TURKEY POINT PLANT

1999 NRC EXAM

OPERATING EXAM

PART A – ADMIN.

PART B – JPM's

DISTRIBUTION CODE
A070

INITIAL SUBMITTAL TP99-301-

B Halbert

Risk Achievement Importance

Basic Event	Achieve Worth	Description
N30002	1.12E+04	FAILURE OF CONTROL RODS TO INSERT WITH POWER REMOVED
NMM3CCFRT	3.07E+03	TRIP BREAKER FAILS TO OPEN DUE TO COMMON CAUSE
%ZZAU3	2.46E+03	LARGE LOCA
EBDF33D01	6.89E+02	DC BUS 3D01 FAULT
%ZZMU3	6.58E+02	MEDIUM LOCA
%ZZS2U3	3.00E+02	SMALL LOCA
CMM3CCNPSH	2.17E+02	FAILURE OF CCW INTEGRITY (NPSH VALVES OR HEAT EXCHANGER TUBE LEAK)
QMM3P9FCCF	2.06E+02	PUMP FAILS TO RUN COMMON CAUSE FAILURES <MODULE>
QXVK33-406	2.06E+02	MANUAL VALVE 3-406 TRANSFERS CLOSED
CMM3PPFCCF	1.53E+02	CCW PUMP FAILS TO RUN DUE TO COMMON CAUSE FAILURE <MODULE>
RHFL3HHSGL	1.03E+02	COMMON CAUSE MISCALIBRATION OF SG LEVEL INDICATORS
QMM3P9ACCF	1.02E+02	PUMP FAILS TO START COMMON CAUSE FAILURES <MODULE>
CMM3PPACCF	1.02E+02	CCW PUMP FAILS TO START DUE TO COMMON CAUSE FAILURE <MODULE>
IMM0RABCCF	9.88E+01	COMMON-CAUSE FAILURE OF THE RAB EXHAUST FANS
AMM0CCFCV6	9.81E+01	COMMON CAUSE FAILURE OF ALL AFW INJECTION CHECK VALVES
AMM0CCCV3B	9.81E+01	COMMON CAUSE FAILURE OF 3 OUT OF 3 AFW STEAM SUPPLY CHECK VALVES
AMM0CC005	9.81E+01	COMMON CAUSE FAILURE OF THE AFW STEAM SUPPLY CHECK VALVES (3-005 AND 4-005)
AMM0CC375	9.81E+01	COMMON CAUSE FAILURE OF THE AFW STEAM SUPPLY CHECK VALVES (*-375,6,7)
AMM0CC381	9.81E+01	COMMON CAUSE FAILURE OF THE AFW STEAM SUPPLY CHECK VALVES (*-381,2,3)
AMM0CCCV3A	9.81E+01	COMMON CAUSE FAILURE OF 3 OUT OF 3 AFW PUMP DISCHARGE CHECK VALVES
QMM3CVNCCF	9.77E+01	CHECK VALVES *-3*1 FAILS TO OPEN DUE TO COMMON CAUSE FAILURE<MODULE>
CMM3CVNCCF	9.77E+01	CV-*-702* FAILS TO OPEN DUE TO COMMON CAUSE FAILURE <MODULE>
AMM0CCN2	9.44E+01	COMMON CAUSE FAILURE OF THE N2 SYSTEM CHECK VALVE
%ZZS1U3	7.77E+01	SMALL-SMALL LOCA S1
APPJ0401	7.76E+01	RUPTURE OF COMMON CONDENSATE SUPPLY LINE
QPPJ3ANY	7.03E+01	ICW PIPING RUPTURE
CPPJ3ANY	7.03E+01	CCW PIPE RUTURE
QXVK300406	6.52E+01	MANUAL VALVE 3-406 TRANSFERS CLOSED
%ZZDC3A	6.23E+01	SPECIAL INITIATOR - LOSS OF 125VDC BUS 3A
MMM3SEALC	5.64E+01	FAILURE OF RCP C SEAL INJECTION COMPONENTS
MMM3SEALB	5.64E+01	FAILURE OF RCP B SEAL INJECTION COMPONENTS

Risk Achievement Importance

Basic Event	Achieve Worth	Description
MMM3SEALA	5.64E+01	FAILURE OF RCP A SEAL INJECTION COMPONENTS
MMM3PATHB	5.64E+01	FAILURE OF SEAL INJECTION FILTER PATH
U3SWSPWR	5.43E+01	OPERATOR FAILURE TO PROVIDE SW TO CHARGING PUMPS WITH OFF- SITE POWER AVAIL
AMM0CCTPA3	5.36E+01	COMMON CAUSE FAILURE OF 3 OUT OF 3 AFW TURBINE-DRIVEN PUMPS TO START
AMM0CCFAV6	5.35E+01	COMMON CAUSE FAILURE OF THE AFW FLOW CONTROL AOVS
%ZZICWU3	5.09E+01	LOSS OF ICW
HXVK0710	5.07E+01	MANUAL VALVE 0-710 TRANSFERS CLOSED
HXVK01113	5.07E+01	MANUAL VALVE 0-1113 TRANSFERS CLOSED
MMM3CCFCV	5.07E+01	COMMON CAUSE FAILURE OF 2 SEAL INJECTION CHECK VALVES TO OPEN
HXVK01112	5.07E+01	MANUAL VALVE 0-1112 TRANSFERS CLOSED
HXVK01125	5.07E+01	MANUAL VALVE 0-1125 TRANSFERS CLOSED
HXVK0972	5.07E+01	MANUAL VALVE 0-972 TRANSFERS CLOSED
MXVR33-333	5.07E+01	MANUAL VALVE 3-333 TRANSFERS OPEN
HXVK0982	5.07E+01	MANUAL VALVE 0-982 TRANSFERS CLOSED
%ZZCCWU3	5.05E+01	LOSS OF CCW
EMM0CF3A4B	3.76E+01	COMMON CAUSE FAILURES OF BATTERIES 3A AND 4B
AMM0CCTPF3	3.75E+01	COMMON CAUSE FAILURE OF 3 OUT OF 3 AFW TURBINE-DRIVEN PUMPS TO RUN
GMMF0215I	3.61E+01	COMMON CAUSE FAILURE OF HHSI PUMP TO RUN
JMMNC3875I	3.61E+01	COMMON CAUSE FAILURE OF CHECK VALVES 3-875A, B, C
GMMA0215I	3.61E+01	COMMON CAUSE FAILURE OF HHSI PUMP TO START
GMMNC3843I	3.61E+01	COMMON CAUSE FAILURE OF MOV-3-843A, B
JMM3862CCF	3.61E+01	COMMON CAUSE FAILURE OF MOV 3-862A&B TO CLOSE
GMMNC3873I	3.59E+01	COMMON CAUSE FAILURE OF CV 3-873A, B, C
GMMNC0879I	3.59E+01	COMMON CAUSE FAILURE OF CV 879A, B, C, D
J004	3.58E+01	RHR SYSTEM PIPING FAILURE
G004	3.58E+01	HHSI SYSTEM PIPING FAILURE
GTKJ3BIT	3.56E+01	BORON INJECTION TANK FAILURE
IMM3CC242	3.46E+01	AHU COMMON-CAUSE FAILURE TO RUN
IMM3CC239	3.45E+01	CHILLER COMMON-CAUSE FAILURE TO RUN
EBDF44D01	3.45E+01	DC BUS 4D01 FAULT
CMVR30749B	3.44E+01	MOTOR-OPERATED VALVE MOV-*-749B TRANSFERS OPEN

Risk Achievement Importance

Basic Event	Achieve Worth	Description
CMM31417CC	3.44E+01	COMMON CAUSE FAILURE TO ISOLATE ECC/CRDM COOLERS
CMVR30749A	3.44E+01	MOTOR-OPERATED VALVE MOV-*-749A TRANSFERS OPEN
UISOPMP	3.27E+01	OPERATOR FAILS TO SECURE RHR PUMPS DURING SBLOCA
EB1F3B4KV	2.70E+01	LOCAL FAULT ON 4160V BUS 3B
U3CCWPMPIS	2.63E+01	OPERATOR FAILS TO STOP CCW PUMPS OR USE ACCUMULATORS
JMMNC3860R	2.05E+01	COMMON CAUSE FAILURE OF SUMP RECIRC MOV'S 860A/B 861A/B
JMMNC3749R	2.05E+01	COMMON CAUSE FAILURE OF MOV'S 3-749A, B
JMMA3C210R	2.05E+01	COMMON CAUSE FAILURE OF RHR/LHSI PUMPS TO START
JHFL3SUMP	2.04E+01	COMMON CAUSE MISCALIBRATION OF CONTAINMENT SUMP LEVEL IND.
JRVR3706R	2.04E+01	RELIEF VALVE 706R SPURIOUS OPEN
JMMF3C210R	2.04E+01	COMMON CAUSE FAILURE OF RHR/LHSI PUMPS TO RUN
JMMNC3753R	2.03E+01	COMMON CAUSE FAILURE OF CHECK VALVES 3-753A, B, C
CCVK300735	2.02E+01	CHECK VALVE *-735 TRANSFERS CLOSED
CCVK30721A	2.02E+01	CHECK VALVE *-721A TRANSFERS CLOSED
CCVK30721B	2.02E+01	CHECK VALVE *-721B TRANSFERS CLOSED
CCVK30721C	2.02E+01	CHECK VALVE *-721C TRANSFERS CLOSED
CCVK300717	2.02E+01	CHECK VALVE *-717 TRANSFERS CLOSED
CMVK300626	2.01E+01	MOTOR-OPERATED VALVE MOV-*-626 TRANSFERS CLOSED
CMVK30716B	2.01E+01	MOTOR-OPERATED VALVE MOV-*-716B TRANSFERS CLOSED
CMVK30716A	2.01E+01	MOTOR-OPERATED VALVE MOV-*-716A TRANSFERS CLOSED
JXVK3887R	1.90E+01	MANUAL VALVE 887R TRANSFERS CLOSED
JMMNC3863R	1.89E+01	COMMON CAUSE FAILURE OF MOV-3-863A, B
GMMCC3864	1.88E+01	COMMON CAUSE FAILURE OF MOV 3-864A&B TO CLOSE
JMMNC3875R	1.87E+01	COMMON CAUSE FAILURE OF CHECK VALVES 3-875A, B, C
U3OPS1COOL	1.85E+01	OPERATOR FAILS TO ESTABLISH LONG TERM COOLING S1 LOCA
EMM33003B	1.80E+01	INDEPENDENT FAULTS ON CIRCUIT FROM 4160V BUS 3B TO 480V LOAD CENTER 3B
CMM3CCWHX B	1.79E+01	NO FLOW THROUGH CCW HX B <MODULE>
CMM3CCWHX C	1.79E+01	NO FLOW THROUGH CCW HX C <MODULE>
CMM3CCWHX A	1.79E+01	NO FLOW THROUGH CCW HX A <MODULE>
ECBR330206	1.75E+01	AC BREAKER 30206 TRANSFERS OPEN

Risk Achievement Importance

Basic Event	Achieve Worth	Description
ECBR330601	1.75E+01	AC BREAKER 30601 TRANSFERS OPEN
GMMF0215R	1.71E+01	COMMON CAUSE FAILURE OF HHSI PUMPS
GMMA0215R	1.71E+01	COMMON CAUSE FAILURE OF HHSI PUMPS
GMMCC3856R	1.71E+01	COMMON CAUSE FAILURE OF MOV-3-856A, B
GXVK3864CR	1.70E+01	MANUAL VALVE 864CR TRANSFERS CLOSED
GMMNC3879R	1.70E+01	COMMON CAUSE FAILURE OF CV 3-879A, B
GMMNC3873R	1.70E+01	COMMON CAUSE FAILURE OF CV 3-873
GMMNC0893I	1.69E+01	COMMON CAUSE FAILURE OF CV 893A, B, C, D
GMMNC0874I	1.69E+01	COMMON CAUSE FAILURE OF CV *-874
U3OPS2HPR	1.67E+01	OPERATOR FAILS TO SWITCHOVER TO HIGH HEAD COLD LEG RECIRC (SMALL LOCA)
EB1F33A4KV	1.64E+01	LOCAL FAULT ON 4160V BUS 3A
TPPJ0SRWSG	1.58E+01	PIPE RUPTURE
TMM3U3SEG	1.58E+01	FAILURE OF SRW X-TIE SEGMENT TO U3
CXVK30728C	1.35E+01	MANUAL VALVE *-728C TRANSFERS CLOSED
CXVK30718C	1.35E+01	MANUAL VALVE *-718C TRANSFERS CLOSED
CXVK30728A	1.35E+01	MANUAL VALVE *-728A TRANSFERS CLOSED
CXVK30835C	1.35E+01	MANUAL VALVE *-835C TRANSFERS CLOSED
CXVK300736	1.35E+01	MANUAL VALVE *-736 TRANSFERS CLOSED
CXVK30718A	1.35E+01	MANUAL VALVE *-718A TRANSFERS CLOSED
CXVK30718B	1.35E+01	MANUAL VALVE *-718B TRANSFERS CLOSED
CXVK30728B	1.35E+01	MANUAL VALVE *-728B TRANSFERS CLOSED
ECBR3P0622	1.25E+01	AC BREAKER 3P0813 TRANSFERS OPEN
EB2F3LC3B	1.15E+01	LOCAL FAULT ON 480V LOAD CENTER 3B
EB2F3MCC3B	1.15E+01	LOCAL FAULT ON 480V MCC 3B
QCVC3ANY	8.84E+00	CHECK VALVE ANY FAILS TO CLOSE
ETM33SU	8.84E+00	STARTUP TRANSFORMER 3 UNAVAILABLE DUE TO TEST AND MAINTENANCE
EBDF33D23	7.64E+00	DC BUS 3D23 FAULT
EMM3CCFDGS	7.61E+00	COMMON CAUSE FAILURES OF EDG 3A AND EDG 3B TO START
EHFL33BUV	7.50E+00	COMMON CAUSE MISCALIBRATION OF "B"TRAIN UV RELAYS
ET1F33SU	6.43E+00	LOCAL FAULT ON UNIT 3 STARTUP TRANSFORMER
%ZZT5U3C	6.23E+00	STEAMLINE/FEEDLINE BREAK 3A GENERATOR

Risk Achievement Importance

Basic Event	Achieve Worth	Description
TMM0DISVLV	5.99E+00	FAILURE OF THE SRW COMMON SEGMENT MODULE
AMM3N2T2V	5.56E+00	N2 BACKUP AIR SUPPLY UNIT 3 TRAIN 2 HEADER VALVING
NCBD3RTB	5.27E+00	AC BREAKER RTB FAILS TO OPEN
NCBD3RTA	5.27E+00	AC BREAKER RTA FAILS TO OPEN
AHFL0N2BKU	4.78E+00	OPERATOR LEAVES THE BACKUP N2 SYSTEM MISALIGNED
AMM3-6278A	4.74E+00	MODULE: FAILURE TO ISOLATE AIR OPERATED VALVE 6278A
AMM3-6278B	4.74E+00	MODULE: FAILURE TO ISOLATE AIR OPERATED VALVE 6278B
AMM3-6278C	4.74E+00	MODULE: FAILURE TO ISOLATE AIR OPERATED VALVE 6278C
ATM3-1405	4.72E+00	AFW TRAIN 1 STEAM SUPPLY T OR M
XMANBYPASS	4.48E+00	FAILURE TO MANUALLY OPEN MFW BYPASS VALVE
AMM0PD143	4.41E+00	CHECK VALVE AFPD-143 FAILS
AXVK3-339	4.23E+00	LOCKED OPEN MANUAL VALVE 3-339 TRANSFERS CLOSED
AXVK3-239	4.22E+00	LOCKED OPEN MANUAL VALVE 3-239 TRANSFERS CLOSED
AXVK3-139	4.22E+00	LOCKED OPEN MANUAL VALVE 3-139 TRANSFERS CLOSED
ECDR3D2306	4.05E+00	DC BREAKER 3D2306 TRANSFERS OPEN
ECDR3D0141	3.88E+00	DC BREAKER 3D0141 TRANSFERS OPEN
QMM3HXBVLV	3.87E+00	ICW TO CCW HEAT EXCHANGER B VALVES SHUT <MODULE>
QMM3HXCVLV	3.87E+00	ICW TO CCW HEAT EXCHANGER C VALVES SHUT <MODULE>
QMM3HXAVLV	3.87E+00	ICW TO CCW HEAT EXCHANGER A VALVES SHUT <MODULE>
AMM3TPAHV1	3.87E+00	FAILURE OF UNIT 3 TRAIN 1 PUMP A HEADER VALVES
ECBR3BUS3B	3.83E+00	AC BREAKER FOR BUS 3B TRANSFERS OPEN
U3T3CD4-3	3.81E+00	FAILURE TO USE MFW AFTER REACTOR TRIP AND AFW FAILURE (3.0E-3)
ECBR3P2301	3.79E+00	AC BREAKER P2301 TRANSFERS OPEN
QMM3BSBVLP	3.78E+00	TRAIN B BASKET STRAINER/VALVES SHUT OR PLUGGED <MODULE>
QMM3BSAVLP	3.78E+00	TRAIN A BASKET STRAINER/VALVES SHUT OR PLUGGED <MODULE>
ATM3SGAT2	3.58E+00	AFW FCV UNAVAILABLE T OR M
ATM3SGCT2	3.58E+00	AFW FCV UNAVAILABLE T OR M
HMMCCRUNM	3.43E+00	COMMOMN CAUSE FAILURE TO RUN MOTOR AIR COMPRESSOR
JMM3M100I	3.33E+00	INDEPENDENT LOCAL FAULTS IN UNIT 3 ECCS SUCTION HEADER
MXVK3-268	3.26E+00	MANUAL VALVE 3-268 TRANSFERS CLOSED
U0RABFAN	3.17E+00	OPERATOR FAILS TO START ONE RAB FAN

Risk Achievement Importance

Basic Event	Achieve Worth	Description
%ZZLOG	3.04E+00	LOSS OF GRID
ECBD33AA02	2.98E+00	AUXILIARY TRANSFORMER BREAKER 3AA02 FAILS TO OPEN
ECDR3D3103	2.90E+00	DC BREAKER 3D3103 TRANSFERS OPEN
ECDR3D0114	2.88E+00	DC BREAKER 3D0114 TRANSFERS OPEN
ECDR3D0127	2.88E+00	DC BREAKER 3D0127 TRANSFERS OPEN
%ZZT3DU3	2.88E+00	LOSS OF MAIN FEEDWATER DUE TO FEEDLINE BREAK
AXVK3-270	2.85E+00	MANUAL VALVE 3-270 TRANSFERS CLOSED
AXVK3-267	2.85E+00	MANUAL VALVE 3-267 TRANSFERS CLOSED
AXVK3-263	2.85E+00	MANUAL VALVE 3-263 TRANSFERS CLOSED
IMM0400002	2.84E+00	LOCAL FAILURE OF FAN V8A
ECDR3D2334	2.79E+00	DC BREAKER 3D2334 TRANSFERS OPEN
NLCD3RXTPA	2.78E+00	LOGIC CIRCUIT FAILS TO GENERATE SIGNAL - TRAIN "A"
NLCD3RXTPB	2.78E+00	LOGIC CIRCUIT FAILS TO GENERATE SIGNAL - TRAIN "B"
ECBD33AB02	2.78E+00	AUXILIARY TRANSFORMER BREAKER 3AB02 FAILS TO OPEN
ECBR445004	2.76E+00	AC BREAKER 45004 TRANSFERS OPEN
ECBR440801	2.76E+00	AC BREAKER 40801 TRANSFERS OPEN
JXVK3758R	2.74E+00	MANUAL VALVE 758R TRANSFERS CLOSED
JCVN3875C	2.74E+00	CHECK VALVE 875C FAILS TO OPEN
JCVN3875B	2.74E+00	CHECK VALVE 875B FAILS TO OPEN
JMM3L100I	2.74E+00	INDEPENDENT LOCAL FAULTS IN RHR/LHSI SUCTION HEADER
JMMA3C210I	2.74E+00	COMMON CAUSE FAILURE OF RHR/LHSI PUMPS TO START
BCVK3875E	2.74E+00	CHECK VALVE 3-87E TRANSFERS CLOSED
JMMNC3876R	2.74E+00	COMMON CAUSE FAILURE OF CHECK VALVES 3-876A, B, C
JMMNC3876I	2.74E+00	COMMON CAUSE FAILURE OF CHECK VALVES 3-876A, B, C
BXVK3865C	2.74E+00	MANUAL VALVE 865C TRANSFERS CLOSED
BXVK3865B	2.74E+00	MANUAL VALVE 865B TRANSFERS CLOSED
JCVK3875B	2.74E+00	CHECK VALVE 875B TRANSFERS CLOSED
BMMNC3875	2.74E+00	COMMON CAUSE FAILURE OF CHECK VALVES 3-875D, E, F
BCVN3875F	2.74E+00	CHECK VALVE 875F FAILS TO OPEN
BCVK3875F	2.74E+00	CHECK VALVE 3-875F TRANSFES CLOSED
JXVK3758I	2.74E+00	MANUAL VALVE 758I TRANSFERS CLOSED

Risk Achievement Importance

Basic Event	Achieve Worth	Description
JCVK3875C	2.74E+00	CHECK VALVE 875C TRANSFERS CLOSED
JMVR3863A	2.74E+00	MOTOR-OPERATED VALVE 863A TRANSFERS OPEN
JMVR3863B	2.74E+00	MOTOR-OPERATED VALVE 863B TRANSFERS OPEN
JRVR33-706	2.74E+00	RELIEF VALVE 3-706 SPURIOUS OPEN
JMMNC3753I	2.74E+00	COMMON CAUSE FAILURE OF CHECK VALVES 3-753A, B
JMMNC3744I	2.74E+00	COMMON CAUSE FAILURE OF MOV-3-744A, B
JMMF3C210I	2.74E+00	COMMON CAUSE FAILURE OF RHR/LHSI PUMPS TO RUN
BCVN3875E	2.74E+00	CHECK VALVE 875E FAILS TO OPEN
EBTF33D03	2.70E+00	BATTERY 3A NO OUTPUT (HOURLY)
EMM3CCFDGR	2.63E+00	COMMON CAUSE FAILURES OF EDG 3A AND EDG 3B TO RUN
EMM33003C	2.62E+00	INDEPENDENT FAULTS ON CIRCUIT FROM 4160V BUS 3A TO 480V LOAD CENTER 3C
HMMCCRUND	2.59E+00	COMMON CAUSE FAILURE TO RUN DIESEL AIR COMPRESSOR
FMM0DWST	2.58E+00	FEEDWATER FROM DWST UNAVAILABLE
ECBR330701	2.58E+00	AC BREAKER 30701 TRANSFERS OPEN
ECBR330306	2.58E+00	AC BREAKER 30306 TRANSFERS OPEN
ATM3SGBT2	2.57E+00	AFW FCV UNAVAILABLE T OR M
U3OPMLPR	2.54E+00	OPERATOR FAILS TO SWITCHOVER TO COLD LEG RECIRC (MEDIUM LOCA)
AXVK0PD177	2.52E+00	LOCKED OPEN MANUAL VALVE AFPD-177 TRANSFERS CLOSED
AXVK3-142	2.52E+00	LOCKED OPEN MANUAL VALVE 3-142 TRANSFERS CLOSED
HPPJ3M300	2.49E+00	PIPE RUPTURE IN HEADER M300
%ZZDC3B	2.48E+00	SPECIAL INITIATOR - LOSS OF 125VDC BUS 3B
HMM3M320	2.48E+00	LOCAL FAULTS IN HEADER M 320
EMM3DOST	2.47E+00	FAILURE OF FUEL SUPPLY FROM DOST
XAUXREC	2.44E+00	OPERATOR FAILS TO OPERATE AUX TRANS BREAKER (1.80E-04)
EBDF33D31	2.39E+00	LOCAL FAULT ON 125V DC BUS 3D31
EB1F3C4KV	2.39E+00	LOCAL FAULT ON 4160V BUS 3C
ECDR4D2306	2.38E+00	DC BREAKER 4D2306 TRANSFERS OPEN
ALCD31401B	2.38E+00	LOGIC CIRCUIT 1401B FAILS TO GENERATE SIGNAL
ALCD31457B	2.38E+00	LOGIC CIRCUIT 1457B FAILS TO GENERATE SIGNAL
ALCD31458B	2.38E+00	LOGIC CIRCUIT 1458B FAILS TO GENERATE SIGNAL
OMM3535FTC	2.37E+00	BLOCK VALVE MOV-535 FAILS TO RECLOSE <MODULE>

Risk Achievement Importance

Basic Event	Achieve Worth	Description
AMM3N2T1V	2.37E+00	N2 BACKUP AIR SUPPLY UNIT 3 TRAIN 1 HEADER VALVING
HMMCCSTRTD	2.34E+00	COMMOMN CAUSE FAILURE TO START DIESEL AIR COMPRESSOR
U3OPTCBKV	2.34E+00	OPERATOR FAILS TO CLOSE BLOCK VALVE
HADF33T9	2.29E+00	AIR DRYER 3T9 FAILS TO DELIVER FLOW
IMCN0M3420	2.23E+00	DAMPER M3420 FAILS TO OPEN
ELCD3TURTP	2.22E+00	TURBINE TRIP SIGNAL FAILURE
HMM4M435	2.19E+00	LOCAL FAULTS IN HEADER M 435- UNIT 4 AC COMMON HEADER
XCROSSTIE	2.16E+00	FAILURE TO ALIGN BLACKOUT XTIE (OPERATOR AND HARDWARE)
IMCK0M3420	2.14E+00	DAMPER M0-3420 TRANSFERS CLOSED
ITM0400013	2.13E+00	FAN V8A UNAVAILABLE DUE TO TEST OR MAINTENANCE
%ZZT8BU3	2.03E+00	PORV 456 FAILS TO RECLOSE
EMM33003A	1.97E+00	INDEPENDENT FAULTS ON CIRCUIT FROM 4160V BUS 3A TO 480V LOAD CENTER 3A
EREE3286G3	1.95E+00	RELAY 286G3 FAILS TO ENERGIZE
EREE3343B7	1.93E+00	RELAY 34/3B7 FAILS TO ENERGIZE
EREE3343B6	1.93E+00	RELAY 34/3B6 FAILS TO ENERGIZE
EB2F4MCC4D	1.91E+00	LOCAL FAULT ON 480V MCC 4D
EB2F43004H	1.91E+00	LOCAL FAULT ON 480V LOAD CENTER 4H
ELCD3SEQBL	1.89E+00	FAULT IN SEQUENCER 3B LOADING LOGIC
IMM0400001	1.88E+00	LOCAL FAILURE OF FAN V8B
ATM0PMPA	1.85E+00	AFW PUMP A TRAIN UNAVAILABLE DUE TO TEST OR MAINTENANCE
ECDR3D2328	1.84E+00	DC BREAKER 3D2328 TRANSFERS OPEN
ELCD3SEQAL	1.82E+00	FAULT IN SEQUENCER 3A LOADING LOGIC
AMM0CCDMV4	1.82E+00	COMMON CAUSE FAILURE OF AFW STEAM SUPPLY DC MOVS
ATPA0AFWA	1.81E+00	AFW TURBINE-DRIVEN PUMP A FAILS TO START
AHFL0PUMPA	1.79E+00	OPERATOR FAILS TO RESTORE PUMP TO OPERATING CONDITION
XLOGCASE3	1.76E+00	OFFSITE POWER NONRECOVERY CASE 3
ECBR35301	1.74E+00	AC BREAKER 5301 TRANSFERS OPEN
ECBR3301WW	1.74E+00	AC BREAKER 301WW TRANSFERS OPEN
AMM3SGCSSL	1.73E+00	FAILURE OF UNIT 3 SG C AFW STEAM SUPPLY LINE
JMM4M1501	1.72E+00	INDEPENDENT LOCAL FAULTS IN UNIT 4 ECCS SUCTION HEADER
HMM3M330	1.72E+00	LOCAL FAULTS IN HEADER M 330

Risk Achievement Importance

Basic Event	Achieve Worth	Description
GMM0GE100I	1.72E+00	INDEPENDENT LOCAL FAULTS IN UNIT 3/4 HHSI HEADER
ELCD33BUV	1.71E+00	3B BUS UNDERVOLTAGE LOGIC CIRCUIT FAILS TO GENERATE SIGNAL
EDGA33A	1.68E+00	DIESEL GENERATOR 3A FAILS TO START
EDGA33B	1.68E+00	DIESEL GENERATOR 3B FAILS TO START
HTM3M335	1.68E+00	AIR COOLING UNIT TEST OR MAINTENANCE
EMM3ACLR	1.68E+00	FAILURE OF 3A BUS BREAKERS TO CLEAR
EMM3BCLR	1.67E+00	FAILURE OF BUS 3B BREAKERS TO CLEAR
EMM3DCLRA	1.67E+00	BUS 3D BREAKERS FAIL TO CLEAR WHEN ALIGNED TO A
%ZZRU3C	1.66E+00	STEAM GENERATOR TUBE RUPTURE 3C GENERATOR
ECBD33AA20	1.66E+00	AC BREAKER 3AA20 FAILS TO CLOSE
IMM3E242A	1.65E+00	LOCAL FAULTS 3E242A
ECBD33AB20	1.65E+00	AC BREAKER 3AB20 FAILS TO CLOSE
EMM300ASU	1.64E+00	INDEPENDENT STARTUP TRANSFORMER 3 CIRCUIT FAULTS ("A" TRAIN)
ELCD33AUV	1.64E+00	3A BUS UNDERVOLTAGE LOGIC FAILS TO GENERATE SIGNAL
U3SWSLOOP	1.64E+00	OPERATOR FAILURE TO PROVIDE SW TO CHARGING PUMPS DURING LOOPOR LOG
ECBR3P0715	1.62E+00	AC BREAKER 3P0715 TRANSFERS OPEN
IMM3E241A	1.62E+00	LOCAL FAULTS 3E241A
EMM300BSU	1.62E+00	INDEPENDENT STARTUP TRANSFORMER 3 CIRCUIT FAULTS ("B" TRAIN)
XOFFSITELO	1.62E+00	FAILURE TO RECOVER OFFSITE POWER FOLLOWING FAILURE OF LOCKOUT RELAY
ETM3AEDG	1.61E+00	EDG 3A TEST OR MAINTENANCE
EMM33003D	1.60E+00	INDEPENDENT FAULTS ON CIRCUIT FROM 4160V BUS 3B TO 480V LOAD CENTER 3D
EREE3X23A1	1.60E+00	RELAY 127X2/3A1 FAILS TO ENERGIZE
ETM3BEDG	1.60E+00	EDG 3B TEST OR MAINTENANCE
EMM3BUVAUX	1.59E+00	FAILURE OF 1 OF UV AUX RELAYS (FAILS LOAD SHED)
%ZZIAU3	1.59E+00	UNIT 3 LOSS OF IA
AMVK06459A	1.58E+00	MOTOR-OPERATED T&T VALVE 6459A TRANSFERS CLOSED
ECBR3BUS3A	1.58E+00	AC BREAKER FOR BUS-3A TRANSFERS OPEN
ECBR3P2201	1.58E+00	AC BREAKER P2201 TRANSFERS OPEN
EMM3AUVAUX	1.57E+00	FAILURE OF 1 OF UV AUX RELAYS (FAILS LOAD SHED)
GXVK4864CI	1.57E+00	MANUAL VALVE 864CI TRANSFERS CLOSED
EHFL3EDG3B	1.57E+00	FAILURE TO PROPERLY ALIGN SYSTEM FOLLOWING MAINTENANCE

Risk Achievement Importance

Basic Event	Achieve Worth	Description
AMM3SGCCCF	1.57E+00	COMMON CAUSE FAILURE OF ISOLATION VALVES 6275C AND 6278C
AMM3SGBCCF	1.56E+00	COMMON CAUSE FAILURE OF ISOLATION VALVES 6275B AND 6278B
IMM3E242B	1.56E+00	LOCAL FAULTS 3E242B
AMM3SGACCF	1.56E+00	COMMON CAUSE FAILURE OF ISOLATION VALVES CV3-6275A AND 6278A
GXVK3864CI	1.56E+00	MANUAL VALVE 864CI TRANSFERS CLOSED
ECBR3P0813	1.55E+00	AC BREAKER 3P0813 TRANSFERS OPEN
QXVK300310	1.55E+00	MANUAL VALVE 3-310 TRANSFERS CLOSED
QXVK300340	1.55E+00	MANUAL VALVE 3-340 TRANSFERS CLOSED
QXVK300350	1.55E+00	MANUAL VALVE 3-350 TRANSFERS CLOSED
QXVK300308	1.55E+00	MANUAL VALVE 3-308 TRANSFERS CLOSED
IMM3E241B	1.54E+00	LOCAL FAULTS 3E241B
EHFL3EDG3A	1.54E+00	FAILURE TO PROPERLY ALIGN SYSTEM FOLLOWING MAINTENANCE
JHFL3H100	1.53E+00	FAILURE TO RESTORE LHSI PUMP TRAIN 3A FROM MAINTENANCE
U3T3CD4-1	1.52E+00	OPERATOR FAILS TO TO RECOVER MAIN FEEDWATER AFTER HI LEVEL (3.0E-3)
JMM3H603R	1.52E+00	INDEPENDENT LOCAL FAULTS IN CCW LINE TO 3A RHR HX
JMM3H600R	1.52E+00	INDEPENDENT LOCAL FAULTS IN RHR/LHSI TRAIN 3A
ECBR330406	1.51E+00	AC BREAKER 3B0406 TRANSFERS OPEN
ECBR35401	1.51E+00	AC BREAKER 5401 TRANSFERS OPEN
TTKG0RWT02	1.51E+00	TANK RWT II LEAKAGE
EREE3X23A2	1.51E+00	RELAY 127X2/3A2 FAILS TO ENERGIZE
%ZZIP8U3	1.50E+00	SPECIAL INITIATOR - LOSS OF 120V I.P. 3P08 (UNIT 3)
TXVK101010	1.50E+00	MANUAL VALVE 101010 TRANSFERS CLOSE
U0SIRESET	1.50E+00	RESET SI
MMM3LV115B	1.50E+00	FAILURE OF AIR OPERATED VALVE LCV-3-115B
JMVN3863AR	1.49E+00	MOTOR-OPERATED VALVE 863AR FAILS TO OPEN
JHFL3H200	1.49E+00	FAILURE TO RESTORE LHSI PUMP TRAIN 3B FROM MAINTENANCE
JTMPMP3AR	1.49E+00	RHR LHSI TRAIN 3A T OR M
JMM3H703R	1.48E+00	INDEPENDENT LOCAL FAULTS IN CCW LINE TO 3B RHR HX
JMM3H700R	1.48E+00	INDEPENDENT LOCAL FAULTS IN RHR/LHSI PUMP TRAIN 3B
HXVK3011	1.46E+00	MANUAL VALVE 3-011 TRANSFERS CLOSED
JTMPMP3BR	1.46E+00	RHR LHSI TRAIN 3B T OR M

Risk Achievement Importance

Basic Event	Achieve Worth	Description
CXVK30787D	1.45E+00	MANUAL VALVE *-787D TRANSFERS CLOSED
JMVN3863BR	1.45E+00	MOTOR-OPERATED VALVE 863BR FAILS TO OPEN
CXVK30787C	1.45E+00	MANUAL VALVE *-787C TRANSFERS CLOSED
ATPF0AFWA	1.44E+00	AFW TURBINE-DRIVEN PUMP A FAILS TO RUN
RCDR3D2309	1.43E+00	DC BREAKER 3D2309 TRANSFERS OPEN
TMM0PSEGD	1.43E+00	SRW PUMP TRAIN D MODULE FAILS
RREE3SL2	1.42E+00	RELAY SL2 FAILS TO ENERGIZE
RREE3SIA2	1.42E+00	RELAY SIA2 FAILS TO ENERGIZE
MCVK3-357	1.42E+00	CHECK VALVE 357 TRANSFERS CLOSED
FMM3SRVCCF	1.41E+00	COMMON CAUSE FAILURE OF SG SAFETY VALVES TO OPEN
HMM41605N	1.41E+00	AIR OPERATED VALVE 4-1605 INHIBITS FLOW
HMM3M335	1.41E+00	LOCAL FAULTS IN HEADER M 335
XLOGCASE4	1.41E+00	OFFSITE POWER NONRECOVERY CASE 4
IMM0S79	1.40E+00	LOCAL FAULTS AC UNIT S79
HTM3CD3	1.40E+00	U3 DIESEL DRIVEN AIR COMPRESSOR IN T/M
IHFL0S79	1.40E+00	FAILURE TO RESTORE S79 FROM TEST OR MAINTENANCE
EMM3LC3E	1.39E+00	INDEPENDENT FAULTS ON CIRCUIT FROM 4160V BUS 3C TO 480V LOAD CENTER 3E
IMCK0FD10	1.38E+00	DAMPER FD10 TRANSFERS CLOSED
IMCK0FD8	1.38E+00	DAMPER FD8 TRANSFERS CLOSED
IMCK0FD9	1.38E+00	DAMPER FD9 TRANSFERS CLOSED
JCBR30726R	1.38E+00	AC BREAKER 0726 TRANSFERS OPEN
JTKJ3RWST	1.38E+00	UNIT 3 RWST RUPTURE
JCBR30626R	1.38E+00	AC BREAKER 0626 TRANSFERS OPEN
HTM4CD4	1.37E+00	UNIT 4 DIESEL DRIVEN COMPRESSOR IN T/M
AMM4CST	1.37E+00	NO FLOW FROM UNIT 4 CST
AMM4CSTRRL	1.37E+00	FAILURE OF UNIT 4 RECIRC. RETURN LINE VALVES TO CST
AMM3CSTRRL	1.37E+00	FAILURE OF UNIT 3 RECIRC. RETURN LINE VALVES TO CST
AMM3CST	1.37E+00	NO FLOW FROM UNIT 3 CST
ECBR330651	1.36E+00	AC BREAKER 30651 TRANSFERS OPEN
%ZZT5U3A	1.36E+00	STEAMLINE/FEEDLINE BREAK 3A GENERATOR
%ZZT5U3B	1.36E+00	STEAMLINE/FEEDLINE BREAK 3A GENERATOR

Risk Achievement Importance

Basic Event	Achieve Worth	Description
ECBR334106	1.36E+00	AC BREAKER 34106 TRANSFERS OPEN
X3OPKMRODI	1.35E+00	OPERATOR FAILS MANUAL ROD INSERTION WITHIN 1 MIN.
JMVK3863BR	1.35E+00	MOTOR-OPERATED VALVE 863BR TRANSFERS CLOSED
JMVK3863AR	1.35E+00	MOTOR-OPERATED VALVE 863AR TRANSFERS CLOSED
U3SSGFW	1.35E+00	FAILURE TO RECOVER SECON. HEAT SINK BY SSGFW (9.6E-4)
GMM3GH601R	1.34E+00	INDEPENDENT LOCAL FAULTS AT HHSR PUMP 3B
%ZZ4KVBU3	1.34E+00	SPECIAL INITIATOR - LOSS OF 4KV BUS B (UNIT 3)
GMM3GH701R	1.33E+00	INDEPENDENT LOCAL FAULTS AT HHSR PUMP 3A
HTM0CT	1.33E+00	CROSS-TIE UNAVAILABLE T OR M
GMVN3843AI	1.33E+00	MOTOR-OPERATED VALVE 843AI FAILS TO OPEN
GHFL3G100	1.32E+00	FAILURE TO RESTORE HHSI PUMP TRAIN 3B FROM MAINTENANCE
GHFL3G200	1.32E+00	FAILURE TO RESTORE HHSI PUMP TRAIN 3A FROM MAINTENANCE
XLOGCASE1	1.32E+00	OFFSITE POWER NONRECOVERY CASE 1
GMM3GF101R	1.31E+00	INDEPENDENT LOCAL FAULTS IN HHSR PUMP 3A/3B HEADER
XRABUS	1.31E+00	FAIL TO RECOVER POWER TO 3A 4KV BUS FROM UNIT 4 S/U XFMR
GMM3GG701R	1.31E+00	INDEPENDENT LOCAL FAULTS IN HHSR PUMP 3A DISCHARGE LINE
GMM3GG601R	1.31E+00	INDEPENDENT LOCAL FAULTS IN HHSR PUMP 3B DISCHARGE LINE
RCDR3D0129	1.30E+00	DC BREAKER 3D0129 TRANSFERS OPEN
JMM3P701R	1.29E+00	INDEPENDENT FAULTS IN THE SOUTH RECIRC SUMP SUCTION LINE
RREE3SIA1	1.29E+00	RELAY SIA1 FAILS TO ENERGIZE
RREE3SL1	1.29E+00	RELAY SL1 FAILS TO ENERGIZE
GMVN3843BI	1.29E+00	MOTOR-OPERATED VALVE 843BI FAILS TO OPEN
GTM3843A	1.29E+00	MOV 3-843A UNAVAILABLE T OR M
GTM3APMP	1.28E+00	HHSI PUMP TRAIN 3A T OR M
GTM3BPMP	1.28E+00	HHSI PUMP TRAIN 3B T OR M
IMM3E240A	1.28E+00	LOCAL FAULTS 3E240A UNIT 2A (LAG/STBY)
IMM3E239A	1.28E+00	LOCAL FAULTS 3E239A UNIT 1A (LEAD/AUTO)
IMM0CCMF16	1.28E+00	COMMON-CAUSE FAILURE OF ROOM 101 FAN UNITS
AMM3SGA1IP	1.26E+00	FAILURE OF SG A TRAIN 1 INJECTION PATH VALVES
AMM3SGB1IP	1.26E+00	NO FLOW FROM SG B TRAIN 1 INJECTION PATH
AMM3SGC1IP	1.26E+00	NO FLOW FROM SG C TRAIN 1 INJECTION PATH

