to ND Pump Isolation).

3.13.4 Close:

1FW-27 (FWST to ND Pump Isolation).

1ND-30 (ND HX 1A Outlet Crossover Block)

1ND-15 (ND HX 1B Outlet Crossover Block)

3.13.5 Stop Containment spray pumps 1A and 1B.

3.13.6 Close 1NS-20 (NS Pump 1A Suction from RWST Block).

3.13.7 Open 1NS-18 (NS Pump 1A Suction from Containment Sump Block).

3.13.8 Open 1RN-134 (NS Heat Exchanger 1A Supply Isolation).

3.13.9 Start Containment Spray Pump 1A.

3.13.10 Close 1NS-3 (NS Pump 1B Suction from RWST Block).

3.13.11 Open 1NS-1 (NS Pump 1B Suction from Containment Sump Block).

3.13.12 Open 1RN-235 (NS Heat Exchanger 1B Supply Isolation).

3.13.13 Start Containment Spray Pump 1B.

3.13.14 Close:

1NI-115 (Safety Inj. Pump 1A Miniflow Line Isol.).

1NI-114 (Safety Inj. Pump 1B Miniflow Line Isol.).

3.13.15 Reinstate control power to 1NI-147 (Safety Inj. Pumps Miniflow Hdr. to RWST).

3.13.16 Close 1NI-147 (Safety Inj. Pumps Miniflow Hdr. to RWST).

3.13.17 Open 1NI-136 (ND HX 1B to Safety Inj. Pump 1B).

3.13.18 Reinstate control power to 1NI-100 (RWST to Safety Inj. Pumps).

3.13.19 Close 1NI-100 (RWST to Safety Inj. Pumps).

3.13.20 Wait until the "FWST Lo-Lo Lvl" alarm (0.9') is received before proceeding to the next step.

3.13.21 Open 1ND-58 (ND HX 1A Outlet to Centrifugal Charging Pumps 1A & 1B Block).

3.13.22 Open 1NI-332 and 1NI-333 (Safety Inj. Pump Suction Crossover from NV). Open 1NI-334 (Safety Injection Pump Suction Crossover from NV Isol.).

3.13.23 Close 1NV-221 and 1NV-222 (Centrifugal Charging Pumps Suction from FW System).

3.13.24 Start Hydrogen Recombiners in accordance with OP O/A/6-50 10 (Hydrogen Skimmer, Cont. Air Return, Hydrogen Recombiner and Hydrogen Purge System) when Hydrogen concentration reaches 2%.

3.13.25 After one hour, if offsite power has not been interrupted, stop the Emergency Diesel Generators per OP/1/A/6350/02 (Diesel Generator).

3.13.26 If a loss of offsite power occurs while in the Cold Leg Recirculation mode, refer to section 4.0 of this procedure.

3.14 Notify Chemistry Department and HP Department to obtain ph sample of containment sump water and to begin periodic sampling of containment for hydrogen concentration.

3.15 If containment pressure increases to 13.0 psi following depletion of the ice in the ice condenser, align the Residual Heat Removal spray headers as follows:

3.15.1 Verify that 1ND-30 (ND HX 1A Outlet Crossover Block) and 1ND-15 (ND HX 1B Outlet Crossover Block) are closed.

NOTE: Do not initiate ND System Spray until at least one hour after Safety Injection has been initiated.

3.15.2 Reinstate power to the following valves:
1NI-173 (ND Hdr. to NC Cold Leg Loops 1 and 2)
1NI-178 (ND Hdr. to NC Cold Leg Loops 3 and 4)

3.15.3 Close 1NI-173 (ND Hdr. to NC Cold Leg Loops 1 and 2).

3.15.4 When 1NI-173 is fully closed, open 1NS-43 (ND Pump 1A Disch. to NS Nozzles Containment Isolation Outside).

3.15.5 Close 1NI-178 (ND Hdr. to NC Cold Leg Loops 3 and 4).

3.15.6 When 1NI-178 is fully closed, open 1NS-38 (ND Pump 1B Disch. to NS Nozzles Containment Isolation Outside).

3.16 When containment pressure has decreased to an allowable level, the Residual Heat Removal Pumps discharge may be realigned to the Reactor Coolant System Cold Legs as follows:

3.16.1 Close 1NS-43 (ND Pump 1A Disch. to NS Nozzles Containment Isolation Outside).

3.16.2 When 1NS-43 is fully closed, open 1NI-173 (ND Hdr. to NC Cold Leg Loops 1 and 2).

3.16.3 Close 1NS-38 (ND Pump 1B Disch. to NS Nozzles Containment Isolation Outside).

3.16.4 When 1NS-38 is fully closed, open 1NI-178 (ND Hdr. NC Cold Leg Loops 3 and 4).

NOTE: Cold Leg Recirculation Phase Monitor Light Configuration.
Group 2 and 4 completely lighted.
Groups 1, 3, 5, 6, and 7 completely dark.

NOTE: Group 6 should be lighted during recirculation mode if Upper Head Head Injection has actuated and secured.

3.16.3 Start Hydrogen Purge System per OP/0/A/6450/10 (Hydrogen Skimmer Cont. Air Return, Hydrogen Recombiner and Hydrogen Purge System) if Hydrogen Concentration increases to 3.5%. Reduce concentration to <3% and realign.

3.17 Approximately 15 hours after the accident, realign the Safety Injection System for Hot Leg recirculation as follows:

3.17.1 Reinstate power to the following valves:

1NI-173 (ND Hdr. to NC Cold Leg Loops 1 and 2)
1NI-178 (ND Hdr. to NC Cold Leg Loops 3 and 4)
1NI-183 (ND Hdr. to NC Hot Legs Isolation)
1NI-121 (Safety Injection Pump 1A Hot Leg Injection Header Isol.)
1NI-162 (Safety Injection Pumps Cold Leg Inj. Hdr. Iso.)
1NI-152 (Safety Inj. Pump 1B Hot Leg Inj. Hdr. Iso.)

3.17.2 Close 1NI-173 (ND Hdr. to NC Cold Leg Loop 1 and 2).

3.17.3 Open 1ND-30 (ND HX 1A Outlet Crossover Block).

3.17.4 Open 1NI-183 (ND Hdr. to NC Hot Legs Isolation).

3.17.5 Close 1NI-178 (ND Hdr. to NC Cold Leg Loops 3 and 4).

3.17.6 Open 1ND-15 (ND HX 1B Outlet Crossover Block).

3.17.7 Stop Safety Injection Pump 1A.

3.17.8 Close 1NI-118 (Safety Injection 1A Cold Leg Inj. Line Iso.).

3.17.9 Open 1NI-121 (Safety Inj. Pump 1A Hot Leg Inj. Header Isolation).

3.17.10 Start Safety Injection Pump 1A and verify flow to the Reactor Coolant System through the Hot Leg Header.

3.17.11 Stop Safety Injection Pump 1B.

3.17.12 Close:

1NI-162 (Safety Inj. Pumps Cold Leg Inj. Hdr. Isol.)
1NI-150 (Safety Inj. Pump 1B Cold Leg Inj. Lines Isol.)

3.17.13 Open 1NI-152 (Safety Inj. Pump 1B Hot Leg Inj. Header Isolation).

3.17.14 Start Safety Injection Pump 1B and verify flow to the Reactor Coolant System through the Hot Leg Header.

NOTE: The Residual Heat Removal and Safety Injection pump are now aligned for Hot Leg recirculation.

NOTE: Monitor Light Configuration during Hot Leg Recirculation.
Groups 2, 4, 5, 6 completely lighted
Groups 1, 3, 7 completely dark

3.18 Verify that when containment pressure decreases to less than .25 psig containment spray pumps shutdown.

4.0 Recovery from Loss of Offsite Power While in Cold Leg Recirculation

4.1 One minute after the loss of power occurred reset the Diesel Generator Load Sequencers.

NOTE: Wait one minute before resetting to allow all loads to be sequenced on.

4.2 Secure the following loads.

4.2.1 Centrifugal Charging Pumps A & B

4.2.2 Pressurizer Backup Heaters

4.2.3 Boron Injection Tank Heaters

4.2.4 Boron Injection Recirculation Pumps A & B

4.2.5 Boric Acid Transfer Pumps

4.2.6 Pipe Tunnel Booster Fans

4.2.7 Control Rod Drive Vent Fans

4.2.8 Lower Containment Cooling Units

4.2.9 Upper Containment Cooling Units

4.2.10 Upper Containment Return Air Fans

4.2.11 Incore Instrument Room Air Handling Units

4.3 Restart the following loads in the sequence listed.

NOTE: In order not to overload the Diesel Generator, start one load, then wait 5 sec., check voltage, amperage and load on the Diesel Generator, then start the next load.