Risk Achievement Importance

Basic Event	Achieve Worth	Description
JMM3P601R	1.25E+00	INDEPENDENT FAULTS IN THE NORTH RECIRC SUMP SUCTION LINE
XLOGCASE6	1.25E+00	OFFSITE POWER NONRECOVERY CASE 6
GTM3843B	1.25E+00	MOV 3-843B UNAVAILABLE T OR M
EDGF33A	1.25E+00	DIESEL GENERATOR 3A FAILS TO RUN
EHFL33AUV	1.25E+00	COMMON CAUSE MISCALIBRATION OF "A" TRAIN UV RELAYS
RREE3SI22X	1.24E+00	RELAY SI22X FAILS TO ENERGIZE
FTKG3CNDSR	1.24E+00	LEAKAGE FROM MAIN CONDENSER
FTKJ3CNDSR	1.24E+00	RUPTURE OF MAIN CONDENSER
ECDR4D0156	1.24E+00	DC BREAKER 4D0156 TRANSFERS OPEN
FMM3P6RCCF	1.24E+00	CONDENSATE PUMPS FAIL TO RUN DUE TO CCF
HMM3M331	1.24E+00	LOCAL FAULTS IN HEADER M 331 (UNIT 3 STANDBY AIR COMPRESSOR)
FMM3P1RCCF	1.24E+00	MAIN FEEDWATER PUMPS FAIL TO RUN DUE TO CCF
CMVC301417	1.24E+00	MOTOR-OPERATED VALVE MOV-*-1417 FAILS TO CLOSE
HMM4M431	1.23E+00	LOCAL FAULTS IN HEADER M 431 (UNIT 4 STANDBY AIR COMPRESSOR)
IMCN0M3419	1.23E+00	DAMPER M3419 FAILS TO OPEN
CMM3C-BOUT	1.23E+00	CCW HXS C-B OUTLET CROSS-CONNECT CLOSED <MODULE>
LMM3P214SI	1.23E+00	COMMON CAUSE FAILURE OF BOTH UNIT 3 CSS PUMPS TO START
LMM3880ABI	1.23E+00	COMMON CAUSE FAILURE OF MOV-3-880A AND B TO OPEN
EDGF33B	1.23E+00	DIESEL GENERATOR 3B FAILS TO RUN
RREE3SI12X	1.23E+00	RELAY SI12X FAILS TO ENERGIZE
JMVC33862A	1.22E+00	MOTOR-OPERATED VALVE 3862A FAILS TO CLOSE
GMVK3843AI	1.22E+00	MOTOR-OPERATED VALVE 843AI TRANSFERS CLOSED
GMVK3843BI	1.22E+00	MOTOR-OPERATED VALVE 843BI TRANSFERS CLOSED
OMM3455FTO	1.22E+00	PCV-455C FAILS TO OPEN <MODULE>
CTM3CCWHXB	1.22E+00	CCW HX TRAIN B IN TEST OR MAINTENANCE
CTM3CCWHXA	1.22E+00	CCW HX TRAIN A IN TEST OR MAINTENANCE
OMM3456FTO	1.22E+00	PCV-456 FAILS TO OPEN <MODULE>
CTM3CCWHXC	1.22E+00	CCW HX TRAIN C IN TEST OR MAINTENANCE
ECBR330802	1.21E+00	AC BREAKER 30802 TRANSFERS OPEN
IHFL0V8B	1.21E+00	FAILURE TO RESTORE V8B FOLLOWING TEST AND MAINTENANCE
U3OPBAF	1.21E+00	FAILURE OF FEED AND BLEED

Risk Achievement Importance

Basic Event	Achieve Worth	Description
ECBR335004	1.21E+00	AC BREAKER 35004 TRANSFERS OPEN
OMVK300536	1.20E+00	MOTOR-OPERATED BLOCK VALVE MOV-*-536 TRANSFERS CLOSED
CMVR301417	1.20E+00	MOTOR-OPERATED VALVE MOV-*-1417 TRANSFERS OPEN
RCDR3D0137	1.20E+00	DC BREAKER 3D0137 TRANSFERS OPEN
%ZZ4KVAU3	1.20E+00	SPECIAL INITIATOR - LOSS OF 4KV BUS A (UNIT 3)
ITM0S79	1.20E+00	AC UNIT S79 UNAVAILABLE TEST OR MAINTENANCE
CCBR330822	1.20E+00	AC BREAKER 30822 TRANSFERS OPEN
OMVK300535	1.20E+00	MOTOR-OPERATED BLOCK VALVE MOV-*-535 TRANSFERS CLOSED
LMM3P214RI	1.20E+00	COMMON CAUSE FAILURE OF BOTH UNIT 3 CSS PUMPS TO RUN
JSMP3SOUTH	1.20E+00	CONTAINMENT SUMP SOUTH PLUGGED
JSMP3NORTH	1.20E+00	CONTAINMENT SUMP NORTH PLUGGED
IMCK0M3419	1.20E+00	DAMPER M3419 TRANSFERS CLOSED
IMM040001A	1.20E+00	RAB FAN 8B FAILS TO START
HPPJ4M400	1.19E+00	PIPE RUPTURE IN HEADER M400
DMM3CVOCC	1.19E+00	COMMON CAUSE FAILURES OF UNIT 3 ECC RETURN CONTROL VALVES TOOPEN
JMVC33862B	1.19E+00	MOTOR-OPERATED VALVE 3862B FAILS TO CLOSE
AMM3SGA2IP	1.18E+00	NO FLOW FROM SG A TRAIN 2 INJECTION PATH
AMM3SGB2IP	1.18E+00	NO FLOW FROM SG B TRAIN 2 INJECTION PATH
AMM3SGC2IP	1.18E+00	NO FLOW FROM SG C TRAIN 2 INJECTION PATH
DMM3ECCSC	1.18E+00	COMMON CAUSE FAILURES OF UNIT 3 ECC UNITS TO START
DMM3HXTUB	1.17E+00	UNIT 3 ECC PRESSURE BOUNDARY FAULTS
HTM4M435	1.17E+00	AIR COOLING UNIT TEST OR MAINTENANCE
JMM3CCWAR	1.17E+00	INDEPENDENT LOCAL FAULTS IN CCW LINE TO RHR PUMP 3A
EMM303CTX	1.17E+00	INDEPENDENT FAULTS ON 3C TRANSFORMER CIRCUIT TO 4160V BUS 3C
JMM3CCWBR	1.17E+00	INDEPENDENT LOCAL FAULTS IN CCW LINE TO RHR PUMP 3B
LMM3890ABI	1.16E+00	COMMON CAUSE FAILURE OF CHECK VALVES 3-890A & B TO OPEN
EB2F3LC3C	1.16E+00	LOCAL FAULT ON 480V LOAD CENTER 3C
GMVC3864AR	1.16E+00	MOV 3864A FAILS TO CLOSE
FMM0010CCF	1.16E+00	SSGFP DISCHARGE CHECK VALVE CCF TO OPEN
GMVC3843AH	1.16E+00	MOTOR-OPERATED VALVE 843AH FAILS TO CLOSE
DPPP31465	1.16E+00	FLOW ELEMENT FE-3-1465 PLUGS

Risk Achievement Importance

Basic Event	Achieve Worth	Description
EB2F3MCC3C	1.16E+00	LOCAL FAULT ON 480C MCC 3C
GMMNC3874H	1.16E+00	COMMON CAUSE FAILURE OF CV 3-874A, B
LMM3P214RR	1.16E+00	COMMON CAUSE FAILURE OF BOTH UNIT 3 CSS PUMPS TO RUN (RECIRCULATION)
GMMA0215H	1.16E+00	COMMON CAUSE FAILURE OF HHSR PUMPS
GMMNC3866H	1.16E+00	COMMON CAUSE FAILURE OF MOV-3-866A, B
GMMCC3843H	1.16E+00	COMMON CAUSE FAILURE OF MOV-3-843A, B
DMM3ECCRC	1.16E+00	COMMON CAUSE FAILURES OF UNIT 3 ECC UNITS TO RUN
GMMNC3879H	1.16E+00	COMMON CAUSE FAILURE OF CV 3-879A, B
GMVC3843BH	1.16E+00	MOTOR-OPERATED VALVE 843BH FAILS TO CLOSE
LMM3890ABR	1.16E+00	COMMON CAUSE FAILURE OF CHECK VALVES 3-890A & B TO OPEN (RECIRCULATION)
LMM3P214SR	1.16E+00	COMMON CAUSE FAILURE OF BOTH UNIT 3 CSS PUMPS TO START (RECIRCULATION)
LPPG3PIPE	1.16E+00	UNIT 3 ECCS PIPING FAILURE
GCBR30622H	1.16E+00	AC BREAKER 0622H TRANSFERS OPEN
LMM3880ABR	1.16E+00	COMMON CAUSE FAILURE OF MOV-3-880A & B TO OPEN (RECIRCULATION)
GXVK3864CH	1.16E+00	MANUAL VALVE 864CH TRANSFERS CLOSED
GCBR30737H	1.16E+00	AC BREAKER 0737H TRANSFERS OPEN
U3OPAHLHPR	1.16E+00	OPERATOR FAILS TO SWITCHOVER TO HOT LEG RECIRC (LARGE LOCA)
GMVN3869H	1.16E+00	MOTOR-OPERATED VALVE 869H FAILS TO OPEN
GCBR30738H	1.16E+00	AC BREAKER 0738H TRANSFERS OPEN
RHFL3CONTP	1.16E+00	COMMON CAUSE CALIBRATION ERROR OF CONTAINMENT PRESSURE SWITCHES
GMMF0215H	1.16E+00	COMMON CAUSE FAILURE OF HHSR PUMPS
GMVK3869H	1.16E+00	MOTOR-OPERATED VALVE 869H TRANSFERS CLOSED
FMM0P82RCC	1.15E+00	COMMON CAUSE FAILURE OF SSGFP TO RUN
MMM3PUMPB	1.15E+00	CHARGING PUMP B FAILURES
JMVR33862B	1.15E+00	MOTOR-OPERATED VALVE 3862B TRANSFERS OPEN
MMM3PUMPC	1.15E+00	CHARGING PUMP C FAILURES
JMVR33862A	1.15E+00	MOTOR-OPERATED VALVE 3862A TRANSFERS OPEN
MMM3PUMPA	1.15E+00	CHARGING PUMP A FAILURES
CMM3PTBFTS	1.15E+00	CCW PUMP B FAILS TO START DUE TO HARDWARE <MODULE>
JCBR30720R	1.15E+00	AC BREAKER 0720R TRANSFERS OPEN
JCBR30616R	1.15E+00	AC BREAKER 0616R TRANSFERS OPEN

Risk Achievement Importance

Basic Event	Achieve Worth	Description
RCDR4D0139	1.15E+00	DC BREAKER 4D0139 TRANSFERS OPEN
CCBR330624	1.15E+00	AC BREAKER 30624 TRANSFERS OPEN
RREE3CIA12	1.15E+00	RELAY 3-86/CIA12 FAILS TO ENERGIZE
U3RCD4-1	1.15E+00	FAILURE TO RESET SI AND USE MFW (SGTR)(3.00E-03)
GMVC3856AR	1.15E+00	MOTOR-OPERATED VALVE 856AR FAILS TO CLOSE
CMVC301418	1.15E+00	MOTOR-OPERATED VALVE MOV-*-1418 FAILS TO CLOSE
CMVR301418	1.15E+00	MOTOR-OPERATED VALVE MOV-*-1418 TRANSFERS OPEN
FMM0P82B	1.14E+00	LOCAL FAILURES AT P82B MODULE
FMM3P1SCCF	1.14E+00	MAIN FEEDWATER PUMPS FAIL TO START DUE TO CCF
U3OPALHR	1.14E+00	OPERATOR FAILS TO SWITCHOVER TO LOW HEAD COLD LEG RECIRC (LARGE LOCA)
FMM3P6SCCF	1.14E+00	CONDENSATE PUMPS FAIL TO START DUE TO CCF
FTM0P82B	1.13E+00	SSGFP 82B OUT FOR TEST OR MAINTENANCE
CMM3PTBFTR	1.13E+00	CCW PUMP B FAILS TO RUN DUE TO HARDWARE <MODULE>
FMM33-012	1.12E+00	INDEPENDENT FAULTS AT SSGFP DISCHARGE CHECK VALVE
GMVC3856BR	1.12E+00	MOTOR-OPERATED VALVE 856BR FAILS TO CLOSE
FMM0P82SCC	1.12E+00	COMMON CAUSE FAILURE OF SSGFP TO START
MMM3PWVLVS	1.12E+00	LOCAL FAILURES OF PRIMARY WATER PUMP DOWNSTREAM VALVES
X3OPKMT	1.12E+00	OPERATOR FAILS MANUAL TRIP & ROD INSERTION WITHIN 1 MIN.
MMVK3-115C	1.12E+00	MOTOR-OPERATED VALVE -115C TRANSFERS CLOSED
MSEL3PREAC	1.12E+00	SEAL LEAKAGE PRE ACCIDENT
MMM3CV113B	1.12E+00	LOCAL FAILURES AT CONTROL VALVE 3-CV-113B
MTM3PUMPA	1.12E+00	CHARGING PUMP A OUT DUE TO MAINTENANCE
MTM3PUMPB	1.12E+00	CHARGING PUMP B OUT DUE TO MAINTENANCE
MMM3PWTANK	1.12E+00	LOCAL FAILURES OF THE PRIMARY WATER STORAGE TANK
GMVC3864BR	1.12E+00	MOV 3864B FAILS TO CLOSE
QMM3PTBFTS	1.12E+00	ICW PUMP TRAIN B FAILS TO START <MODULE>
MMM3CV114A	1.12E+00	LOCAL FAILURES AT CONTROL VALVE 3-CV-114A
MMM3CV266	1.12E+00	FAILURE OF CHECK VALVE 266
MTM3PUMPC	1.12E+00	CHARGING PUMP C OUT DUE TO MAINTENANCE
MTKJ3VCT	1.12E+00	VOLUME CONTROL TANK UNIT 3 RUPTURES
RREE3S115X	1.11E+00	RELAY S115X FAILS TO ENERGIZE

Fussel-Vesley Importance

Basic Event	Fussel Vesley	Description
%ZZS2U3	3.02E-01	SMALL LOCA
%ZZLOG	1.65E-01	LOSS OF GRID
U3OPS2HPR	1.24E-01	OPERATOR FAILS TO SWITCHOVER TO HIGH HEAD COLD LEG RECIRC (SMALL LOCA)
%ZZCCWU3	1.22E-01	LOSS OF CCW
%ZZS1U3	7.69E-02	SMALL-SMALL LOCA S1
%ZZMU3	6.63E-02	MEDIUM LOCA
XCROSSTIE	6.13E-02	FAILURE TO ALIGN BLACKOUT XTIE (OPERATOR AND HARDWARE)
%ZZIAU3	5.98E-02	UNIT 3 LOSS OF IA
XMANBYPASS	5.65E-02	FAILURE TO MANUALLY OPEN MFW BYPASS VALVE
CMM31417CC	4.82E-02	COMMON CAUSE FAILURE TO ISOLATE ECC/CRDM COOLERS
U3OPMLPR	4.76E-02	OPERATOR FAILS TO SWITCHOVER TO COLD LEG RECIRC (MEDIUM LOCA)
NMM3CCFRT	4.43E-02	TRIP BREAKER FAILS TO OPEN DUE TO COMMON CAUSE
HMM3M331	4.24E-02	LOCAL FAULTS IN HEADER M 331 (UNIT 3 STANDBY AIR COMPRESSOR)
HMM4M431	4.11E-02	LOCAL FAULTS IN HEADER M 431 (UNIT 4 STANDBY AIR COMPRESSOR)
%ZZT1U3	4.07E-02	REACTOR TRIP
X3OPKMRODI	3.85E-02	OPERATOR FAILS MANUAL ROD INSERTION WITHIN 1 MIN.
GMMA0215I	3.74E-02	COMMON CAUSE FAILURE OF HHSI PUMP TO START
XLOGCASE1	3.68E-02	OFFSITE POWER NONRECOVERY CASE 1
MMM3PATHB	3.59E-02	FAILURE OF SEAL INJECTION FILTER PATH
%ZZICWU3	3.44E-02	LOSS OF ICW
N30002	3.37E-02	FAILURE OF CONTROL RODS TO INSERT WITH POWER REMOVED
MMM3SEALC	3.33E-02	FAILURE OF RCP C SEAL INJECTION COMPONENTS
MMM3SEALB	3.33E-02	FAILURE OF RCP B SEAL INJECTION COMPONENTS
MMM3SEALA	3.33E-02	FAILURE OF RCP A SEAL INJECTION COMPONENTS
EMM3ACLR	2.91E-02	FAILURE OF 3A BUS BREAKERS TO CLEAR
EMM3BCLR	2.88E-02	FAILURE OF BUS 3B BREAKERS TO CLEAR
%ZZAU3	2.55E-02	LARGE LOCA
ZZPWRLVL	2.51E-02	UNIT 3 POWER LEVEL GREATER THAN 25%
ZZMTCUNF	2.43E-02	MTC UNFAVORABLE
%ZZDC3A	2.42E-02	SPECIAL INITIATOR - LOSS OF 125VDC BUS 3A
JXVK3887R	2.30E-02	MANUAL VALVE 887R TRANSFERS CLOSED

Fussel-Vesley Importance

Basic Event	Fussel Vesley	Description
EDGF33A	2.29E-02	DIESEL GENERATOR 3A FAILS TO RUN
AMM0CCTPA3	2.21E-02	COMMON CAUSE FAILURE OF 3 OUT OF 3 AFW TURBINE-DRIVEN PUMPS TO START
U0RABFAN	2.20E-02	OPERATOR FAILS TO START ONE RAB FAN
EDGF33B	2.09E-02	DIESEL GENERATOR 3B FAILS TO RUN
AMM0CCFAV6	2.01E-02	COMMON CAUSE FAILURE OF THE AFW FLOW CONTROL AOVS
U3OPALHR	1.90E-02	OPERATOR FAILS TO SWITCHOVER TO LOW HEAD COLD LEG RECIRC (LARGE LOCA)
GMMA0215R	1.72E-02	COMMON CAUSE FAILURE OF HHSI PUMPS
HMMCCSTRTD	1.72E-02	COMMOMN CAUSE FAILURE TO START DIESEL AIR COMPRESSOR
%ZZT3EU3	1.71E-02	EXCESSIVE FEEDWATER
%ZZT3AU3	1.71E-02	LOSS OF MAIN FEEDWATER - RECOVERABLE
HTM3CD3	1.69E-02	U3 DIESEL DRIVEN AIR COMPRESSOR IN T/M
HTM4CD4	1.57E-02	UNIT 4 DIESEL DRIVEN COMPRESSOR IN T/M
QMM3P9ACCF	1.48E-02	PUMP FAILS TO START COMMON CAUSE FAILURES <MODULE>
XLOGCASE3	1.48E-02	OFFSITE POWER NONRECOVERY CASE 3
CMM3PPACCF	1.47E-02	CCW PUMP FAILS TO START DUE TO COMMON CAUSE FAILURE <MODULE>
HMMCCRUNM	1.45E-02	COMMOMN CAUSE FAILURE TO RUN MOTOR AIR COMPRESSOR
%ZZT8BU3	1.36E-02	PORV 456 FAILS TO RECLOSE
GMMNC3843I	1.34E-02	COMMON CAUSE FAILURE OF MOV-3-843A, B
IMM0RABCCF	1.33E-02	COMMON-CAUSE FAILURE OF THE RAB EXHAUST FANS
QCVC3ANY	1.28E-02	CHECK VALVE ANY FAILS TO CLOSE
GMMF0215I	1.21E-02	COMMON CAUSE FAILURE OF HHSI PUMP TO RUN
EDGA33A	1.18E-02	DIESEL GENERATOR 3A FAILS TO START
%ZZ4KVCU3	1.18E-02	SPECIAL INITIATOR - LOSS OF 4KV BUS C (UNIT 3)
EDGA33B	1.17E-02	DIESEL GENERATOR 3B FAILS TO START
ATPA0AFWA	1.15E-02	AFW TURBINE-DRIVEN PUMP A FAILS TO START
AHFL0N2BKU	1.14E-02	OPERATOR LEAVES THE BACKUP N2 SYSTEM MISALIGNED
FMM0P82B	1.11E-02	LOCAL FAILURES AT P82B MODULE
%ZZT7U3	1.10E-02	SPURIOUS UNIT 3 SAFETY INJECTION SIGNAL
AMM3-6278B	1.09E-02	MODULE: FAILURE TO ISOLATE AIR OPERATED VALVE 6278B
AMM3-6278A	1.09E-02	MODULE: FAILURE TO ISOLATE AIR OPERATED VALVE 6278A
AMM3-6278C	1.09E-02	MODULE: FAILURE TO ISOLATE AIR OPERATED VALVE 6278C

Fussel-Vesley Importance

Basic Event	Fussel Vesley	Description
JMMA3C210R	1.04E-02	COMMON CAUSE FAILURE OF RHR/LHSI PUMPS TO START
AMM3SGCSSL	1.01E-02	FAILURE OF UNIT 3 SG C AFW STEAM SUPPLY LINE
ATM0PMPA	9.94E-03	AFW PUMP A TRAIN UNAVAILABLE DUE TO TEST OR MAINTENANCE
AMM0CCTPF3	9.90E-03	COMMON CAUSE FAILURE OF 3 OUT OF 3 AFW TURBINE-DRIVEN PUMPS TO RUN
HMMCCRUND	9.54E-03	COMMON CAUSE FAILURE TO RUN DIESEL AIR COMPRESSOR
UISOPMP	9.52E-03	OPERATOR FAILS TO SECURE RHR PUMPS DURING SBLOCA
ITM0400013	9.33E-03	FAN V8A UNAVAILABLE DUE TO TEST OR MAINTENANCE
CMM3PPFCCF	9.26E-03	CCW PUMP FAILS TO RUN DUE TO COMMON CAUSE FAILURE <MODULE>
OMM3535FTC	8.65E-03	BLOCK VALVE MOV-535 FAILS TO RECLOSE <MODULE>
U3T3CD4-3	8.45E-03	FAILURE TO USE MFW AFTER REACTOR TRIP AND AFW FAILURE (3.0E-3)
OMM3456FTO	8.36E-03	PCV-456 FAILS TO OPEN <MODULE>
OMM3455FTO	8.36E-03	PCV-455C FAILS TO OPEN <MODULE>
%ZZT3BU3	8.32E-03	LOSS OF MAIN FEEDWATER CONDENSATE RECOVERABLE
CTM3CCWHXA	8.25E-03	CCW HX TRAIN A IN TEST OR MAINTENANCE
CTM3CCWHXB	8.25E-03	CCW HX TRAIN B IN TEST OR MAINTENANCE
CTM3CCWHXC	8.10E-03	CCW HX TRAIN C IN TEST OR MAINTENANCE
CMM3CCWHX B	8.09E-03	NO FLOW THROUGH CCW HX B <MODULE>
CMM3CCWHX A	8.09E-03	NO FLOW THROUGH CCW HX A <MODULE>
CMM3CCWHX C	8.09E-03	NO FLOW THROUGH CCW HX C <MODULE>
JMMNC3749R	7.93E-03	COMMON CAUSE FAILURE OF MOV'S 3-749A, B
U3PREAC	7.77E-03	OPERATOR FAILS TO DETECT AND ISOLATE THE SEAL COVER GAS
MSEL3PREAC	7.77E-03	SEAL LEAKAGE PRE ACCIDENT
JMM3862CCF	7.69E-03	COMMON CAUSE FAILURE OF MOV 3-862A&B TO CLOSE
EMM3CCFDGR	6.87E-03	COMMON CAUSE FAILURES OF EDG 3A AND EDG 3B TO RUN
ECBD33AA02	6.45E-03	AUXILIARY TRANSFORMER BREAKER 3AA02 FAILS TO OPEN
JMMNC3860R	6.42E-03	COMMON CAUSE FAILURE OF SUMP RECIRC MOV'S 860A/B 861A/B
JMMNC3863R	5.90E-03	COMMON CAUSE FAILURE OF MOV-3-863A, B
JHFL3SUMP	5.84E-03	COMMON CAUSE MISCALIBRATION OF CONTAINMENT SUMP LEVEL IND.
ECBD33AB02	5.80E-03	AUXILIARY TRANSFORMER BREAKER 3AB02 FAILS TO OPEN
AMM3N2T2V	5.70E-03	N2 BACKUP AIR SUPPLY UNIT 3 TRAIN 2 HEADER VALVING

Fussel-Vesley Importance

Basic Event	Fussel Vesley	Description
EMM3CCFDGS	5.62E-03	COMMON CAUSE FAILURES OF EDG 3A AND EDG 3B TO START
GMMF0215R	5.55E-03	COMMON CAUSE FAILURE OF HHSI PUMPS
XLOGCASE5	5.21E-03	OFFSITE POWER NONRECOVERY CASE 5
U3CCWPMPIS	5.06E-03	OPERATOR FAILS TO STOP CCW PUMPS OR USE ACCUMULATORS
CTM3ONEHXG	5.06E-03	ONE CCW HEAT EXCHANGER IN TEST OR MAINTENANCE
MTM3PUMPB	5.05E-03	CHARGING PUMP B OUT DUE TO MAINTENANCE
MTM3PUMPC	5.05E-03	CHARGING PUMP C OUT DUE TO MAINTENANCE
MTM3PUMPA	5.05E-03	CHARGING PUMP A OUT DUE TO MAINTENANCE
NCBD3RTA	4.96E-03	AC BREAKER RTA FAILS TO OPEN
NCBD3RTB	4.96E-03	AC BREAKER RTB FAILS TO OPEN
XLOGCASE6	4.91E-03	OFFSITE POWER NONRECOVERY CASE 6
ETM33SU	4.87E-03	STARTUP TRANSFORMER 3 UNAVAILABLE DUE TO TEST AND MAINTENANCE
JMM3H600R	4.85E-03	INDEPENDENT LOCAL FAULTS IN RHR/LHSI TRAIN 3A
U3SWSLOOP	4.85E-03	OPERATOR FAILURE TO PROVIDE SW TO CHARGING PUMPS DURING LOOPOR LOG
JMM3H700R	4.51E-03	INDEPENDENT LOCAL FAULTS IN RHR/LHSI PUMP TRAIN 3B
EMM3DCLRA	4.37E-03	BUS 3D BREAKERS FAIL TO CLEAR WHEN ALIGNED TO A
%ZZIA34	4.19E-03	DUAL UNIT LOSS OF IA
ATPF0AFWA	3.98E-03	AFW TURBINE-DRIVEN PUMP A FAILS TO RUN
GMM3GH601R	3.93E-03	INDEPENDENT LOCAL FAULTS AT HHSR PUMP 3B
GMM3GH701R	3.90E-03	INDEPENDENT LOCAL FAULTS AT HHSR PUMP 3A
U3SWSPWR	3.84E-03	OPERATOR FAILURE TO PROVIDE SW TO CHARGING PUMPS WITH OFF- SITE POWER AVAIL
XLOGCASE4	3.60E-03	OFFSITE POWER NONRECOVERY CASE 4
ETM3AEDG	3.42E-03	EDG 3A TEST OR MAINTENANCE
GMMCC3864	3.40E-03	COMMON CAUSE FAILURE OF MOV 3-864A&B TO CLOSE
XRABUS	3.36E-03	FAIL TO RECOVER POWER TO 3A 4KV BUS FROM UNIT 4 S/U XFMR
ETM3BEDG	3.34E-03	EDG 3B TEST OR MAINTENANCE
GMMCC3856R	3.06E-03	COMMON CAUSE FAILURE OF MOV-3-856A, B
JMM3H603R	2.76E-03	INDEPENDENT LOCAL FAULTS IN CCW LINE TO 3A RHR HX
IMCN0M3420	2.70E-03	DAMPER M3420 FAILS TO OPEN
JMM3H703R	2.57E-03	INDEPENDENT LOCAL FAULTS IN CCW LINE TO 3B RHR HX
CMM3CCNPSH	2.50E-03	FAILURE OF CCW INTEGRITY (NPSH VALVES OR HEAT EXCHANGER TUBE LEAK)

How do Operator Handle this in MCR?

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. NPS HAS GIVEN PERMISSION TO PERFORM TEST
2. REACTOR POWER IS > 90%
3. ERDADS IS ~~NOT~~ AVAILABLE
4. ALL PROCEDURE PREREQUISITES ARE SATISFIED
5. CORE AT MOL

let Operator determine operable channels?

INITIATING CUE:

YOU ARE THE RCO AND HAVE BEEN DIRECTED BY THE ANPS TO PERFORM THE MID SHIFT WEEKEND REQUIREMENT FOR PERFORMING THERMAL CALIBRATION OF NIS

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01059020202

What is this?

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: PERFORM CALORIMETRIC UTILIZING ERDADS

JPM NUMBER: 01059020202 JPM TYPE:

JPM REV. DT.: 05/13/99 NORMAL PATH

NUCLEAR SAFETY IMPORTANCE: 2.00

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE: _____ DISCUSS: _____

INSTRUCTOR's INFORMATION

BOOTH OPERATOR:

1. RESET TO IC-1 - PLACE SIMULATOR IN RUN
2. ADJUST NIS GAINS AS FOLLOWS: N-41=5.10; N-42=4.70; N-43=4.70; N-44=5.10
3. FREEZE SIMULATOR UNTIL READY TO BEGIN

ok why

it ope obtain Xplain

TASK STANDARDS:

1. OBTAINED COMPUTER PROGRAM "CAL" PRINTOUT *(PROVIDED)*
2. DETERMINED METER CORRECTION AND COMPARED TO ACCEPTANCE CRITERIA
3. DETERMINED THAT 'CALORIMETRIC TO PLANT CURVE BOOK' CORRECTION MEETS ACCEPTANCE CRITERIA

was not part

REQUIRED MATERIALS:

1. 3-OSP-059.5, POWER RANGE INSTRUMENTATION SHIFT CHECKS AND DAILY CALIBRATIONS
2. DDPS PRINTOUT

REFERENCES:

3-OSP-059.5, POWER RANGE NUCLEAR INSTRUMENTATION SHIFT CHECKS AND DAILY CALIBRATIONS

TERMINATING CUES:

ATTACHMENT 1 COMPLETED

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01059020202

Why n't [illegible] Simulator with [illegible]?

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU step WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. NPS HAS GIVEN PERMISSION TO PERFORM TEST
2. REACTOR POWER IS > 90%
3. ERDADS IS NOT AVAILABLE
4. ALL PROCEDURE PREREQUISITES ARE SATISFIED
5. CORE AT MOL

What is then?

Why Test then, Who really knows

May let Oper do step 7.1.3.1 ?

How long ?

ok

INITIATING CUES:

RO SRO?

YOU ARE THE RCO AND HAVE BEEN DIRECTED BY THE ANPS TO PERFORM THE MID SHIFT WEEKEND REQUIREMENT FOR PERFORMING THERMAL CALIBRATION OF NIS

Should they Verify Current Proc Rev? Change?

Why n't let Operator [illegible] this

EVALUATOR'S NOTES:

The JPM is based on all of the plant conditions being as specified in Prerequisite 3.2 and the minimum instrumentation being operable as specified in Prerequisite 3.1 of 3-OSP-059.5 (Steps 7.1.2 & 7.1.3.1).

***CUE:** If the operator goes to perform procedure step 7.1.2 or step 7.1.3.1, tell the student that the requirements of these steps is satisfied (these are given in the initial conditions).*

Critical Steps ?

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01059020202

C

(C) **ELEMENT: 1**

not C

OBTAIN ERDADS CALORIMETRIC DATA [Step 7.1.3.3]

If the ERDAS not AVAILABLE ?

STANDARDS:

1. THE "CAL" PROGRAM PERFORMED USING ERDADS
2. A PRINTOUT OF THE "CAL" PROGRAM DATA OBTAINED (provided)

why not OBTAIN ?

CUE: ***Once the operator demonstrated how to obtain the printout, provide the printout.***

3. PRINTOUT ATTACHED TO THE REMARKS SECTION OF ATTACHMENT 1

Why is this a Standard - Req'd Oper Can [illegible]

not C

EVALUATOR'S NOTES:

(C) **ELEMENT: 2**

CALCULATE METER CORRECTIONS [Att. 1, Steps 1,2 & 3]

STANDARDS:

DPPS

1. Tavg AND Tref RECORDED ON ATTACHMENT 1
2. Tref SUBTRACTED FROM Tavg
3. Tref - Tavg CHECKED TO BE BETWEEN 0.00 AND 0.25 F
4. REACTOR POWER FROM NIS RECORDED ON ATTACHMENT 1
5. REACTOR POWER FROM "CAL" PRINTOUT RECORDED ON ATT. 1
6. EACH NIS POWER RANGE METER CORRECTION (%) DETERMINED BY SUBTRACTING "CAL" POWER (2) FROM NIS POWER (1)
7. METER CORRECTION RECORDED ON ATTACHMENT 1

EVALUATOR'S NOTES: Need to add Decimal Precision

(C) **ELEMENT: 3**

COMPARE METER CORRECTION VALUES (%) TO ACCEPTANCE CRITERIA [Attachment 1, Step 4]

STANDARDS:

1. IDENTIFIED CHANNELS WITH UNACCEPTABLE METER CORRECTION VALUES
2. NOTIFIED NPS THAT ACCEPTANCE CRITERIA IS IS NOT MET FOR N-42 AND N-43, AND REQUESTS PERMISSION TO ADJUST GAINS

ATT 4 Step 5a

Where is 5b?

CUE: ***As NPS, acknowledge notification and tell operator to complete attachment 1.***

EVALUATOR'S NOTES:

CUE: ***Tell the operator to use the VPA values in step 6a.***

(C) **ELEMENT: 4**

DETERMINE IF "CALORIMETRIC TO PLANT CURVE BOOK" CORRECTION FACTOR MEETS ACCEPTANCE CRITERION [Attachment 1, Steps 6 & 7]

STANDARDS:

1. DELTA-T RECORDED FOR LOOP A, TI-412A ON VPA
2. DELTA-T RECORDED FOR LOOP B, TI-422A ON VPA
3. DELTA-T RECORDED FOR LOOP C, TI-432A ON VPA
4. AN AVERAGE DELTA-T CALCULATED AND RECORDED ON ATTACHMENT
5. REACTOR POWER DETERMINED FROM SIMULATOR MOL PLANT CURVE BOOK USING AVERAGE DELTA-T ~54.3
6. "CALORIMETRIC TO PLANT CURVE BOOK" CORRECTION FACTOR CALCULATED 100.3-101.1
7. DETERMINED IF CORRECTION FACTOR IS 2% OR LESS ~-0.8%

EVALUATOR'S NOTES:

Student should identify that acceptance criterion of 2% or less is met.

Tell student that the JPM is complete.

7.0 PROCEDURE

NOTES

- *Calorimetric not required when reactor power is less than 15 percent.*
- *Perform Step 7.1.3 or 7.1.4*
- *Reactor Engineering normally performs this section, except on weekends and holidays. It remains the RCO's responsibility to ensure it is performed as required.*

7.1 Thermal Calibration and Shift Check of NIS

7.1.1 Obtain permission from the NPS to perform this test.

7.1.2 Check the plant conditions specified in Subsection 3.2.

How to do this?

7.1.3 Perform a computer calorimetric as follows using Attachment 1, 2, or 3, Thermal Calibration and Shift Check of NIS:

1. Verify the minimum instrumentation required by Subsection 3.1 is operable.

NOTE

If the minimum instrumentation required by Substep 7.1.3.1 is not operable, Substep 7.1.3.3 cannot be completed.

2. **IF** Subsection 3.1 is not met, **THEN** perform Step 7.1.4, Manual Calorimetric.

3. Perform the following using the ERDADS:

   a. Run the ERDADS Program CAL.

   b. Obtain a printout of the CAL data, titled Calorimetric Measurement for record retention with Attachments 1, 2 and 3, affix to Remarks Section.

4. Perform actions specified in Attachments.

5. Verify all log entries specified in Subsection 2.2 have been recorded.

NOTE

Manual Calorimetric - Perform when one or more DDPS channels required to run the CAL program are not available, channels that are available may be used for data.

7.1.4 Perform the following using Attachment 4, Manual Calibration of the NIS:

NOTE

Attachment 4 provides optional instruments and techniques for performing the required surveillance. These options are provided to accommodate various plant conditions and instrument availability. Where options have been provided, either may be used with the other marked N/A.

1. Perform actions specified in Attachment 4.
2. Verify all log entries specified in Subsection 2.2 have been recorded.

END OF TEXT

ATTACHMENT 1
(Page 1 of 3)
THERMAL CALIBRATION AND MID SHIFT CHECK OF NIS

DATE:	TIME:

NOTES

- *The intent of Step 1 is to ensure conservatism and consistency. Tavg and Tref should be recorded to two decimal precision.*
- *Tavg, reactor power and/or Turbine load may be adjusted to satisfy the conditions of Step 2.*

1. ____________ °F - ____________ °F = ____________
   Tavg Tref
2. Is Step 1 between 0.00 and 0.25 °F: ☐ YES ☐ NO IF NO, THEN explain in the Remarks Section.
3. Record the Reactor Power as indicated by NIS panel AND the DDPS Cal Program, to two decimal precision, where indicated below AND complete the calculations:

   ____________ % - ____________ % = ____________ percent meter correction
   N-41A Calorimetric Power

   ____________ % - ____________ % = ____________ percent meter correction
   N-42A Calorimetric Power

   ____________ % - ____________ % = ____________ percent meter correction
   N-43A Calorimetric Power

   ____________ % - ____________ % = ____________ percent meter correction
   N-44A Calorimetric Power
4. Acceptance Criteria

NOTES

- *Power range gains should be adjusted when the percent meter correction is ≥ plus or minus 0.5.*
- *The NPS may authorize adjustment of the power range gain to match the calorimetric power, even if the acceptance criterion is met.*
- *Calorimetric measurements taken below 70 percent power are typically less accurate than full power measurements. Meter adjustments in the nonconservative (down) direction are not recommended or required to maintain the 2 percent maximum deviation from NIS to Calorimetric.*
- *Calorimetric measurements taken below 70 percent power resulting in an adjustment to the NIS Power Range Channel(s) shall be recorded on Attachment 6 to ensure that the cumulative effect of multiple adjustments do not exceed allowable limits.*

Check the applicable criterion.

☐ For Reactor Power ≥ 90%, each Meter Correction is ≤ plus or minus one 1%.
☐ For Reactor Power < 90%, and ≥ 70%, each Meter Correction is ≤ plus or minus 2%.
☐ For Reactor Power < 70%, each Meter Correction shall be ≤ minus 2% and should be ≤ plus 2%.

Results Satisfactory: ☐ YES ☐ NO ______________________________ ____________
Signature *Date*

ATTACHMENT 1
(Page 2 of 3)

THERMAL CALIBRATION AND MID SHIFT CHECK OF NIS

(5) **IF** acceptance criterion is not met, **THEN** perform the following:

a. Obtain permission from NPS to adjust power range gains.

b. Adjust the power range gains according to Attachment 5.

> **NOTE**
>
> *DDPS data from all 3 loops or VPA data from all 3 loops must be available to calculate an average ΔT. If all 3 loops are not available, N/A Steps 6 and 7.*

(6) Record the following data:

a. 5 MIN AVG ΔT LOOP A, DLTA5MAV-3 ______°F

5 MIN AVG ΔT LOOP B, DLTB5MAV-3 ______°F

5 MIN AVG ΔT LOOP C, DLTC5MAV-3 ______°F

OR

VPA, TI-3-412A ______°F

VPA, TI-3-422A ______°F

VPA, TI-3-432A ______°F

Not Provided

b. Calculate an Average ΔT from data in 6a

AVG ΔT ______°F

c. Determine Reactor Power from Plant Curve Book, Section 1, Figure 1, using AVG ΔT in Step 6b.