4.3.1 Residual Heat Removal Pumps A & B.

4.3.2 Safety Injection Pumps A & B.

4.3.3 Centrifugal Charging Pumps A & B

4.3.4 Annulus Ventilation Fans A & B, and verify proper operation per OP/1/A/6450/02 (Annulus Ventilation System).

4.3.5 Annulus Ventilation Preheaters A & B.

4.3.6 Containment Air Return Fans A & B.

4.3.7 Containment Spray Pumps A & B.

4.3.8 If the following were operating prior to the loss of power, restart them.

4.3.8.1 Hydrogen Recombiners A & B.

4.3.8.2 Hydrogen Skimmer Fans A & B.

4.3.9 Start Spent Fuel Cooling Pump A or B if desired.

4.4 Verify the proper operation of the following loads.

4.4.1 Vital Battery Chargers EVCA, EVCB, EVCC, EVCD.

4.4.2 Load Centers ELXA, ELXB, ELXC, ELXD.

4.4.3 Power Panelboards EKA and EKB.

4.4.4 ND and NS Room Sump Pumps.

4.4.5 A/C System Switchgear Room Fans SGR-AHU-A, B, C, and D.

4.4.6 D/G A and B Auxiliaries.

4.4.7 Blowers for the following EMF Monitors.

4.4.7.1 EMF-33 (Condenser Air Ejector)

4.4.7.2 EMF-35, 36, and 37 (Unit Vent Particulate, Gas and Iodine)

4.4.7.3 EMF-38, 39, and 40 (Containment Particulate, Gas and Iodine)

4.4.7.4 EMF-41 (Auxiliary Building Ventilation)

4.4.7.5 EMF-42 (Fuel Building Ventilation)

4.4.7.6 EMF-43A (Control Room Air Intake A)

4.4.7.7 EMF-43B (Control Room Air Intake B)

4.4.8 Auxiliary Building Filtered Exhaust Fans A and B.

4.4.9 Comp. Cooling pumps A1, A2, B1 and B2.

4.4.10 Nuclear Service Water Pumps A and B.

4.4.11 Auxiliary Feedwater Pumps A and B.

4.4.12 Control Area Air Conditioning System.

4.4.13 Battery Room Exhaust Fans 1 and 2.

4.4.14 Ground Water Drainage System Pumps.

5.0 Enclosures

5.1 BOP ESF Components Alignment Checklist.

5.2 Post Accident Valve Checklist.

DUKE POWER COMPANY
McGUIRE NUCLEAR STATION
UNIT # 1

EP/1/A/5000/03
LOSS OF REACTOR COOLANT
BOP ESF COMPONENTS
ALIGNMENT CHECKLIST
ENCLOSURE 5.1

VALVE NO.	COMPONENT NAME	POSITION	INITIAL
1BB-2-B	STM. GEN. 1A BLOWDOWN CONTAINMENT OUTSIDE ISOL.	CLOSED	
1BB-3-B	STM. GEN. 1B BLOWDOWN CONTAINMENT OUTSIDE ISOL.	CLOSED	
1BB-4-B	STM. GEN. 1C BLOWDOWN CONTAINMENT OUTSIDE ISOL.	CLOSED	
1BB-5-B	STM. GEN. 1D BLOWDOWN CONTAINMENT OUTSIDE ISOL.	CLOSED	
1BB-2-A	STM. GEN. 1A BLOWDOWN CONTAINMENT INSIDE ISOL.	CLOSED	
1BB-3-A	STM. GEN. 1B BLOWDOWN CONTAINMENT INSIDE ISOL.	CLOSED	
1BB-4-A	STM. GEN. 1C BLOWDOWN CONTAINMENT INSIDE ISOL.	CLOSED	
1BB-5-A	STM. GEN. 1D BLOWDOWN CONTAINMENT INSIDE ISOL.	CLOSED	
1BB-140-A	STM. GEN. 1A BLOWDOWN CONTAINMENT INSIDE ISOL.	CLOSED	
1BB-141-A	STM. GEN. 1B BLOWDOWN CONTAINMENT INSIDE ISOL.	CLOSED	
1BB-142-A	STM. GEN. 1C BLOWDOWN CONTAINMENT INSIDE ISOL.	CLOSED	
1BB-143-A	STM. GEN. 1D BLOWDOWN CONTAINMENT INSIDE ISOL.	CLOSED	
1CF-17	STM. GEN. 1D FDW CONTROL	CLOSED	
1CF-20	STM. GEN. 1C FDW CONTROL	CLOSED	
1CF-23	STM. GEN. 1B FDW CONTROL	CLOSED	
1CF-26	STM. GEN. 1A FDW CONTROL	CLOSED	
1CF-26	STM. GEN. 1D FDW CONTAINMENT ISOLATION	CLOSED	
1CF-28	STM. GEN. 1C FDW CONTAINMENT ISOLATION	CLOSED	
1CF-30	STM. GEN. 1B FDW CONTAINMENT ISOLATION	CLOSED	
1CF-33	STM. GEN. 1A FDW CONTAINMENT ISOLATION	CLOSED	
1CF-104	STM. GEN. 1A FDW CONTROL BYPASS CONTROL	CLOSED	
1CF-105	STM. GEN. 1B FDW CONTROL BYPASS CONTROL	CLOSED	
1CF-106	STM. GEN. 1C FDW CONTROL BYPASS CONTROL	CLOSED	
1CF-107	STM. GEN. 1D FDW CONTROL BYPASS CONTROL	CLOSED	
1FW-1-A	REFUELING WATER LOOP ISOLATION	CLOSED	

DUKE POWER COMPANY
McGUIRE NUCLEAR STATION
UNIT # 1

EP/1/A/5000/03
LOSS OF REACTOR COOLANT
BOP ESF COMPONENTS
ALIGNMENT CHECKLIST
ENCLOSURE 5.1

VALVE NO.	COMPONENT NAME	POSITION	INITIAL
LFW-11-B	REFUELING WATER LOOP ISOLATION	CLOSED	
LFW-13-A	FWST RECIRCULATION LOOP ISOLATION	CLOSED	
LFW-13-B	FWST RECIRCULATION LOOP ISOLATION	CLOSED	
LKC-1-A	AUX. BLDG. NON-ESS. RETURN AUTO ISOL.	CLOSED	
LKC-1-B	AUX. BLDG. NON-ESS. RETURN AUTO ISOL.	CLOSED	
LKC-3-A	REACTOR BLDG. NON-ESS. RETURN AUTO ISOL.	*CLOSED	
LKC-18-B	REACTOR BLDG. NON-ESS. RETURN AUTO ISOL.	*CLOSED	
LKC-50-A	TRAIN LA TO AUX. BLDG. NON-ESS. SUPPLY HDR. AUTO ISOL.	CLOSED	
LKC-53-B	TRAIN LB TO AUX. BLDG. NON-ESS. SUPPLY HDR. AUTO ISOL.	CLOSED	
LKC-56-A	ND HX LA AUTO SUPPLY	OPEN	
LKC-81-B	ND HX LB AUTO SUPPLY	OPEN	
LKC-115-B	TRAIN LB TO RB NON-ESS. SUPPLY HDR. AUTO ISOL.	*CLOSED	
LKC-130-A	TRAIN LA TO RB NON-ESS. SUPPLY HDR. AUTO ISOL.	*CLOSED	
LKC-303-B	EXCESS LETDOWN HX SUPPLY PENT. ISOLATION (OUTSIDE)	CLOSED	
LKC-315-B	EXCESS LETDOWN HX RETURN PENT. ISOLATION (OUTSIDE)	CLOSED	
LKC-320-A	NCDT HX SUPPLY HDR. PENT ISOL. (OUTSIDE)	CLOSED	
LKC-332-B	NCDT HX RETURN HDR. PENT ISOL. (INSIDE)	CLOSED	
LKC-333-A	NCDT HX RETURN HDR. PENT ISOL. (OUTSIDE)	CLOSED	
LKC-338-B	NC PUMP SUPPLY HEADER PENT ISOL. (OUTSIDE)	*CLOSED	
LKC-24-B	NC PUMP RETURN HEADER PENT ISOL. (INSIDE)	*CLOSED	
LKC-25-A	NC PUMP RETURN HEADER PENT ISOL. (OUTSIDE)	*CLOSED	
LKC-29-B	REACTOR BLDG. DRAIN HDR. INSIDE CONT. ISOL.	CLOSED	
LKC-30-A	REACTOR BLDG. DRAIN HDR. OUTSIDE CONT. ISOL.	CLOSED	
LKC-160	REACTOR MAKEUP WATER CONT. SUPPLY ISOL. OUTSIDE	CLOSED	
LKC-195	NC PUMP MOTOR OIL CONTAINMENT ISOL. OUTSIDE	CLOSED	
LKC-196	NC PUMP MOTOR OIL CONTAINMENT ISOL. INSIDE	CLOSED	