Reactor Power = ____________ x ____________ - ____________ = ____________ %
Slope Avg ΔT Intercept

d. Calculate a calorimetric to Plant Curve Book Correction Factor:

(Calorimetric Reactor Power, Step 3) - (Figure 1, Reactor Power, Step 6c) =
(____ percent) - (____ percent) = ____ percent Correction Factor

(7) **IF** the calorimetric to Plant Curve Book correction factor determined in Step 6d exceeds 2 percent, **THEN** recheck the instrument readings in Step 6a and re-evaluate the calculations.

a. **IF** the correction factor still exceeds 2 percent, **THEN** notify Reactor Engineering.

What do they Really use?

JPM STUDENT IC SHEET

ADDED Per R.✓
NO Procedures!

INITIAL CONDITIONS:

1. A STARTUP IS PLANNED ON THE ONCOMING SHIFT.
2. ONE RCO MUST BE HELD OVER 2 HOURS FOR THE STARTUP.
3. THE FOLLOWING IS THE WORK HISTORY (EXCLUDING SHIFT TURNOVER TIME) OF THE THREE OPERATORS ON SHIFT:

Need Time card
for Print
Computer sheet
5

Day	1	2	3	4	5	6	7	8 (today)
Operator #1	0	0	12	12	12	8	14	10
Operator #2	0	0	12	12	12	12	8	14
Operator #3	0	0	12	12	12	8	8	15
Operator #4	0	8	12	10	10	8	10	12
Operator #5	0	4	12	10	10	14	10	12

4. A BREAK OF AT LEAST 8 HOURS OCCURED BETWEEN ALL WORK PERIODS.
5. ALL OPERATORS BEGAN THEIR SCHEDULE AT THE SAME TIME EACH DAY.

INITIATING CUE:

YOU ARE THE NWE AND YOU MUST DETERMINE WHICH OPERATOR(S) ARE ELIGIBLE TO BE HELD OVER 2 HOURS FOR THE STARTUP.

Validated?

What is this?

JOB CLASSIFICATION: NUCLEAR WATCH ENGINEER

JPM TITLE: IDENTIFY OVERTIME ELIGABILITY

JPM NUMBER: 03201027101 JPM TYPE: NORMAL PATH

NUCLEAR SAFETY IMPORTANCE: 1.67 COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 0 MINUTES 10 JPM REV. DT.: 08/03/99

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM:__X___ SIMULATE:_____ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

1. INDIVIDUAL SELECTED MUST NOT EXCEED ANY OF THE FOLLOWING "HOURS WORKED" RESTRICTIONS:
   A. > 16 HOURS IN A 24 HOUR PERIOD
   B. > 24 HOURS IN A 48 HOUR PERIOD
   C. > 72 HOURS IN ANY 7 DAY PERIOD

REQUIRED MATERIALS:

NONE

REFERENCES:

1. 0-ADM-200, CONDUCT OF OPERATIONS
2. 0-ADM-018, FITNESS FOR DUTY: CALL-OUT OF PERSONNEL, AND REPORTABILITY

Do they have a callout form that should be completed?

TS not referenced

TERMINATING CUES:

ELIGIBLE INDIVIDUAL(S) IDENTIFIED.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. A STARTUP IS PLANNED ON THE ONCOMING SHIFT.
2. ONE RCO MUST BE HELD OVER 2 HOURS FOR THE STARTUP.
3. THE FOLLOWING IS THE WORK HISTORY (EXCLUDING SHIFT TURNOVER TIME) OF THE THREE OPERATORS ON SHIFT:

What form
is the req'd
in WP ON?

Day	1	2	3	4	5	6	7	8 (today)
Operator #1	0	0	12	12	12	8	14	10
Operator #2	0	0	12	12	12	12	8	14
Operator #3	0	0	12	12	12	8	8	15
Operator #4	0	8	12	10	10	8	10	12
Operator #5	0	4	12	10	10	14	10	12

4. A BREAK OF AT LEAST 8 HOURS OCCURED BETWEEN ALL WORK PERIODS.
5. ALL OPERATORS BEGAN THEIR SCHEDULE AT THE SAME TIME EACH DAY.

INITIATING CUE:

YOU ARE THE NWE AND YOU MUST DETERMINE WHICH OPERATOR(S) ARE ELIGIBLE TO BE HELD OVER 2 HOURS FOR THE STARTUP.

and why others are NOT eligible —
make more challenging

( ) ELEMENT: 1

COMPARE HOURS WORKED TO REQUIREMENTS.

STANDARDS:

1. VERIFIED THAT THE AVAILABLE OVERTIME WOULD NOT CAUSE THE INDIVIDUALS TO EXCEED ANY OF THE FOLLOWING "HOURS WORKED" RESTRICTIONS:
   A. > 16 HOURS IN A 24 HOUR PERIOD
   B. > 24 HOURS IN A 48 HOUR PERIOD
   C. > 72 HOURS IN ANY 7 DAY PERIOD

EVALUATOR'S NOTES:

(C) ELEMENT: 2

DETERMINE ELIGIBLE INDIVIDUAL TO FILL SHIFT VACANCY.

STANDARDS:

1. IDENTIFIED OPERATORS #2 AND #4 AS THE ONLY OPERATORS THAT WOULD NOT EXCEED LIMITS.

EVALUATOR'S NOTES:

NOTE: Operator 1 is not eligible because the additional 2 hours would exceed 24 hours in 48.
Operator 3 is not eligible because the additional 2 hours would exceed 16 hours in 24.
Operator 5 is not eligible because the additional 2 hours would exceed 72 hours in 7 days.

Tell the operator that the JPM is completed.

Do they
Just Tell the
Examinee the
Answer - or Do
they Complete a
form to Callout?

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 1 AT 100% POWER.
2. ALL FOUR (4) NIS POWER RANGES ARE IN SERVICE.

INITIATING CUE

YOU ARE THE RCO AND THE ANPS HAS DIRECTED YOU TO DETERMINE THE QUADRANT POWER TILT RATIO (QPTR) USING EXCORE DETECTOR CURRENTS.

Routine activity!

JOB PERFORMANCE MEASURE WORKSHEET-JPM # 01059006200

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: DETERMINE QUADRANT POWER TILT RATIO (QPTR)

JPM NUMBER: 01059006200 JPM TYPE: NORMAL PATH

JPM REV. DATE: 05/14/99

NUCLEAR SAFETY IMPORTANCE: 2.00

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE:_____ DISCUSS:_____

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

1. RESET TO IC-1

Rene 8 #7

TASK STANDARDS:

1. UPPER AND LOWER DETECTOR CURRENTS RECORDED IN THE APPROPRIATE SECTION OF ATTACHMENT 1 OF THE PROCEDURE.
2. 100% POWER CURRENT VALUES OBTAINED AND RECORDED IN THE APPROPRIATE SECTION OF ATTACHMENT 1 OF THE PROCEDURE.
3. UPPER AND LOWER SECTION NORMALIZED CURRENT VALUES ARE CALCULATED AND RECORDED IN THE APPROPRIATE SECTION OF ATTACHMENT 1 OF THE PROCEDURE.
4. UPPER AND LOWER SECTION NORMALIZED AVERAGE CALCULATED AND RECORDED IN THE APPROPRIATE SECTION OF ATTACHMENT 1 OF THE PROCEDURE.
5. UPPER AND LOWER SECTION TILT RATIOS CALCULATED AND RECORDED IN THE APPROPRIATE SECTION OF ATTACHMENT 1 OF THE PROCEDURE.
6. HIGHEST SECTION QUADRANT POWER TILT RATIO (QPTR) DETERMINED.

JOB PERFORMANCE MEASURE WORKSHEET-JPM # 01059006200

REQUIRED MATERIALS:

1. 3-OSP-059.10
2. PLANT CURVE BOOK

Calculator ?

REFERENCES:

1. 3-OSP-059.10, DETERMINATION OF QUADRANT POWER TILT RATIO

TERMINATING CUES:

NIS QUADRANT POWER TILT RATIO (QPTR) HAS BEEN DETERMINED.

JOB PERFORMANCE MEASURE WORKSHEET-JPM # 01059006200

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 1 AT 100% POWER.
2. ~~ALL FOUR (4) NIS POWER RANGES ARE IN SERVICE.~~

why Tell them this?

let operator figure this out?

INITIATING CUES:

YOU ARE THE RCO AND THE ANPS HAS DIRECTED YOU TO DETERMINE THE QUADRANT POWER TILT RATIO (QPTR) USING EXCORE DETECTOR CURRENTS

EVALUATOR'S NOTES:

NOTE: Provide the operator with access to the MOL Plant Curve Book.

in Simulator?

What do they use in MCR?

Not in #1

( ) **ELEMENT: 1**

OBTAIN THE REQUIRED MATERIALS.

STANDARDS:

__1. 3-OSP-059.10 HAS BEEN OBTAINED AND CHECKED AGAINST THE OTSC INDEX.

Temp changes?

CUE: ***When the need to check for OTSCs is recognized, tell the operator, "There are no outstanding OTSCs on 3-OSP-059.10."***

__2. OBTAINED PLANT CURVE BOOK.

EVALUATOR'S NOTES:

NOTE: Provide the operator with a copy of the procedure once it has been identified.

Is this Temp changes?

Note: The Operator will not be able to check for OTSCs in the simulator in the usual manner.

Why not? / How do they check in MCR

Where did these numbers come from ?

(C) **ELEMENT: 2**

RECORD THE POWER RANGE DETECTOR CURRENTS.

STANDARDS:

C 1. REVIEWED NOTES PRIOR TO STEP 7.1.

C 2. ENTERED INFORMATION INTO ATTACHMENT 1 STEP 1. [Step 7.1.1]

C 3. UPPER AND LOWER DETECTOR CURRENTS FOR CHANNELS N-41 THRU N-44 HAVE BEEN RECORDED IN THE APPLICABLE SECTION OF ATTACHMENT 1. [Step 7.1.1 & Att. 1, Step 2]

EVALUATOR'S NOTES:

NOTE: Standards 1 & 2 are not critical to this element.

NOTE: Allowed meter reading error of +/- 2

Will meter scale support this ?

SIMULATOR VALUES: (Det A = Upper, Det B = Lower)

		Actual / Normal
N-41	Det A	201 - 205 / 205 = .98049 -> 1.00000
	Det B	167 - 172 / 169 = .98817 -> 1.01775
N-42	Det A	152 - 156 / 155 = .98065 -> 1.00645
	Det B	158 - 162 / 160 = .98750 -> 1.01250
N-43	Det A	151 - 155 / 154 = .98052 -> 1.00649
	Det B	124 - 128 / 127 = .97638 -> 1.00787
N-44	Det A	181 - 185 / 184 = .98370 -> 1.00543
	Det B	164 - 168 / 167 = .98204 -> 1.00599

(C) ELEMENT: 3

RECORD 100% POWER CURRENT VALUES.
[Step 7.1.2, Step 7.1.3 & Att 1, Step 2]

STANDARDS:

__1. 100% DETECTOR CURRENT VALUES FROM THE PLANT CURVE BOOK HAVE BEEN RECORDED IN APPLICABLE SECTION OF ATTACHMENT 1.

EVALUATOR'S NOTES:

NOTE: See element 2 notes and ensure operator uses MOL simulator plant curve.

why
who normally
knows this
what does the
MCR use?

Let them
CAll
Core Eng.!

(C) ELEMENT: 4

CALCULATE UPPER AND LOWER SECTION NORMALIZED CURRENT VALUES
[Step 7.1.4 and Att 1, Step 2]

STANDARDS:

__1. DIVIDED EACH DETECTOR CURRENT BY ITS ASSOCIATED 100% POWER CURRENT VALUE.

__2. RECORDED NORMALIZED CURRENT VALUES IN THE APPROPRIATE SECTION OF ATTACHMENT 1.

EVALUATOR'S NOTES:

NOTE: See element 2 notes.

(C) **ELEMENT: 5**

CALCULATE UPPER AND LOWER SECTIONS NORMALIZED AVERAGE POWER. [Step 7.1.4 & Att 1, Step 3]

STANDARDS:

What criteria?

__1. ADDED ALL UPPER SECTION NORMALIZED DETECTOR CURRENTS.

__2. ADDED ALL LOWER SECTION NORMALIZED DETECTOR CURRENTS.

__3. DIVIDED UPPER SECTION TOTAL NORMALIZED CURRENT BY THE NUMBER OF DETECTORS IN SERVICE.

__4. DIVIDED LOWER SECTION TOTAL NORMALIZED CURRENT BY THE NUMBER OF DETECTORS IN SERVICE.

__5. ALL CALCULATED VALUES RECORDED IN THE APPLICABLE SECTION OF ATTACHMENT 1.

EVALUATOR'S NOTES:

SIMULATOR VALUES:

Upper Detector Normalized Current Sum
(Lower range) .98049 + .98065 + .98052 + .98370 = 3.92536
(Worst case) .98049 + .98065 + 1.00649 + .98370 = 3.97306
(Upper range) 1.00000 + 1.00645 + 1.00649 + 1.00543 = 4.01837

Lower Detector Normalized Current Sum
(Lower range) .98817 + .98750 + .97638 + .98204 = 3.93409
(Worst case) 1.01775 + .98750 + .97638 + .98204 = 3.96367
(Upper range) 1.01775 + 1.01250 + 1.00787 + 1.00599 = 4.04411

Upper Detector Normalized Power
(Lower range) 3.92536/4 = .98134
(Worst case) 3.97306/4 = .99327
(Upper range) 4.01837/4 = 1.00459

Lower Detector Normalized Power
(Lower range) 3.93409/4 = .98352
(Worst case) 3.96367/4 = .99092
(Upper range) 4.04411/4 = 1.01103

(C) **ELEMENT: 6**

CALCULATE UPPER AND LOWER SECTION TILT RATIOS.
[Step 7.1.4 & Att 1, Step 4]

STANDARDS:

__1. DETERMINED THE LARGEST UPPER SECTION NORMALIZED DETECTOR CURRENT.

__2. DIVIDED THE LARGEST UPPER SECTION NORMALIZED CURRENT BY THE AVERAGE UPPER SECTION NORMALIZED POWER.

__3. DETERMINE THE LARGEST LOWER SECTION NORMALIZED DETECTOR CURRENT.

__4. DIVIDED THE LARGEST LOWER SECTION NORMALIZED CURRENT BY THE AVERAGE LOWER SECTION NORMALIZED POWER.

__5. RECORDED RATIOS IN THE APPROPRIATE SECTION OF ATTACHMENT 1.

What're Criteria?

EVALUATOR'S NOTES:

<u>Upper Detector QPTR</u>
(Lower range) .98370/.98134 = 1.00240
(Worst case) 1.00649/.99327 = 1.01331
(Upper range) 1.00649/1.00459 = 1.00189

<u>Lower Detector QPTR</u>
(Lower range) .98817/.98352 = 1.00473
(Worst case) 1.01775/.99092 = 1.02708
(Upper range) 1.01775/1.01103 = 1.00665

What is Conservative? Meaning - what is passing

(C) **ELEMENT: 7**

DETERMINE TECH SPEC 3.2.4 COMPLIANCE

STANDARDS:

Not C 1. RECORDED HIGHEST SECTION QPTR AS THE ACTUAL NIS QPTR VALUE IN ATTACHMENT 1, STEP 5.

Ⓒ 2. CIRCLED "YES" OR "NO" TO INDICATE IF NIS QPTR IS LESS THAN OR EQUAL TO 1.02 (TS 3.2.4). [Att 1, Step 6] +/- ?

Not C 3. ENTERED NAME, DATE, AND TIME IN ATTACHMENT 1, STEP 6.

EVALUATOR'S NOTES:

NOTE: Standard 3 is not critical to this element.

1. DEPENDS ON VALUES SELECTED
2. DEPENDS ON VALUES SELECTED

Tell the operator that the JPM is completed.

What will change if None

Could trip 1 instrument OOS operator at none point,

7.0 PROCEDURE

None 'OOS?'

NOTES

- *At least three power range nuclear instrumentation channels must be in service to calculate QPTR using excore detectors.*
- *If only three excore NIS channels are in service, Subsections 7.1 and 7.3 or Subsections 7.2 and 7.3 shall be performed. (N/A for Incore Thermocouple QPTR when RTP is less than 75 percent)*
- *If only 3 excore NIS channels are in service, and reactor power is greater than or equal to 75 percent, Subsections 7.1 and 7.3, or Subsections 7.2 and 7.3 shall be performed within 12 hours.*
- *Tech Spec 3.0.2 applies to this procedure if either:*
  - *(a) The one power range nuclear instrumentation detector declared out of service, or*
  - *(b) Annunciator B 2/2 - POWER RANGE UPPER DET HI FLUX DEV/AUTO DEFEAT or Annunciator B 2/3 - POWER RANGE LOWER DET HI FLUX DEV/AUTO DEFEAT declared out of service.*

  Is returned to service within the specified time interval of Tech Spec 3/4.2.4, completion of the ACTION requirements of Tech Spec is NOT required.
- *If reactor power is greater than or equal to 75 percent and the 1 power range nuclear instrument detector declared out of service in Subsection 4.6 is declared back in service within 12 hours, the actions of Subsection 4.6 do NOT apply.*

7.1 Determine NIS QPTR using ATTACHMENT 1 as follows:

7.1.1 Read and record the top and bottom detector current for all in service power range nuclear instrumentation channels (meter face).

7.1.2 Record the 100 percent power current values for each in service power range nuclear instrumentation detector.

7.1.3 Refer to plant curve book for the 100 percent power current values.

7.1.4 Complete calculations on Attachment 1.

7.1.5 **IF** QPTR is treater than 2.0 percent, **THEN** perform Subsection 7.2.

ATTACHMENT 1

(Page 1 of 2)

DETERMINATION OF NIS QPTR USING EXCORE DETECTOR CURRENTS

1. Date: 5/24/99 Time 1634 Initials:

2. Determination normalized detector currents:

Upper Section Normalized Detector Currents			
N41 Top Current	=	200 micro amps	= .9756
100 Percent Top Current		205 micro amps	
N42 Top Current	=	155 micro amps	= 1.0
100 Percent Top Current		155 micro amps	
N43 Top Current	=	154 micro amps	= 1.0
100 Percent Top Current		154 micro amps	
N44 Top Current	=	184 micro amps	= 1.0
100 Percent Top Current		184 micro amps	
Upper Section Normalized Current Total			= 3.9756

Lower Section Normalized Detector Currents			
N41 Bottom Current	=	170 micro amps	= 1.0059
100 Percent Bottom Current		169 micro amps	
N42 Bottom Current	=	160 micro amps	= 1.0
100 Percent Bottom Current		160 micro amps	
N43 Bottom Current	=	126 micro amps	= .9921
100 Percent Bottom Current		127 micro amps	
N44 Bottom Current	=	167 micro amps	= 1.0
100 Percent Bottom Current		167 micro amps	
Lower Section Normalized Current Total			= 3.998

ATTACHMENT 1
(Page 2 of 2)

DETERMINATION OF NIS QPTR USING EXCORE DETECTOR CURRENTS

3. Determination average normalized power:

Average Upper Section Normalized Power

$$\frac{\text{Upper Section Normalized Current Total}}{\text{Upper detectors used (3 or 4)}} = \frac{3.9756}{4} = .9939$$

Average Lower Section Normalized Power

$$\frac{\text{Lower Section Normalized Current Total}}{\text{Lower detectors used (3 or 4)}} = \frac{3.998}{4} = .9995$$

4. Determine QPTR:

Upper Section Tilt Ratio

$$\frac{\text{Largest Upper Section Normalized Detector Current}}{\text{Average Upper Section Normalized Power}} = \frac{1.0}{.9939} = 1.00614$$

Lower Section Tilt Ratio

$$\frac{\text{Largest Lower Section Normalized Detector Current}}{\text{Average Lower Section Normalized Power}} = \frac{1.0059}{.9995} = 1.00640$$

5. NIS QPTR = highest Section QPTR = 1.006

6. NIS QPTR is less than or equal to 1.02 [TS 3.2.4] (Circle one): NO [✓ YES]

Performed by: ______________ Date: 5/24/99 Time: 639

Reviewed by: ______________

Approved by: ______________
(NPS or ANPS)

/JBS/ld/lr/lr

JPM STUDENT IC SHEET

RO

INITIAL CONDITIONS:

1. THE UNIT 3 ANPS HAS REVIEWED A CLEARANCE REQUEST ON THE LP HEATERS BYPASS VALVE, CV-3-2011.
2. THE CLEARANCE REQUEST HAS BEEN GIVEN TO THE ADMIN RCO WITH DIRECTIONS TO RESEARCH AND WRITE A CLEARANCE ORDER.
3. PCON IS NOT AVAILABLE FOR CLEARANCE RESEARCH AND PREPARATION.

INITIATING CUE:

YOU ARE THE ADMIN RCO AND YOU HAVE BEEN DIRECTED TO RESEARCH AND WRITE A CLEARANCE ORDER TO MECHANICAL MAINTENANCE ON CV-3-2011 TO REPAIR A BODY TO BONNET LEAK.

NO value to Test

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01201013100

JOB CLASSIFICATION: RCO

JPM TITLE: WRITE EQUIPMENT CLEARANCE ORDERS

JPM NUMBER: 01201013100 JPM TYPE: NORMAL PATH
JPM REV. DATE: 06/10/99

NUCLEAR SAFETY IMPORTANCE: 3.00

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE:_____ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

1. THE CLEARANCE ORDER IS RESEARCHED.
2. THE REQUIRED CLEARANCE INFORMATION IS ENTERED ON THE CLEARANCE ORDER FORM.

REQUIRED MATERIALS:

1. 0-ADM-212, IN-PLANT EQUIPMENT CLEARANCE ORDERS
2. ACCESS TO PLANT P&IDs
3. BLANK CLEARANCE ORDER FORM

REFERENCES:

1. 0-ADM-212, IN-PLANT EQUIPMENT CLEARANCE ORDERS

TERMINATING CUES:

THE CLEARANCE ORDER FORM IS COMPLETED.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. THE UNIT 3 ANPS HAS REVIEWED A CLEARANCE REQUEST ON THE LP HEATERS BYPASS VALVE, CV-3-2011.
2. THE CLEARANCE REQUEST HAS BEEN GIVEN TO THE ADMIN RCO WITH DIRECTIONS TO RESEARCH AND WRITE A CLEARANCE ORDER.
3. PCON IS NOT AVAILABLE FOR CLEARANCE RESEARCH AND PREPARATION.

What is this?

INITIATING CUES:

YOU ARE THE ADMIN RCO AND YOU HAVE BEEN DIRECTED TO RESEARCH AND WRITE A CLEARANCE ORDER TO MECHANICAL MAINTENANCE ON CV-3-2011 TO REPAIR A BODY TO BONNET LEAK.

Need to Clarify Re Zone Removal in Attach 6

ADD and replace the Valve Operator

( ) **ELEMENT: 1**

RESEARCH THE CLEARANCE ORDER.

STANDARDS:

__1. REVIEWED P&ID 5613-M-3073, SH.2.

EVALUATOR'S NOTES:

None

What is Criteria?

(C) **ELEMENT: 2**

ENTER INLET ISOLATION VALVE ON CLEARANCE ORDER FORM.

STANDARDS:

__1. ENTERED THE ISSUING STEP NUMBER.

__2. SEQUENTIALLY ENTERED THE CLEARANCE TAG NUMBER.

__3. ENTERED THE COMPONENT ID NUMBER: 3-20-300.

__4. ENTERED THE COMPONENT NAME: "ISOLATION VALVE, CONDENSATE TO FW PUMP SUCTION CV-2011."

__5. ENTERED THE REQUIRED POSITION OF THE COMPONENT: "CLOSED."

EVALUATOR'S NOTES:

NOTE 1: Steps can be done in any order.

NOTE 2: The exact wording shown for the component name is not critical.

(C) **ELEMENT: 3**

ENTER OUTLET ISOLATION VALVE.

What is entered?

STANDARDS:

__1. ENTERED THE ISSUING STEP NUMBER.

__2. SEQUENTIALLY ENTERED THE CLEARANCE TAG NUMBER.

__3. ENTERED THE COMPONENT ID NUMBER WAS ENTERED: 3-20-301.

__4. ENTERED THE COMPONENT NAME WAS ENTERED: "ISOLATION VALVE, CONDENSATE TO FW PUMP SUCTION CV-2011."

__5. ENTERED THE REQUIRED POSITION OF THE COMPONENT: "CLOSED."

EVALUATOR'S NOTES:

NOTE 1: Steps can be done in any order.

NOTE 2: The exact wording shown for the component name is not critical.

(C) **ELEMENT: 4**

ENTER DRAIN VALVE.

What is critical?

STANDARDS:

__1. ENTERED THE ISSUING STEP NUMBER.

__2. SEQUENTLY ENTERED THE CLEARANCE TAG NUMBER.

__3. ENTERED THE COMPONENT ID NUMBER: 3-20-302.

__4. ENTERED THE COMPONENT NAME: "DRAIN VALVE, CONDENSATE TO FW PUMP SUCTION TELLTALE."

__5. ENTERED THE REQUIRED POSITION OF THE COMPONENT: "OPEN."

or

EVALUATOR'S NOTES:

NOTE 1: Steps can be done in any order.

NOTE 2: Instructions for this valve may additionally be to throttle it. The critical issue is that it be opened to depressurize the line.

NOTE 3: The exact wording shown for the component name is not critical.

(C) **ELEMENT: 5**

ENTER INSTRUMENT AIR ISOLATION VALVE(S).

STANDARDS:

__1. ENTERED THE ISSUING STEP NUMBER.

__2. SEQUENTIALLY ENTERED THE CLEARANCE TAG NUMBER.

__3. ENTERED THE COMPONENT ID NUMBER: (3-40-637) OR (3-40-2129A AND 3-40-2129B).

__4. ENTERED THE COMPONENT NAME:"INST AIR TO CV-2011 ISOL VLV."

__5. ENTERED THE REQUIRED POSITION OF THE COMPONENT: "CLOSED."

What is critical?

EVALUATOR'S NOTES:

NOTE 1: Steps can be done in any order.

NOTE 2: Instrument air can be isolated by the root valve or by the two instrument valves...it is the clearance writers choice.

NOTE 3: The exact wording shown for the component name is not critical.

Not Critical

ELEMENT: 6

ENTER CONTROL FUSES.

STANDARDS:

__1. ENTERED THE ISSUING STEP NUMBER.

__2. SEQUENTIALLY ENTERED THE CLEARANCE TAG NUMBER.

__3. ENTERED THE COMPONENT ID NUMBER: (CV-3-2011-FUSES XGV).

__4. ENTERED THE COMPONENT NAME: "LP HEATER BYPASS VLV POWER SUPPLY FUSES."

__5. ENTERED THE REQUIRED POSITION OF THE COMPONENT: "REMOVE."

EVALUATOR'S NOTES:

NOTE: Steps can be done in any order.

NOTE: For a mechanical maintenance clearance, this is not critical because air is isolated. I&C will get the fuses when they remove the operator.

Inform the operator that this JPM is now completed.

Why would I&C remove fuses when clearance is hung? Why not Operators

ATTACHMENT 4 (Page 1 of 2)

CLEARANCE ORDER

Unit No. 03

Ind Verif Required (Y/N) Y

Clear.Order #	System #	Originator
3-99-05-085	073	RCO NAME HERE

Principal Equipment

CV-3-2011

Instructions

Issued By	IV'd By	Released By	IV'd By

Clearance Approval Signatures

Assistant Nuclear Plant Supv Ind Review/Authorization

____
(Signature)

Nuclear Plant Supervisor Authorization (Non-Outage) Notification (Outage)

____
(Signature)
(N/A if not Tech Spec or Safety related)

Safety Related ☐
Risk Significant ☐
Tech Spec Related ☐
Load Threatening ☐
Load Limiting ☐

Dept	Controller Acceptance	Date/Time	Controller Release	Date/Time
Ops				
Mech				
Elec				
I&C				
Const				
Tech				
Relay				
other				

ISSUING STEP	RELEASING STEP	TAG NUMBER	COMPONENT ID DESCRIPTION/INSTRUCTIONS	ISSUED ACTION REQUIRED	CDV	PERFORMED BY DATE/TIME INITIALS	IV'd BY DATE/TIME INITIALS	RELEASING ACTION REQUIRED	CDV	PERFORMED BY DATE/TIME INITIALS	IV'd BY DATE/TIME INITIALS
1		1	3-20-300 ISOLATION VALVE, CONDENSATE TO FW PUMP SUCTION CV-2011	CLOSE							
2		2	3-20-301 ISOLATION VALVE, CONDENSATE TO FW PUMP SUCTION CV-2011	CLOSE							
3		3	3-20-302 DRAIN VALVE, CONDENSATE TO FW PUMP SUCTION TELLTALE	OPEN							

ATTACHMENT 4
(Page 2 of 2)

Clearance #: 3-99-05-085

CLEARANCE ORDER

ISSUING STEP	RELEASING STEP	TAG NUMBER	COMPONENT ID DESCRIPTION/INSTRUCTIONS	ISSUED ACTION REQUIRED	CDV	PERFORMED BY DATE/TIME INITIALS	IV'd BY DATE/TIME INITIALS	RELEASING ACTION REQUIRED	CDV	PERFORMED BY DATE/TIME INITIALS	IV'd BY DATE/TIME INITIALS
4		4	3-40-637 INST AIR TO CV-2011 ISO VLV	CLOSE							
5		5	CV-3-2011-FUSES XGV LP HEATER BYPASS VLV POWER SUPPLY FUSES	REMOVE							
6		-	CV-3-2011 CONTROL SWITCH	HANG INFORMATION TAG							

Procedure NO:	Procedure Title:	Page: 70
O-ADM-212	In-Plant Equipment Clearance Orders	Approval Date: 08/26/97

ATTACHMENT 3 (Page 1 of 3)

CLEARANCE # ____________

CLEARANCE CONTROL FORM

CONTROLLER MECH. MAINT. **DEPT.** 01 **CONTROLLER ACCEPTANCE** ____________ **DATE** ________ **TIME** ________

UNIT NO. 3 **CONTROLLER RELEASE** ____________ **DATE** ________ **TIME** ________

Reason For Clearance: CV-3-2011 BODY TO BONNET LEAK

Suggested Clearance Boundary: ISOLATE AND DEPRESSURIZE
(i.e. Isolation Valves, Breakers, Vents/Drains)

Clearance is Requested By MECH **Date** 05/26/99 **Time** 4:07 pm

Duration of Clearance Expected To Be 0 **Hrs** 4 **Days**

SYSTEM # ____________ **CLEARANCE REQUEST #** 72396

No.	Work Order/ Permit No.	Component	Work to be Performed	Initial Complete
1.	99990001	CV-3-2011 LO PRESSURE HEATERS BYPASS CONTROL VALVE	REPAIR BODY TO BONNET LEAK	

<<< End of Form >>>

JPM STUDENT IC SHEET

Is this Valid for Operators

Do - they Have similar JPM?

SRO/

INITIAL CONDITIONS:

1. UNIT 3 HAS EXPERIENCED A VALID SAFETY INJECTION SIGNAL.

2. THE POST ACCIDENT HYDROGEN MONITOR HAS BEEN PLACED IN SERVICE PER 3-OP-094, SECTION 7.1 WITH THE EXCEPTION OF VALVES PAHM-3-002A AND PAHM-3-002B WHICH APPEAR TO HAVE BROKEN REACH RODS.

3. YOUR ALLOWABLE DOSE MARGIN IS 1850 MR.

4. A SURVEY MAP IS AVAILABLE OF THE 10 FT. ELEVATION, SHOWING DOSE RATES AND ONE WAY TRAVEL TIME TO REACH THE VALVES FOR EACH OF 3 POSSIBLE ROUTES.

5. HEALTH PHYSICS PERSONNEL ARE CURRENTLY UNAVAILABLE TO PROVIDE ASSISTANCE.

INITIATING CUE:

YOU HAVE BEEN DIRECTED TO DETERMINE:

1) WHICH PATH WOULD RESULT IN THE LOWEST RADIATION EXPOSURE.

2) IF PAHM-3-002A AND PAHM-3-002B CAN BE OPENED LOCALLY BY YOU WITHOUT EXCEEDING YOUR DOSE MARGIN LIMIT.

Where does this info come from?

JOB PERFORMANCE MEASURE/WORKSHEET-JPM #24094001510

SURVEY DATA:

Valves are located at Survey Map Area 'A'.
Estimated time at the valves: 2 minutes.
Dose rate at the valves: 12 R/hr.

Survey Map Area	Travel Time (min.)	Average Dose Rate (R/hr)
B	1	2
C	12	8
D	2	4
E	7	12
F	1	6
G	4	18

RESULTS:

Identify the Lowest Exposure Path:

______ #3 RHR Pits   ______ #4 RHR Pits   ______ West End

Can the Alignment be completed within your Dose Margin?

______ Yes   ______ NO

JOB PERFORMANCE MEASURE WORKSHEET-JPM #24094001510

JOB CLASSIFICATION: SNPO

JPM TITLE: PLACE UNIT 3 POST-ACCIDENT HYDROGEN MONITOR IN SERVICE

Title MisLeading

Assess Radiological Concerns To place

JPM NUMBER: 24094001510

JPM REV. DATE: 06/10/99

NUCLEAR SAFETY IMPORTANCE: 4.50

COMBINED IMPORTANCE: 4.50

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE:_____ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

DETERMINED THERE IS NO SUCCESS PATH FOR OPENING VALVES WITHOUT EXCEEDING DOSE MARGIN LIMITS.

REQUIRED MATERIALS:

1. 10 FOOT ELEVATION SURVEY MAP WITH ESTIMATED TRANSIT TIMES
2. CALCULATOR

REFERENCES:

NONE

TERMINATING CUES:

DETERMINED THERE IS NO SUCCESS PATH FOR OPENING VALVES.

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT 3 HAS EXPERIENCED A VALID SAFETY INJECTION SIGNAL.
2. THE POST ACCIDENT HYDROGEN MONITOR HAS BEEN PLACED IN SERVICE PER 3-OP-094, SECTION 7.1 WITH THE EXCEPTION OF VALVES PAHM-3-002A AND PAHM-3-002B WHICH APPEAR TO HAVE BROKEN REACH RODS.
3. YOUR ALLOWABLE DOSE MARGIN IS 1850 MR.
4. A SURVEY MAP IS AVAILABLE OF THE 10 FT. ELEVATION, SHOWING DOSE RATES AND ONE WAY TRAVEL TIME TO REACH THE VALVES FOR EACH OF 3 POSSIBLE ROUTES.
5. HEALTH PHYSICS PERSONNEL ARE CURRENTLY UNAVAILABLE TO PROVIDE ASSISTANCE.

INITIATING CUES:

YOU HAVE BEEN DIRECTED TO DETERMINE:

1) WHICH PATH WOULD RESULT IN THE LOWEST RADIATION EXPOSURE.

2) IF PAHM-3-002A AND PAHM-3-002B CAN BE OPENED LOCALLY BY YOU WITHOUT EXCEEDING YOUR DOSE MARGIN LIMIT.

Could see printout of Plant dose records - if normally posted

Where does this come from - HP - do ops use it - is this valid for ops?

What is normal dose info in MREM vs R?? / where posted

( ) **ELEMENT: 1**

CALCULATE EXPOSURE AT VALVE.

STANDARDS:

__1. (12 R/HR)(1000 MR/R)(1 HR/60 MIN)(2 MIN)= 400 MR

EVALUATOR'S NOTES:

NOTE: The operator may perform the calculations in any order.

( ) **ELEMENT: 2**

CALCULATE EXPOSURE FROM UNIT 4 RHR PITS.

STANDARDS:

__1. (6 R/HR)(1000 MR/R)(1 HR/60 MIN)(1 MIN)(2 TRIPS) = 200 MR.

__2. (18 R/HR)(1000 MR/R)(1 HR/60 MIN)(4 MIN)(2 TRIPS) = 2400 MR

__3. (200 MR)+(2400 MR)+(400 MR)= 3000 MR TOTAL DOSE.

EVALUATOR'S NOTES:

Note: Total exposure via this path including time at the valves: 3000 mr.

( ) ELEMENT: 3

CALCULATE EXPOSURE FROM UNIT 3 RHR PITS.

STANDARDS:

__1. (4 R/HR)(1000 MR/R)(1 HR/60 MIN)(2 MIN)(2 TRIPS) = 267 MR.

__2. (12 R/HR)(1000 MR/R)(1 HR/60 MIN)(7 MIN)(2 TRIPS) = 2800 MR

__3. (267 MR)+(2800 MR)+(400 MR)= 3467 MR TOTAL DOSE.

EVALUATOR'S NOTES:

Note: Total exposure via this path including time at the valves: 3467 mr

( ) ELEMENT: 4

CALCULATE EXPOSURE FROM PIPEWAY WEST END.

STANDARDS:

__1. (2 R/HR)(1000 MR/R)(1 HR/60 MIN)(1 MIN)(2 TRIPS) = 67 MR.

__2. (8 R/HR)(1000 MR/R)(1 HR/60 MIN)(12 MIN)(2 TRIPS) = 3200 MR.

__3. (67 MR)+(3200 MR)+(400 MR)= 3667 MR.

EVALUATOR'S NOTES:

Note: Total exposure via this path including time at the valves: 3667 mr.

(C) **ELEMENT: 5**

DETERMINE LOWEST EXPOSURE PATH.

STANDARDS:

__1. COMPARED RESULTS OF THREE CALCULATIONS AND DETERMINED THE PATH FROM UNIT 4 RHR PITS TO BE THE LOWEST EXPOSURE.

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 6**

COMPARE EXPOSURE TO MARGIN.

STANDARDS:

__1. COMPARED EXPOSURE TO MARGIN AND DETERMINED ALIGNMENT COULD NOT BE MADE WITHIN ALLOWABLE MARGIN OF 1850 MR.

EVALUATOR'S NOTES:

TERMINATE JPM AT THIS POINT

REV 1-1-94 LOCATION: 10' ELEVATION RADIOACTIVE PIPEWAY H.P. - 44:4

DATE ____________________

TIME ____________________

ECH ____________________

RWP # ____________________

POSTED AS FOLLOWS :

(R) RADIATION AREA
(H) HIGH RAD AREA
(L) LOCKED HIGH RAD AREA
(A) AIRBORNE AREA
(C) CONTAMINATED AREA
(M) RADIOACTIVE MATERIAL
( ) ____________________
(B) RESPIRATORY PRO. REQUIRED
(F) HOT PARTICLE AREA
(N) NOTIFY H.P. PRIOR TO ENTRY
(S) SURVEY METER REQUIRED
( ) ____________________
( ) ____________________

___ = GENERAL AREA DOSE RA (mrem/hr - D
★ = CONTACT DOSE RATE
○ = SMEAR LOCATION
△ = NEUTRON DOSE RATE (mrem/hr - D
□ = BETA DOSE RATE (mrem/hr - S
----- = RAD BOUNDARY
-o-o-o- = CONTAMINATION BOUNDARY

INSTRUMENT	SER. #

REVIEWED BY: ____________________

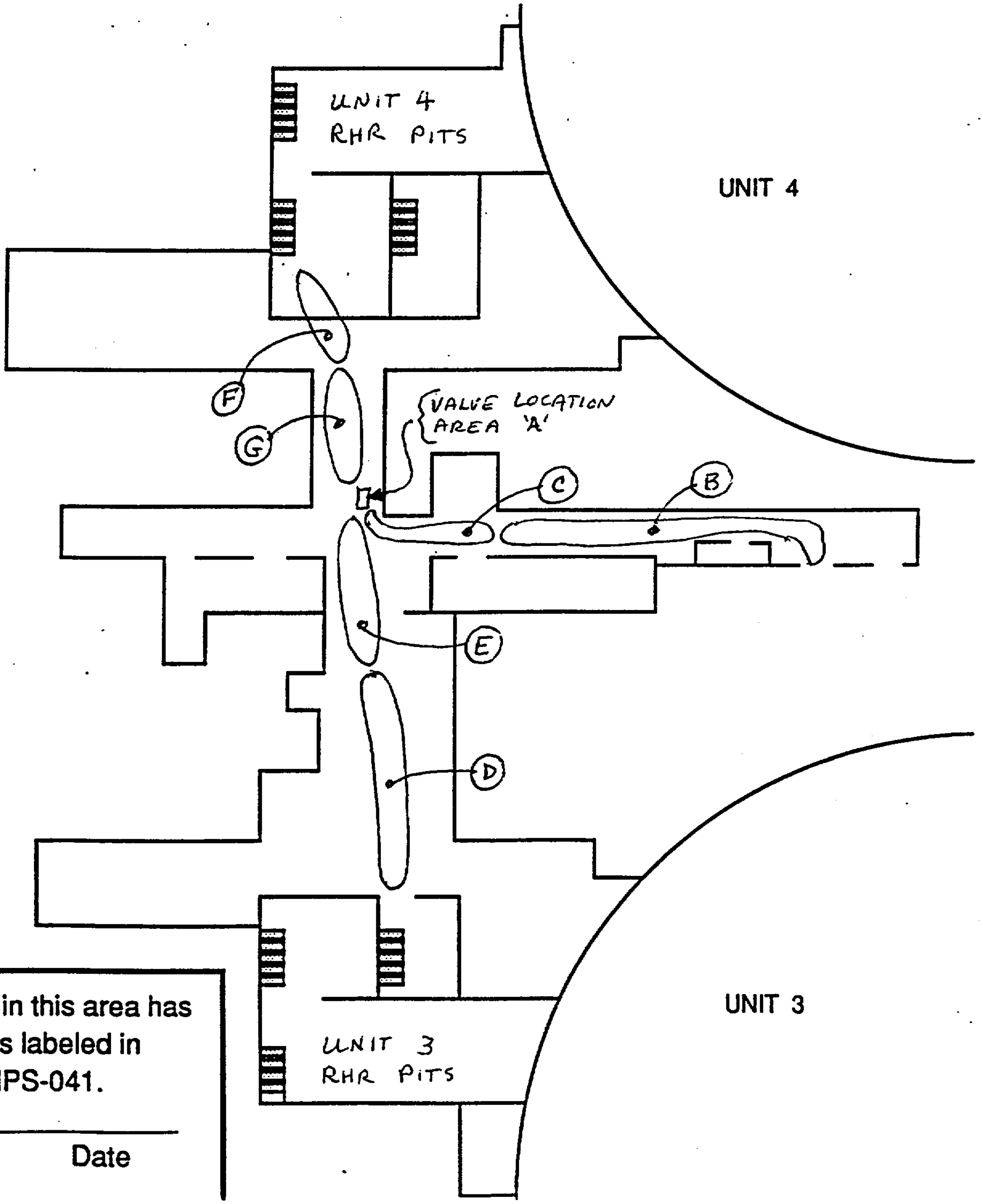
PAGE ___ of ___

SMEARS dpm/100 cm²

1____ 6____ 11____ 16____ 21____ 26____
2____ 7____ 12____ 17____ 22____ 27____
3____ 8____ 13____ 18____ 23____ 28____
4____ 9____ 14____ 19____ 24____ 29____
5____ 10____ 15____ 20____ 25____ 30____

REMARKS____________________

REFER TO LOCAL AREA POSTINGS FOR ADDITIONAL INFORMAT



Radioactive Material in this area has been inspected and is labeled in accordance with O-HPS-041.