*PHASE B ISOLATION

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VALVE NO.	COMPONENT NAME	POSITION	INITIAL
LNI-158-A	NI PUMP 1A TO UE1 ACCUMULATOR FILL LINE ISOL.	CLOSED	
LNM-3-A	PCR LIQUID SAMPLE LINE INSIDE CONT. ISOL.	CLOSED	
LNM-6-A	PCR STEAM SAMPLE LINE INSIDE CONT. ISOL.	CLOSED	
LNM-7-B	PCR SAMPLE HEADER OUTSIDE CONT. ISOLATION	CLOSED	
LNM-22-A	NC HOT LEG #1 SAMPLE LINE INSIDE CONT. ISOLATION	CLOSED	
LNM-25-A	NC HOT LEG #4 SAMPLE LINE INSIDE CONT. ISOLATION	CLOSED	
LNM-26-B	NC HOT LEGS SAMPLE HDR. OUTSIDE CONT. ISOLATION	CLOSED	
LNM-72-B	NI ACCUMULATOR 1A SAMPLE LINE INSIDE CONT. ISOLATION	CLOSED	
LNM-75-B	NI ACCUMULATOR 1B SAMPLE LINE INSIDE CONT. ISOLATION	CLOSED	
LNM-78-B	NI ACCUMULATOR 1C SAMPLE LINE INSIDE CONT. ISOLATION	CLOSED	
LNM-81-B	NI ACCUMULATOR 1D SAMPLE LINE INSIDE CONT. ISOLATION	CLOSED	
LNM-82-A	NI ACCUMULATORS SAMPLE HDR. OUTSIDE CONT. ISOLATION	CLOSED	
LNM-187-A	SG 1A UPPER SHELL SAMPLE CONT. ISOL. INSIDE	CLOSED	
LNM-190-A	SG 1A BLOWDOWN LINE SAMPLE CONT. ISOL. INSIDE	CLOSED	
LNM-191-B	SG 1A SAMPLE HDR. CONT. ISOL. OUTSIDE	CLOSED	
LNM-197-B	SG 1B UPPER SHELL SAMPLE CONT. ISOL. INSIDE	CLOSED	
LNM-200-B	SG 1B BLOWDOWN LINE SAMPLE CONT. ISOL. INSIDE	CLOSED	
LNM-201-A	SG 1B SAMPLE HDR. CONT. ISOL. OUTSIDE	CLOSED	
LNM-207-A	SG 1C UPPER SHELL SAMPLE CONT. ISOL. INSIDE	CLOSED	
LNM-210-A	SG 1C BLOWDOWN LINE SAMPLE CONT. ISOL. INSIDE	CLOSED	
LNM-211-B	SG 1C SAMPLE HDR. CONT. ISOL. OUTSIDE	CLOSED	
LNM-217-B	SG 1D UPPER SHELL SAMPLE CONT. ISOL. INSIDE	CLOSED	
LNM-220-B	SG 1D BLOWDOWN LINE SAMPLE CONT. ISOL. INSIDE	CLOSED	
LNM-221-A	SG 1D SAMPLE HDR. CONT. ISOL. OUTSIDE	CLOSED	
LRN-1-B	RC SUPPLY A SHUTOFF	CLOSED	
LRN-3-A	RC SUPPLY A SHUTOFF	CLOSED	

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VALVE NO.	COMPONENT NAME	POSITION	INITIAL
1RN-4A	RC SUPPLY B SHUTOFF	CLOSED	
1RN-4B	RC SUPPLY B SHUTOFF	CLOSED	
1RN-8A	SUMP SUPPLY A SHUTOFF	CLOSED	
1RN-8B	SUMP SUPPLY B SHUTOFF	OPEN	
1RN-10A	LOW LEVEL SUPPLY B SHUTOFF	CLOSED	
1RN-11B	LOW LEVEL SUPPLY B SHUTOFF	CLOSED	
1RN-12A	LOW LEVEL SUPPLY A SHUTOFF	OPEN	
1RN-13B	LOW LEVEL SUPPLY A SHUTOFF	OPEN	
1RN-14A	RN CHANNEL SUPPLY CROSSOVER ISOLATION	CLOSED	
1RN-15B	RN CHANNEL SUPPLY CROSSOVER ISOLATION	CLOSED	
1RN-16A	RN CHANNEL LA SUPPLY ISOLATION	OPEN	
1RN-18 -B	RN CHANNEL LB SUPPLY ISOLATION	OPEN	
1RN-40 -A	NONESSENTIAL HEADER SUPPLY LA ISOLATION	*CLOSED	
1RN-41B	NONESSENTIAL HEADER SUPPLY LB ISOLATION	CLOSED	
1RN-42A	AB NONESSENTIAL SUPPLY ISOLATION	CLOSED	
1RN-43A	NONESSENTIAL HEADER SUPPLY LB ISOLATION	CLOSED	
1RN-44B	AB NONESSENTIAL RETURN ISOLATION	CLOSED	
1RN-45A	AB NONESSENTIAL RETURN ISOLATION	CLOSED	
1RN-47A	LA DIESEL GENERATOR HX SUPPLY ISOLATION	OPEN	
1RN-86 -A	COMPONENT COOLING HX LA SUPPLY ISOLATION	OPEN	
1RN-100A	NV PUMP LA COOLER COMPLEX SUPPLY ISOLATION	OPEN	
1RN-111A	NI PUMP LA COOLER COMPLEX SUPPLY ISOLATION	OPEN	
1RN-120A	NS PUMP MOTOR LA ES COOLER SUPPLY ISOLATION	OPEN	
1RN-121A	ND PUMP MOTOR LA ES COOLER SUPPLY ISOLATION	OPEN	
1RN-122A	NI PUMP MOTOR LA ES COOLER SUPPLY ISOLATION	OPEN	

*PHASE B ISOLATION

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VALVE NO.	COMPONENT NAME	POSITION	INITIAL
LRN-147-A	RC DISCHARGE A ISOLATION	OPEN	
LRN-148-B	RC DISCHARGE A ISOLATION	OPEN	
LRN-149-A	SNSWP DISCHARGE A ISOLATION	CLOSED	
LRN-150-A	RN CHANNEL DISCHARGE CROSSOVER ISOLATION	CLOSED	
LRN-151-B	RN CHANNEL DISCHARGE CROSSOVER ISOLATION	CLOSED	
LRN-152-B	SNSWP DISCHARGE B ISOLATION	OPEN	
LRN-171-B	LB DIESEL GENERATOR HX SUPPLY ISOLATION	OPEN	
LRN-181-B	KC HX LB SUPPLY ISOLATION	OPEN	
LRN-204-B	NV PUMP LB COOLER COMPLEX SUPPLY ISOLATION	OPEN	
LRN-215-B	NI PUMP LB COOLER COMPLEX SUPPLY ISOLATION	OPEN	
LRN-227-B	NS PUMP MOTOR LB ES COOLER SUPPLY ISOLATION	OPEN	
LRN-231-B	ND PUMP MOTOR LB ES COOLER SUPPLY ISOLATION	OPEN	
LRN-240-B	KF PUMP MOTOR LB ES COOLER SUPPLY ISOLATION	OPEN	
LRN-251-B	NONESSENTIAL SUPPLY TO RB OUTSIDE ISOL.	*CLOSED	
LRN-253-A	NONESSENTIAL SUPPLY TO RB INSIDE ISOL.	*CLOSED	
LRN-276-A	NONESSENTIAL RETURN FROM RB INSIDE ISOL.	*CLOSED	
LRN-277-B	NONESSENTIAL RETURN FROM RB OUTSIDE ISOL.	*CLOSED	
LRN-279-B	UNIT 1 AB VENTILATION SYSTEM ISOLATION	CLOSED	
LRN-283-A	RC DISCHARGE B ISOLATION	CLOSED	
LRN-284-B	RC DISCHARGE B ISOLATION	CLOSED	
LRN-296-A	ESSENTIAL HEADER LA RETURN ISOL.	OPEN	
LRN-297-B	ESSENTIAL HEADER LB RETURN ISOL.	OPEN	
LRN-299-A	UNIT 1 AB VENTILATION SYSTEM RETURN ISOL.	CLOSED	
LRN-301-A	CONTAINMENT VENTILATION SYSTEM SUPPLY ISOLATION	*CLOSED	
LRN-302-B	CONTAINMENT VENTILATION SYSTEM SUPPLY ISOLATION	*CLOSED	