____
HP Technician Date

REV 1-1-94

LOCATION: 10' ELEVATION RADIOACTIVE PIPEWAY

H.P. - 44:47

DATE ____________

TIME ____________

ECH ____________

RWP # ____________

POSTED AS FOLLOWS :

(R) RADIATION AREA
(H) HIGH RAD AREA
(L) LOCKED HIGH RAD AREA
(A) AIRBORNE AREA
(C) CONTAMINATED AREA
(M) RADIOACTIVE MATERIAL
( ) ____________
(B) RESPIRATORY PRO. REQUIRED
(F) HOT PARTICLE AREA
(N) NOTIFY H.P. PRIOR TO ENTRY
(S) SURVEY METER REQUIRED
( ) ____________
( ) ____________

___ = GENERAL AREA DOSE RATE (mrem/hr - DD
* = CONTACT DOSE RATE
○ = SMEAR LOCATION
△ = NEUTRON DOSE RATE (mrem/hr - DD
☐ = BETA DOSE RATE (mrem/hr - SD
----- = RAD BOUNDARY
-o-o-o- = CONTAMINATION BOUNDARY

INSTRUMENT	SER. #

REVIEWED BY: ____________

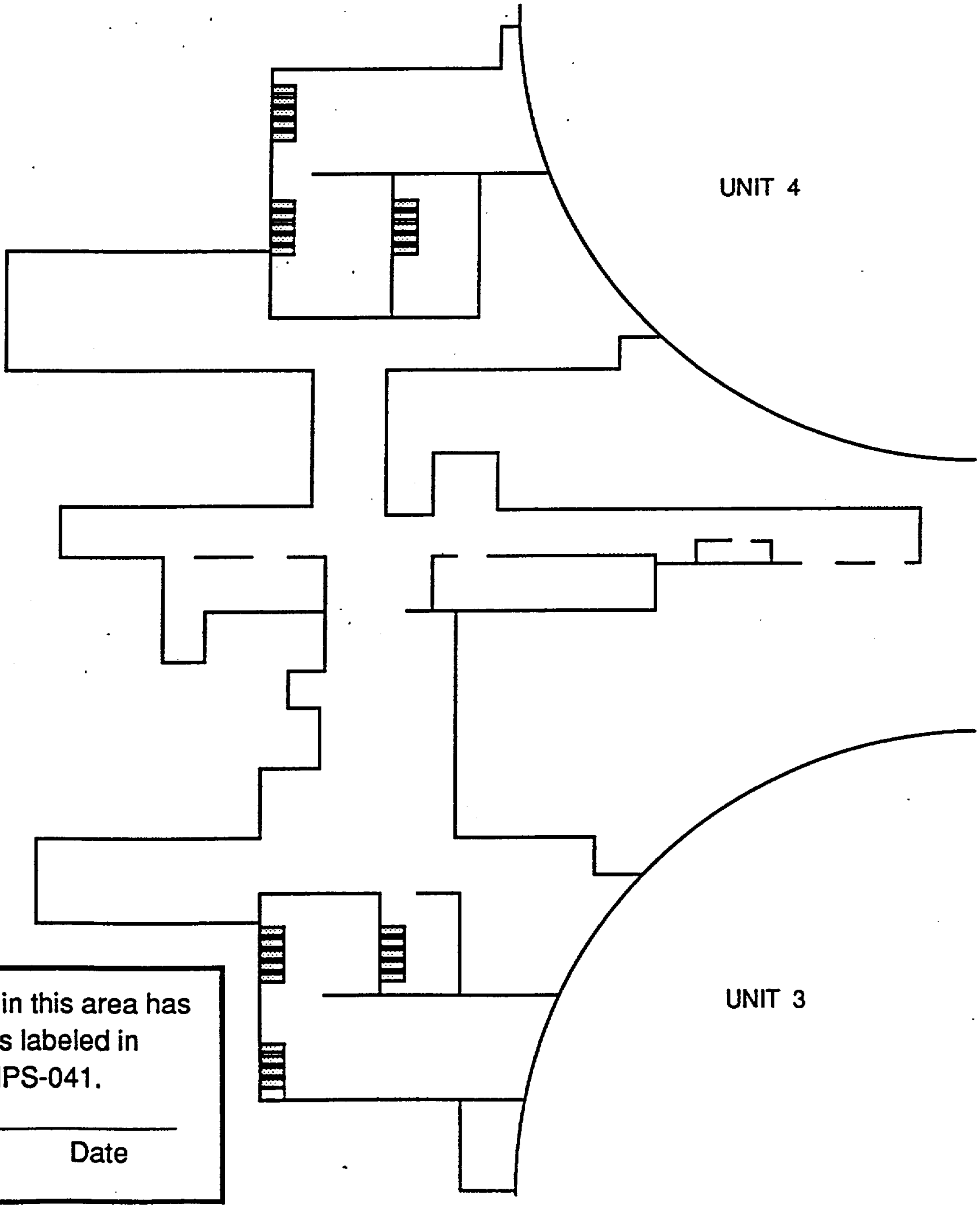
PAGE ____ of ____

SMEARS dpm/100 cm^2

1 ______ 6 ______ 11 ______ 16 ______ 21 ______ 26 ______
2 ______ 7 ______ 12 ______ 17 ______ 22 ______ 27 ______
3 ______ 8 ______ 13 ______ 18 ______ 23 ______ 28 ______
4 ______ 9 ______ 14 ______ 19 ______ 24 ______ 29 ______
5 ______ 10 15 20 25 30

REMARKS ____________

REFER TO LOCAL AREA POSTINGS FOR ADDITIONAL INFORMATI



Radioactive Material in this area has been inspected and is labeled in accordance with O-HPS-041.

____

HP Technician Date

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT 3 INITIALLY AT 100 % POWER.
2. A SMALL BREAK LOCA OCCURS, > 50 GPM LEAKAGE AND WITHIN CHARGING PUMP CAPACITY, AT 0700 ON 06/18/99.
3. THE NPS DECLARES AN ALERT AT 0710.
4. THE COMMUNICATOR STARTS TO FILL OUT THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM AT 0711.
5. THE NRC RESIDENT IS NOTIFIED OF THE EVENT AT 0713.
6. THE NPS/EC APPROVES THE STATE FORM AT 0720.
7. THE COMMUNICATOR CONTACTS/NOTIFIES THE STATE/COUNTIES AT 0722.
8. METEOROLOGICAL DATA IS AS FOLLOWS:

10 METER TOWER		SOUTH DADE TOWER	
WIND SPEED	10 MPH	WIND SPEED	12 MPH
WIND DIRECTION	218°	WIND DIRECTION	212°
SIGMA THETA	4.0°	DELTA T	-0.6

INITIATING CUE:

YOU ARE THE COMMUNICATOR AND YOU HAVE BEEN DIRECTED TO COMPLETE THE ATTACHED STATE OF FLORIDA NOTIFICATION MESSAGE FORM

Need to set
up simulator - to
Co obtain some -
data - with first

JOB PERFORMANCE MEASURE WORKSHEET-JPM #02001013401

SRO only?

JOB CLASSIFICATION: ANPS/NPS

JPM TITLE: MAKE EMERGENCY NOTIFICATIONS

JPM NUMBER:02001013401

JPM TYPE:

ALTERNATE PATH ?

TIME DEPENDENT ?

JPM REV. DT.:05/13/99

NUCLEAR SAFETY IMPORTANCE:4.33

COMBINED IMPORTANCE:4.33

TIME VALIDATION:10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE: _____ DISCUSS: _____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

STATE OF FLORIDA NOTIFICATION MESSAGE FORM COMPLETED

REQUIRED MATERIALS:

0-EPIP-20101, DUTIES OF EMERGENCY COORDINATOR

REFERENCES:

0-EPIP-20101, DUTIES OF EMERGENCY COORDINATOR

TERMINATING CUES:

COMPLETION OF REQUIRED FORMS

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

Why not let the Operator get the form?
Have a copy of Operator Logs with info

INITIAL CONDITIONS:

1. UNIT 3 INITIALLY AT 100 % POWER.
2. A SMALL BREAK LOCA OCCURS, > 50 GPM LEAKAGE AND WITHIN CHARGING PUMP CAPACITY, AT 0700 ON 06/18/99.
3. THE NPS DECLARES AN ALERT AT 0710.
4. THE COMMUNICATOR STARTS TO FILL OUT THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM AT 0711.
5. THE NRC RESIDENT IS NOTIFIED OF THE EVENT AT 0713.
6. THE NPS/EC APPROVES THE STATE FORM AT 0720.
7. THE COMMUNICATOR CONTACTS/NOTIFIES THE STATE/COUNTIES AT 0722.
8. METEOROLOGICAL DATA IS AS FOLLOWS:

10 METER TOWER		**SOUTH DADE TOWER**	
WIND SPEED	10 MPH	WIND SPEED	12 MPH
WIND DIRECTION	218°	WIND DIRECTION	212°
SIGMA THETA	4.0°	DELTA T	-0.6

INITIATING CUE:

YOU ARE THE COMMUNICATOR AND YOU HAVE BEEN DIRECTED TO COMPLETE THE ATTACHED STATE OF FLORIDA NOTIFICATION MESSAGE FORM

If Perf'd in simulator let operator get placard

EVALUATORS NOTE:

NOTE: A copy of the placard that is available in the control room is included with the procedure as a reference.

Unclear will this normally come from - Com th Operator aid doc?

(C) **ELEMENT: 1**

ENTER EVENT INFORMATION IN THE STATE OF FLORIDA NOTIFICATION FORM (ATT. 1)

STANDARDS:

1. CHECKED THE EMERGENCY BOX
2. ENTERED THE TIME AND DATE (0711/6-18-99) [Step 1A]
3. ENTERED THE NEXT SEQUENTIAL MESSAGE NUMBER [Step 1C]
4. CHECKED FROM CONTROL ROOM [Step 1D]
5. CHECKED TURKEY POINT UNIT 3 [Step 2]
6. CHECKED THE ACCIDENT CLASSIFICATION (ALERT) [Step 3]
7. ENTERED THE TIME AND DATE OF THE CLASSIFICATION 0710 ON 06/18/99 [Step 4]
8. ENTERED A BRIEF BUT INFORMATIVE EVENT DESCRIPTION [Step 5]

   "Plant in mode 1 and RCS leakage > 50 gpm and RCS leakage within available charging pump capacity"

9. LEFT INJURIES BLANK [Step 6]

Critical

is this really critical?

How to handle this?

EVALUATOR'S NOTES:

NOTE: Only standards 6, 7 and 8 are critical to this element.

(C) **ELEMENT: 2**

ENTER RELEASE INFORMATION IN THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM

STANDARDS:

1. CHECKED 'NO RELEASE' [Step 7A]

EVALUATOR'S NOTES:

(C) **ELEMENT: 3**

ENTER METEOROLOGICAL DATA ON THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM

STANDARDS:

1. ENTERED WIND DIRECTION (218 deg.) [Step 11A]
2. ENTERED SECTORS AFFECTED (B,C,D) [Step 11B] Critical
3. ENTERED WIND SPEED (10 mph) [Step 11C]
4. ENTERED STABILITY CLASS NEUTRAL (D) [Step 11D] Critical

EVALUATOR'S NOTES:

NOTE: Standards 2 and 4 are critical to this Element.

(C) ELEMENT: 4

ENTER PROTECTIVE ACTION RECOMMENDATIONS ON THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM

STANDARDS:

CHECKED APPROPRIATE BOX...NO RECOMMENDATIONS AT THIS TIME [Step 12A]

EVALUATOR'S NOTES:

( ) **ELEMENT: 5**

ENTERED EVENT TERMINATION STATUS ON THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM

STANDARDS:

1. APPROPRIATE BOX CHECKED...NO [Step 13]

EVALUATOR'S NOTES:

( ) **ELEMENT: 6**

ENTER EC APPROVAL ON THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM

STANDARDS:

SIGNATURE, TIME AND DATE ENTERED (0720, 6/18/99)

EVALUATOR'S NOTES:

( ) **ELEMENT: 7**

ENTER STATE AND COUNTY WARNING POINTS NOTIFICATION INFORMATION

STANDARDS:

1. MESSAGE RECEIVED BY, DATE AND TIME HAVE BEEN ENTERED ON THE STATE OF FLORIDA NOTIFICATION MESSAGE FORM

EVALUATOR'S NOTES:

Tell the student the JPM is complete.

ATTACHMENT 1
(Page 1 of 2)

STATE OF FLORIDA NOTIFICATION MESSAGE FORM FOR NUCLEAR POWER PLANTS

☐ THIS IS A DRILL ☑ THIS IS AN ACTUAL EMERGENCY

1. A. Time/Date 0711 / 6-18-99 B. Reported by: (Name/Title)
C. Message Number 001 D. From: ☑ Control Room ☐ TSC ☐ EOF

2. SITE ☐ CRYSTAL RIVER UNIT 3 ☐ ST LUCIE UNIT 1 ☐ ST LUCIE UNIT 2 ☑ TURKEY POINT UNIT 3 ☐ TURKEY POINT UNIT 4

3. ACCIDENT CLASSIFICATION
☐ NOTIFICATION OF UNUSUAL EVENT ☐ SITE AREA EMERGENCY
☑ ALERT ☐ GENERAL EMERGENCY

4. CURRENT EMERGENCY DECLARATION TIME: 0710 DATE: 6/18/99

5. INCIDENT DESCRIPTION OR UPDATE PLANT IN MODE 1 AND RCS LEAKAGE >50 GPM AND RCS LEAKAGE WITHIN AVAILABLE CHARGING PUMP CAPACITY

6. INJURIES A. ☐ Contaminated B. ☐ Non-contaminated

7. RELEASE STATUS:
A. ☑ No Release (Go to Item 11) C. ☐ A Release is occurring - expected duration
B. ☐ Potential (Possible) Release D. ☐ A Release occurred, but stopped - duration

8. *RELEASE RATE
A. ☐ NOBLE GASES: Curies per second ☐ Measured ☐ Default
B. ☐ IODINES: Curies per second ☐ Measured ☐ Default
C. ☐ Release within normal operating limits.

9. *TYPE OF RELEASE IS (Blanks are for specific nuclides, if available, i.e., I-131, Cs-137, etc.)
A. ☐ Radioactive gases C. ☐ Radioactive liquids
B. ☐ Radioactive airborne particulates D. ☐ Other

10. * PROJECTED OFFSITE DOSE RATE

DISTANCE	THYROID DOSE RATE (CDE)	TOTAL DOSE RATE (TEDE)
1 Mile (Site boundary)	mrem/hr	mrem/hr
2 Miles	mrem/hr	mrem/hr
5 Miles	mrem/hr	mrem/hr
10 Miles	mrem/hr	mrem/hr

11. METEOROLOGICAL DATA
A. Wind direction (from) 218 degrees C. Wind speed 10 MPH
B. Sectors affected BCD D. Stability class NEUTRAL (D)

Operator and
Determine the

12. UTILITY RECOMMENDED PROTECTIVE ACTIONS
A. ☑ No recommendations at this time.
B. ☐ Notify the public to take the following protective actions:
(Note: If message refers to 360° radius, use the word "ALL" under sectors.)

MILES	NO ACTION	SHELTER/SECTORS	EVACUATE/SECTORS
0 - 2			
2 - 5			
5 - 10			

13. HAS EVENT BEEN TERMINATED?: A. ☑ NO B. ☐ YES: Time Date

RM/EC Approval: initials Time 0720 Date 6/18/99

14. MESSAGE RECEIVED BY: Name NAME Time 0722 Date 6/18/99

* This information may not be available on initial notifications

*F-439/1:2

*/3:3/JR/dt/lr/ev

ATTACHMENT 1
(Page 2 of 2)

STATE OF FLORIDA NOTIFICATION MESSAGE FORM FOR NUCLEAR POWER PLANTS

not Clear
Not well written

SECTOR REFERENCE:

The chart below can be used to determine sectors affected by a radiological release, through comparison with wind direction from the meteorological recorders in the Control Room.

If the wind direction is directly on the edge of two sectors (e.g. 11°, 33°, 56°, etc.), and additional sector should be added to the protective action recommendations. For example, if the wind direction is from 78°, then the affected sectors for PARs should be L, M, N, and P.

SECTOR INFORMATION:

WIND SECTOR	WIND FROM	DEGREES	WIND TOWARD	SECTORS AFFECTED
[A]	N	348-11	S	H J K
[B]	NNE	11-33	SSW	J K L
[C]	NE	33-56	SW	K L M
[D]	ENE	56-78	WSW	L M N
[E]	E	78-101	W	M N P
[F]	ESE	101-123	WNW	N P Q
[G]	SE	123-146	NW	P Q R
[H]	SSE	146-168	NNW	Q R A
[J]	S	168-191	N	R A B
[K]	SSW	191-213	NNE	A B C
[L]	SW	213-236	NE	B C D
[M]	WSW	236-258	ENE	C D E
[N]	W	258-281	E	D E F
[P]	WNW	281-303	ESE	E F G
[Q]	NW	303-326	SE	F G H
[R]	NNW	326-348	SSE	G H J

STABILITY CLASSIFICATION REFERENCE:

The below chart can be used to determine atmospheric stability classification for notification to the State of Florida. Primary method is from ΔT via the South Dade (60 meter) tower. Backup method is from Sigma Theta via the Ten Meter Tower. If neither meteorological tower is available, Stability Classification shall be determined using data from National Weather Service (See EPIP-20126, Off-site Dose Calculations).

CLASSIFICATION OF ATMOSPHERIC STABILITY:

Stability Classification	Pasquill Categories	Primary Delta T (°F)	Backup Sigma Theta Range (Degrees)
Extremely unstable	A	$\Delta T \leq -1.7$	22.5 or more
Moderately unstable	B	$-1.7 < \Delta T \leq -1.5$	17.5 to 22.4
Slightly unstable	C	$-1.5 < \Delta T \leq -1.4$	12.5 to 17.4
Neutral	D	$-1.4 < \Delta T \leq -0.5$	7.5 to 12.4
Slightly stable	E	$-0.5 < \Delta T \leq 1.4$	3.8 to 7.4
Moderately stable	F	$1.4 < \Delta T \leq 3.6$	2.1 to 3.7
Extremely stable	G	$3.6 < \Delta T$	2.0 or less

Meteorological information needed to fill out Section 11 on the Notification Message Form is available from the Dose Calculation Worksheet (EPIP-20126). The Worksheet shall be filled out by Chemistry and given to the Emergency Coordinator.

*F-439/2:2

*/3:3/JR/dt/lr/ev

ATTACHMENT 2

(Page 1 of 2)

EVENT NOTIFICATION WORKSHEET - NRC FORM 361

NRC FORM 361

US NUCLEAR REGULATORY COMMISSION
OPERATIONS CENTER

EVENT NOTIFICATION WORKSHEET

NOTIFICATION TIME	FACILITY OR ORGANIZATION	UNIT	CALLER'S NAME	CALL BACK: ENS_____ OR( )____-_____

EVENT TIME & ZONE	EVENT DATE / /
POWER MODE BEFORE	POWER MODE AFTER

Event Classifications

- ☐ GENERAL EMERGENCY
- ☐ SITE AREA EMERGENCY
- ☐ ALERT
- ☐ UNUSUAL EVENT
- ☐ 50.72 NON-EMERGENCY
- ☐ PHYSICAL SECURITY (73.71)
- ☐ TRANSPORTATION
- ☐ 20.403 MATERIAL/EXPOSURE
- ☐ OTHER
- ☐

1-Hr Non-Emergency
10 CFR 50.72 (b) (1)

- ☐ (i) (A) TS Required S/D
- ☐ (i) (B) TS Deviation
- ☐ (iii) Degraded Condition
- ☐ (ii) (A) Unanalyzed Condition
- ☐ (ii) (B) Outside Design Basis
- ☐ (ii) (C) Not Covered by OPs/EOPs
- ☐ (iii) Earthquake
- ☐ (iii) Flood
- ☐ (iii) Hurricane
- ☐ (iii) Ice/Hail
- ☐ (iii) Lighting
- ☐ (iii) Tornado
- ☐ (iii) Other Natural Phenomenon
- ☐ (iv) ECCS Discharge to RCS
- ☐ (v) Lost ENS
- ☐ (v) Lost Emerg. Assessment
- ☐ (v) Lost Offsite Comms
- ☐ (vi) Fire
- ☐ (vi) Toxic Gas
- ☐ (vi) Rad Release
- ☐ (vi) Other Hampering Safe Op

4-Hr Non-Emergency
10 CFR 50.72 (b) (2)

- ☐ (i) Degrade While S/D
- ☐ (ii) RPS Actuation (Scram)
- ☐ (ii) ESF Actuation
- ☐ (iii) (A) Safe S/D Capability
- ☐ (iii) (B) Rhr Capability
- ☐ (iii) (C) Control of Rad Release
- ☐ (iii) (D) Accident Mitigation
- ☐ (iv) (A) Air Release >2X App B
- ☐ (iv) (B) Liq Release >2X App B
- ☐ (v) Offsite Medical
- ☐ (vi) Offsite Notification

DESCRIPTION

Include: Systems affected, actuations & their initiating signals, causes, effect of event on plant, actions taken or planned, etc.

NOTIFICATIONS	YES	NO	WILL BE
NRC RESIDENT			
STATE(s)			
LOCAL			
OTHER GOV AGENCIES			

ANYTHING UNUSUAL OR NOT UNDERSTOOD?	☐	YES (Explain above)	☐	NO
DID ALL SYSTEMS FUNCTION AS REQUIRED?	☐	YES	☐	NO (Explain above)
MODE OF OPERATION UNTIL CORRECTED	ESTIMATE FOR RESTART DATE:		☐	ADDITION INFO ON BACK?

F-443/1:2

ATTACHMENT 2
(Page 2 of 2)

EVENT NOTIFICATION WORKSHEET - NRC FORM 361

NRC FORM 361 ADDITIONAL INFORMATION USNRC OPERATIONS CENTER

RADIOLOGICAL RELEASES CHECK OR FILL IN APPLICABLE ITEMS *(specific details/explanations should be covered in event description)*

☐ LIQUID RELEASE	☐ GASEOUS RELEASE	☐ UNPLANNED RELEASE	☐ PLANNED RELEASE	☐ ONGOING	☐ TERMINATED
☐ MONITORED	☐ UNMONITORED	☐ OFFSITE RELEASE	☐ T.S. EXCEEDED	☐ RM ALARMS	☐ AREAS EVACUATED
☐ PERSONNEL EXPOSED OR CONTAMINATED		☐ OFFSITE PROTECTIVE ACTIONS RECOMMENDED		☐ *State release path in description	

	Release Rate (Ci/sec)	% T.S. LIMIT	HOO GUIDE	Total Activity (Ci)	% T.S. LIMIT	HOO GUIDE
Noble Gas			0.1 Ci/sec			1000 Ci
Iodine			10 uCi/sec			0.01 Ci
Particulate			1 uCi/sec			1 mCi
Liquid (excluding tritium & dissolved noble gears)			10 uCi/min			0.1Ci
Liquid (tritium)			0.2 Ci/min			5 Ci
Total Activity						

	PLANT STACK	CONDENSER/AIR EJECTOR	MAIN STEAM LINE	SG BLOWDOWN	OTHER
RAD MONITOR READINGS:					
ALARM SETPOINTS:					
% T.S. LIMIT (If applicable)					

RCS OR SG TUBE LEAKS CHECK OR FILL IN APPLICABLE ITEMS: *(specific details/explanations should be covered in event description)*

LOCATION OF THE LEAK *(e.g., SG #, valve, pipe, etc)*:

LEAK RATE:	UNITS: gpm/gpd	T.S. Limits:	SUDDEN OR LONG TERM DEVELOPMENT:

LEAK START DATE: TIME:

COOLANT ACTIVITY & UNITS: PRIMARY - SECONDARY -

LIST OF SAFETY RELATED EQUIPMENT NOT OPERATIONAL:

EVENT DESCRIPTION *(Continued from front)*

ENCLOSURE 1
(Page 1 of 17)

EMERGENCY CLASSIFICATION TABLE

1. Primary Leakage/LOCA

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
Plant in Mode 1-2-3-4 **AND** Either A or B: A. RCS Leakage GREATER THAN 10 GPM as indicated by: 1) Control Room observation **OR** 2) Inventory balance calculation **OR** 3) Field observation **OR** 4) Emergency Coordinator judgment - - - - - - - - - - - - - - - - - - B. Failure of any primary system safety or relief valve to close resulting in an uncontrolled RCS depressurization.	Plant in Mode 1-2-3-4 **AND** RCS leakage greater than 50 gpm **AND** RCS leakage within available charging pump capacity **CAUTION:** This section should not be used for events involving only a steam generator tube leak/rupture, or only a faulted/ruptured steam generator.	Plant in Mode 1-2-3-4 **AND** RCS leakage greater than 50 gpm **AND** RCS leakage greater than available charging pump capacity **CAUTION:** This section should not be used for events involving only a steam generator tube leak/rupture, or only a faulted/ruptured steam generator.	Either A or B: - - - - - - - - - - - - - - - - - - A. RCS leakage greater than 50 gpm **AND** RCS leakage greater than available ch pump capacity **AND** Containment pressure greater than 20 **CAUTION:** This section should not be us events involving only a steam generator tube leak/rupture, c faulted/ ruptured steam gene - - - - - - - - - - - - - - - - - - B. Plant in Mode 1, 2, 3, 4, **AND** RCS leakage greater than 50 gpm **AND** RCS leakage greater than available pump capacity **AND** Loss of containment integrity which p a flowpath to the environment. **CAUTION:** This section should not be use events involving only a steam generator tube leak/rupture, or faulted/ruptured steam genera - - - - - - - - - - - - - - - - - - **CAUTION:** Consult Attachment 3 for requi Protective Action Recommend
Possible Control Room Indicators			
TI-465, 467, 469 TEC Flow Indicators	Charging/Letdown Flow Mismatch	RCS pressure Containment Pressure ARMS Charging/Letdown Flow Mismatch	RCS pressure Containment Pressure PRMS R-14
Complete Actions listed in Subsection 5.3 Page 20	Complete Actions listed in Subsection 5.4 Page 25	Complete Actions listed in Subsection 5.5 Page 32	Complete Actions listed in Subsection 5.6 Page 41

INITIAL HERE

What form would HP provide - Field Team?

JPM STUDENT IC SHEET

ADDED per Rev

NO procedures!

INITIAL CONDITIONS:

1. A GENERAL EMERGENCY HAS BEEN DECLARED.
2. AVERAGE CETs INDICATE 650 DEG.F.
3. CONTAINMENT PRESSURE INDICATES 3.5 PSIG.
4. CHRRMS INDICATES 1,100 R/HR.
5. CONTAINMENT LEAKAGE THAT EXCEEDS TECHNICAL SPECIFICATIONS HAS BEEN IN PROGRESS FOR APPROXIMATELY THREE HOURS.
6. THE FOLLOWING OFF-SITE DOSES HAVE BEEN DETERMINED:

	1 MILE	2 MILE	5 MILE
TOTAL DOSE	1100MREM	900 MREM	300 MREM
THYROID DOSE	4800 MREM	5100 MREM	1100 MREM

INITIATING CUE:

AS THE EMERGENCY COORDINATOR, DETERMINE PROTECTIVE ACTION RECOMMENDATIONS (PARs).

is this the Most Conservative Answer?,

JOB PERFORMANCE MEASURE WORKSHEET-JPM #02201054406

JOB CLASSIFICATION: ANPS/NPS

JPM TITLE: EVALUATE PROTECTIVE ACTION RECOMMENDATIONS

JPM NUMBER: 02201054406 JPM TYPE: NORMAL PATH

NUCLEAR SAFETY IMPORTANCE: 4.33 COMBINED IMPORTANCE: 4.33

TIME VALIDATION:10 MINUTES JPM REV. DT.: 08/05/99

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM:__X__ SIMULATE:_____ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

THE MOST CONSERVATIVE PAR HAS BEEN SELECTED FOR EACH MILE SECTOR (0-2, 2-5, 5-10), BASED ON CURRENT PLANT CONDITIONS AND/OR OFF-SITE DOSE ESTIMATES.

REQUIRED MATERIALS:

0-EPIP-20101, DUTIES OF EMERGENCY COORDINATOR

REFERENCES:

1. 0-EPIP-20101, DUTIES OF THE EMERGENCY COORDINATOR
2. 0-EPIP-20126, OFF-SITE DOSE CALCULATIONS

TERMINATING CUES:

THE MOST CONSERVATIVE PAR HAS BEEN EVALUATED.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. A GENERAL EMERGENCY HAS BEEN DECLARED.
2. AVERAGE CETs INDICATE 650 DEG.F.
3. CONTAINMENT PRESSURE INDICATES 3.5 PSIG.
4. CHRRMS INDICATES 1,100 R/HR.
5. CONTAINMENT LEAKAGE THAT EXCEEDS TECHNICAL SPECIFICATIONS HAS BEEN IN PROGRESS FOR APPROXIMATELY THREE HOURS.
6. THE FOLLOWING OFF-SITE DOSES HAVE BEEN DETERMINED:

	1 MILE	2 MILE	5 MILE
TOTAL DOSE	1100 MREM	900 MREM	300 MREM
THYROID DOSE	4800 MREM	5100 MREM	1100 MREM

INITIATING CUES:

AS THE EMERGENCY COORDINATOR, DETERMINE PROTECTIVE ACTION RECOMMENDATIONS (PARs).

( ) ELEMENT: 1

LOCATE ATTACHMENT 3 IN 0-EPIP-20101, DUTIES OF THE EMERGENCY COORDINATOR.

STANDARDS:

1. ATTACHMENT 3 HAS BEEN LOCATED.

EVALUATOR'S NOTES:

(C) ELEMENT: 2

DETERMINE PARS FOR 0-2, 2-5, & 5-10 MILE SECTORS BASED ON PLANT CONDITIONS AND OFF-SITE DOSES.

STANDARDS:

Use items 2,

1. PARS SELECTED FOR EACH SECTOR HAVE BEEN BASED ON PLANT CONDITIONS.
2. PARS SELECTED FOR EACH SECTOR HAVE BEEN BASED ON DOSE VALUES PROVIDED BY THE CHEMISTRY DEPARTMENT.
3. THE MOST LIMITING DOSE HAS BEEN USED FOR PAR DETERMINATION.
4. THE PAR ENTERED HAS BEEN DETERMINED USING ATTACHMENT 3, 0-EPIP-20101, DUTIES OF EMERGENCY COORDINATOR.

EVALUATOR'S NOTES:

NOTE: THE FOLLOWING PARS SHOULD HAVE BEEN SELECTED:

	0-2	2-5	5-10
Plant Conditions:	S(CR)	S(DW)	NONE
Total Dose:	E(CR)	S(DW)	NONE
Thyroid Dose:	S(CR)	E(DW)+S(RS)	S(DW)
Summary:	E(CR)	E(DW)+S(RS)	S(DW)

Inform the operator that the JPM has been completed.

Need attachment 3 of EPIP-20101

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 3.
2. SHUTDOWN BANKS HAVE NOT BEEN WITHDRAWN.
3. THE CURRENT RCS BORON CONCENTRATION IS 900 PPM.
4. BURNUP IS 10500 MWD/MTU.
5. VCT LEVEL IS 25%.
6. ALL PREREQUISITES ARE SATISFIED.

INITIATING CUE

YOU ARE THE RCO AND YOU HAVE BEEN DIRECTED BY THE ANPS TO INCREASE RCS BORON CONCENTRATION TO 1060 PPM.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01046007301

JOB CLASSIFICATION: RCO

JPM TITLE: BORATE THE RCS VIA THE BLENDER

JPM NUMBER: 01046007301 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 05/26/99

NUCLEAR SAFETY IMPORTANCE: 3.00

COMBINED IMPORTANCE: 4.00

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: __X__ SIMULATE:_____ DISCUSS:_____

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

1. Reset to IC-8
2. Trip reactor and acknowledge alarms
3. Touch electrical generation 3A480VLC->30105->Fail Open-> arm TFB1OL=T
4. Freeze simulator until ready to begin

TASK STANDARDS:

1. BORATION INITIATED
2. VCT LEVEL MAINTAINED

REQUIRED MATERIALS:

1. 0-OP-046, CVCS - BORON CONCENTRATION CONTROL
2. PLANT CURVE BOOK
3. 3-ONOP-046.4

REFERENCES:

1. 0-OP-046, CVCS - BORON CONCENTRATION CONTROL
2. PLANT CURVE BOOK
3. 3-ONOP-046.4

TERMINATING CUES:

VCT LEVEL MAINTAINED.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

Why Tell op this?

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 3.
2. SHUTDOWN BANKS HAVE NOT BEEN WITHDRAWN.
3. THE CURRENT RCS BORON CONCENTRATION IS 900 PPM.
4. BURNUP IS 10500 MWD/MTU.
5. VCT LEVEL IS 25%.
6. ALL PREREQUISITES ARE SATISFIED.

Who determines this

Procedure

INITIATING CUES:

YOU ARE THE RCO AND YOU HAVE BEEN DIRECTED BY THE ANPS TO INCREASE RCS BORON CONCENTRATION TO 1060 PPM.

( ) **ELEMENT: 1**

OBTAIN REQUIRED MATERIALS.

STANDARDS:

__1. 0-OP-046 OBTAINED.

__2. PROCEDURE CHECKED AGAINST OTSC INDEX.

Note: The Operator will not be able to check for OTSCs in the simulator in the usual manner. When the need to check for OTSCs is recognized, tell the operator, ***"There are no outstanding OTSCs on 0-OP-046."***

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 2**

DETERMINE RCS BORON CONCENTRATION CHANGE AND CORRESPONDING AMOUNT OF BORIC ACID TO ADD.
[Step 5.2.2.1]

STANDARDS:

__1. THE DIFFERENCE BETWEEN THE CURRENT BORON CONCENTRATION (900 PPM) AND THE BORON CONCENTRATION DIRECTED BY THE ANPS (1060 PPM) IS DETERMINED. (1060-900 = 160 PPM)
[Step 5.2.2.1.a]

__2. USING SECTION III, FIG 2 OF THE PLANT CURVE BOOK, DETERMINED THE QUANTITY OF BORIC ACID TO CHANGE THE BORON CONCENTRATION BY 160 PPM WOULD REQUIRE 1735 GALLONS.
[Step 5.2.2.1.a]

__3. BORIC ACID TOTALIZER ADJUSTED TO 1735 GALLONS.
[Step 5.2.2.1.b]

EVALUATOR'S NOTES:

NOTE 1: Standards 1 & 2 are not critical to this element.

NOTE 2: Either MOL or EOL simulator curve books may be used.

(C) **ELEMENT: 3**

SET REACTOR MAKEUP CONTROLS FOR BORATION.

STANDARDS:

__1. THE SETPOINT ON THE BORIC ACID CONTROLLER FCV-3-113A WAS ADJUSTED TO THE DESIRED FLOW RATE.
[Step 5.2.2.2]

CUE: ***If the operator asks what flowrate to use, say "It is your choice."***

__2. THE REACTOR MAKEUP SELECTOR SWITCH PLACED TO THE "BORATE" POSITION.
[Step 5.2.2.3]

EVALUATOR'S NOTES:

NOTE: The ratio of boric acid flow to setpoint on FCV-113A is 5 gpm to 1; i.e., 10 gpm is equal to a setpoint of 2.

NOTE: Standard 1 is not critical to this element.

(C) ELEMENT: 4

INITIATE BORATION OF THE RCS.

STANDARDS:

__1. REVIEWED NOTE PRIOR TO STEP 5.2.2.4.

C
__2. REACTOR MAKEUP CONTROL SWITCH TURNED TO "START". [Step 5.2.2.4]

__3. BORIC ACID FLOW VERIFIED ON RECORDER FR-*-113. [Step 5.2.2.5]

__4. FLOW RATE IS VERIFIED CONSISTENT WITH THE FLOW RATE SET ON FCV-113A CONTROLLER. [Step 5.2.2.5]

EVALUATOR'S NOTES:

NOTE 1: The operator may identify the need to place FCV-113B control switch to OPEN based on the procedure NOTE prior to step 5.2.2.4.

NOTE 2: Standards 1, 3 and 4 are not critical.

NOTE 3: At this point the Booth operator will fail the running charging pump causing a complete loss of charging.

BOOTH OPERATOR: After 100 gallons of boric acid or 3 minutes, whichever comes first, trip the running 3A Charging pump by pressing "mast fail". Once the operator starts a standby charging pump, fail it by touching electrical generation->3B(H)480VLC->30203(35008)->fail open->set TFB1OM(N)=T

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01046007301

(C) **ELEMENT: 5**

PERFORM THE IMMEDIATE ACTIONS OF ONOP-047.1.

STANDARDS:

✓1. STARTED A STANDBY CHARGING PUMP (TRIPS AFTER STARTING) [ONOP-047.1, STEP 4.1.1]

✓2. STARTED A SECOND STANDBY CHARGING PUMP. (SUCCESSFUL) [ONOP-047.1, STEP 4.1.2]

__3. INCREASED RUNNING CHARGING PUMP SPEED AND PLACED PUMP IN AUTO CONTROL.

✓4. ACTIONS 1 & 2 PERFORMED FROM MEMORY.

EVALUATOR'S NOTES:

NOTE: Standards 2 & 4 are critical to this Element.

this makes ~~step~~ standard 1 crit!

TELL THE OPERATOR THAT THE JPM HAS BEEN COMPLETED.

INIT

Date/Time Started:________________/__________

5.2 Boration

5.2.1 Initial Conditions

— — — — — 1. All applicable prerequisites listed in Section 3.0 satisfied.

5.2.2 Procedure Steps

CAUTIONS

- ***Except in situations which require emergency boration, simultaneous boration via the blender and MOV-*-350 shall only be performed when the reactor is shutdown.***
- ***The amount of acid added via MOV-*-350 will have to be estimated using the flow rate indicated on FI-*-110 and the duration of flow.***

NOTE

Attachment 5 of this procedure may be used to assist in calculating boration requirements for power or temperature changes.

1. The determination of boric acid quantity may be the day to day activities associated with min temperature adjustments due to changes in reactivi (i.e., xenon transient after load change), or by use Section III of the Plant Curve Book for larger chang (i.e., load changes).