*PHASE B ISOLATION

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VALVE NO.	COMPONENT NAME	POSITION	INITIAL
LRV-78-A	LOWER CONT. VENT. UNIT SUPPLY CONT. ISOL. (OUTSIDE)	*CLOSED	
LRV-79-B	LOWER CONT. VENT. UNIT SUPPLY CONT. ISOL. (INSIDE)	*CLOSED	
LRV-76-A	LOWER CONT. VENT. UNIT DISCHARGE CONT. ISOL. (INSIDE)	*CLOSED	
LRV-77-B	LOWER CONT. VENT. UNIT DISCHARGE CONT. ISOL. (OUTSIDE)	*CLOSED	
LRV-79-A	UPPER CONT. VENT. UNIT SUPPLY CONT. ISOL. (OUTSIDE)	*CLOSED	
LRV-80-B	UPPER CONT. VENT. UNIT SUPPLY CONT. ISOL. (INSIDE)	*CLOSED	
LRV-101-A	UPPER CONT. VENT. UNIT DISCHARGE CONT. ISOL. (INSIDE)	*CLOSED	
LRV-102-B	UPPER CONT. VENT. UNIT DISCHARGE CONT. ISOL. (OUTSIDE)	*CLOSED	
LSM-1	MAIN STEAM LD ISOLATION	*CLOSED	
LSM-3	MAIN STEAM LC ISOLATION	*CLOSED	
LSM-5	MAIN STEAM LB ISOLATION	*CLOSED	
LSM-7	MAIN STEAM LA ISOLATION	*CLOSED	
LSM-9	MAIN STEAM LD ISOLATION BYPASS CONTROL	*CLOSED	
LSM-10	MAIN STEAM LC ISOLATION BYPASS CONTROL	*CLOSED	
LSM-11	MAIN STEAM LB ISOLATION BYPASS CONTROL	*CLOSED	
LSM-12	MAIN STEAM LA ISOLATION BYPASS CONTROL	*CLOSED	
LVE-5-A	CONT. H. PURGE TO ANNULUS INSIDE CONT. ISOL.	CLOSED	
LVE-6-B	CONT. H. PURGE TO ANNULUS OUTSIDE CONT. ISOL.	CLOSED	
LVE-8-A	CONT. H. PURGE BLOWER INLET	CLOSED	
LVE-10-A	CONT. H. PURGE BLOWER OUTLET CONT. ISOL. OUTSIDE	CLOSED	
LVI-119-B	"A" HEADER CONTAINMENT OUTSIDE ISOLATION	CLOSED	
LVI-148-B	INSTRUMENT AIR UPPER CONTAINMENT OUTSIDE ISOL.	CLOSED	
LVI-150-B	INSTRUMENT AIR LOWER CONTAINMENT OUTSIDE ISOL.	CLOSED	
LVI-160-B	"B" HEADER CONTAINMENT OUTSIDE ISOLATION	CLOSED	