— — — — — a. Determine the approximate quantity of boric ac required to change reactivity by the desir amount.

— — — — — (1) Determine the approximate quantity of boric acid to be added via the blender.

— — — — — (2) Determine the approximate quantity of boric acid to be added via MOV-*-350 (N/A if not desired or reactor is critical).

— — — — — b. Set the Boric Acid Totalizer to the determined amount of acid to be added via the blender.

INIT — 5.2.2 (Cont'd)

_ _ _ _ _ 2. Adjust the setpoint on the Boric Acid Control FCV-*-113A to the desired flow rate.

_ _ _ _ _ 3. Place the Reactor Makeup Selector Switch to t BORATE position.

NOTE

If FCV--113B, Blender to Charging Pump Suction valve, closes due to flow deviation, FCV-*-113B control switch may be placed to OPEN.*

_ _ _ _ _ 4. Turn the RCS Makeup Control Switch to the STAF position.

_ _ _ _ _ 5. Verify expected boration flow rate by observing Ch Recorder FR-*-113 **AND** ensure it is consistent wi the flow rate established in Substep 5.2.2.2.

6. **IF** simultaneous boration via MOV-*-350 is desired, **THEN** perform the following: (N/A if not desired or reactor is critical).

_ _ _ _ _ a. Open MOV-*-350.

_ _ _ _ _ b. Verify expected flow rate on FI-*-110.

(1) Indicated flow rate: ____________

_ _ _ _ _ c. Note the time MOV-*-350 was opened.

(1) Time: ____________

_ _ _ _ _ 7. **IF** the desired boron concentration, **OR** Tavg achieved before the setting on the batch integrat automatically stops the boration, **THEN** turn the RC Makeup Control Switch to STOP.

8. **WHEN** boration has stopped, **THEN** verify t following valve control switches are in AUTO **AN** the valves are closed.

_ _ _ _ _ a. Boric Acid to Blender, FCV-*-113A

_ _ _ _ _ b. Blender to Charging Pump Suction, FCV-*-113B

INIT

5.2.2.8 (Cont'd)

— — — — — c. Primary Water to Blender, FCV-*-114A

— — — — — d. Blender to VCT, FCV-*-114B

9. IF simultaneous boration via MOV-*-350 was performed, THEN perform the following: (N/A if MOV-*-350 not used).

— — — — — a. Close MOV-*-350.

— — — — — b. Note the time flow indicates 0 gpm on FI-*-110. Time: ____________

— — — — — c. Estimate amount of boric acid added via MOV-*-350 using flow rate and duration of flow.

— — — — — 10. Place the Reactor Makeup Selector Switch to AUTO.

— — — — — 11. Turn the RCS Makeup Control Switch to START.

— — — — — 12. IF additional borations are desired, OR if the expected changes to Tavg, or boron concentration are not achieved, THEN repeat Substeps 5.2.2.1 through 5.2.2.11, as necessary.

13. WHEN boration is complete, THEN perform th following:

—— a. Record the time and the amount of boric aci added in the RCO Logbook.

—— b. IF boron equalization is required between th PZR and RCS, THEN perform the appropria section of *-OP-041.2, PRESSURIZE OPERATION.

—— 14. Direct the Chemistry Department to sample the RC as necessary, to verify the desired boration has bee achieved (especially after large boron changes).

INIT

5.2.2 (Cont'd)

15. Verify that Automatic Makeup is set to the m recent RCS boron concentration per Section III of Plant Curve Book by adjusting, as necessary:

—— a. Boric Acid Flow Controller, FCV-*-113A

AND/OR

—— b. Primary Water Auto Setpoint, HIC-*-114

—— 16. Verify Boric Acid Flow Controller FCV-*-113A is AUTO.

—— 17. Verify all log entries specified in Subsection 2 Records Required, have been recorded.

—— 18. Complete the QA Record Page for this section.

4.0 IMMEDIATE ACTIONS

NOTE

If charging is reestablished in Subsection 4.1 return to normal operation.

4.1 Attempt to reestablish charging.

4.1.1 Start any operable charging pump.

4.1.2 Start any charging pump that will deliver flow.

4.2 Isolate Letdown by closing the following Orifice Isolation Valves:

4.2.1 CV-3-200A

4.2.2 CV-3-200B

4.2.3 CV-3-200C

4.3 Close Excess L/D and RCP Seal Return Isolation Valve, MOV-3-6386

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT 3 EXPERIENCED A LOSS OF OFF SITE POWER.
2. ALL AFW PUMPS AUTOMATICALLY STARTED AND HAVE BEEN RUNNING FOR APPROXIMATELY 1 HOUR.
3. EOP(S) ARE IN PROGRESS.
4. 3A AND 3B 4KV BUSES HAS JUST BEEN TRANSFERED FROM THE EDGs TO THE STARTUP TRANSFORMER.
5. ~~THE AFW PUMP AREA IS ACCESSIBLE.~~ Booth Prept P20 OP07
6. PLANT CONDITIONS REQUIRE CONTINUED USE OF THE AFW SYSTEM.

INITIATING CUE:

YOU ARE THE RCO AND YOU HAVE BEEN DIRECTED BY THE ANPS TO COMPLY WITH THE CAUTIONS IMMEDIATELY PRECEDING STEP 21 OF EOP-E-0.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01075025501

JOB CLASSIFICATION: RCO

JPM TITLE: SHUTDOWN AFW PUMP(S) DURING EMERGENCY PLANT OPERATIONS

JPM NUMBER: 01075025501 JPM TYPE: NORMAL PATH

JPM REV. DATE: 05/26/99

NUCLEAR SAFETY IMPORTANCE: 0.00

COMBINED IMPORTANCE: 0.00

TIME VALIDATION: 5 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

1. Reset to IC-60.
2. Press NO OP and unfreeze frozen models. Run AFW flow to maximum and feed S/Gs to >25%.
3. Parallel EDGs and S/U transformer and place 4KV buses on the S/U transformer. Shutdown (normal stop) EDGs.
4. When S/G levels >25%, reduce AFW flow to zero.
5. Freeze simulator until ready to begin.

TASK STANDARDS:

1. "C" AFW PUMP SHALL BE SHUTDOWN AND A SECOND PUMP ALSO SHUTDOWN

REQUIRED MATERIALS:

1. 3-OP-075

Need action to
EOP
Caution!

REFERENCES:

1. 3-OP-075, AUXILIARY FEEDWATER SYSTEM

TERMINATING CUES:

THE "C" AND A SECOND AFW PUMP HAVE BEEN SHUTDOWN.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you?
If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

Let Oper Verify - How will he do this

INITIAL CONDITIONS:

why Tell this?

1. UNIT 3 EXPERIENCED A LOSS OF OFF SITE POWER.
2. ALL AFW PUMPS AUTOMATICALLY STARTED AND HAVE BEEN RUNNING FOR APPROXIMATELY 1 HOUR.
3. EOP(S) ARE IN PROGRESS.
4. 3A AND 3B 4KV BUSES HAS JUST BEEN TRANSFERED FROM THE EDGs TO THE STARTUP TRANSFORMER.
5. THE AFW PUMP AREA IS ACCESSIBLE.
6. PLANT CONDITIONS REQUIRE CONTINUED USE OF THE AFW SYSTEM FOR S/G FEED.

see Caution

How would ops really be Tell to do this - Any better wording?

INITIATING CUES:

YOU ARE THE RCO AND YOU HAVE BEEN DIRECTED BY THE ANPS TO COMPLY WITH THE CAUTIONS IMMEDIATELY PRECEDING STEP 21 OF EOP-E-0.

STATE 20 of ~~Step 6.2.3~~ EOP-E-0 has been completed - Continue with Step 21 ~~EO~~ EOP-E-0

( ) **ELEMENT: 1**

OBTAIN 3-OP-075, SECTION 6.2, FOR SHUTTING DOWN AN AFW PUMP DURING PERFORMANCE OF THE EOPs.

STANDARDS:

__1. OBTAINED A COPY OF 3-OP-075, SECTION 6.2.

__2. VERIFIED PROCEDURE IN OTSC BOOK.

EVALUATOR'S NOTES:

Note: The Operator will not be able to check for OTSCs in the simulator in the usual manner. When the need to check for OTSCs is recognized, tell the operator, ***"There are no outstanding OTSCs on 3-OP-075."***

(C) **ELEMENT: 2**

RESET AFW ACTUATION SIGNALS.
[Steps 6.2.2.1 & 6.2.2.2]

STANDARDS:

C 1. RESET AMSAC AND VERIFIED THE RED AMSAC ACTUATED LIGHT IS OUT ON PANEL 3C04 (VPA).
[Step 6.2.2.1.a]

__2. CHECKED IF SI HAS BEEN RESET.
[Step 6.2.2.1.b]

__3. CHECKED IF LOSS OF VOLTAGE SIGNAL HAS BEEN RESET AS INDICATED BY BOTH S/U TRANSF. BREAKERs BEING CLOSED.
[Step 6.2.2.1.c]

C 4. VERIFIED BOTH SGFPs SEMAPHORES ARE GREEN-FLAGGED.
[Step 6.2.2.1.d]

__5. CHECKED IF NR S/G LEVEL IN ALL 3 S/Gs IS GREATER THAN 15%.
[Step 6.2.2.1.e]

Why
Crit - No
ACTION

EVALUATOR'S NOTES:

NOTE: Standards 1 and 4 are critical to this element.

( ) **ELEMENT: 3**

REVIEW PROCEDURE STEPS 6.2.2.2 & 6.2.2.3 FOR APPLICABILITY.

STANDARDS:

__1. REVIEWED STEP 6.2.2.2 AND RECOGNIZED ALL AFW ACTUATION SIGNALS ARE RESET.

__2. REVIEWED STEP 6.2.2.3 AND TRANSITIONED CORRECTLY TO 6.2.2.4.

EVALUATOR'S NOTES:

NOTE: The operator does not transition forward to Step 6.2.2.7 because all 3 AFW pumps are running.

(C) **ELEMENT: 4**

SHUTDOWN "C" AUXILIARY FEEDWATER PUMP.

STANDARDS:

__1. REVIEWED CAUTION AND NOTES PRIOR TO STEP 6.2.2.4 AND CHOSE "C" AFW PUMP TO SHUTDOWN FIRST.

C__2. MOMENTARILY PLACED THE T&T CONTROL SWITCH FOR THE "C" AFW PUMP TO CLOSED.
[Step 6.2.2.4]

EVALUATOR'S NOTES:

NOTE: Standard 2 is critical to this element.

( ) **ELEMENT: 5**

REVIEW STEP 6.2.2.5 FOR APPLICABILTY.

STANDARDS:

__1. REVIEWED STEP 6.2.2.5 AND DETERMINED IT TO NOT BE APPLICABLE AND WENT FORWARD TO STEP 6.2.2.6.

EVALUATOR'S NOTES:

NOTE: STEP 6.2.2.5 IS NOT APPLICABLE BECAUSE ALL AFW ACTUATION SIGNALS ARE RESET.

(C) **ELEMENT: 6**

SHUTDOWN A SECOND AUXILIARY FEEDWATER PUMP.

STANDARDS:

__1. RECOGNIZED A CONTINUOUS AVERAGE FLOW OF 60 GPM CANNOT BE MAINTAINED ON THE REMAINING AFW PUMPS. [Step 6.2.2.6]

Cue: ***"The NPS directs the shutdown of a second AFW pump."***

__2. REVIEWED CAUTION AND NOTES PRIOR TO STEP 6.2.2.7.

__3. DIRECTED FIELD OPERATOR TO STAND BY THE AFW PUMP STEAM SUPPLY MOV BREAKER. [Step 6.2.2.7.a]

BOOTH OPERATOR CUE: ***Report back as the field operator that you are in position at the breaker***

✓4. CLOSED THE AFW PUMP STEAM SUPPLY MOV.
[Step 6.2.2.7.b]

__5. DIRECTED THE FIELD OPERATOR TO LOCALLY OPEN THE BREAKER TO THE STEAM SUPPLY MOV.
[Step 6.2.2.7.c]

Booth Operator: **sys mat->feedwater->aux f/w steam. Touch MOVs -> Breaker LOA local close/trip (mech)->MOV-1405 set TCF5MA27=F->MOV-1404 set TCF5M527=F->MOV-1403 set TCF5MB28=F**

BOOTH OPERATOR CUE: ***Report back as the field operator that the breaker is open.***

__6. DIRECTED THE FIELD OPERATOR TO RESET THE GOVERNOR FOR THE PUMP JUST SHUTDOWN.
[Step 6.2.2.7.d]

BOOTH OPERATOR CUE: ***Report back as the field operator that the AFW pump governor is reset.***

EVALUATOR'S NOTES:

NOTE: Standard 4 is critical to this element.

Tell the operator that the JPM is completed.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
20	**Verify SI Flow:**	
	a. RCS pressure - LESS THAN 1600 PSIG[2000 PSIG]	a. Go to Step 21.
	b. High-head SI pump flow indicator - CHECK FOR FLOW	b. Manually start pumps and align valves to establish an injection flowpath.
	c. RCS pressure - LESS THAN 250 PSIG[650 PSIG]	c. Go to Step 21.
	d. RHR pump flow indicator - CHECK FOR FLOW	d. Manually start pumps and align valves to establish an injection flowpath.

CAUTIONS

- ***This series of cautions is applicable to multiple AFW pump operation throughout the rest of the EOP network.***
- ***If two AFW pumps are operating on a single train, one of the pumps needs to be shutdown within one hour of the initial start signal.***
- ***If two AFW trains are operating, continuing to operate a single AFW pump with an average flow of less than 60 gpm for greater than one hour may damage the pump.***
- ***When either of the above operating conditions exist, a pump(s) should be shutdown using 3-OP-075, AUXILIARY FEEDWATER SYSTEM, Section 6.2, to minimize the potential for damaging the pump(s).***

21	**Verify AFW Valve Alignment - PROPER EMERGENCY ALIGNMENT**	Manually align valves to establish proper AFW alignment.

INIT

6.2 Shutdown of AFW Pump(s) during Emergency Plant Operations

CAUTION

This section of the procedure may ONLY be used when the EOPs are in effect.

6.2.1 Initial Conditions

1. AFW pumps have been operating due to automatic actuation of the system.
2. AFW pump(s) needs to be shut down due to extended parallel pump operation **OR** due to low flow conditions.

6.2.2 Procedure Steps

1. Check to determine if the following AFW actuation signals are reset:
    - a. AMSAC (The red AMSAC ACTUATED on 3C04 is out)
    - b. SI (ERDADS display indicates SI reset)
    - c. Loss of Voltage (Both S/U transformer breakers closed)
    - d. Last Steam Generator Feedwater Pump Tripped (Switch semaphore flag and light agree)
    - e. Steam Generator Level in ALL S/Gs greater than 15% on the narrow range indication
2. **IF** an AFW actuation signal is present, **THEN** attempt to reset the actuation signal(s).
3. **IF** only one pump is operating in each train, **THEN** observe CAUTION and NOTES prior to Substep 6.2.2.7 **AND** go to Substep 6.2.2.7.

INIT 6.2.2 (Cont'd)

CAUTION

Under certain accident conditions, radiation levels in the area of the AFW pump cage may NOT permit access for tripping or resetting of the AFW pump T&T valve or pump governor.

NOTES

Why?

- ***If the shutdown AFW pump is required for service AND it trips on overspeed during the attempted restart, 3-ONOP-075, Auxiliary Feedwater System Malfunction, Attachment 5, will need to be used to restore the pump to operating status.***
- ***When tripping an AFW pump using the T&T valve, the C AFW pump is preferred.***
- ***Substeps 6.2.2.4 and 6.2.2.5 should only be used to trip the first pump in the train with two AFW pumps running.***

4. **IF** ALL of the AFW actuation signals are reset, **THEN** momentarily place the T&T valve control switch for the desired AFW pump to CLOSED.

5. **IF** any of the AFW actuation signals can NOT be reset, **THEN** perform one of the following:

   a. **IF** the area of the AFW pumps is accessible, **THEN** dispatch an operator to locally trip the desired AFW pump using the mechanical trip mechanism ONLY.

INIT 6.2.2 (Cont'd)

CAUTION

Operation of the T&T valve from the Alternate Shutdown Panel (ASP) blocks ALL automatic and remote start signals for the AFW pump from both units.

NOTE

The C AFW pump T&T valve can be operated from the Unit 3 ASP and the B AFW pump T&T valve can be operated from the Unit 4 ASP.

b. **IF** any of the AFW actuation signals can NOT be reset **AND** the area of the AFW pumps is inaccessible, **THEN** dispatch an operator to trip the desired AFW pump using the Unit 3(4) Alternate Shutdown Panel (ASP) controls as follows:

(1) Open the key control box on the Unit 3(4) ASP.

(2) Obtain the Unit 3(4) ASP keys **AND** open the locked box on the south wall of the Unit 3(4) B 4160KV Bus Room.

(3) Obtain one of the REMOTE/LOCAL control transfer switch keys.

(4) Insert the key into the ASP transfer switch for MOV-6459C(B) **AND** place the switch in the LOCAL position.

(5) Place the ASP control switch for MOV-6459C(B) in the CLOSED position.

6. **WHEN** a continuous average flow of 60 gpm on the remaining AFW pump(s) can NO longer be maintained, **THEN** observe CAUTION and NOTES prior to Substep 6.2.2.7 **AND** continue with Substep 6.2.2.7.

INIT 6.2.2 (Cont'd)

CAUTION

Do not continue with this section of the procedure if only one AFW pump is running and no other source of feedwater is available to the unit.

How can oper Check this!

NOTES

- *Shutdown of the AFW pump using the steam supply MOV allows for an automatic restart once the governor control has been reset.*
- *If the AFW pump governor can NOT be reset due to radiological conditions, a minimum wait time of 30 minutes is required prior to attempting to restart the AFW pump using the MOV.* Let Oper Check —
- *Substep 6.2.2.7 should be used to shut down a single pump in a single train.*

What to do if pump does not stop rotating?

7. Perform the following to stop the AFW pump:
   a. Station operator(s) at the AFW pump steam supply MOV breaker(s) in preparation to isolate the steam to the AFW pump.
   b. **WHEN** the operator is in position, **THEN** manually close the AFW pump steam supply MOV(s).
   c. **WHEN** the MOV indicates full closed, **THEN** have the field operator locally open the supply breaker(s) to the valve(s).
   d. **IF** the AFW pump cage is accessible, **THEN** request an operator be dispatched to reset the governor by rotating the governor knob towards the lowest setting, **AND** when the pump stops rotating, returning the knob to the maximum setting.

8. **WHEN** plant conditions allow the AFW actuation signals to be reset **AND** an alternate source of water is available to the S/Gs, **THEN** restore the AFW System alignment using the appropriate sections **AND** attachments of this procedure as directed by the NPS/TSC.

[illegible] Pump Alert

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. GOP-305 IS IN PROGRESS.
2. UNIT IS IN MODE 3 WITH RCS PRESSURE EQUAL TO 400 PSIG.
3. 'B' AND 'C' RCPs ARE IN OPERATION.
4. PREPARATIONS ARE IN PROGRESS FOR GOING ON RHR.
5. H.P. TECHNICIAN AND 2 MECHANICS ARE IN CONTAINMENT.

Why Tell him - Will Open
EVAC anyway?

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: RESPOND TO EXCESSIVE RCS LEAKAGE

JPM NUMBER: 01041068303 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 05/26/99

NUCLEAR SAFETY IMPORTANCE: 4.00

COMBINED IMPORTANCE: 4.50

TIME VALIDATION: 15 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

1. RESET TO IC 14, AND INITIATE SCENARIO 27. DELETE CONDITIONAL COMPOSITE TRIGGER "MOV750".
2. WHEN OPERATOR HAS RECEIVED A TURNOVER OF PLANT STATUS, INITIATE AN UNISOLABLE RCS LEAK IN CONTAINMENT:
   RCS PRESSURE -> HOT LEG 'B' BREAK -> TVHHHLB=0.002

TASK STANDARDS:

RCS INVENTORY MAINTAINED.

REQUIRED MATERIALS:

1. 3-ONOP-041.3
2. 3-ONOP-041.7

REFERENCES:

3-ONOP-041.3, EXCESSIVE REACTOR COOLANT SYSTEM LEAKAGE
3-ONOP-041.7, S/D LOCA [MODE 3 (<1000 PSIG) OR MODE 4]

TERMINATING CUES:

RCS INVENTORY MAINTAINED.

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND THE SIMULATOR WILL PROVIDE THE INITIATING CUES.

STP?
LOCATION?

INITIAL CONDITIONS:

1. GOP-305 IS IN PROGRESS.
2. UNIT IS IN MODE 3 WITH RCS PRESSURE EQUAL TO 400 PSIG.
3. 'B' AND 'C' RCPs ARE IN OPERATION.
4. PREPARATIONS ARE IN PROGRESS FOR GOING ON RHR.
5. H.P. TECHNICIAN AND 2 MECHANICS ARE IN CONTAINMENT.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

EVALUATOR'S NOTES:

NOTE: It is permissible to supply an additional operator to act as balance-of-plant operator.

( ) **ELEMENT: 1**

MAINTAIN RCS INVENTORY.
[3-ONOP-041.3, Steps 1 & 2]

at what Value? what is to be directed?

what to be directed?

STANDARDS:

__1. CHARGING FLOW INCREASED AS NECESSARY. [3-ONOP-041.3, Step 1.a] Imm ACT

__2. CHARGING PUMPS STARTED AS NECESSARY. [3-ONOP-041.3, Step 1.b] Imm ACT

__3. LETDOWN ISOLATED AS NECESSARY. [3-ONOP-041.3, Step 1.c] Imm ACT

__4. ACTIONS PERFORMED FROM MEMORY.

__5. CHECKS RCS INVENTORY DECREASING - YES [3-ONOP-041.3, Step 2]

EVALUATOR'S NOTES:

NOTE: Letdown may automatically isolate before operator action can be taken.

Can leak be allowed to allow Opr isolate?

(C) **ELEMENT: 2**

VERIFY CHARGING FLOW AT MAXIMUM.
[3-ONOP-041.3, Step 3a]

STANDARDS:

__1. MAXIMUM CHARGING FLOW VERIFIED.

what INSTrument
what Value

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 3**

what valves

VERIFY LETDOWN ISOLATED.
[3-ONOP-041.3, Step 3b]

STANDARDS:

__1. LETDOWN ISOLATION VERIFIED.

EVALUATOR'S NOTES:

NOTE: When leakage is greater than charging pump capacity and letdown is isolated, transition should be made to 3-ONOP-041.7 from the foldout page or step 7 of 3-ONOP-041.3.

( ) **ELEMENT: 4**

OBTAIN SHUTDOWN LOCA PROCEDURE.

STANDARDS:

__1. 3-ONOP-041.7 OBTAINED.

Shouldn't it Be ?

EVALUATOR'S NOTES:

NOTE: RCPs may be stopped early based on foldout page item 3 on low #1 seal ΔP.

( ) **ELEMENT: 5**

DETERMINE IF RHR PUMPS SHOULD BE STOPPED.
[3-ONOP-041.7, Step 1]

STANDARDS:

__1. REVIEWED NOTES PRIOR TO STEP 1.

__2. IDENTIFIED RHR PUMPS WERE NOT RUNNING.

__3. IF PRESSURIZER LEVEL IS <12%, PLACED RHR PUMPS IN PULL-TO-LOCK.

__4. CONTINUED WITH STEP 2.

EVALUATOR'S NOTES:

NOTE: RHR is not in service with these plant conditions.

( ) **ELEMENT: 6**

ISOLATE RCS LETDOWN.
[3-ONOP-041.7, Step 2]

STANDARDS:

__1. EXCESS LETDOWN WAS VERIFIED ISOLATED BY OBSERVING THE FOLLOWING VALVES ARE CLOSED:

A. CV-*-387
B. HCV-*-137
[Step 2.a]

__2. NORMAL LETDOWN WAS VERIFIED ISOLATED BY OBSERVING CLOSED OR MANUALLY CLOSING THE FOLLOWING VALVES:

A. CV-*-200A
B. CV-*-200B
C. CV-*-200C
D. LCV-*-460
[Step 2.b]

__3. RHR LETDOWN WAS VERIFIED ISOLATED BY OBSERVING CLOSED HCV-*-142.
[Step 2.c]

EVALUATOR'S NOTES:

NOTE: Letdown should have already been isolated and RHR is not in service.

( ) **ELEMENT: 7**

CHECK IF CHARGING FLOW IS ADEQUATE.
[3-ONOP-041.7, Step 3]

STANDARDS:

__1. REVIEWED CAUTION PRIOR TO STEP 3.

__2. CHARGING FLOW ADJUSTED AS NECESSARY TO MAINTAIN PRZ LEVEL.
[Step 3.a]

__3. OBSERVED PRZ LEVEL TO BE LESS THAN 12% AND/OR DECREASING.
[Step 3.b]

__4. CONTINUED WITH STEP 4.

EVALUATOR'S NOTES:

NOTE: Charging flow is at maximum, pressurizer level is <12% and decreasing.

(C) **ELEMENT: 8**

DISPATCH PERSONNEL TO LOCALLY RESTORE POWER TO LOCKED OUT SI EQUIPMENT.
[3-ONOP-041.7, Step 4]

STANDARDS:

__1. NPO WAS DISPATCHED TO VERIFY THE FOLLOWING BREAKERS ARE CLOSED (ON):

- __A. 30622, MOV-843B
- __B. 30621, MOV-866B
- __C. 30605, MOV-864B
- __D. 30615, MOV-750
- __E. 30616, MOV-862B
- __F. 30626, MOV-863B

[Step 4.a]

__2. SNPO WAS DISPATCHED TO VERIFY THE FOLLOWING BREAKERS ARE CLOSED (ON):

- __A. 30738, MOV-843A
- __B. 30737, MOV-869
- __C. 30712, MOV-864A
- __D. 30720, MOV-862A
- __E. 30726, MOV-863A
- __F. 30731, MOV-751
- __G. 30732, MOV-866A

[Step 4.b]

__3. NPO WAS DISPATCHED TO VERIFY THE FOLLOWING BREAKERS ARE RACKED IN:

- __A. 3AA13
- __B. 3AB12
- __C. 4AA13
- __D. 4AB12

[Step 4.c]

BOOTH OPERATOR: **Close / Rack in breakers using parameter controller composite triggers "SI3BMCC" and "SI3CMCC".**

BOOTH OPERATOR CUE: ***Report back that the MCC breakers are closed and the 4 KV breakers are racked in.***

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 9**

EVACUATE NON-ESSENTIAL PERSONNEL FROM CONTAINMENT.
[3-ONOP-041.7, Step 5]

STANDARDS:

1. EVACUATION ANNOUNCEMENT WAS MADE.
   [Step 5.a]
2. THE CONTAINMENT EVACUATION ALARM WAS ACTUATED.
   [Step 5.b]
3. EVACUATION ANNOUNCEMENT WAS MADE AGAIN.
   [Step 5.c]

BOOTH OPERATOR CUE: **If asked, inform operator that two mechanics and an HP Tech are in containment.**

BOOTH OPERATOR CUE: **Respond as HP Supervisor to evacuate personnel from containment.**

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 10**

ACTUATE PHASE "A" CONTAINMENT ISOLATION.
[3-ONOP-041.7, Step 6]

STANDARDS:

__1. PHASE "A" CONTAINMENT ISOLATION MANUALLY ACTUATED. [Step 6.a]

__2. ALL ISOLATION PHASE "A" WHITE LIGHTS ON VPB ARE VERIFIED TO BE BRIGHT. [Step 6.b]

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 11**

DETERMINE IF RCPs MUST BE STOPPED.
[3-ONOP-041.7, Step 7]

STANDARDS:

__1. RCPs CHECKED TO SEE IF ANY ARE RUNNING.
[Step 7.a]

__2. THE FOLLOWING CONDITIONS CHECKED TO SEE IF EITHER EXISTS:

A. #1 SEAL D/P LESS THAN 200 PSID.

(OR)

B. #1 SEAL LEAKOFF FLOW LESS THAN 0.8 GPM.
[Step 7.b]

C 3. THE RCP's WERE STOPPED IF EITHER CONDITION WAS EXCEEDED.
[Step 7.c]

EVALUATOR'S NOTES:

why

NOTE: When phase A is actuated, # 1 seal ΔP will decrease to < 200 psid if it has not already.

NOTE: Only standard 3 is critical to this element.

NOTE: RCPs may be stopped earlier in this scenario based on foldout page guidance.

(C) **ELEMENT: 12**

START ONE HIGH-HEAD SI PUMP.
[3-ONOP-041.7, Steps 8->11]

STANDARDS: NOT C

why is this critical

__1. ONE HHSI PUMP WAS STARTED IF EITHER OF THE FOLLOWING CONDITIONS WAS CHECKED AND FOUND TO EXIST:

A. PRZ LEVEL LESS THAN 12% [50%].

(OR)

B. RCS SUBCOOLING BASED ON CORE EXIT TCs LESS THAN 30°F [210°F].

[Step 8]

Already / valve is open - why critical

__2. ONE TRAIN OF SI EQUIPMENT ALIGNED FOR INJECTION AS FOLLOWS:

A. VERIFIED A TRAIN IS ALIGNED BY VERIFYING MOV-*-843A IS OPEN.

(OR)

B. VERIFIED B TRAIN IS ALIGNED BY VERIFYING MOV-*-843B IS OPEN.

[Step 9]

this is critical

__3. ONE HHSI PUMP STARTED.
[Step 10]

NOT C

__4. SI FLOW VERIFIED ON FI-943.
[Step 11]

EVALUATOR'S NOTES:

NOTE: Standard 4 is not critical to this element.

Terminate JPM at this point.

NOTES

- *STEP 1 in an IMMEDIATE ACTION step.*
- *Foldout page shall be monitored throughout this procedure.*

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	**Maintain RCS Inventory** a. Maintain RCS Inventory as directed by the NPS: • Maintain program level **OR** • Maintain ordered band for operational mode **OR** • Maintain unit water solid (if unit water solid prior to event) b. Start additional charging pumps as necessary to maintain RCS Inventory c. **IF** charging flow is maximum, **THEN** isolate letdown flow	
2	**Check RCS Inventory Decreasing**	Go to Step 10.
3	**Verify The Following:** a. Charging flow - MAXIMUM b. Letdown flow - ISOLATED	Return to Step 1.
4	**Check Unit In Mode 1 Through 3 Greater Than 1000 psig With Safety Injection System Aligned For Injection**	Go to Step 6.
5	**Manually Trip The Reactor AND Go To 3-EOP-E-0, REACTOR TRIP OR SAFETY INJECTION**	
6	**Check Unit Operating Mode 3 Less Than 1000 psig With Safety Injection Blocked Or Mode 4**	Go to Step 8.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	**Go To 3-ONOP-041.7, SHUTDOWN LOCA [MODE 3 (LESS THAN 1000PSIG) OR MODE 4]**	
8	**Check Unit Operating Mode 5 or 6 With Refueling Cavity <u>NOT</u> FILLED**	Go to 3-ONOP-033.2, REFUELING CAVITY SEAL FAILURE.
9	**Go To 3-ONOP-041.8, SHUTDOWN LOCA [MODE 5 OR 6]**	
10	**Monitor RCS Leakage**	
	a. Perform The Following:	
	1) Determine RCS leak rate using the appropriate leak rate procedure • 3-OSP-041.1, REACTOR COOLANT SYSTEM LEAKRATE CALCULATION <u>**OR**</u> • 3-OSP-041.2, REACTOR COOLANT SYSTEM VISUAL LEAK INSPECTION <u>**AND**</u> LEAK EVALUATION	
	2) Attempt to identify the source of the leak	
	3) Check if the leak is isolable	3) Go to Step 11.
	4) Isolate the leak as following: • <u>**IF**</u> leakage is from the RHR System, <u>**THEN**</u> perform ATTACHMENT 1 <u>**OR**</u> • Plant Clearance	

FOLDOUT FOR PROCEDURE 3-ONOP-041.3

-- **3-EOP-E-0 TRANSITION CRITERIA**
IF Unit 3 is in Modes 1 through 3 greater than 1000 psig with the Safety Injection System aligned for injection, **AND** either of the following occurs, **THEN** verify the Reactor tripped **AND** go to 3-EOP-E-0, REACTOR TRIP OR SAFETY INJECTION:
a. RCS leakage greater than charging pump capcity and letdown isolated.
b. PZR level - CAN NOT BE MAINTAINED GREATER THAN 12%[50%]

2. **3-ONOP-041.7 TRANSITION CRITERIA**
IF Unit 3 is in Modes 3 Less than 1000 psig with the Safety Injection system flow paths isolated or Mode 4, **AND** either of the following occurs, **THEN** go to 3-ONOP-041.7, SHUTDOWN LOCA [Mode 3 (less than 1000 psig) OR 4]:
a. RCS Leakage greater than charging pump capacity and letdown isolated.
b. PZR controlling RCS pressure with a bubble **AND** PZR level - CAN NOT BE MAINTAINED GREATER THAN 12%[50%]
c. PZR Water solid and PZR level decreasing with maximum charging flow and letdown isolated.

3. **3-ONOP-041.8 TRANSITION CRITERIA**
IF Unit 3 is in Mode 5 or 6 **AND** either of the following occurs, **THEN** go to 3-ONOP-041.8, SHUTDOWN LOCA [MODE 5 OR 6]
a. RCS Leakage greater than charging pump capacity **AND** letdown isolated.
b. RCS DRAINDOWN level less than 23%.

4. **3-ONOP-033.2 TRANSITION CRITERIA**
IF the reactor is operating in MODE 6 with the refueling cavity filled, **THEN** Go to 3-ONOP-033.2, REFUELING CAVITY FAILURE

3-ONOP-033.2 TRANSITION CRITERIA
IF any Process Radiation Monitor alarms while performing this procedure, **THEN** perform 3-ONOP-067, RADIOACTIVE EFFLUENT RELEASE while continuing with this procedure.

6. PRMS R-11 OR R-12 INCREASING
IF R-11 **OR** R-12 increasing, **THEN** close Containment Instrument Air Valves, CV-3-2819 and CV-3-2826, **AND** Containment Sump Pump Discharge Valves, CV-3-2821 and CV-3-2822.

7. **ADVERSE CONTAINMENT CONDITIONS**
Adverse containment conditions are defined as either a containment atmosphere temperature greater than or equal to 180° F **OR** containment radiation levels greater than or equal to 1.3E5 R/hr. Under these conditions the setpoint values in brackets, [ ], are required to be used.

IF containment temperature subsequently falls below 180° F, **THEN** normal setpoint values may be used. **IF** containment radiation level subsequently falls below $1.3x10^5$ R/hr **AND** TSC staff has determined that the integrated dose to containment is less than 10^6 Rads, **THEN** normal setpoint values may be used.

NOTES

- *Foldout page shall be monitored throughout this procedure.*
- *RCS inventory should be controlled using the level instrument(s) in use for existing plant conditions prior to the event.*

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	**Monitor Conditions To Determine If RHR Pumps Should be Stopped:**	
	a. Check the following: * PZR level - LESS THAN 12% [50%] **OR** * RCS subcooling based on core exit TCs - LESS THAN 30°F [210°F]	a. <u>IF</u> neither condition satisfied <u>THEN</u> Go to STEP 2
	b. Stop RHR pumps and place them in PULL TO LOCK	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	**Isolate RCS letdown**	
	a. Excess letdown isolation valves - CLOSED • CV-3-387, Excess Letdown Isolation Valve From Cold Leg To Excess Letdown Heat Exchanger • HCV-3-137, Excess Letdown Flow Controller	a. Manually close valves.
	b. Normal Letdown isolation valves - CLOSED • CV-3-200A, 45 gpm LTDN Isolation • CV-3-200B, 60 gpm LTDN Isolation • CV-3-200C, 60 gpm LTDN Isolation • LCV-3-460, High Pressure Letdown Isolation From Loop B Cold Leg	b. Manually close valves.
	c. RHR letdown Isolation Valves - CLOSED • HCV-3-142, RHR LTDN to CVCS	c. Manually close valve.

CAUTION

RCS Makeup Control Switch must be in Stop to ensure Charging pump suction auto transfers to the RWST.

3 **Check If Charging Flow Is Adequate** — Go to STEP 4

a. Adjust charging flow as necessary to maintain PZR level

b. Check PZR level

- GREATER THAN 12% [50%]
- STABLE **OR** INCREASING

c. RCS subcooling based on core exit TCs - GREATER THAN 30°F [210°]

d. Charging flow - ADEQUATE

- FI-3-122 -LESS THAN 140 GPM
- Check PZR level

  1) GREATER THAN 12% [50%]

  2) STABLE **OR** INCREASING

e. Go to appropriate plant procedure as determined by the Nuclear Plant Supervisor.

4 Dispatch Personnel To Locally Restore Power To Locked Out SI Equipment As Follows:

a. Verify the following breakers CLOSED

- 30622 for MOV-3-843B
- 30621 for MOV-3-866B
- 30605 for MOV-3-864B
- 30615 for MOV-3-750
- 30616 for MOV-3-862B
- 30626 for MOV-3-863B

b. Verify the following breakers CLOSED

- 30738 for MOV-3-843A
- 30737 for MOV-3-869
- 30712 for MOV-3-864A
- 30720 for MOV-3-862A
- 30726 for MOV-3-863A
- 30731 for MOV-3-751
- 30732 for MOV-3-866A

c. Verify the following breakers RACKED IN:

- 3AA13 for 3A HHSI PUMP
- 3AB12 for 3B HHSI PUMP
- 4AA13 for 4A HHSI PUMP
- 4AB12 for 4B HHSI PUMP

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	**Evacuate Non-essential Personnel In Containment**	
	a. Announce over the plant PA system: • **Attention all personnel inside Unit 3 Containment: ~~Evacuate Unit 3 Containment~~**	a. Request NPS pass supervisory announcement over MTX-900 radio to order personnel out of containment.
	b. Sound the containment evacuation alarm	b. Notify Health Physics Shift Supervisor **OR** Operations Department personnel inside containment to order all personnel to evacuate the containment building.
	c. Announce over the plant PA system: • **Attention all personnel inside Unit 3 Containment: Evacuate Unit 3 Containment**	c. Request NPS pass supervisory announcement over MTX-900 radio to order personnel out of containment.
6	**Actuate Containment Isolation Phase A:**	
	a. Manually actuate containment isolation phase A	
	b. Containment isolation phase A valve white lights on VPB - ALL BRIGHT	b. **IF** any containment isolation phase A valve is **NOT** closed, **THEN** manually close valve. **IF** valve(s) can **NOT** be manually closed, **THEN** manually or locally isolate affected containment penetration.
7	**Monitor Conditions To Determine If RCPs Must Be Stopped:**	
	a. Check RCPs -ANY RUNNING	a. Go to Step 8.
	b. Check the following: * Number one seal differential pressure - LESS THAN 200 PSID **OR** * Number one seal leakoff flow - LESS THAN 0.8 GPM	b. **IF** neither condition satisfied, **THEN** Go to Step 8.
	c. Stop affected RCP(s)	

What about essential?

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	**Check If One HHSI Pump Should Be Started:**	
	a. Check the following: * PZR level - LESS THAN 12% [50%] **OR** * RCS Subcooling based on core exit TCs - LESS THAN 30° F[210° F]	a. **IF** neither condition satisfied **THEN** go to STEP 16
9	**Establish One Train Of Safety Injection as follows:**	
	* Verify the following A train SI equipment aligned for injection a. SI To Cold Leg Isol Valve, MOV-3-843A - OPEN **OR** * Verify the following B train SI equipment aligned for injection a. SI To Cold Leg Isol Valve, MOV-3-843B - OPEN	
10	**Start One High-head SI Pump**	
11	**Verify SI Flow:**	
	a. High-head SI pump flow indicators - CHECK FOR FLOW • FI-3-940 • FI-3-943	a. Manually start pumps and align valves.

FOLDOUT FOR PROCEDURE E-0

1. **COLD LEG RECIRCULATION SWITCHOVER CRITERIA**
   IF RWST LEVEL DECREASES TO LESS THAN 155,000 GALLONS, **THEN** perform ATTACHMENT 2 of this procedure.

2. **CST MAKEUP WATER CRITERIA**
   IF CST level decreases to less than 10%, **THEN** add makeup to CST using 3-OP-018.1, CONDENSATE STORAGE TANK.

3. **RCP STOPPING CRITERIA**
   IF either of the following conditions occur, **THEN** the RCPs must be stopped:

   Number one seal differential pressure - LESS THAN 200 PSID

   OR

   Number one seal leakoff flow - LESS THAN 0.8 GPM

4. **OMS SERVICE CRITERIA**

   WHEN RCS Hot Leg temperature is less than 285°F, **THEN** place both OMS mode switches is Low Pressure Ops position.

5. **ADVERSE CONTAINMENT CONDITIONS**
   Adverse containment conditions are defined as either a containment atmosphere temperature greater than or equal to 180°F **OR** containment radiation levels greater than or equal to $1.3x10^5$ R/hr. Under these conditions the setpoint values in brackets, [ ], are required to be used.

   IF containment temperature subsequently falls below 180°F, **THEN** normal setpoint values may be used. **IF** containment radiation level subsequently falls below $1.3x10^5$ R/hr **AND** TSC staff has determined that the integrated dose to containment is less than 10^6 Rads, **THEN** normal setpoint values may be used.

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 1 AT 100% POWER.
2. ALL SYSTEMS ARE IN THEIR NORMAL ALIGNMENT EXCEPT A CONTAINMENT PURGE IS IN PROGRESS.

INITIATING CUE:

AS THE RCO, RESPOND TO PLANT CONDITIONS.

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: RESPOND TO PROCESS RADIATION MONITOR ALARM(S)

JPM NUMBER: 01067009300 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 05/14/99

NUCLEAR SAFETY IMPORTANCE: 3.00

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

1. Reset to IC-1; Place simulator in run; Touch sys mat->containment->sampling & prms->2600->fuse loa->set TCC1XEPF=T->2601->fuse loa->set TCC1LAGF=T->2602->fuse loa->set TCC1XEQF=T->2603->fuse loa->set TCC1LAHF=T; Install white placards on VPB switches for POV-2600->2603.

2. Open POV-3-2602/3; Open POV-3-2600/1; Start U-3 purge exhaust fan; Start U-3 purge supply fan.

3. Block auto operation of containment and control room ventilation isolation on an R-11/12 alarm as follows: sys mat->reactor->safeguards actuation logic->containment isolation->CIV11->fail to actuate->set TFL3V11=T->CIV1->fail to actuate->fail to actuate->TFL3V1=T.

4. Freeze simulator.

TASK STANDARDS:

1. THE ALARMING CHANNEL WILL BE IDENTIFIED.
2. THE ALARM CONDITION WILL BE VALIDATED BY CHECKING THE AFFECTED PRMS CHANNEL.
3. AUTO ACTIONS ASSOCIATED WITH THE PRMS ALARM WILL BE VERIFIED.
5. THE SOURCE OF THE PROBLEM WILL BE INVESTIGATED.

REQUIRED MATERIALS:

1. 3-ONOP-067, RADIOACTIVE EFFLUENT RELEASE

REFERENCES:

1. 3-ONOP-067, RADIOACTIVE EFFLUENT RELEASE
2. 3-ARP-097.CR, WINDOW H-1/4

TERMINATING CUES:

1. ONOP-067 ACTIONS COMPLETED TO MITIGATE THE EVENT AND ISOLATE THE SOURCE OF THE RELEASE.

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND THE SIMULATOR WILL PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 1 AT 100% POWER.
2. ALL SYSTEMS ARE IN THEIR NORMAL ALIGNMENT EXCEPT A CONTAINMENT PURGE IS IN PROGRESS.

INITIATING CUE:

AS THE RCO, RESPOND TO PLANT CONDITIONS.

EVALUATOR'S NOTES:

NOTE 1: The operator may silence the PRMS HI RADIATION alarm.

What is expectations?

NOTE 2: Elements 4 and 5 may be performed early based on when the operator reviews and applies the Fold Out page.

BOOTH OPERATOR: Shortly after simulator taken to run, Touch sys mat->containment->sampling & prms->R11->rad transmitter drift coefficient->TVCMMD1=0.04/1min ramp ->R12->rad transmitter drift coefficient->set TVCMMD2=0.04/1min ramp

Do not Fail R11 full upscale - Just above APP setpt.

( ) **ELEMENT: 1**

OBTAIN PROCEDURE.

STANDARDS:

__1. 3-ONOP-067, RADIOACTIVE EFFLUENT RELEASE, OBTAINED.

EVALUATOR'S NOTES:

None

Expected to use ARP - Silence alarm?.

Need ARP ACTIONS

Element 1

ELEMENT 2 or 1.a.

( ) **ELEMENT: 2**

VALIDATE THE PRMS HI RADIATION ALARM.

STANDARDS:

__1. REVIEWED NOTES PRIOR TO STEP 1.

__2. IDENTIFIED THE ALARMING PRMS CHANNEL AS R-11 BY OBSERVING THE R-11 RED HIGH LED ON.
[Step 1]

__3. X REVIEWED NOTES PRIOR TO STEP 2 AND NOTED STEP 2.b WAS NOT APPLICABLE FOR AN R-11 ALARM.

__4. CHECKED CHANNEL READOUT INDICATING > ALARM SETPOINT.
[Step 2a]

__5. DEPRESSED C/S PUSHBUTTON AND CHECKED PROPER RESPONSE FOR A SOURCE CHECK.
[Step 2c]

__6. X CHECKED FAIL INDICATOR TO BE OFF - *NOT APPLICABLE TO R-11 & R-12*
[Step 2d]

__7. CHECKED DISPLAY AND RECORDER READING **NOT** FAILED LOW.
[Step 2d]

__8. CHECKED RM-80 GREEN MONIOTR LIGHT TO BE ON.
[Step 2d]

__9. REVIEWED CAUTION AND NOTES PRIOR TO STEP 3.

__10. TRANSITIONED TO STEP 16 BASED ON STEP 3 RNO.
[Step 3]

EVALUATOR'S NOTES:

NOTE: Due to high level, source check response may not be visible.

( ) **ELEMENT: 3**

CHECK FOR R-11/12 HIGH ALARMS.
[Step 16a]

STANDARDS:

What is criteria?

__1. CHECKED R-11 RED HIGH LED - ON.

__2. CHECKED R-11 PART ALARM MONITOR PUSHBUTTON - FLASHING.

__3. CHECKED R-12 RED HIGH LED - ON.

__4. CHECKED R-12 GAS ALARM MONITOR PUSHBUTTON - FLASHING.

__5. CHECKED R-11/12 DISPLAY READING - GREATER THAN OR EQUAL TO ALARM SETPOINT.

EVALUATOR'S NOTES:

NOTE: Standards 2 & 4; Once pressed, R-11 & R-12 pushbuttons will no longer flash.

(C) **ELEMENT: 4**

VERIFY CONTAINMENT VENTILATION ISOLATION.
[Step 16b & Att.1, pg.1]

STANDARDS:

1. CHECKED CONTAINMENT VENTILATION ISOLATION.

3-2600 Need

/ # ? What are correct #

Need ATTachment X

__A. STOPPED CONT. PURGE AIR SUPPLY FAN.

__B. STOPPED CONT. PURGE AIR EXHAUST FAN.

__C. CLOSED POV-2600, CONT. PURGE SUPPLY ISOLATION (OC).

__D. CLOSED POV-2601, CONT. PURGE SUPPLY ISOLATION (IC).

__E. CLOSED POV-2602, CONT. PURGE EXHAUST ISOLATION (OC).

__F. CLOSED POV-2603, CONT. PURGE EXHAUST ISOLATION (IC).

__G. CLOSED CV-2826, CONT. INSTRUMENT AIR BLEED (OC).

__H. CLOSED CV-2819, CONT.INSTRUMENT AIR BLEED (IC).

EVALUATOR'S NOTES:

NOTE 1: Because the R-11 alarm failed to initiate Containment and Control Room Ventilation, the operator will have to manually align the listed equipment.

NOTE 2: The operator may have performed these actions immediately upon entering the procedure in response to Fold Out Page 2.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01049002306

JOB CLASSIFICATION: RCO

JPM TITLE: TRIP INSTRUMENT BISTABLES IN RESPONSE TO A FAILURE OF LT-495, 3C STEAM GENERATOR LEVEL TRANSMITTER

JPM NUMBER: 01049002306 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 05/26/99
NUCLEAR SAFETY IMPORTANCE: 4.00

COMBINED IMPORTANCE: 4.00

TIME VALIDATION: 12 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

1. Reset to IC-1.
2. Take 3C condensate pump out of service [Touch sys mat ->main power distribution-> 4KV & 480VAC->3C4KVBUS->12 ->breaker position->set TAF1D6CP=3].
3. Take 3C S/G Pressure transmitter, FT-495, out of service by failing the transmitter high. Touch [STEAM PRESSURE->F495->FT495->TRANSMITTER FAIL HIGH->SET TFS1M6EH=T]
4. Trip the following bistables:
   Rack #25 BS-3-495, BS-3-498A-1, BS-3-498A-2, BS-3-498D
5. Acknowledge alarms and hang clearance tags on rack 25 and 3C condensate pump switch.
6. Put simulator in freeze.

TASK STANDARDS:

1. NO REACTOR PROTECTION OR SAFEGUARDS ACTION INITIATED.
2. MINIMUM CHANNELS OPERABLE MAINTAINED.
3. CORRECT BISTABLES IDENTIFIED AND TRIPPED.

REQUIRED MATERIALS:

Where do they put this –

1. KEY #3 TO HAGAN RACKS
2. 3-ONOP-049.1 "DEVIATION OR FAILURE OF SAFETY RELATED OR REACTOR PROTECTION CHANNELS"

REFERENCES:

1. 3-ONOP-049.1, "DEVIATION OR FAILURE OF SAFETY RELATED OR REACTOR PROTECTION CHANNELS"

TERMINATING CUES:

APPROPRIATE BISTABLES HAVE BEEN MANUALLY TRIPPED.

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND THE SIMULATOR WILL PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 1 AT 100% POWER.
2. THE 3C CONDENSATE PUMP IS OUT OF SERVICE.
3. 3C S/G STEAM FLOW TRANSMITTER, FT-495, HAS FAILED HIGH AND ITS BISTABLES HAVE BEEN TRIPPED.
4. ALL OTHER ALIGNMENTS AND EQUIPMENT CONDITIONS ARE NORMAL.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

BOOTH INSTRUCTIONS: **Fail 3C S/G level transmitter, LT-495, high. [Touch STEAM PRESSURE-> STEAM GEN ->L495->LT495->TRANSMITTER FAIL HIGH-> SET TFF1M2CH=T]**

Full scale
or Partial
Scale
?

But not
Full
SCALE
*

[illegible]

( ) ELEMENT: 1

OBTAIN REQUIRED MATERIALS.

STANDARDS:

__1. SILENCED ANNUNCIATOR.

__2. OBTAINED 3-ONOP-049.1.

does it require two?

EVALUATOR'S NOTES:

NOTE: Normally this task is shared between the RCO and the ANPS.

Cue: **If asked, tell the operator to perform the actions as directed by ONOP-049.1.**

( ) ELEMENT: 2

How much "Log" to review proc.

IDENTIFY MALFUNCTIONIONING PROTETCTION INSTRUMENTATION CHANNEL.
[Step 5.1]

STANDARDS:

__1. CHANNEL IDENTIFIED BY INSTRUMENT LOOP NUMBER: LT-495.

__2. CHANNEL COMPARED TO ADJACENT CHANNELS AND KNOWN PLANT PARAMETERS AND CONDITIONS.

EVALUATOR'S NOTES:

Note 1: The operator will compare the failed high LT-495 with its adjacent channels, LT-494 and LT-496 which will be reading normally.

Note 2: The operator will determine that no plant transient condition exists.

( ) **ELEMENT: 3**

VERIFY NO APPLICABLE CONTROL TRANSFER SWITCHES.
[Step 5.2]

STANDARDS:

__1. OBSERVED THAT THE FAILED CHANNEL, LT-495, IS PROTECTION ONLY.

EVALUATOR'S NOTES:

NOTE: There is no applicable transfer switch for this failure.

( ) **ELEMENT: 4**

VERIFY THAT NO OFF-NORMAL CONDITIONS EXIST ON THE ADJACENT CHANNELS.
[Step 5.3]

STANDARDS:

__1. LOOP METER INDICATIONS ARE LOOKED AT AND VERIFIED CONSISTENT WITH NORMAL VALUES.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 5**

RO's duty??

REFER TO TECH SPECS AND VERIFY MINIMUM CHANNELS OPERABLE. [Step 5.4]

Why not let Ops do this.

STANDARDS:

__1. IDENTIFIED NEED TO REFERENCE TECH SPECS.

Cue: ***When the need to reference Tech Specs is identified, tell the operator that the NPS is doing that and to continue with the procedure.***

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 6**

VERIFIED ATTACHMENTS 1, 2, & 3 ARE NOT REQUIRED TO BE PERFORMED AND A TEST SEQUENCER PROCESSOR HAS NOT FAILED. [Steps 5.5, 5.6, 5.7, 5.8]

Why not let the Opr Verify these?

STANDARDS:

__1. IDENTIFIED THAT A 4KV/480V LOAD CENTER UNDERVOLTAGE CHANNEL HAS NOT FAILED.

__2. IDENTIFIED THAT A TURBINE STOP VALVE CLOSURE CHANNEL HAS NOT FAILED.

__3. IDENTIFIED THAT A TURBINE STOP OIL CHANNEL HAS NOT FAILED.

__4. IDENTIFIED THAT A TEST SEQUENCER PROCESSOR NOR AN EAGLE 21 CHANNEL HAS FAILED.

Cue: ***When these issues are raised by the operator, role play as the ANPS and acknowledge that the situations presented by Steps 5.5 through 5.8 do not exist.***

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 7**

DETERMINE THAT ALL BISTABLES FOR LT-495 CANNOT BE THROWN. (Step 5.9)

STANDARDS:

__1. READ STEP 5.9 AND DETERMINED THAT AN UNDESIRABLE ENGINEERED SAFETY FEATURE ACTUATION WILL BE INITIATED IF BISTABLES ARE THROWN.

__2. READ THE NOTE PRIOR TO STEP 5.9.1.

__3. REQUESTED GUIDANCE FROM THE ANPS PRIOR TO CONTINUING.

Cue: *When the operator identifies that a reactor trip will occur if all of the bistables listed in Attachment 4 are thrown, direct the operator to:*

"Place all bistable switches for the affected loop in the test position using Attachment 4 that will not result in a reactor trip."

Cue: *If the operator fails to recognize that a reactor trip will occur if all of the listed bistables are thrown, direct the operator to:*

"Place all bistable switches for the affected loop in the test position using Attachment 4."

EVALUATOR'S NOTES:

Note 1: Page 32 of Attachment 4 lists the 6 bistables that would normally be thrown for a failure of LT-495. In this case, 1 of the 6 bistables should not be thrown: BS-3-495B-1.

Note 2: Only Standard 1 is critical to this element.

(C) **ELEMENT: 8**

PLACE BISTABLES IN THE TEST POSITION.
[Step 5.9.1 & 5.9.2]

STANDARDS:

__1. EVALUATED ATTACHMENT 4, PAGE 32 OF 53 AND IDENTIFIED WHICH BISTABLE CANNOT BE THROWN (BS-3-495B-1).

__2. OBTAINED NPS PERMISSION TO THROW REMAINING BISTABLES LISTED ON PAGE 32 OF 53.

Why Critical

Cue: As the NPS, grant permission to throw remaining bistables listed on Page 32 of 53.

C __3. OBTAINS KEY #3 TO HAGAN RACKS.

Cue: The operator will explain that Key #3 will need to be checked out from the NPS. The examiner should role play as the NPS and give the key to the operator.

C __4. PROCEEDED TO HAGAN RACK 13 AND PLACED THE FOLLOWING BISTABLE SWITCHES TO TEST:

  __A. BS-3-495-1

  __B. BS-3-495-2

  __C. BS-3-495A-1

  __D. BS-3-495A-2

  __E. BS-3-495B-2

__5. VERIFIED BISTABLE STATUS IN HAGAN RACK 13 BY OBSERVATION OF THE ASSOCIATED STATUS LIGHTS.

__6. VERIFIED BISTABLE STATUS IN CONTROL ROOM BY OBSERVING POSTAGE STAMP BISTABLE LIGHTS ARE LIT FOR EACH OF THE 5 BISTABLES THROWN.

__7. VERIFIED THE FOLLOWING ANNUNCIATORS ARE LIT:

__A. C 2/3

__B. C 1/3

* why would this be
critical - ?
maybe loss
is open/(w?) locked

EVALUATOR'S NOTES:

NOTE: Only Standards 3 & 4 are critical to this Element.

(C) **ELEMENT: 9**

EVALUATE NECESSITY OF PLACING BYPASS SWITCHES AT AMSAC PANEL TO BYPASS.
[Step 5.10]

STANDARDS:

__1. REVIEWED STEP 5.10 AND DETERMINED IT WAS APPLICABLE FOR THE FAILURE OF LT-495.

__2. DIRECTED THE FIELD OPERATOR TO PLACE THE BYPASS SWITCH FOR STEAM GENERATOR LEVEL CHANNEL II (LI-3-495) TO THE BYPASS POSITION AT THE AMSAC PANEL USING ATTACHMENT 5 OF 3-ONOP-049.1.

EVALUATOR'S NOTES:

Booth Operator: Acknowledge the directions given by the operator and place the failed channel switch to Bypass at the AMSAC Panel.
[SYS MAT->REACTOR->EAGLE 21/AMSAC->AMSAC->PROCESSOR B LEVEL 3 BYPASS SWITCH->SET TCL4L3BB=T]

( ) ELEMENT: 10

EVALUATE THE NECESSITY OF RESETTING THE STEAM DUMP TO CONDENSER.
[Step 5.11]

STANDARDS:

__1. REVIEWED STEP 5.11 AND DETERMINED IT WAS NOT APPLICABLE FOR THE FAILURE OF LT-495.

EVALUATOR'S NOTES:

None

( ) ELEMENT: 11

COMPLETE ADMINISTRATIVE REQUIREMENTS.
[STEP 5.12 & 5.13]

STANDARDS:

__1. IDENTIFIED THE NEED TO INITIATE A PWO AND NOTIFY THE I&C SUPERVISOR.

Cue: ***When the need for a PWO and I&C Supervisor notification are stated, role play as the ANPS and tell the RCO:***

"That is being handled by another operator."

__2. IDENTIFIED THE NEED TO COMPLETE SUBSECTION 5.9 AND ISSUE A CLEARANCE.

Terminate the JPM at this point.

7/C

Florida Power & Light Company

Turkey Point Nuclear Plant

Unit 3

This procedure may be affected by an O.T.S.C. (On The Spot Change) verify information prior to use
Date verified_______ Initials_______

3-ONOP-049.1

Title:

Deviation or Failure of Safety Related or Reactor Protection Channels

Safety Related Procedure

Responsible Department:	Operations
Revision Approval Date:	11/7/97
Periodic Review Due:	10/29/02

RTSs *92-1600P, 92-2177P, 93-1529P, 95-0520P, 95-0639, 95-0850P, 95-0658P, 96-1030P, 96-1476P, 97-1019P*
PC/Ms *94-035, 95-170*

LIST OF EFFECTIVE PAGES

OTSCs Incorporated by Word Processing:

	OTSC Number	Originator	Safety Review By	Approved By	Approved By (NPS)	PNSC No.	Approval Date
1	0805-97	B. Adams	J. Rosado	J. Eaton	W. Prevatt	N/A	11/7/97

Page	Revision Date	Page	Revision Date
1	11/07/97	38	11/07/97
2	11/07/97	39	11/07/97
3	11/07/97	40	11/07/97
4	10/30/97	41	11/07/97
5	11/07/97	42	11/07/97
6	11/07/97	43	11/07/97
7	11/07/97	44	11/07/97
8	11/07/97	45	11/07/97
9	11/07/97	46	11/07/97
10	11/07/97	47	11/07/97
11	11/07/97	48	11/07/97
12	11/07/97	49	11/07/97
13	11/07/97	50	11/07/97
14	11/07/97	51	11/07/97
15	11/07/97	52	11/07/97
16	11/07/97	53	11/07/97
17	11/07/97	54	11/07/97
18	11/07/97	55	11/07/97
19	11/07/97	56	11/07/97
20	11/07/97	57	11/07/97
21	11/07/97	58	11/07/97
22	11/07/97	59	11/07/97
23	11/07/97	60	11/07/97
24	11/07/97	61	11/07/97
25	11/07/97	62	11/07/97
26	11/07/97	63	11/07/97
27	11/07/97	64	11/07/97
28	11/07/97	65	11/07/97
29	11/07/97	66	11/07/97
30	11/07/97	67	11/07/97
31	11/07/97	68	11/07/97
32	11/07/97	69	11/07/97
33	11/07/97	70	11/07/97
34	11/07/97	71	11/07/97
35	11/07/97	72	11/07/97
36	11/07/97	73	11/07/97
37	11/07/97		

*/JWB/1:3/mb/sw/lr

TABLE OF CONTENTS

1.0 PURPOSE

1.1 This procedure provides the corrective action for responding to a safety related or reactor protection channel failure/deviation and provides the necessary instructions to ensure that the minimum channels operable is met as required by Technical Specifications.

NOTES

- *Momentary spiking of a channel that quickly returns to normal may be a precursor of imminent channel failure. The bistables for that channel should be placed in the tripped position as soon as possible, with a maximum delay time of 6 hours, to allow for further investigation by I&C.*
- *Instrumentation failure may occur in such a manner as to cause a particular instrumentation loop to deviate from the actual monitored parameter by either a finite or extreme amount. Such a deviation may be in a direction such that a reactor protection or safety related trip function may not occur on that instrument loop, even though the setpoint for the trip function has been reached by the actual parameter.*

2.0 SYMPTOMS

2.1 An instrumentation loop could have failed or failure may be imminent if any of the following symptoms exist:

2.1.1 A channel indicator and/or recorder pen showing a pegged low or high condition.

2.1.2 A channel indicator showing a deviation from one or more of the adjacent channels of a magnitude greater than the posted allowable deviation.

2.1.3 During routine testing, maintenance, etc., evidence (such as test equipment readings, module performance) suggests that an instrumentation failure has occurred.

2.1.4 Alarms occurring on an instrumentation channel which otherwise indicates normal.

2.1.5 Process controls acting erratically or abnormally.

2.1.6 Momentary spiking occurs with return to normal indication.

3.0 AUTOMATIC ACTIONS

3.1 The following automatic actions may or may not occur, depending upon the channel which has failed and the mode of failure:

3.1.1 Actuation of the high or low alarm associated with the failed channel.

3.1.2 Initiation of a trip function as evidenced by alarm actuation or status light illumination.

4.0 IMMEDIATE ACTIONS

4.1 None

5.0 SUBSEQUENT ACTIONS

What constitutes off-normal

5.1 Verify instrument loop failure by comparison to adjacent loops and known plant parameters and conditions.

5.2 Verify applicable control transfer switches are in the position which eliminates the failed loop.

5.3 Verify no off-normal conditions exist on the adjacent channels which are to remain in service.

RO's [illegible] do?

5.4 Refer to Technical Specifications 3/4.3, Instrumentation, **AND** verify the minimum channels operable.

5.4.1 Take appropriate actions as specified in Technical Specifications.

CAUTION

The failed channel bistable(s) is required to be placed in the tripped mode within 6 hours of the failure determination, except if other channel bistable(s) are in the tripped or test position and would result in an undesired Engineered Safety Features actuation or Reactor Trip actuation. The overall effect of a failure of this type is a reduction of instrumentation redundancy and, therefore, a possible reduction in plant protection.

5.5 **IF** a 4KV bus/480V load center undervoltage channel has failed, **THEN** perform Attachment 1.

5.6 **IF** a turbine stop valve closure channel has failed, **THEN** perform Attachment 2.

5.7 **IF** a turbine auto stop oil channel has failed, **THEN** perform Attachment 3.

NOTE

If I&C determines a Test Sequence Processor for an Eagle-21 Channel has failed, then that associated Eagle-21 Channel may remain in service if Attachment 6 is performed once per shift. (Reference Safety Evaluation JPN-PTN-SEIS-95-001)

5.8 **IF** I&C determines a Test Sequence Processor on an Eagle-21 Channel has failed **AND** no off-normal bistables are lit, **THEN** perform Attachment 6 once per shift until the associated Eagle-21 Channel is removed from service for repair.

Channel Failed Low I.C

5.9 **IF** any other channel has failed **AND** an undesirable Engineered Safety Features actuation will **NOT** be initiated, **THEN** perform the following:

> **NOTE**
>
> ***IF*** *plant conditions are such that not all bistables associated with the failed channel may be tripped due to an undesired RPS or ESF actuation,* ***THEN*** *place only the bistables which will* ***NOT*** *cause an RPS or ESF actuation in the test/tripped position (follow action of Tech. Spec. 3/4.3 for those bistables which were not placed in the tripped condition).*

5.9.1 Place all bistable switches for the affected loop in test position using Attachment 4.

5.9.2 Verify bistables tripped by observing corresponding status light (VPB) On.

5.10 **IF** any of the following channels are failed, **THEN** place the Bypass Switch(es) for the failed channel to Bypass position at the AMSAC panel using Attachment 5:

5.10.1 Any Steam Generator Level Channel I (LI-3-474, LI-3-484, or LI-3-494)

OR

5.10.2 Any Steam Generator Level Channel II (LI-3-475, LI-3-485, or LI-3-495)

OR

5.10.3 PT-3-446

OR

5.10.4 PT-3-447

OTSC

NOTE

The following step is to allow automatic operation of the Steam Dump to Condenser System during a turbine trip subsequent to a failure of PT-3-447, First Stage Pressure Channel.

5.11 **IF** First Stage Pressure Channel, PT-3-447 has failed **AND** Steam Dump to Condenser has armed, **THEN** place the Steam Dump to Condenser Mode Selector switch to RESET and return to AUTO.

0805-97

5.12 Initiate a Plant Work Order **AND** notify the I&C Supervisor.

5.13 **IF** maintenance is **NOT** to be performed immediately, **THEN** verify Subsection 5.9 complete **AND** issue a clearance for each bistable switch that was placed in the tripped position in accordance with 0-ADM-212, In-Plant Equipment Clearance Orders.

6.0 REFERENCES/RECORDS REQUIRED/COMMITMENT DOCUMENTS

6.1 References

6.1.1 Technical Specifications

1. 3/4.3, Instrumentation

6.1.2 FSAR

1. Section 4.2, System Design and Operation
2. Section 7.2, Protective Systems

6.1.3 Plant Procedures

1. 0-ADM-212, In-Plant Equipment Clearance Orders
2. 0-EPIP-20101, Duties of Emergency Coordinator

6.1.4 Miscellaneous Documents (i.e., PC/M, Correspondence)

1. Channel Accuracies, Overall Channel Accuracies and Setpoint Tolerances Document
2. Westinghouse Control and Protection Instrumentation System, Vol I and Vol II.
3. PC/M 90-220, RTD Bypass Elimination Modification and Eagle 21 Installation
4. PTN-OPSTA-91-034, Revised Tech Open Items
5. JPN-PTN-SEIS-95-001, Safety Evaluation for Operability of Eagle-21 Racks with the Test Sequence Processor (TSP) Out-of-Service
6. PC/M 95-170, Thermal Power Uprate Setpoint/Scaling

6.2 Records Required

6.2.1 Normal log entries

6.2.2 Completed copies of the below listed item(s) constitute Quality Assurance records and shall be transmitted to QA Records for retention in accordance with the Quality Assurance Records Program requirements:

1. Attachment 2
2. Attachment 3
3. Attachment 6

6.3 Commitment Documents

6.3.1 None

END OF TEXT

ATTACHMENT 4
(Page 32 of 53)

FAILED CHANNEL BISTABLE LIST

L-3-495 **Steam Generator C Narrow Range Level** Ref Dwgs 5610-T-D-17; 5610-T-L1, Sh 3 and 19

Max Deviation As Compared to other Channels 10% LEVEL DEVIATION

RACK No.	BISTABLE No.	BISTABLE FUNCTION	STATUS LIGHT	ANNUNCIATOR	FUNC-TION	LOGIC AFFECTED
13	BS-3-495-1	HI Level Logic	S/G C HI LEVEL LC495-1		P	2/3 channels on 1/3 S/G, high S/G level (N/R 80%) for turbine trip, with P-7 satisfied causing reactor trip signal
13	BS-3-495-2	HI Level Alarm		C 2/3 SG C NARROW RANGE HI LEVEL	C	
13	BS-3-495A-1	Lo Lo Level Logic	S/G C LO LO LEVEL LC495A1		P	2/3 channels on 1/3 S/G, low low level (10%)
13	BS-3-495A-2	Lo Lo Level Alarm		C 1/3 SG C NARROW RANGE LO/LO-LO LEVEL	C	
13	BS-3-495B-1	Lo Level Logic	S/G C LO LEVEL LC495B1		P	1/2 channels on 1/3 S/G, low level (10%) with 1/2 low feedwater flow (665,000 lb/hr <steam flow) on same S/G
13	BS-3-495B-2	Lo Level Alarm		C 1/3 SG C NARROW RANGE LO/LO-LO LEVEL	C	

C - CONTROL RELATED
P - RX PROTECTION RELATED
S - SAFETY INJECTION RELATED

(C) **ELEMENT: 5**

VERIFY CONTROL ROOM VENTILATION ISOLATION.
(Step 16b & Att.1, pg.2)

Need

STANDARDS:

1. CHECKED CONTROL ROOM VENTILATION ISOLATION.

__A. CLOSED D-1A, VENTILATION INLET DAMPER.

__B. CLOSED D-1B, VENTILATION INLET DAMPER.

__C. STOPPED EF-9, TOILET EXHAUST FAN.

__D. STOPPED EF-20, KITCHEN EXHAUST FAN.

__E. CLOSED D-14, TOILET EXHAUST DAMPER.

__F. CLOSED D-22, KITCHEN EXHAUST DAMPER.

__G. STARTED CONTROL ROOM EMERGENCY VENTILATION SUPPLY FAN, SF1B.

__H. OPENED D-2, EAST INLET DAMPER.

__I. OPENED D-3, WEST INLET DAMPER.

__J. OPENED D-11A, CONTROL ROOM RECIRC DAMPER.

__K. OPENED D-11B, CONTROL ROOM RECIRC DAMPER.

EVALUATOR'S NOTES:

NOTE: As with the Containment Room Ventilation, Control Room Ventilation Isolation failed to occur and the components must be manually aligned.

( ) **ELEMENT: 6**

DISPATCH A FIELD OPERATOR TO INSPECT THE RM-80 SKID.
[Step 16C]

STANDARDS:

__1. FIELD OPERATOR DIRECTED TO INSPECT SKID, SILENCE LOCAL ALARMS AND CHECK FOR ABNORMAL INDICATIONS.

EVALUATOR'S NOTES:

BOOTH OPERATOR CUE: ***Acknowledge the command to inspect the RM-80 skid.***

( ) **ELEMENT: 7**

DIRECT HEALTH PHYSICS AND CHEMISTRY TO VERIFY ACTUAL ACTIVITY INSIDE CONTAINMENT.
[Step 16d]

STANDARDS:

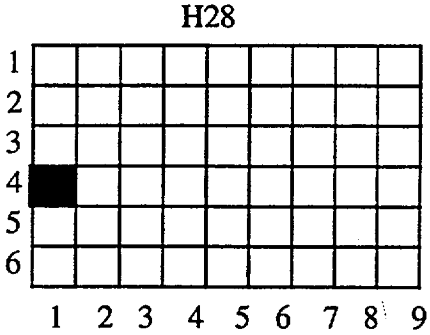
__1. CHEMISTRY AND HP DIRECTED TO VERIFY ACTUAL ACTIVITY INSIDE CONTAINMENT.

BOOTH OPERATOR CUE: ***Report back that containment is still locked and no entries have been made.***

EVALUATOR'S NOTES:

TERMINATE THE JPM AT THIS POINT.

YELLOW	POWER PRODUCTION AVAILABILITY	H 1/4



ATTACHMENT 8
Page 4 of 54
Panel H

PRMS
HI RADIATION

How to know what SP is / should Be

DEVICES:

R-11, R-12, R-14,
R-15, R-17A/B,
R-18, R-19, & R-20

SETPOINTS:

Variable with each PRMS channel

How to ID Spurious Alarm with no set point values?

OPERATOR ACTIONS:

1. Verify alarm by checking the following:
   a. Countrate meter on each PRMS drawer in rack QR-66.
   b. Alarm indicators on each drawer in rack QR-66.

2. Verify the following automatic actions have occurred:
   a. Refer to 3-ONOP-067, Radioactive Effluent Release, for alarms on R-11, R-12, R-14, R-17A/B, R-18, R-19, **OR** R-20.

3. Corrective actions:
   a. Verify valid alarm on affected PRMS channel (for all channels except R-11/12 or R-20):
      (1) Check FAIL/TEST light not lit.
      (2) Push FAIL/TEST light (meter reading of 288 or 289K)
      (3) Push SOURCE CHECK light (should get meter increase).
      (4) Push HIGH ALARM light to determine if meter level is above high alarm setpoint.
   b. Verify or manually initiate required automatic actions.
   c. Refer to 3-ONOP-067, Radioactive Effluent Release.
   d. Refer to TS 3.3.3, 3.4.6, and 3.9.13 for additional required actions.

Don't exist for R11/12 ?!!

CAUSES:
1. High radiation in on of the systems monitored by PRMS.
2. PRMS system component failure.

REFERENCES:
1. Tech Spec Sections 3.3.3, 3.4.6, and 3.9.13

FOLDOUT PAGE

How will they know this?

What will ops do here step 1

1. Notify plant personnel of any potentially hazardous effluent release via the plant page. Notification should include specific information about the nature of the release, the location of affected plant areas and a warning for personnel to remain clear.

2. Verify the automatic actions for any of the following PRMS HIGH ALARMS if they occur:

   a. R-11/12 HIGH ALARM:

   Doe

      1) Containment purge supply and exhaust valves - CLOSED

         - POV-3-2600
         - POV-3-2601
         - POV-3-2602
         - POV-3-2603

      2) Containment instrument air bleed valves - CLOSED

         - CV-3-2819
         - CV-3-2826

      3) Containment purge supply and exhaust fans - OFF

      4) Control Room ventilation in recirculation lineup

   Not as detailed as step a, why not?

   b. R-14 HIGH ALARM

      1) RCV--014, Gas Decay Tank Discharge Valve - CLOSED

   c. R-17A/B HIGH ALARM:

      1) RCV-3-609, CCW Surge Tank Vent Valve - CLOSED

   d. R-18 HIGH ALARM:

      1) RCV-018, Liquid Waste Discharge Valve - CLOSED

   e. R-19 HIGH ALARM:

      1) Steam Generator Blowdown Flow Control Valves - CLOSED

         - FCV-3-6278A
         - FCV-3-6278B
         - FCV-3-6278C

      2) Verify S/G Sample Total Flow Indicators at the Cold Chem Lab Bldg indicate flow has stopped (ensures Blowdown Sample Valves, SV-3-2800, SV-3-2801, SV-3-2802 are closed)

      3) Blowdown Tank to Canal Level Control Valve, LCV-3-6265B - CLOSED

STEP | **ACTION/EXPECTED RESPONSE** | **RESPONSE NOT OBTAINED**

NOTES

- *If R11/R12 has an abnormal reading following a voltage transient, I&C needs to restart the sample skid using 3-PMI-067.1, PROCESS RADIATION MONITORING SYSTEM CHANNEL R-3-11 or R-3-12 CALIBRATION PROCEDURE, Step 22 of this procedure.*
- *Foldout page shall be monitored throughout this procedure.*

1 **Check High Alarm On The Following PRMS Channels**

Response not obtained: Go To Step 4.

- Check For R-11/12 HIGH Alarms
  * Check R-11 Red HIGH LED - ON
  * Check R11 PART alarm monitor pushbutton - FLASHING
  * Check R-12 Red HIGH LED - ON
  * Check R12 GAS alarm monitor pushbutton - FLASHING

  OR

- R-14 HIGH ALARM LIGHT ON

  OR

- R-15 HIGH ALARM LIGHT ON

  OR

- R-17A HIGH ALARM LIGHT ON

  OR

- R-17B HIGH ALARM LIGHT ON

  OR

- R-18 HIGH ALARM LIGHT ON

  OR

- R-19 HIGH ALARM LIGHT ON

  OR

- R-20 HIGH ALARM LIGHT ON

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTES

- *A PRMS source check on a channel with a HIGH Alarm may be inconclusive since the effect of the source may be insignificant to cause noticeable change in the readout.*
- *Step 2b is NOT Applicable for R-11/12 or R-20 HIGH ALARM.*

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	**Check Affected PRMS Channel alarm - VALID**	Perform the following:
	a. Check readout on affected channel - GREATER THAN **OR** EQUAL TO ALARM SETPOINT What's alarm set point?	- Notify NPS of problem with PRMS channel. - Direct Health Physics Shift Supervisor to conduct radiological surveys to confirm validity of alarm. - Direct Chemistry to perform sampling to confirm validity of alarm. - Continue with procedure until affected systems are verified normal.
	b. Check channel operability as follows: Not Applicable Purpose of Doing it at High? 1) Depress and hold FAIL/TEST pushbutton on affected PRMS Channel 2) Check readout - EQUAL TO 288K **OR** 289K 3) Release FAIL/TEST pushbutton.	?
	c. Check affected PRMS drawer responds to source check How to perform S-check PB only?	
	d. Check For PRMS Channel Failure - Check Fail indicator - OFF - Display **AND** recorder reading - **NOT** FAILED LOW - For R-11/12 check RM-80 Green Monitor Light - ON	d. Perform Step 8.

CAUTION

IF more than one High Radiation Event, the operator should prioritize actions to minimize OFFSITE DOSE.

NOTES

- *Prioritization should include consideration of Release Rate, Size of leak, Isolable vs Non-Isolable, etc.*
- *Step 3 RNO actions should be performed in the determined order of priority.*

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	**Perform Corrective Action For PRMS HIGH ALARM As Follows:** • Check R-11 **AND** R-12 HIGH ALARMS - CLEAR • Check R-15 **AND** R-19 HIGH ALARMS - CLEAR • Check R-17A **AND** R-17B HIGH ALARMS - CLEAR • Check R-14 HIGH ALARM - CLEAR • Check R-18 HIGH ALARM - CLEAR • Check R-20 HIGH ALARM - CLEAR	Perform the following: * **IF** R-11 **AND** R-12 HIGH ALARM, **THEN** go to Step 16. * **IF** R-15 **OR** R-19 HIGH ALARM, **THEN** go to Step 29. * **IF** R-17A **OR** R-17B HIGH ALARM, **THEN** go to Step 39. * **IF** R-14 HIGH ALARM, **THEN** go to Step 51. * **IF** R-20 HIGH ALARM, **THEN** perform 3-ONOP-041.4, EXCESSIVE REACTOR COOLANT SYSTEM ACTIVITY while continuing with this procedure. * **IF** R-18 HIGH ALARM, **THEN** perform the following: a. Verify RCV-018 - CLOSED. b. **IF** Liquid Release in progress, **THEN** terminate the release c. Inform the NPS of R-18 alarm d. Determine and correct the cause of the R-18 high alarm before commencing another liquid release.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	**Check WARNING Alarm On The Following PRMS Channels - ON** • Check For R-11/12 WARNING Alarms * Check R-11 AMBER WARNING LED - ON * Check R-11 PART alarm monitor pushbutton - FLASHING * Check R-12 AMBER WARNING LED - ON * Check R12 PART alarm monitor pushbutton - FLASHING **OR** • R-14 WARNING ALARM LIGHT ON **OR** • R-15 WARNING ALARM LIGHT ON **OR** • R-17A WARNING ALARM LIGHT ON **OR** • R-17B WARNING ALARM LIGHT ON **OR** • R-18 WARNING ALARM LIGHT ON **OR** • R-19 WARNING ALARM LIGHT ON **OR** • R-20 WARNING ALARM LIGHT ON	Go To Step 8.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE

Step 5b not applicable for R-11/12 or R-20 WARNING ALARM.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	**Check Affected PRMS Channel WARNING ALARM - VALID**	Perform the following: • Notify NPS of problem with PRMS channel. • Direct Health Physics Shift Supervisor to conduct radiological surveys to confirm validity of alarm. • Direct Chemistry to perform sampling to confirm validity of alarm. • Continue with procedure until affected systems are verified normal.
	a. Check readout on affected channel - GREATER THAN **OR** EQUAL TO ALARM SETPOINT	
	b. Check channel operability as follows:	
	1) Depress and hold FAIL/TEST pushbutton on affected PRMS Channel.	
	2) Check readout - EQUAL TO 288K **OR** 289K	
	3) Release FAIL/TEST pushbutton.	
	c. Check affected PRMS drawer responds to source check	
	d. Check For PRMS Channel Failure • Check Fail indicator - OFF • Display **AND** recorder reading - **NOT** FAILED LOW	d. Perform Step 8.
6	**Check HIGH ALARM On Same PRMS Channel(s) - OFF**	**IF** any PRMS Channel HIGH ALARM **AND** WARNING ALARM ON, **THEN** perform actions required by Step 3 concurrently (for that channel) while continuing with Step 7.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	**Perform Corrective Actions For PRMS Channel WARNING ALARM**	
	a. Notify NPS/ANPS of PRMS channel in alarm	
	b. Direct Health Physics to perform radiological surveys to assess plant conditions	
	c. Direct Chemistry to perform samples to assess plant conditions	
	d. Monitor affected PRMS channel(s) for activity level changes	
	e. Perform necessary actions to minimize any potential release of radiological effluent	
	f. Notify Plant management of conditions	
	g. Check plant conditions stable	g. **IF** plant conditions continue to degrade, **THEN** consider performing a plant shutdown
	h. Check R11/12 WARNING ALARM - CLEAR	h. **IF** R11/12 WARNING ALARM actuates, **THEN** perform Steps 16 and 17, while continuing with this procedure.