*PHASE B ISOLATION

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VALVE NO.	COMPONENT NAME	POSITION	INITIAL
LVS-11-B	UNIT 1 CONTAINMENT STATION AIR OUTSIDE ISOL.	CLOSED	
LVP-1-B	UPPER CONTAINMENT PURGE SUPPLY #1 OUTSIDE ISOL.	CLOSED	
LVP-1-A	UPPER CONTAINMENT PURGE SUPPLY #1 INSIDE ISOL.	CLOSED	
LVP-2-B	UPPER CONTAINMENT PURGE SUPPLY #2 OUTSIDE ISOL.	CLOSED	
LVP-2-A	UPPER CONTAINMENT PURGE SUPPLY #2 INSIDE ISOL.	CLOSED	
LVP-5-B	LOWER CONTAINMENT PURGE SUPPLY #1 OUTSIDE ISOL.	CLOSED	
LVP-5-A	LOWER CONTAINMENT PURGE SUPPLY #1 INSIDE ISOL.	CLOSED	
LVP-6-B	LOWER CONTAINMENT PURGE SUPPLY #2 OUTSIDE ISOL.	CLOSED	
LVP-6-A	LOWER CONTAINMENT PURGE SUPPLY #2 INSIDE ISOL.	CLOSED	
LVP-10-A	UPPER CONTAINMENT PURGE EXHAUST #1 INSIDE ISOL.	CLOSED	
LVP-11-B	UPPER CONTAINMENT PURGE EXHAUST #1 OUTSIDE ISOL.	CLOSED	
LVP-12-A	UPPER CONTAINMENT PURGE EXHAUST #2 INSIDE ISOL.	CLOSED	
LVP-13-B	UPPER CONTAINMENT PURGE EXHAUST #2 OUTSIDE ISOL.	CLOSED	
LVP-15-A	LOWER CONTAINMENT PURGE EXHAUST #1 INSIDE ISOL.	CLOSED	
LVP-16-B	LOWER CONTAINMENT PURGE EXHAUST #1 OUTSIDE ISOL.	CLOSED	
LVP-17-A	INCORE INSTR. ROOM PURGE SUPPLY INSIDE ISOL.	CLOSED	
LVP-18-B	INCORE INSTR. ROOM PURGE SUPPLY OUTSIDE ISOL.	CLOSED	
LVP-19-A	INCORE INSTR. ROOM PURGE EXHAUST INSIDE ISOL.	CLOSED	
LVP-20-B	INCORE INSTR. ROOM PURGE EXHAUST OUTSIDE ISOL.	CLOSED	
LVO-1-A	CONT. AIR RELEASE & ADDITION LOWER COMPT. INSIDE ISOL.	CLOSED	
LVO-1-B	CONT. AIR RELEASE & ADDITION LOWER COMPT. OUTSIDE ISOL.	CLOSED	
LVO-4-B	CONT. AIR RELEASE & ADDITION UPPER COMPT. OUTSIDE ISOL.	CLOSED	
LVO-4-A	CONT. AIR RELEASE & ADDITION UPPER COMPT. INSIDE ISOL.	CLOSED	
LVX-11-A	CONTAINMENT SAMPLE BLOWER SUCTION (A) CONT. ISOL. INSIDE	CLOSED	
LVX-13-B	CONTAINMENT SAMPLE BLOWER SUCTION (B) CONT. ISOL. INSIDE	CLOSED	

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VALVE NO.	COMPONENT NAME	POSITION	INITIAL
LWL-86-A	REACTOR BLDG. SUMP PUMP DISCH. INSIDE CONT. ISOL.	CLOSED	
LWL-86-B	REACTOR BLDG. SUMP PUMP DISCH. OUTSIDE CONT. ISOL.	CLOSED	
LWL-103-A	CONT. VENT UNIT DRAINS INSIDE CONT. ISOL.	*CLOSED	
LWL-103-B	CONT. VENT UNIT DRAINS OUTSIDE CONT. ISOL.	*CLOSED	
LVM-115-B	CONTAINMENT OUTSIDE ISOL.	CLOSED	

*PHASE B ISOLATION

[illegible] POINT BEACH NUCLEAR PLANT
[illegible] POINT BEACH NUCLEAR STATION
UNIT 1 2

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POST ACCIDENT VALVE CHECKLIST
ENCLOSURE 5.2

VALVE NO.	VALVE NAME	POSITION	INITIAL
LND-1	NC LOOP 3 DISCH TO ND SYSTEM ISOLATION	CLOSED	
LND-2	NC LOOP 3 DISCH. TO ND SYSTEM CONTAINMENT ISO. INSIDE	CLOSED	
LNC-32	PRESSURIZER #1 POWER OPERATED SAFETY RELIEF	CLOSED	
LNC-34	PRESSURIZER #1 POWER OPERATED SAFETY RELIEF	CLOSED	
LNC-36	PRESSURIZER #1 POWER OPERATED SAFETY RELIEF	CLOSED	
LNC-32	PRESSURIZER #1 POWER OPERATED SAFETY RELIEF ISO.	OPEN	
LNC-33	PRESSURIZER #1 POWER OPERATED SAFETY RELIEF ISO.	OPEN	
LNC-35	PRESSURIZER #1 POWER OPERATED SAFETY RELIEF ISO.	OPEN	
LNV-1	NC LETDOWN ISOLATION TO REGENERATIVE HX #1	CLOSED	
LNV-2	NC LETDOWN ISOLATION TO REGENERATIVE HX #1	CLOSED	
LNV-11	NV AUX. SPRAY SUPPLY TO PRESSURIZER ISOLATION	CLOSED	
LNV-14	NC LOOP 3 SUPPLY TO EXCESS LETDOWN HX #1 ISO.	CLOSED	
LNV-15	NC LOOP 3 SUPPLY TO EXCESS LETDOWN HX #1 ISO.	CLOSED	