NOTE

Step 8 is not applicable to a channel failure of R-11 or R-12.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	**Check For PRMS Channel Failure** • Check Fail indicator - OFF • Display **AND** recorder reading - **NOT** FAILED LOW	Perform the following: a. **IF** R-14 fails low **AND** gas decay tank release in progress, **THEN** stop the release. b. **IF** R-18 fails low **AND** liquid release in progress, **THEN** stop the release. c. **IF** R-19 fails low **AND** S/G blowdown in progress, **THEN** stop S/G blowdown. d. Notify NPS to refer to Tech Specs **AND** take all required actions for the failed channel(s). e. Notify I&C of the PRMS failure.
9	**Check R11/12 RM-80 Green Monitor Light - ON**	Identify ~~and~~ correct the cause of failure using applicable steps 18 through 28.
10	**Check If Effluent Radiation Monitors Are In Alarm**	
	a. Check the following radiation monitor alarms CLEAR • RAD-3-6417 (SJAE SPING) • RAD-3-6426 (DAM-1 Monitor)	a. **IF** Steps 29 through 32 **NOT** previously performed, **THEN** go to Step 29.
	b. Check RAD-6304 (Plant Vent SPING) alarm - CLEAR	b. Perform the following as applicable: 1) 4-0NOP-033.1, SFP COOLING SYSTEM MALFUNCTION 2) **IF** Step 52 through 55 **NOT** previously performed, **THEN** go to Step 52.
	c. Check RAD-6418 (SFP Vent SPING) alarm - CLEAR	c. Perform 3-0NOP-033.3, ACCIDENT INVOLVING NEW **OR** SPENT FUEL.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11	**Check The Following To Ensure Unmonitored Effluent Release NOT IN PROGRESS** • No unexplained decrease in level or pressure in any tank containing radioactive liquids or gas • No uncontained spillage of radioactive or potentially radioactive liquids • No high alarm on Area Radiation Monitors • No leakage detected by using 3-OP-067.1, REACTOR VESSEL HEAD LEAKAGE DETECTION SYSTEM • No unexplained decrease in Spent Fuel Pool level • No unexplained increase in PRT, RCDT, Waste Holdup Tank, or Containment sump	Perform the following: a. Locate and isolate release. b. Direct plant personnel to assist in containing leakage within the RCA boundary. c. Direct Health Physics to survey **AND** post areas as necessary. d. Direct chemistry to sample and analyze effluent release to determine extent of contamination **AND** off-site dose rate. e. Restore any tank **OR** Spent Fuel Pool to required levels. f. Perform other mitigating activities as directed by Health Physics or Chemistry.
12	**Check If Release Exceeds Technical Specifications**	
	a. Check SPING 4 reading to determine if release activity concentration - LESS THAN 2.8 E-1 μCi/cc (10 x T.S.Limit)	a. Consult with Chemistry Department to determine concentration.
	b. Check SPING 4 reading to determine if release activity concentration - LESS THAN 2.8 E-2 μCi/cc (T.S. Limit)	b. Consult with Chemistry Department to determine concentration
	c. Notify NPS to refer to 0-EPIP-20101, DUTIES OF THE EMERGENCY COORDINATOR	
	d. **IF** release exceeds Technical Specifications, **THEN** direct Chemistry Department to perform off-site dose calculations using 0-EPIP-20126, OFFSITE DOSE CALCULATIONS	d. Go to Step 13

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	**Direct Nuclear Plant Supervisor To Evaluate Plant Conditions** a. Refer to following sections of Technical Specifications for any LCO requirements: * Section 3.3.3, Monitoring Instrumentation * Section 3.4.6.1, RCS Leakage Detection Systems * Section 3.4.6.2, RCS Operational Leakage * Section 3.4.8, RCS Specific Activity * Section 3.6.1.5, Containment Systems Air Temperature * Section 3.7.1.4, Secondary Coolant System Specific Activity * Section 3.9.13, Radiation Monitoring for Refueling Operations b. Review the following procedures and make any notifications that may be required: • 0-EPIP-20101, DUTIES OF THE EMERGENCY COORDINATOR • 0-ADM-115, NOTIFICATION OF PLANT EVENTS c. Check for applicability to conditions listed in 0-ADM-025, LICENSEE EVENT REPORTS **AND** NUCLEAR PROBLEM REPORTS	
14	**Check ALL PRMS Channel ALARMS - OFF**	Perform the following: a. **IF** any HIGH ALARM, **THEN** Return to Step 1. b. **IF** any WARNING ALARM, **THEN** Return to step 4. c. **IF** any PRMS channel failed and placed out of service, **THEN** Continue with Step 15.
15	**Go To Appropriate Plant Procedure As Determined By NPS**	

Purpose of this?

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	**Check For High Containment Airborne Activity**	
	a. Check For R-11/12 HIGH ALARMS * Check R-11 Red HIGH LED - ON * Check R-11 PART alarm monitor pushbutton - FLASHING * Check R-12 Red HIGH LED - ON * Check R-12 GAS alarm monitor pushbutton - FLASHING * R-11/12 display reading - GREATER THAN **OR** EQUAL TO ALARM SETPOINT	a. Go to Step 18. Valid:? S.P.?
	b. Verify Containment And Control Building Ventilation Systems Aligned Using ATTACHMENT 1	Need
	c. Dispatch an operator to the RM-80 skid to perform the following: • Silence the local alarm • Check for any abnormal indications	
	d. Direct Health Physics And Chemistry Departments To Verify Actual Activity Inside Containment	
	e. Perform The Following To Evaluate Plant Status: * 3-ONOP-041.3, EXCESSIVE REACTOR COOLANT SYSTEM LEAKAGE * 3-ONOP-033.3, ACCIDENTS INVOLVING NEW OR SPENT FUEL	
	f. Determine if alarm is valid by checking against current plant status	f. Go to Step 19.
	g. Evacuate Non-essential Personnel From Containment	
17	**Return To Step 1**	

JPM STUDENT IC SHEET

② Could Have
EDG Running AT
MAX Load +
CCW pp would
Overload EDG
Let Oper make
Decision
problem
other
or shift supv

INITIAL CONDITIONS:

1. UNITS 3 AND 4 ARE OPERATING AT 100% POWER.
2. 3B CCW PUMP IS OUT OF SERVICE.
3. NO SURVEILLANCES ARE IN PROGRESS.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

① Close to Have
1 CCW OOS
1 CCW pp trip -
Study will CAVITATE + to
Have Oper make decision to
recover the pump + trip RX
per step 4 of FOLDOUT
page

Or

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: RESPOND TO A COMPLETE LOSS OF COMPONENT COOLING WATER SYSTEM FLOW

JPM NUMBER: 01030008303 JPM TYPE: NORMAL PATH

JPM REV. DATE: 05/26/99

NUCLEAR SAFETY IMPORTANCE: 3.00

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 5 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS;

1. RESET TO IC 1, LOAD SCENARIO 107
2. START 3A CCW PUMP; STOP 3B CCW PUMP
3. PLACE "3B" CCW PUMP OUT OF SERVICE (PARAMETER CONTROLLER DIRECT TRIGGER TAK1B13P=3)
4. DELETE CONDITIONAL TRIGGERS FROM EVENT SUMMARY
5. INSERT THE FOLLOWING MALFUNCTIONS
   a. INSERT BEARING WEAR ON "3A" CCW PUMP TO CAUSE OVERLOAD ANNUNCIATOR (PARAMETER CONTROLLER DIRECT TRIGGER TVKA001X=1.0). WHILE OPERATOR INVESTIGATES AND PERFORMS ACTIONS OF ANN.PROC FOR H 8/2 INCREASE WEAR TO CAUSE "3A" CCW PUMP TRIP, BEFORE OPERATOR ATTEMPTS TO START "3C" CCW PUMP AND STOP "3A"
   b. ONCE "3C" CCW PUMP AUTO STARTS ON LOW PRESSURE, INSERT 3D 4KV BUS LOCKOUT (PARAMETER CONTROLLER DIRECT TRIGGER TFE2Z53S=T).

TASK STANDARDS:

1. REACTOR TRIPPED.
2. RCPS TRIPPED.
3. CVCS LETDOWN ISOLATED.
4. RUNNING CHARGING PUMP INCREASED TO MAXIMUM SPEED.
5. SNPO DISPATCHED TO ESTABLISH EMERGENCY COOLING WATER.

REQUIRED MATERIALS:

3-ONOP-030
3-ARP-097.CR-H 8/1,H 8/2

REFERENCES:

1. 3-ONOP-030, COMPONENT COOLING WATER MALFUNCTION

TERMINATING CUES:

WHEN THE IMMEDIATE ACTIONS OF 3-ONOP-030 FOR A TOTAL LOSS OF CCW FLOW ARE COMPLETE.

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND THE SIMULATOR WILL PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNITS 3 AND 4 ARE OPERATING AT 100% POWER.
2. 3B CCW PUMP IS OUT OF SERVICE.
3. NO SURVEILLANCES ARE IN PROGRESS.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

( ) **ELEMENT: 1**

RESPOND TO ANNUNCIATOR H 8/2, "CCW PP A/B/C MOTOR OVERLOAD" ACTUATION.

STANDARDS:

__1. ALARM VERIFIED BY CHECKING THE FOLLOWING:

  __A. CCW PUMP AMPS FOR HIGH AMPS

  __B. HEADER FLOW FOR HIGH FLOW

  __C. ANNUNCIATOR H 8/3 OFF

EVALUATOR'S NOTES:

BOOTH OPERATOR: **While the operator is performing the alarm verification actions per the ARP, trip 3A CCW Pump and after 3C CCW Pump auto-starts, lockout 3D 4KV Bus.**

(C) **ELEMENT: 2**

Verify Imm Actions with no Procedure

PERFORM IMMEDIATE OPERATOR ACTIONS OF ONOP-030 .

STANDARDS:

__1. CCW FLOW IN BOTH HEADERS VERIFIED NORMAL. (ZERO FLOW) [Step 1]

__2. HAVING DETERMINED NO FLOW ON EITHER CCW HEADER, PERFORMED THE FOLLOWING:

__A. START ATTEMPTED ON ANY IDLE CCW PUMP. (UNSUCCESSFUL) [Step 1 RNO a]

U B. ✓ REACTOR TRIPPED AND COMMENCED E-0, WHILE CONTINUING ONOP-030, IMMEDIATE ACTIONS. [Step 1 RNO b]

Cue: ***When the operator trips the reactor say: "The Immediate Actions of E-0 have been performed by other operators. Continue with the actions of the ONOP."***

U C. ✓ ALL RCPS STOPPED. [Step 1 RNO b]

U D. ✓ LETDOWN (CV-200A) ISOLATED. [Step 1 RNO c]

C E. ✓ RUNNING CHARGING PUMP PLACED IN MANUAL AND RUN UP TO MAXIMUM SPEED. [Step 1 RNO d]

C F. ✓ OPERATOR DISPATCHED TO PERFORM ATTACHMENT 1 OF ONOP-030 TO PROVIDE EMERGENCY COOLING TO THE DESIRED CHARGING PUMP. [Step 1 RNO e]

__3. CCW SYSTEM DETERMINED TO BE INTACT BY VERIFYING THAT CCW SURGE TANK LEVEL ON LI-613A IS > 25% AND STABLE OR INCREASING.

__4. ABOVE ACTIONS PERFORMED WITHOUT REFERENCE TO PROCEDURE

EVALUATOR'S NOTES:

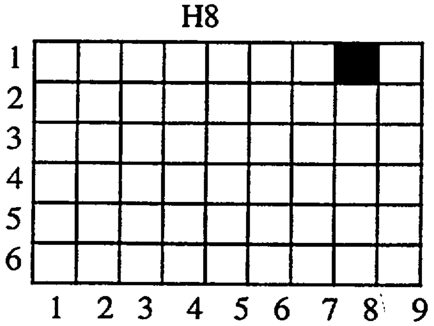
NOTE 1: Standards 2B, 2C, 2D, 2E, and 2F are critical to this Element.

NOTE 2: Booth Operator shall take appropriate actions to stabilize the Unit so that S.I. is not required.

NOTE 3: Service water to charging pump alignment is accomplished using scenario 107 composite "SERVWTR".

Terminate the JPM at this point.

YELLOW	POWER PRODUCTION AVAILABILITY	H 8/1



ATTACHMENT 8
Page 43 of 54
Panel H

CCW PP A/B/C
TRIP

DEVICES:
Alarm relay 174/TDDO
in 4KV breakers:
152-3AA12
152-AB13
152-AD04

SETPOINTS:
135 amps

OPERATOR ACTIONS:

1. Verify alarm by checking the following:
   a. CCW pump indicating lights (VPB).
   b. CCW pump motor ammeters (VPB).
   c. CCW header flow indications (VPB).
   d. Annunciator H 8/3 alarming (CCW HEADER LO PRESS)

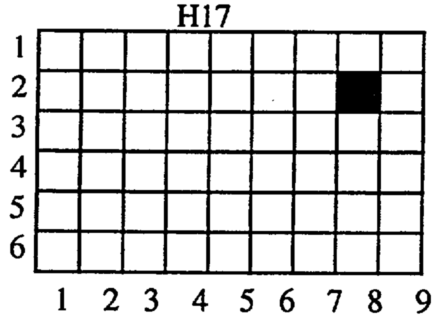
2. Verify the following automatic actions have occurred:
   a. Possible start of standby of CCW pump on low header pressure.

3. Corrective actions:
   a. Follow 3-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, for required actions.
   b. Refer to TS 3.7.2 for any additional required actions.

CAUSES:
1. CCW pump trip due to motor overload

REFERENCES:
1. FPL EWD 5610-E-25, Sh 2, 2A
2. FPL EWD 5613-E-25, Sh 2C, 2C1, 2C2, 2C3
3. Tech Spec Section 3.7.2

BLUE	INVESTMENT PROTECTION	H 8/2



ATTACHMENT 8
Page 44 of 54
Panel H

CCW PP A/B/C MOTOR OVERLOAD

DEVICES:
Overcurrent relay 151 TOC →

SETPOINTS:
67.5 amps

in 4KV Breakers:
152-3AA12
152-3AB13
152-3AD04

What is High Amps
How to know
What is High Flow?

What will Oper do Here?

OPERATOR ACTIONS:

1. Verify alarm by checking the following:
   a. CCW pump motor ammeters (VPB) for high amps
   b. CCW header flow indications (VPB) for high flow
   c. Annunciator H 8/3 alarming (CCW HEADER LO PRESS) with a decreasing CCW Surge Tank level (VPB) due to discharge header rupture (if applicable)

What will Oper do Here

2. Corrective actions:
   a. **IF** pump motor is the only indication of the problem, **THEN** start standby pump **AND** stop affected pump using 3-OP-030, COMPONENT COOLING WATER SYSTEM.
   b. Dispatch Operator to determine cause of overload.
   c. Advise Electrical **OR** Mechanical Maintenance of the problem.
   d. **IF** an overload condition develops on pump started above **OR** more complicated problems are indicated with the CCW system, **THEN** refer to 3-ONOP-030, Component Cooling Water Malfunction.
   e. Refer to TS 3.7.2 for any additional required actions.

CAUSES:
1. CCW pump motor overload due to electrical or mechanical problem.

REFERENCES:
1. FPL EWD 5610-E-25, Sh 2, 2A
2. FPL EWD 5613-E-25, Sh 2C, 2C1, 2C2, 2C3
3. Tech Spec Section 3.7.2

* 17/JGK/dt/dt/bc

FOLDOUT FOR 3-ONOP-030

1. **TOTAL LOSS OF CCW FLOW**

   A. Manually trip the reactor, verify reactor trip using the EOP network, THEN stop the RCPs.

   B. Isolate letdown and excess letdown.

   C. Establish one charging pump running at maximum speed **AND** dispatch operator to establish emergency cooling water to one of the remaining two charging pumps using Attachment 1. Monitor RCS pressure closely while running charging pump at maximum speed.

   D. **WHEN** Attachment 1 is complete, **THEN** operate charging pump supplied with emergency cooling as necessary to maintain RCP seal cooling.

2. **LOSS OF CCW TO ANY COMPONENT**

   IF component cooling water flow to any component cooled by CCW is lost, **THEN** shutdown the affected component.

3. **CHARGING PUMP EMERGENCY COOLING CRITERIA**

   IF Cooling Water is **NOT** available to charging pumps, **THEN** charging pump operation shall be at maximum speed until cooling is restored from CCW System or using Attachment 1.

4. **CCW PUMP STOPPING CRITERIA**

   IF any Component Cooling Water Pump is cavitating, **THEN** stop the affected Component Cooling Water Pump(s) and place in Pull-To-Lock.

5. **REACTOR TRIP CRITERIA**

   IF tripping a RCP is required, **THEN** manually trip the reactor prior to stopping the RCP.

6. **RCP STOPPING CRITERIA**

   IF any RCP bearing temperature annunciator alarm actuates **AND** its associated motor bearing temperature is greater than 195°F, **THEN** trip reactor and stop the affected RCP(s).

7. CCW System operation once CCW System Hdr has been restored shall be within the operating restrictions of 3-OP-030 summarized as follows: [Commitment - Step 3.3.2]

   CCW Pumps, Heat Exchangers, and Flows/Loads.

   - N-1 CCW Pumps (where N = number of CCW Hxs aligned to CCW)
   - All CCW Hxs in service when RHR in service OR with only 2 CCW Hxs in service, place 2 CCW Pumps in Pull-To-Lock.
   - Maximum of 5 out of 6 CCW Heat Loads.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION

If any RCP bearing temperature annunciator alarm actuates AND its associated motor bearing temperature is greater than 195°F, THEN trip the reactor and stop the affected RCP(s).

NOTES

- *Steps 1 and 2 are IMMEDIATE ACTION steps.*
- *Foldout page should be monitored throughout this procedure.*
- *A time delay exists on TR-320 from when an RCP parameter exceeds its setpoint to when the recorder provides indication and alarm. Use the RCP mimic display on ERDADS as a backup to TR-320 to monitor affected RCP parameters.*

1 **Verify Flow In Both Component Cooling Water Headers - NORMAL**

- FT-3-613A for header A
- FT-3-613B for header B

What is Normal?

What is this?
What will it do?

Perform the following:

How to Know

a. **IF** starting an idle CCW pump will **NOT** overload an EDG, **THEN** start CCW pumps as necessary to establish flow in both headers.

b. **IF** CCW flew to RCPs can **NOT** be established, **THEN** manually trip the reactor **AND** verify reactor trip using the EOP Network, **THEN** stop all RCPs.

c. Isolate Letdown and Excess Letdown.

d. **IF** any charging pump is running, **THEN** operate at maximum speed until Attachment 1 is completed.

e. Dispatch an operator to establish emergency cooling water to desired charging pump using Attachment 1.

*/JBS/dt/sw/bc

NOTES

- *The top of the component cooling water surge tank divider plate is located at approximately 25% indicated level.*
- *If a cross tie valve between the units is leaking or open, the surge tank on the opposite unit may be experiencing level control problems.*
- *If in Modes 1 through 3, and CCW System level is NOT maintained within the CCW Head Tank, restore CCW System level to be within the CCW Head Tank within 24 hours.*
- *LI-3-613A and LI-3-614A are NOT overlapping (i.e., LI-3-614A will go off scale low before LI-3-613A comes off its high peg with decreasing level).*

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	**Verify Component Cooling Water Surge Tank Level Being Maintained** a. Component Cooling Water Surge Tank Level, LI-3-613A - • GREATER THAN 25% **AND** • STABLE OR INCREASING	Perform the following: 1. Open Component Cooling Water Surge Tank Makeup, MOV-3-832 as necessary to add makeup. 2. **IF** Component Cooling Water Surge Tank Level can **NOT** be maintained, **THEN** perform the following: a) Trip the reactor. b) Stop all RCPs. c) Perform 3-EOP-E-O, REACTOR TRIP OR SAFETY INJECTION, while continuing with this procedure. 3. OBSERVE NOTES PRIOR TO STEP 6 and Go To Step 6.

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 4.
2. RCS TEMPERATURE IS APPROXIMATELY 300°F.
3. RCS PRESSURE IS APPROXIMATELY 310 PSIG.
4. THE RHR SYSTEM IS IN SERVICE.
5. A STANDBY SG FEED PUMP IS SUPPLYING THE S/Gs.
6. NO EQUIPMENT IS OUT OF SERVICE.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: RESPOND TO LOSS OF RHR

JPM NUMBER: 01050004309 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 05/17/99

NUCLEAR SAFETY IMPORTANCE: 2.50

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

1. Reset to IC-30 (on RHR 310#/300 deg.)
2. Place simulator in run and ensure annunciators are acknowledged
3. Adjust FC-605 as needed to obtain 3500 to 3700 gpm on FI-605 and freeze simulator until ready to begin.
4. When the operator has completed turnover, fail the operating RHR pump (prevent restart) as follows:
SYS MAT->MAIN POWER DISTRIBUTION->4 Kv & 480 VAC->
3A 4 Kv BUS->BKR 15 (3A RHR PUMP)->FAIL OPEN TFM1DSAT=T

TASK STANDARDS:

1. CORE REMAINS COVERED.
2. CORE COOLING RESTORED.

REQUIRED MATERIALS:

1. 3-ONOP-050

REFERENCES:

1. 3-ONOP-050, LOSS OF RHR
2. 3-ARP-097.CR, CONTROL ROOM ANNUNCIATOR RESPONSE

TERMINATING CUES:

RCS COOLING ESTABLISHED.

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND THE SIMULATOR WILL PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 4.
2. RCS TEMPERATURE IS APPROXIMATELY 300°F.
3. RCS PRESSURE IS APPROXIMATELY 310 PSIG.
4. THE RHR SYSTEM IS IN SERVICE.
5. A STANDBY SG FEED PUMP IS SUPPLYING THE S/Gs.
6. NO EQUIPMENT IS OUT OF SERVICE.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

EVALUATOR'S NOTES:

Expectations?

NOTE: Operator may reference 3-ARP-097.CR for annunciator H-6/2,'RHR Hx HI/LO FLOW' received prior to performing 3-ONOP-050. The ARP will require the operator to verify FI-605 indicated flow, HCV-758 & FCV-605 demand, MOV-750/751 & MOV=744A/B positions and RHR pump amps before transition is directed to ONOP-050.

( ) ELEMENT: 1

DIRECT SNPO TO LOCALLY MONITOR PUMPS.
[Step 1]

do we expect op to use ARP?

STANDARDS:

__1. SNPO DIRECTED TO STAND BY THE RHR PUMPS.

__2. COMMUNICATIONS WERE ESTABLISHED.

__3. PERFORMED WITHOUT REFERENCE TO PROCEDURE.

BOOTH OPERATOR-AS SNPO:
CUE: ***Acknowledge operator's notification and establish communications.***

How much is operator expected to communicate to STA

EVALUATOR'S NOTES:

None

( ) ELEMENT: 2

DIRECT STA TO MONITOR HEATUP RATE.
[Step 2]

STANDARDS:

__1. STA DIRECTED TO MONITOR HEATUP RATE.

__2. PERFORMED WITHOUT REFERENCE TO PROCEDURE.

CUE: Acknowledge notification as STA.

EVALUATOR'S NOTES:

None

( ) ELEMENT: 3

CHECK MOV-750/751 OPEN.
[Step 3]

STANDARDS:

__1. MOV-750/751 VERIFIED OPEN ON VPB.

__2. PERFORMED WITHOUT REFERENCE TO PROCEDURE.

EVALUATOR'S NOTES:

None

( ) ELEMENT: 4

OBTAIN 3-ONOP-050.

STANDARDS:

__1. PROCEDURE OBTAINED.

__2. STEPS 1 THROUGH 3 REVIEWED TO ENSURE COMPLETE.

EVALUATOR'S NOTES:

JPM

NOTE: The ANPS would typically obtain the procedure and direct activities from this point. For the purposes of this PM, the operator will work from the procedure.

( ) **ELEMENT: 5**

VERIFY MOV-744A/744B OPEN.
[Step 4]

Lights

STANDARDS:

Not

C__1. MOV-744A/744B VERIFIED OPEN ON VPB.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 6**

CHECK RHR PUMPS RUNNING.
[Step 5]

STANDARDS:

__1. OBSERVED GREEN LIGHT INDICATION AND ZERO AMPS ON BOTH RHR PUMPS ON VPB.

EVALUATOR'S NOTES:

NOTE: No RHR pumps are running at this point.

(C) **ELEMENT: 7**

CLOSE HCV-758.
[Step 5, RNO a]

STANDARDS:

__1. HCV-758 MANUALLY CLOSED AT VPB.

EVALUATOR'S NOTES:

HCV-758 is manually closed by adjusting its potentiometer until controller demand is zero.

(C) **ELEMENT: 8**

CLOSE FCV-605.
[Step 5, RNO b]

STANDARDS:

__1. FCV-605 MANUALLY CLOSED AT VPB.

EVALUATOR'S NOTES:

NOTE 1: MOV-750 and MOV-751 have previously been verified open. There is no change in their condition. [Step 5, RNO c]

NOTE 2: ① FCV-605 is closed by placing its controller in manual and forcing closed with the ∇ pushbutton or by ② leaving the controller in automatic and adjusting the potentiometer until the controller demand is zero.

Which is Preferred?

(C) **ELEMENT: 9**

START AN RHR PUMP.
[Step 5, RNO d & e]

STANDARDS:

NoT C 1. RESTART OF PREVIOUSLY OPERATING 3A RHR PUMP WAS ATTEMPTED AT VPB.

C 2. STANDBY 3B RHR PUMP STARTED AT VPB.

EVALUATOR'S NOTES:

NOTE: 3A RHR pump will not start but the 3B RHR pump will start.

NOTE: Standard 1 is not critical to this element.

(C) **ELEMENT: 10**

RETURN FCV-605 TO AUTO.
[Step 5, RNO g]

Procedure ONOP - not specify flow!

STANDARDS:

__1. FCV-605 RETURNED TO AUTOMATIC OPERATION AT THE DESIRED FLOW.

EVALUATOR'S NOTES:

NOTE 1: Desired flow, as determined by 3-OP-050, is between 3500 and 3700 gpm. From what procedure?

NOTE 2: If FCV-605 potentiometer setting has not been changed, depressing the AUTO pushbutton on FC-605 will automatically return flow to the pre-event value of 3500-3700 gpm.

If FCV-605 potentiometer setting has been changed, the operator will have to readjust the potentiometer until 3500 to 3700 gpm is obtained.

Which is Preferred "Only - Conservative" ?

(C) **ELEMENT: 11**

OPEN HCV-758 AS NECESSARY TO CONTROL RCS TEMPERATURE.
[Step 5, RNO h]

STANDARDS:

__1. HCV-758 POTENTIOMETER ADJUSTED TO CONTROL RCS TEMPERATURE AT VPB.

How RCS Temp
How much?

EVALUATOR'S NOTES:

Note: The operator will attempt to adjust HCV-758 controller while monitoring RCS loop temperature to stabilize RCS temperature.

( ) ELEMENT: 12

VERIFY RHR PUMPS NOT CAVITATING.
[Step 6]

STANDARDS:

__1. 3B RHR PUMP AMPS VERIFIED TO BE STABLE AT VPB.

__2. RHR LOOP FLOW VERIFIED TO BE STABLE AT VPB.

__3. NOISE VERIFIED TO BE NORMAL BY CONTACTING THE SNPO AT THE 3B RHR PUMP.

BOOTH OPERATOR-AS SNPO:
CUE: Report back that the operating pump sounds normal.

EVALUATOR'S NOTES:

NOTE: There will be no evidence of cavitation.

( ) ELEMENT: 13

VERIFY AUTOMATIC RHR FLOW CONTROL OPERATION.
[Step 7a]

STANDARDS:

__1. FCV-605 VERIFIED MAINTAINING DESIRED FLOW (APPROX. 3500 TO 3700 GPM) IN AUTOMATIC ON VPB.

EVALUATOR'S NOTES:

NOTE: After verifying RHR flow is normal, the operator will transition to Step 18.

( ) ELEMENT: 14

MAINTAIN STABLE PLANT CONDITIONS (Step 18)

STANDARDS:

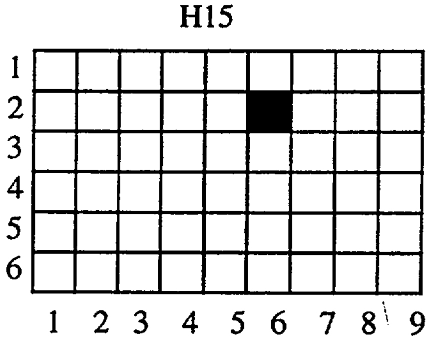
__1. RCS TEMPERATURE VERIFIED TO BE STABLE OR DECREASING.

__2. Tavg MAINTAINED AT DESIRED TEMPERATURE.

EVALUATOR'S NOTES:

Tell the operator that the JPM is completed.

WHITE	STATUS/INFORMATION	H 6/2



ATTACHMENT 8
Page 32 of 54
Panel H

RHR HX
HI/LO FLOW

DEVICES:
FT-3-605

(Located in RHR HX room)

SETPOINTS:
Low alarm - 3000 gpm

High alarm is variable.

Based upon what?
What is SP?

OPERATOR ACTIONS:

> **NOTE**
>
> *Annunciator is defeated whenever MOV-3-744A & B are both closed.*

Will open close flow?

1. Verify alarm by checking the following: ✓
   a. RHR flow indication on FI-3-605 (VPB). ✓
   b. Demanded positions of HCV-3-758 and FCV-3-605 (VPB). ✓
   c. Position indicating lights for MOV-3-750/751 and MOV-3-744A/B for intermediate indication. (VPB).
   d. LIS-3-6421 and LIS-3-6423 for low level indication (VPB).
   e. RHR pump motor ammeter for oscillating amps (VPB).

2. Corrective actions:
   a. For a loss of RHR flow **OR** in a reduced inventory condition, refer to 3-ONOP-050, Loss of RHR.
   b. Position FCV-3-605 and HCV-3-758 at VPB to obtain desired RHR flow rate **AND** cooldown/ heatup rate.
   c. **IF** RHR flow will **NOT** adjust properly, **THEN** dispatch an Operator to locally check RHR pump operation.
   d. Check running RHR pump lights **AND** ammeter for normal indications.
   e. **IF** cavitation, pump trip, or other pump malfunction indicated, **THEN** lineup and start idle RHR pump using 3-ONOP-050, LOSS OF RHR.
   f. Check RHR System valve alignment.
   g. Refer to TS 3.4.1.3, 3.4.1.4.1, 3.4.1.4.2, and 3.9.8 for any additional required actions.

?

CAUSES:
1. Low/high RHR system flow

REFERENCES:
1. FPL Dwg 5613-M-3050
2. Tech Spec Sections 3.4.1.3, 3.4.1.4.1, 3.4.1.4.2, and 3.9.8

STEP | **ACTION/EXPECTED RESPONSE** | **RESPONSE NOT OBTAINED**

CAUTION

If leakage from the RHR system is discovered, the leak should be isolated using 3-ONOP-041.3, EXCESSIVE REACTOR COOLANT SYSTEM LEAKAGE.

NOTES

- *Steps 1 through 3 are IMMEDIATE ACTION steps*
- *If loss of RHR is due to a loss of off-site power capability, power and RHR flow should be restored utilizing 3-ONOP-004, LOSS OF OFFSITE POWER or 3-EOP-ECA-0.0, LOSS OF ALL AC. During a loss of power, this procedure should be used to establish containment closure and alternate cooling if RHR flow remains unavailable.*

1 **Dispatch An Operator To Monitor RHR Pumps As Follows:**

a. Obtain radio

b. Monitor RHR pump locally

c. Maintain communication with control room

d. Stay near RHR pump until normal RHR flow is restored

How much of
this will ops
Tell to plant
operator?

NOTE

RCS heatup rate is required to be monitored by the STA or any available operator while efforts continue to restore RHR cooling.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	**Monitor RCS Heatup Rate As Follows:**	
	a. Plot core exit temperature every minute for 5 minutes	a. **IF** core exit temperatures are **NOT** available, **THEN** perform the following: 1) Assume a 12°F per minute heatup rate unless the refueling cavity is flooded. **IF** the refueling cavity is flooded, **THEN** use 4°F per minute. 2) Observe NOTE prior to Step 3 **AND** go to Step 3
	b. Calculate RCS heatup rate	
	c. Determine time required to reach saturation in RCS	
	d. Report results to unit RCO and NPS	
	e. Repeat this step every 15 minutes until RHR cooling is Restored	

NOTE

Interrupt feature for MOV-3-750 and MOV-3-751 is only functional with OMS in LO PRESS OPS.

3 **Check Loop 3C RHR Pump Suction Stop Valves - OPEN**

- MOV-3-750
- MOV-3-751

Perform the following

a. Stop RHR pumps.

b. IF a momentary pressure spike has caused either or both valves to start closing, **THEN** perform the following at the Pushbutton Interrupt switches:

1) Determine affected valve(s).
   - Yellow light -ON

2) Verify over pressure signal **NOT** present:
   - Blue light -ON

3) Push Interrupt Pushbutton for affected valve(s).

4) Verify yellow light - DE-ENERGIZES.

5) **WHEN** blue light DE-ENERGIZES, **THEN** verify affected valve(s) - OPEN.

6) Go to Step 4.

c. IF RCS pressure GREATER THAN 525 psig, **THEN** perform the following:

1) Stop the charging pump(s).

2) Reduce RCS pressure to 450 psig.

d. IF Loop 3C RHR Pump Suction Stop Valve(s) were **NOT** closed to isolate system leakage, **THEN** reopen RHR Loop Suction Stop Valve(s). IF either valve can **NOT** be opened, **THEN** direct an operator to locally reopen Loop 3C RHR Pump Suction Stop Valve(s).

e. IF either valve can **NOT** be reopened, **THEN** observe NOTE prior to Step 20 **AND** go to Step 20.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	**Verify RHR Discharge To Cold Leg Isolation Valves - OPEN** • MOV-3-744A • MOV-3-744B	<u>IF</u> RHR Discharge To Cold Leg Isolation valve(s) were <u>**NOT**</u> closed to isolate system leakage, <u>**THEN**</u> perform the following: a. Reopen RHR discharge valve(s). b. <u>IF</u> at least one valve can <u>**NOT**</u> be opened, <u>**THEN**</u> perform the following: 1) Stop RHR pump(s). 2) Direct operators to locally reopen RHR Discharge To Cold Leg Isolation Valve(s). 3) Observe NOTE prior to Step 20 <u>**AND**</u> go to Step 20.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	**Check RHR Pumps- ANY RUNNING**	Perform the following: ✓a. Close RHR Heat Exchanger Outlet Flow valve, HCV-3-758. ✓b. Close RHR Heat exchanger Bypass Flow valve, FCV-3-605. c. Verify MOV-3-750 and MOV-3-751 - OPEN Will open Verify open 5 Not ✓d. Attempt to restart previously running RHR pump. ✓e. **IF** previously running RHR pump can **NOT** be started, **THEN** start alternate RHR pump. f. **IF** neither RHR pump can be started, **THEN** perform the following: 1) Direct appropriate personnel to restore at least one RHR pump to operable status. 2) Observe NOTE prior to Step 20 **AND** go to Step 20. g. Return RHR Heat Exchanger Bypass Flow valve, FCV-3-605, to AUTOMATIC operation at desired flow. h. Open RHR Heat Exchanger Outlet Flow valve, HCV-3-758, as necessary to maintain desired RCS temperature.
6	**Verify RHR Pump NOT Cavitating** • Running RHR pump amps - STABLE • RHR flow - STABLE • RHR pump noise level - NORMAL	Go to Step 12.
7	**Check For RHR Flow Control Valve Failure**	
	a. Verify RHR Heat Exchanger Bypass Flow, FCV-3-605 - MAINTAINING DESIRED FLOW IN AUTOMATIC	a. Go to Step 8.
	b. Go to Step 18	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	**Increase RHR Flow**	
	a. **IF** RHR flow is less than desired flow, **THEN** increase RHR Flow 500 gpm from current value as follows: • Adjust RHR Heat Exchanger Bypass Flow valve, FCV-3-605	a. **IF** FCV-3-605 is fully open, **THEN** open RHR Heat Exchanger Outlet Flow valve, HCV-3-758, to establish desired flow.
	b. Verify RHR pump **NOT** Cavitating • Running RHR pump amps - STABLE • Check RHR flow - STABLE • RHR pump noise level - NORMAL	b. Perform the following: 1) Decrease RHR flow 500 gpm from current value. 2) Return to Step 12.
	c. Check RHR flow - GREATER THAN **OR** EQUAL TO 3000 GPM	c. Perform the following: * **IF** RHR flow is less than 3000 gpm **BUT** inceasing, **THEN** return to Step 15a. **OR** * **IF** RHR flow can **NOT** be restored, **THEN** go to Step 16.
	d. Go to Step 18	
16	**Check If RCS - OPERATING DRAINED DOWN (LESS THAN 10% COLD CAL PZR LEVEL)**	Observe NOTE prior to Step 20 **AND** go to Step 20.
17	**Go To 3-ONOP-041.8, SHUTDOWN LOCA [MODE 5 OR 6]**	
18	**Maintain Stable Plant Conditions**	
	a. Verify RCS temperature - STABLE **OR** DECREASING	a. Perform the following: • Adjust HCV-3-758 to obtain desired cooldown rate. • Adjust FCV-3-605 to maintain desired RHR flow rate.
	b. Verify RCS temperature - LESS THAN 200°F **OR** trending to NPS DESIRED TEMPERATURE	b. Observe NOTE prior to Step 20 **AND** go to Step 20.
19	**Go to Step 34**	

JPM STUDENT IC SHEET

No Value

INITIAL CONDITIONS:

1. ONLY ONE(1) HHSI PUMP IS AVAILABLE ON UNIT #3 WHICH HAS EXPERIENCED AN SI SIGNAL.
2. OPERATORS ARE PERFORMING 3-EOP-ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED.
3. THE UNIT 4 RCO HAS BEEN DIRECTED TO PERFORM ATTACHMENT 1 OF 3-EOP-ECA-0.2 FOR UNIT 3.

INITIATING CUE

YOU ARE THE SNPO AND YOU HAVE BEEN DIRECTED TO PERFORM 3-EOP-ECA-0.2, ATTACHMENT 1, TO ALIGN UNIT 4 HIGH-HEAD SI PUMP SUCTION TO UNIT 3 RWST.

JOB CLASSIFICATION: SENIOR NUCLEAR PLANT OPERATOR

JPM TITLE: REALIGN UNIT 4 HHSI PUMPS TO UNIT 3 RWST DURING A LOSS OF ALL AC POWER WITH SI REQUIRED ON UNIT 3

JPM NUMBER: 24050032500 JPM TYPE: NORMAL PATH

JPM REV. DATE: 05/08/99

NUCLEAR SAFETY IMPORTANCE: 4.00

COMBINED IMPORTANCE: 4.00

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM:_____ SIMULATE:__X__ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

1. THE HHSI ALIGNMENT HAS BEEN COMPLETED AS DIRECTED.
2. THE UNIT 4 RCO HAS BEEN INFORMED OF THE HHSI ALIGNMENT STATUS.

REQUIRED MATERIALS:

1. 3-EOP-ECA-0.2, LOSS OF ALL A.C.POWER RECOVERY WITH SI REQUIRED (ATTACHMENT 1)
2. UNIT 4 ICCS KEYS
3. COMMON ICCS KEYS

REFERENCES:

1. 3-EOP-ECA-0.2, LOSS OF ALL A.C.POWER RECOVERY WITH SI REQUIRED

TERMINATING CUES:

THE RCO HAS BEEN NOTIFIED OF ALIGNMENT COMPLETION.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you?
If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. ONLY ONE(1) HHSI PUMP IS AVAILABLE ON UNIT #3 WHICH HAS EXPERIENCED AN SI SIGNAL.
2. OPERATORS ARE PERFORMING 3-EOP-ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED.
3. THE UNIT 4 RCO HAS BEEN DIRECTED TO PERFORM ATTACHMENT 1 OF 3-EOP-ECA-0.2 FOR UNIT 3.

INITIATING CUE

YOU ARE THE SNPO AND YOU HAVE BEEN DIRECTED TO PERFORM 3-EOP-ECA-0.2 ATTACHMENT 1 TO ALIGN UNIT 4 HIGH-HEAD SI PUMP SUCTION TO UNIT 3 RWST.

(C) **ELEMENT: 1**

LOCALLY OPEN THE HHSI CROSS-TIE VALVES.

STANDARDS:

__1. HIGH-HEAD SI PUMP SUCTION HEADER SECTIONALIZING VALVE 870A HAS BEEN OPENED LOCALLY.
[Att. 1, Step 1.a]

CUE: *When the valve has been identified and the operator has stated the required actions, confirm the required actions by stating:*

"The stem is fully up and the valve will not turn any more in the counter clockwise direction."

__2. SI PUMP SUCTION CROSS-CONNECT VALVE 870B HAS BEEN OPENED LOCALLY.
[Att. 1, Step 1.a]

CUE: *Once the valve has been identified and the operator has stated the required actions, confirm the required actions by stating:*

"The stem is fully up and the valve will not turn any more in the counter clockwise direction."

__3. HIGH-HEAD SI PUMP MINI FLOW RECIRC CROSS-CONNECT VALVES(892A AND 892B) HAVE BEEN UNLOCKED AND OPENED LOCALLY.
[Att. 1, Step 1.b]

CUE: *When the valves have been identified and the operator has stated the required actions, confirm the required actions by stating:*

"The valves will not turn any more in the counter clockwise direction."

EVALUATOR'S NOTES:

1. Valves 870A and 870B are rising stem valves. The operator should state that he will turn the handwheel on each valve counter-clockwise until it stops and the stem will be in the full-up position.

2. Valves 892A and 892B are knocker valves with color coded ICCS locks. The operator will need to unlock and remove the lock and then turn the valve handle in the counter-clockwise direction until it stops.

(C) **ELEMENT: 2**

CLOSE 4-864C.

STANDARDS:

RWST OUTLET VALVE 4-864C IS UNLOCKED AND CLOSED
[Att. 1, Step 1.c]

CUE: When the operator has located the valve and identified the required actions, confirm the required actions by stating:

"The stem is fully down and the valve will not turn anymore in the clockwise direction."

EVALUATOR'S NOTES:

1. Valve 4-864C is a rising stem valve. The operator should state that he will turn the handwheel on the valve clockwise until it stops and the stem will be in the full-down position.

(C) **ELEMENT: 3**

NOTIFY RCO.

STANDARDS:

RCO NOTIFIED OF ALIGNMENT COMPLETION.

CUE: Acknowledge notification as the RCO using repeat back and stating that you will complete Attachment 1.

EVALUATOR'S NOTES:

Tell the operator that the JPM is complete.

ATTACHMENT 1
(Page 1 of 1)

REALIGNMENT OF UNIT 4 HIGH-HEAD SI PUMP SUCTION TO UNIT 3 RWST

1. **Isolate Unit 4 High-Head SI Pumps From Unit 4 RWST:**

   a. Locally open SI pump suction inter-tie valves:

      - 870A, High-Head SI Pump Suction Header Sectionalizing Valve
      - 870B, SI Pump Suction Cross-Connect Valve

   b. Locally unlock and open high-head SI Pump Mini Flow Recirc Cross-Connect Valves:

      - 892A
      - 892B

   c. Unlock and close Unit 4 RWST Outlet valve:

      - 4-864C

   d. Turn on control power **AND** close Unit 4 High-Head SI Pump Recirc To RWST valves:

      - MOV-4-856A
      - MOV-4-856B

   e. Turn off control power to Unit 4 High-Head SI Pump Recirc To RWST valves:

      - MOV-4-856A
      - MOV-4-856B

2. **Notify Unit 3 RCO That This Attachment Has Been Completed.**

FINAL PAGE

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

A LOSS OF POWER HAS OCCURRED ON THE 4B 4KV BUS AND THE 4B EDG HAS FAILED TO ENERGIZE THE 4B 4KV BUS.

INITIATING CUE:

YOU ARE THE ANPO AND THE RCO HAS DIRECTED YOU TO RESPOND TO A 4B EDG FAILURE.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #04023030501

JOB CLASSIFICATION: ANPO

JPM TITLE: RECOVER FROM A UNIT 4 EDG AUTO START FAILURE

JPM NUMBER: 04023030501 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 05/17/99

NUCLEAR SAFETY IMPORTANCE: 4.25

COMBINED IMPORTANCE: 4.25

TIME VALIDATION: 35 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM:_____ SIMULATE:__X__ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

1. 4B EDG IS RUNNING.
2. 4B EDG IS SUPPLYING LOADS ON 4B 4KV BUS.
3. 4B EDG CONTROL IS RETURNED TO THE CONTROL ROOM.

REQUIRED MATERIALS:

4-ONOP-023.2, EMERGENCY DIESEL GENERATOR FAILURE

REFERENCES:

4-ONOP-023.2, EMERGENCY DIESEL GENERATOR FAILURE

TERMINATING CUES:

4B EDG CONTROL IS RETURNED TO THE CONTROL ROOM.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

A LOSS OF POWER HAS OCCURRED ON THE 4B 4KV BUS AND THE 4B EDG HAS FAILED TO ENERGIZE THE 4B 4KV BUS.

INITIATING CUES:

YOU ARE THE ANPO AND THE RCO HAS DIRECTED YOU TO RESPOND TO A 4B EDG FAILURE.

EVALUATOR'S NOTES:

NOTE: The operator will review the initial NOTES and CAUTION before performing step 1.

( ) **ELEMENT: 1**

EVALUATE EDG STATUS.
(Step 1)

STANDARDS:

__1. CHECK 4B EDG - STOPPED.

Cue: ***Confirm indications that the EDG is stopped by pointing a "stopped" value on the indicator identified (i.e. 0 Voltage, 0 RPM, etc.).***

Cue: ***If the operator asks which alarms are in, point to START FAILURE (9/4) AND OVERSPEED (3/2).***

EVALUATOR'S NOTES:

Note: The Operator may use any combination of noise level, voltage, kw, frequency, rpm, to verify the EDG is stopped.

Why? The Operator should state their Exam state Aknowledge

(C) **ELEMENT: 2**

PLACE THE 4B EDG MASTER CONTROL SWITCH IN LOCAL.
(Step 2)

STANDARDS:

__1. PLACED 4B EDG MASTER CONTROL SWITCH IN LOCAL

CUE: ***Point to the LOCAL position of the master control switch.***

if Ask - the

EVALUATOR'S NOTES:

Note: The master control switch should initially be in NORMAL.

( ) ELEMENT: 3

CHECK STARTING AIR LINE PRESSURE TO BE BETWEEN 193 AND 202 PSIG.
(Step 3)

STANDARDS:

__1. CHECKED STARTING AIR PRESSURE BETWEEN 193 AND 202 PSIG.

when ASK

CUE: ***Point to 200 psig on the starting air pressure gauges (2).***

EVALUATOR'S NOTES:

None

( ) ELEMENT: 4

CHECK CONTROL POWER LIGHT ON.
(Step 4)

STANDARDS:

__1. CHECKED CONTROL POWER LIGHT ON.

when ask ***CUE: Point to the control power light and say "On."***

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 5**

How ?

CHECK EDG DAY TANK LEVEL IS ABOVE LOW LEVEL ALARM. (Step 5)

STANDARDS:

__1. CHECKED LEVEL ABOVE ALARM SETPOINT

What is ARP setpoint - Operator should know or check procedure

When asked

CUE:* *Point to 80% on the day tank level indicator.

EVALUATOR'S NOTES:

Note: . FYI. The low level alarm setpoint is 25%.

( ) **ELEMENT: 6**

CHECK LOCAL ANNUNCIATOR PANEL ALARMS (Step 6)

STANDARDS:

__1.CHECKED EDG LOCAL PANEL ALARMS

CUE: ***When asked the status of each alarm pointed out by the operator, say "Off" for each except for the ENGINE OVERSPEED alarm (ANN. 3/2). When ANN. 3/2 status is asked, say "ON."***

EVALUATOR'S NOTES:

Note : START FAILURE annunciator is also in alarm but is not among those listed in Step 6.

Why not?

(C) **ELEMENT: 7**

Procedure states
To pull lever
N.T. state to
pull up —
pull out —
pull down ?.

RESET OVERSPEED TRIP.
(Step 6 (RNO a))

STANDARDS:

__1. CHECKED OVERSPEED TRIP DEVICE ON ENGINE.

CUE: when ask ***Indicate that the red overspeed trip lever is in the "up" position.***

__2. RELATCHED OVERSPEED TRIP DEVICE ON ENGINE.

CUE: ***Indicate that the red trip lever is now in the horizontal position.***

EVALUATOR'S NOTES:

Note 1: The Operator will leave the EDG Control Panel and go downstairs to the Southwest side of the 4B EDG engine to observe the overspeed trip lever.

Note 2: When observed, the examiner will see the lever in the horizontal position. The "up" position is approximately 45° above the horizontal.

NOTE 3: Standard 1 is not critical to this element.

( ) ELEMENT: 8

CHECK 4B EDG RELAY STATUS.
(Step 7)

STANDARDS:

__1. CHECKED FOR FLAGS ON ALL RELAYS 140, 160, 132, 151 PHASE A, B, C AND 187 PHASE A, B, C

CUE: ***Say "Black" when each relay flag is identified by the Operator.***

EVALUATOR'S NOTES:

Note: The operator will return upstairs to the EDG control panels to observe the relay flags.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #04023030501

(C) **ELEMENT: 9**

VERIFY START FAILURE RESET.
(Step 8)

STANDARDS:

__1. REVIEWED CAUTION PRIOR TO STEP 8.

__2. CHECKED STATUS OF START FAILURE ANNUNCIATOR (9/4).

CUE: ***Point to the Start Failure annunciator and say "ON."***

why __3. PUSHED ALARM RESET PUSH BUTTON.

CUE: ***When the PB is located and the action identified, say "The Alarm Reset Push Button is depressed."***

when ask

CUE: ***If the Operator asks if annunciator 9/4 cleared, answer that it did clear.***

EVALUATOR'S NOTES:

Note: Only standard 3 is critical to this element.

why critical
does this meet
logic ?,

(C) **ELEMENT: 10**

VERIFY EDG LOCKOUT RESET.
(Step 9)

STANDARDS:

__1. VERIFIED STATUS OF EDG LOCKOUT RELAY.

Cue: ***When the operator checks the EDG lockout relay, indicate that it is NOT reset by saying "The handle is at a 45° angle and an orange flag is showing."***

C 2. RESET EDG LOCKOUT RELAY.

CUE: ***Once the relay is reset, indicate that it is reset by saying "The handle is in the vertical position and a black flag is showing."***

Why listed

C 3. VERIFIED WITH RCO THAT 4B 4KV BUS LOCKOUT RELAYS ARE RESET.

CUE: ***When identified, as the RCO tell the Operator "The 4B 4KV Bus Lockout Relays are reset."***

EVALUATOR'S NOTES:

Note 1: Only standards 2 & 3 are critical to this element.

Note 2: The Operator may ask at this point if the EDG autostarted. If asked, reply by pointing to 900 RPM on the engine tachometer.

Note 2: The operator will read the CAUTION before step 10 and will verify the status of step 10a through 10d.

( ) **ELEMENT: 11**

VERIFY EDG OPERATION.
(Step 10)

STANDARDS:

__1. REVIEWED CAUTION PRIOR TO STEP 10.

__2. VERIFIED EDG AUTO STARTED, BREAKER CLOSED, AND SEQUENCER LOADED THE 4KV BUS.

if ask—do not Volunteer Info—!

What if Operator didn't ask for this?

Cue: ***When asked if the EDG autostarted, point to 900 RPM on the tachometer. and point to voltage equal to 4KV on the voltmeter and frequency is 60.0 HZ on the frequency meter.***

Cue: ***When shown the light indication for the EDG breaker and asked if it is closed, point to the red light and say "On."***

Cue: ***When the Operator attempts to determine if the emergency loads are being sequenced onto the bus by looking at the Watt meter and/or the ammmeter, point to 1000 KW on the watt meter.***

__3. TRANSITIONED TO STEP 16.

Oper didn't ask this—

What is SAT—?

What is Real Load on BUS under this condition is it 1000KW?

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 12**

MAINTAIN RUNNING EDG.
(Step 16)

STANDARDS:

__1. REVIEWED CAUTION PRIOR TO STEP 16.

__2. VERIFIED VOLTS BETWEEN 3740 AND 4580 VOLTS.

CUE: POINT TO 4160 VOLTS.

__3. VERIFIED HERTZ BETWEEN 58.8 AND 61.2 HZ.

CUE: POINT TO 60.0 HZ.

__4. VERIFIED LOAD LESS THAN 2500 KW.

CUE: POINT TO 1000 KW. Is this Real?

__5. CONTACTED RCO FOR DIRECTION.

CUE: As the RCO, direct the operator to "Transfer EDG operation to the Control Room."

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 13**

TRANSFER EDG CONTROL TO CONTROL ROOM.
(Steps 17 & 18)

STANDARDS:

__1. OBTAIN PERMISSION FROM RCO TO TRANSFER CONTROL.

Cue: ***As the Unit RCO, grant permission to "Transfer 4B EDG operation to the Control Room."***

__2. PLACE 4B EDG MASTER CONTROL SWITCH IN NORMAL.

CUE: when asked ***When identified, point to the NORMAL position for the Master Control Switch.***

EVALUATOR'S NOTES:

NOTE: Standard 1 is not critical to this element.

NOTE: As this failure involves only one EDG (4B bus is the only one that lost power), step 19 does not apply.

TELL THE OPERATOR THAT THIS JPM HAS BEEN COMPLETED.

ADD (MCR Reports Freq 57-63 Hz
+ Decide to Trip EDG Locally

ATTACHMENT 1
(Page 1 of 9)

RESPONSE TO EMERGENCY DIESEL GENERATOR FAILURE

CAUTION

If either 4KV bus is deenergized, the Normal / Isolate switches for the affected EDG 4KV bus breaker is placed in Isolate to reset the anti-pumping relays. The affected EDG breaker may auto-close when the switch is returned to Normal.

NOTES

- *Throughout this attachment, affected refers to the diesel generator which is being started.*
- *Unless otherwise noted all controls and indications are located on the affected emergency diesel engine electrical control panel.*

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	**Check Affected Emergency Diesel Generator - STOPPED**	a. Locally verify all breakers on affected 4KV buses - OPEN b. Perform the following at the affected EDG breaker, 4AA20, 4AB21: 1) Place Normal/Isolate switch in ISOLATE 2) Place Normal/Isolate switch in NORMAL c. Go to Step 12.

ATTACHMENT 1
(Page 2 of 9)

RESPONSE TO EMERGENCY DIESEL GENERATOR FAILURE

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	**Place Affected Emergency Diesel Generator Master Control Switch In Local**	
3	**Check That The Starting Air Line Pressure Is Between 193 And 202 psig**	Perform the following: a. Check for an air leak in: 1) Starting air lines 2) Air Receiver Tanks b. **IF** an air leak is found, **THEN** isolate the leak as necessary. c. Verify the electric air compressor is running. 1) **IF** the air compressor will NOT run in AUTO, **THEN** place the air compressor switch to **RUN**. 2) **IF** the air compressor does NOT start, **THEN** start the diesel air compressor using 4-OP-023, EMERGENCY DIESEL GENERATOR. d. **IF** Air Receiver Tank pressure is between 193 and 202 psig **AND** the Engine Start Air Press-Left or Right indicates less than 183 psig, **THEN** verify the EDG Air Start System valve alignment using 4-OP-023, EMERGENCY DIESEL GENERATOR.

ATTACHMENT 1
(Page 3 of 9)

RESPONSE TO EMERGENCY DIESEL GENERATOR FAILURE

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	**Check Control Power Light-ON**	a. Request RCO to verify affected Emergency Diesel Generator Flashing and Control Power Breaker ON: · 4D23A-28 for 4A EDG · 4D01-47 for 4B EDG b. Verify the local distribution panel breaker is ON: · 4D35-06 for 4A EDG · 4D36-06 for 4B EDG
5	**Check The EDG Day Tank Level ABOVE THE LOW LEVEL ALARM**	a. Check the Fuel Oil Transfer Pump as follows: 1) Place Fuel Transfer switch to **RUN** **AND** verify the red Fuel Transfer light is ON. 2) **IF** the red Fuel Transfer light is **OFF** **THEN** verify closed breaker 45112 (45212), DG 4A (B) Fuel Oil Transfer Pump. 3) **IF** the Fuel Oil Transfer Pump will **NOT** start, **THEN** transfer fuel to the Day Tank by cross-tying EDG Fuel Oil Systems using 4-OP-023, EMERGENCY DIESEL GENERATOR. b. **IF** the Fuel Oil Transfer Pump is running and Day Tank level is NOT increasing, **THEN** open 4-70-400A(B) to bypass SV-4-3434A(B). c. **IF** the Day Tank level is still NOT increasing, **THEN** verify the Fuel Oil System valve alignment using 4-OP-023, EMERGENCY DIESEL GENERATOR.

STEP | **ACTION/EXPECTED RESPONSE** | **RESPONSE NOT OBTAINED**

ATTACHMENT 1
(Page 4 of 9)

2.

RESPONSE TO EMERGENCY DIESEL GENERATOR FAILURE

Unclear Direction

6 **Check The Following EDG Local Panel Alarms:**

- 3/2, ENGINE OVERSPEED TRIP - CLEAR
- 4/2, LUBE OIL HIGH TEMPERATURE TRIP - CLEAR
- 4/4, EXHAUST HIGH TEMPERATURE TRIP - CLEAR
- 4/5, COOLING WATER HIGH TEMP TRIP - CLEAR
- 5/2, MAIN MANIFOLD LUBE OIL LOW PRESSURE TRIP - CLEAR
- 5/5, COOLING WATER LOW PRESSURE TRIP - CLEAR
- 6/1, ENGINE HIGH VIBRATION TRIP - CLEAR
- 6/2, PISTON COOLING OIL LOW PRESSURE TRIP - CLEAR
- 6/4, CRANKCASE HIGH PRESSURE TRIP - CLEAR

Perform the following:

a. Correct cause of abnormal indication.

   1) **IF** the cause is an overspeed trip, relatch the overspeed trip lever, **THEN** pull the lever a second time to ensure full engagement.

b. **IF** cause can NOT be identified or corrected, **THEN** perform the following:

   1) **IF** Nuclear Plant Supervisor grants permission to continue starting the affected generator, **THEN** go to Step 7.

   2) **IF** local start of second emergency diesel generator is required, **THEN** return to Step 1.

   3) **IF** Nuclear Plant Supervisor does NOT grant permission to continue starting the affected diesel generator, **THEN** return to procedure **AND** step in effect.

ATTACHMENT 1

(Page 5 of 9)

RESPONSE TO EMERGENCY DIESEL GENERATOR FAILURE

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	**Check Affected Diesel Generator Relay Status:** • Loss of Field Relay (140) - NO FLAG • Voltage Balance Relay (160) - NO FLAG • Reverse Power Relay (132) - NO FLAG • Overcurrent phase A (151V PH A) - NO FLAG • Overcurrent phase B (151V PH B) - NO FLAG • Overcurrent phase C (151V PH C)- NO FLAG • Differential phase A (187G PH A) - NO FLAG • Differential phase B (187G PH B) - NO FLAG • Differential phase C (187G PH C) - NO FLAG	Perform the following: a. Report relay flag status to RCO. b. Notify RCO that assistance is required to repair affected diesel generator. c. IF local start of second emergency diesel generator is required, THEN return to Step 1. d. IF local start of second emergency diesel generator is NOT required, THEN return to procedure AND step in effect.
8	**Verify Start Failure Annunciator - OFF**	Push ALARM RESET pushbutton.

CAUTION

The affected EDG may Auto-start when the Lockout Relay is reset.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	**Verify Diesel Generator Lockout Relay - RESET**	Perform the following: a. Reset Diesel Generator Lockout Relay.

Procedure No.:	Procedure Title:	Page:
4-ONOP-023.2	Emergency Diesel Generator Failure	12
		Approval Date: 4/13/99

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

ATTACHMENT 1
(Page 6 of 9)

RESPONSE TO EMERGENCY DIESEL GENERATOR FAILURE

CAUTION

When the affected Diesel Generator attains voltage and frequency, the EDG output breaker will automatically close and required emergency loads will automatically sequence onto the bus if the sequencer associated with the 4KV Bus is operable.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	**Check Affected Diesel Generator - AUTO STARTED**	
	a. Affected Diesel Generator - RUNNING	a. Continue at Step 11.
	b. Affected EDG output breaker automatically closed	b. Continue at Step 12.
	c. Required emergency loads automatically sequence onto the Bus What are required loads	c. Continue at Step 16. What will operator see How will he know - step provides no info !!
	d. Continue at Step 16	
11	**Locally Start Affected Diesel Generator:**	
	a. Push affected Diesel Generator Engine EMERGENCY START pushbutton	
	b. Verify affected Diesel Generator - RUNNING	b. Perform the following: 1) Notify RCO that affected diesel generator will not start. 2) Continue attempts to start diesel generator(s) as directed by RCO. 3) Return to Step 1.
	c. Verify EDG output breaker automatically closes	c. Continue at Step 12.
	d. Verify required emergency loads automatically sequence onto the Bus	
	e. Continue at Step 16	

JEE/bsm/bvc/ev

ATTACHMENT 1
(Page 7 of 9)

RESPONSE TO EMERGENCY DIESEL GENERATOR FAILURE

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	**Check Affected Diesel Generator:**	
	a. At the Engine Control Panel, verify affected diesel generator speed - BETWEEN 880 AND 920 RPM	a. Adjust Governor Control Switch.
	b. On Generator Control Panel, verify affected diesel generator frequency - BETWEEN 58.8 AND 61.2 HZ	b. Adjust Governor Control Switch.
	c. Verify affected diesel generator voltage - BETWEEN 3740 AND 4580 VOLTS	c. Adjust Voltage Control Switch.
13	**Notify RCO That Affected Diesel Generator Is Available To Power Its Associated Bus**	
14	**Obtain Permission From RCO To Locally Energize 4KV Bus Associated With Running Diesel Generator**	Perform the following: a. IF 4KV bus will be energized from Control Room, **THEN** place affected diesel generator Local/Normal Selector Switch to NORMAL. b. IF 4KV bus can **NOT** be energized from Control Room, **THEN** go to Step 15. c. IF local start of second emergency diesel generator is required, **THEN** return to Step 1. d. **WHEN** Unit 4 4KV buses have been energized from Control Room, **THEN** return to procedure **AND** step in effect.

ATTACHMENT 1
(Page 8 of 9)

RESPONSE TO EMERGENCY DIESEL GENERATOR FAILURE

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	**Locally Energize Desired 4KV Bus:**	
	a. Verify affected diesel generator Master Control switch in LOCAL	a. Place affected diesel generator Master Control Switch in LOCAL.
	b. Verify affected diesel generator Isolation switches (Engine Control Cubicle) are positioned to ISOLATE	b. Place the affected diesel generator Isolation switches to ISOLATE.
	c. Place synchronizing switch for diesel output breaker to be closed to ON	
	d. Have the RCO verify all breakers on associated 4KV bus - OPEN	
	e. At EDG Electrical Control Panel, close diesel generator output breaker	
	f. Place appropriate synchronizing switch to OFF <u>AND</u> remove handle	
	g. Check diesel generator output breaker status - CLOSED	

ATTACHMENT 1
(Page 9 of 9)

RESPONSE TO EMERGENCY DIESEL GENERATOR FAILURE

> ***CAUTION***
>
> ***Operating the isolation switches with the EDG loaded, will trip the EDG.***

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	**Maintain Running Diesel Generator(s)**	
	a. Verify voltage - BETWEEN 3740 AND 4580 - VOLTS	a. Adjust Voltage Adjust Control Switch.
	b. Verify frequency - BETWEEN 58.8 AND 61.2HZ	b. Adjust Governor Control Switch.
	c. Verify load - LESS THAN 2500 KW	c. Notify RCO to shed non-essential loads.
	d. Operate diesel generator controls as directed by RCO	
17	**Obtain Permission To Transfer Affected Emergency Diesel Generator Operation To Control Room**	Perform the following: a. <u>IF</u> Control Room has been evacuated, <u>THEN</u> return to 0-ONOP-105, CONTROL ROOM EVACUATION. b. Return to Step 16.
18	**Place Affected Emergency Diesel Generator Master Control Switch In NORMAL**	
19	**Check Unit 4 Emergency Diesel Generators - BOTH RUNNING**	<u>IF</u> local start of second emergency diesel generator is required, <u>THEN</u> return to Step 1.
20	**Return To Procedure <u>AND</u> Step In Effect**	

FINAL PAGE

JEE/bsm/bvc/ev

Not Very Good

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT 3 IS ON HOT LEG RECIRCULATION FOLLOWING A LOCA.

2. THE NPS HAS DIRECTED YOU TO PUMP THE CONTENTS OF THE #1 WASTE HOLDUP TANK TO UNIT 3 CONTAINMENT USING 0-OP-061.12, "WASTE DISPOSAL SYSTEM - WASTE MONITOR TANKS AND DEMINERALIZER OPERATION."

3. 3-OP-094, "CONTAINMENT POST ACCIDENT MONITORING SYSTEMS," SECTION 7.1, "POST ACCIDENT H2 MONITOR STARTUP," WAS PERFORMED EARLIER BUT WAS NOT COMPLETED BEYOND STEP 7.1.2.4.

INITIATING CUE:

YOU ARE THE SNPO AND HAVE BEEN GIVEN DIRECTION TO:

1) COMPLETE SECTION 7.1.2 OF 3-OP-094.

AND

2) THEN PUMP THE #1 WASTE HOLDUP TANK CONTENTS TO THE UNIT 3 CONTAINMENT USING 0-OP-061.12.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #24061039500

JOB CLASSIFICATION: SNPO

JPM TITLE: PUMP WASTE HOLDUP TK CONTENTS TO THE CONTAINMENT

JPM NUMBER: 24061039500 JPM TYPE: NORMAL PATH

JPM REV. DATE: 06/11/99

NUCLEAR SAFETY IMPORTANCE: 3.50

COMBINED IMPORTANCE: 3.50

TIME VALIDATION: 20 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM:_____ SIMULATE:__X__ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

1. PRE-PUMP BACK ALIGNMENTS COMPLETED PER 3-OP-094, SECTION 7.1.2.
2. WASTE HOLDUP TANK CONTENTS PUMPED TO UNIT 3 CONTAINMENT PER 0-OP-061.12.

REQUIRED MATERIALS:

1. 3-OP-094, CONTAINMENT POST ACCIDENT MONITORING SYSTEMS
2. 0-OP-061.12, WASTE DISPOSAL SYSTEM-WASTE MONITOR TANKS AND DEMINERALIZER OPERATION

REFERENCES:

1. 3-OP-094, CONTAINMENT POST ACCIDENT MONITORING SYSTEMS
2. 0-OP-061.12, WASTE DISPOSAL SYSTEM-WASTE MONITOR TANKS AND DEMINERALIZER OPERATION

TERMINATING CUES:

WASTE HOLDUP TANK PUMPED DOWN TO APPROXIMATELY 10%.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT 3 IS ON HOT LEG RECIRCULATION FOLLOWING A LOCA.
2. THE NPS HAS DIRECTED YOU TO PUMP THE CONTENTS OF THE #1 WASTE HOLDUP TANK TO UNIT 3 CONTAINMENT USING 0-OP-061.12, "WASTE DISPOSAL SYSTEM - WASTE MONITOR TANKS AND DEMINERALIZER OPERATION."
3. 3-OP-094, "CONTAINMENT POST ACCIDENT MONITORING SYSTEMS," SECTION 7.1, "POST ACCIDENT H2 MONITOR STARTUP," WAS PERFORMED EARLIER BUT WAS NOT COMPLETED BEYOND STEP 7.1.2.4.

INITIATING CUES:

YOU ARE THE SNPO AND HAVE BEEN GIVEN DIRECTION TO:

1) COMPLETE SECTION 7.1.2 OF 3-OP-094.

AND

2) THEN PUMP THE #1 WASTE HOLDUP TANK CONTENTS TO THE UNIT 3 CONTAINMENT USING 0-OP-061.12.

Cue: *Due to the infrequent and EOP driven nature of this procedure, give the operator the procedures when the initiating cue is read.*

Why? Let oper find procedure

( ) **ELEMENT: 1**

OBTAIN REQUIRED MATERIALS.

? This is not req'd
all JPMs is
an expectation

STANDARDS:

__1. PROCEDURES 3-OP-094 AND 0-OP-061.12 OBTAINED.

__2. PROCEDURES CHECKED AGAINST THE OTSC INDEX.

Cue: *When the operator identifies the need to check the procedures to verify latest revision on OTSC status, inform the operator that it has already been verified by the NPS.*

EVALUATOR'S NOTES:

None

(C) ELEMENT: 2

REMOVE FLOOR CAP AND CLOSE MPAS-001 <u>OR</u> CLOSE VALVE 1731. [Step 7.1.2.5 OF 3-OP-094]

Note

STANDARDS:

__1. OBTAINED FLOOR CAP TOOL FROM RACK IN EAST END OF EAST-WEST AUX BUILDING HALLWAY.

Cue: ***Tell operator "Tool has been obtained."***

__2. REMOVED FLOOR CAP FOR MPAS-001.

Cue: ***Tell operator "Floor Cap has been removed."***

__3. CLOSED WHT WASTE TRANSFER PUMP DISCHARGE TO RAD WASTE BUILDING VALVE, MPAS-001.

TASK

Cue: ***Tell operator "The handle is turned fully clockwise."***

<u>OR</u>

__4. CLOSED AUX BLDG WHT VALVE TO RADWASTE BLDG WHT, 1731.

Cue: ***Tell operator "The handle is turned fully clockwise."***

EVALUATOR'S NOTES:

NOTE 1: Standard 1 is only critical if the operator chooses to close MPAS-001 instead of 1731.

NOTE 2: The floor caps should <u>not</u> be removed for purposes of this JPM. Have the operator locate the tool and describe how the tool will be used to open MPAS-001 when the floor cap is removed.

NOTE 3: MPAS-001 is located in the AUX Building in the North-South Hallway near the Unit 3 BA Evaporator Room.

NOTE 4: 1731 is located in the Radwaste Building.

(C) **ELEMENT: 3**

UNLOCK AND OPEN ISOL VLV FROM WHT PUMP BACK, MPAS-3-004.
[Step 7.1.2.6.a OF 3-OP-094]

STANDARDS:

__1. USING "A" KEY, UNLOCKED AND OPENED MPAS-3-004.

Not allowed key

Cue: ***Tell the operator "The valve is unlocked, the handwheel is full counter clockwise and the stem is full up."***

EVALUATOR'S NOTES:

NOTE 1: MPAS-3-004 is located on the Aux Building roof near the Containment Wall. It requires an "A" key to unlock it.

(C) **ELEMENT: 4**

CLOSE ISOL VLV MPAS TO PURGE AIR RTN, MPAS-3-005.
[Step 7.1.2.6.b OF 3-OP-094]

STANDARDS:

Consequence if
not done?

__1. CLOSED MPAS-3-005.

Cue: ***Tell the operator "The handwheel is full clockwise and the stem is full up."***

EVALUATOR'S NOTES:

NOTE: MPAS-3-005 is located on the on the Aux Building roof near the Containment Wall next to MPAS-3-004.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #24061039500

(C) **ELEMENT: 5**

⊕

Assum Typ 7.1.1.1

ALIGN SYSTEM FOR PUMPING WHT TO CONTAINMENT.

15 the Step 7.1.2.1 ?

Verify/Confirm these valves were closed in other procedure

STANDARDS:

W/C

__1. OBTAINED FLOOR CAP TOOL FROM RACK IN EAST END OF EAST-WEST AUX BUILDING HALLWAY.

Cue: ***Tell operator "Tool has been obtained."***

__2. REMOVED FLOOR CAP FOR MPAS-002.

Cue: ***Tell operator "Floor Cap has been removed."***

__3. OPENED MPAS-3-002, WHT WASTE TRANSFER PUMP AND WASTE EVAP FEED PUMP DISCHARGE VALVE TO UNIT 3. [Step 7.1.2.2 of 0-OP-061.12]

ASK

Cue: ***Tell the operator "The handle is full counter clockwise."***

if ASK

Cue: ***Inform Operator that Independent Verification of this step has been completed.***

or Verify open

__4. UNIT 3 RCO CONTACTED TO OPEN THE CONTAINMENT INSTRUMENT AIR BLEED VALVES, CV-2819 AND CV-2826. (Step 7.1.2.3)

what will plant operator say - do step w

Tell ACTIONS

Cue: ***As Unit 3 RCO, say "The Containment Instrument Air Bleed valves, CV-2819 and CV-2826 are opened."***

EVALUATOR'S NOTES:

NOTE: MPAS-002 is located adjacent to MPAS-001.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #24061039500

(C) **ELEMENT: 6**

COMMENCE PUMPING WHT TO CONTAINMENT. why is Brkr open? / Normal Position

How will operator know location?

STANDARDS:

__1. RECOGNIZED "BREAKER-OPEN" CONDITION OF WASTE EVAPORATOR FEED PUMP AND REQUESTED RCO/NPS PERMISSION TO CLOSE BREAKER 0862.

Cue: ***As NPS, tell the operator "Close Breaker 0862."***

C

__2. PLACED BREAKER 0862 TO "ON" AT MCC D. Indicates closed

Cue: ***Tell the operator "The breaker is in ON."***

C

__3. STARTED THE WASTE EVAP FEED PUMP BY PLACING ITS CONTROL SWITCH TO "ON" AT WASTE BORON PANEL. [Step 7.1.2.4]

Cue: ***Tell the operator "The red light is on and the green light is off."***

Not C __4. REVIEWED STEP 7.1.2.5 FOR APPLICABILITY. [Step 7.1.2.5]

Cue: ***When asked, say "The Waste Evaporator Feed Pump is running and no additional flow is desired."***

Not C __5. WHT LEVEL DECREASING VERIFIED ON LI-1001 AT THE WASTE BORON PANEL. on local at 4' Elev [Step 7.1.2.6]

ADD

CUE: ***Say "LI-1001 is reading 65% and is decreasing."***

Not C __6. REVIEWED STEP 7.1.2.7 FOR APPLICABILITY AND DETERMINED STEP TO NOT BE APPLICABLE. [Step 7.1.2.7]

__7. REVIEWED STEP 7.1.2.8 FOR APPLICABILTY.
[Step 7.1.2.8]

CUE: ***Inform Operator that "There is no evidence of in-leakage to the Waste Holdup Tank."***

__8. REVIEWED STEP 7.1.2.9 FOR APPLICABILTY AND OBSERVED LI-1001 AT THE WASTE BORON PANEL.
[Step 7.1.2.9]

CUE: ***Say "LI-1001 is now indicating 10% level in the #1 Waste Holdup Tank."***

on the LI at 4" Elevation

why not!

EVALUATOR'S NOTES:

NOTE 1: Only Standards 2 and 3 are critical to this element.

NOTE 2: The normal condition of the Waste Evaporator Feed pump is to have its breaker open. This condition is not reflected in 0-OP-061.12. The operator should recognize the breaker status when he first observes no red or green light indication above the pump control switch.

If the operator fails to recognize the open breaker condition, when the control switch is placed in ON, tell the operator ***"The red and green lights are off."***

(C) **ELEMENT: 7**

TERMINATE PUMP DOWN AT 10% IN #1 WHT.

What Tell its #1

STANDARDS:

+C 1. STOPPED THE WASTE EVAPORATOR FEED PUMP USING THE CONTROL SWITCH ON THE WASTED BORON PANEL.
[Step 7.1.2.10]

Cue: ***Tell the operator " The green light is on and the red light is off."***

(C) 2. MPAS-3-002, WHT WASTE TRANSFER PUMP AND WASTE EVAP FEED PUMP DISCHARGE VALVE TO UNIT 3, CLOSED.
[Step 7.1.2.11]

Cue: ***Tell the operator "The hand wheel is fully clockwise."***

Cue: ***Inform Operator that Independent Verification of valve closure has been completed.***

__3. NPS NOTIFIED THAT #1 WHT HAS BEEN PUMPED TO UNIT 3 CONTAINMENT.
[Step 7.1.2.12]

Cue: ***As the NPS, confirm the notification that the #1 WHT has been pumped to the Unit 3 Containment.***

__4. #1 WHT LEVEL (LI-1001) MONITORED.
[Step 7.1.2.13]

Cue: ***When questioned, say "The #1 WHT level is stable."***

EVALUATOR'S NOTES:

NOTE: Standards 1 and 2 are critical to this element.

Inform Operator that this JPM has been completed

7.0 INFREQUENT OPERATIONS

7.1 Post Accident H_2 Monitor Startup

NOTE

This section provides instruction for putting the PAHM System in service. It shall be in service within 30 minutes of an SI signal.

7.1.1 Initial Conditions

1. All applicable prerequisites listed in Section 3.0 are satisfied.
2. The unit has received a valid SI signal.

7.1.2 Procedure Steps

NOTE

Valves PASS-3-008, 3-001A, 3-001B, 3-002A and 3-002B are located in the floor outside the Unit 3 Sample Room.

1. Remove the floor caps **AND** open the following valves using the reach rods located in the Auxiliary Building:
   a. Post Accident Sampling System Return Line Isolation Valve, PASS-3-008
   b. H_2 Analyzer 3A Outlet Isol, PAHM-3-001A
   c. H_2 Analyzer 3B Outlet Isol, PAHM-3-001B
   d. PACV Vent and Sample System to PAHM Header Isolation Valve (RR), PAHM-3-002A
   e. PACV Vent and Sample System to PAHM Header Isolation Valve (RR), PAHM-3-002B
2. Unlock **AND** open PACVS Isol Vlv Penet 53, HV-3-3, in front of the Unit 3 Containment Spray Pump Room. (An A key is required for this lock.)
3. Unlock **AND** open PACVS Isol Vlv Penet 16, HV-3-1, located in the north Aux Bldg hallway. (An A key is required for this lock.)

7.1.2 (Cont'd)

4. Request the Unit RCO to perform the following:

   a. Verify the following function selector switches on the Hydrogen Analyzer Panels are in the SAMPLE position:

      (1) QR 81

      (2) QR 82

   b. Place the control switches to ANALYZE.

   c. Depress the REMOTE selector buttons.

   d. Depress the ALARM reset buttons.

Already Completed

5. Remove floor cap **AND** close WHT Waste Transfer Pump Discharge to Rad Waste Building, MPAS-001, located outside the Unit 3 BA Evap Room, using the reach rod.

   OR

   Close Aux Bldg WHT valve to Radwaste Bldg WHT, 1731, located in the Waste Evaporator Feed Pump Room in the Radwaste Bldg.

NOTE

The following valves are located on the Auxiliary Building roof near the Unit 3 containment wall.

6. Perform the following:

   a. Unlock and open Isol Vlv from WHT Pp Back, MPAS-3-004 (An A key is required).

   b. Close Isol Vlv MPAS to Purge Air Rtn, MPAS-3-005.

7.0 INFREQUENT OPERATIONS

7.1 Waste Holdup Tank Pump Back System - Unit 3

INITIALS
CK'D VERIF

Date/Time Started ______________________

7.1.1 Initial Conditions

1. This section is to be performed only when the accident unit is in a Recirculation SI mode following a LOCA **AND** then only when specifically directed by the NPS, ANPS or NWE.

7.1.2 Procedure Steps

Will Monitor Floor CAP Tool ✓

Steps 7.1.2.5 7.1.2.6

____
____ 1. MPAS-001 **AND** MPAS-3-005 have been closed using 3-OP-094, CONTAINMENT POST ACCIDENT MONITORING SYSTEM.

____ ____ 2. Open WHT Waste Transfer Pump and Waste Evap Feed Pump Discharge Valve to Unit 3, MPAS-3-002.

____ ____ 3. Open **OR** verify open Containment Instrument Air Bleed Valves CV-3-2819 **AND** CV-3-2826. (These valves can be opened using the key lock switch in the Control Room to override the SI closure signal)

____ 4. Start the Waste Evap Feed Pump by placing switch SSI to **ON**, at the Waste Boron Panel.

5. **IF** additional flow is desired, **OR** the Waste Evaporator Feed Pump (P220) is out-of-service, **THEN** start the Waste Transfer Pump (P229C) using switch HS-1095B located on Panel C-46 in the Radwaste Building.

____ 6. Observe the WHT level decrease on LI-1001 at the WASTE BORON PANEL **OR** LI-1001B on the 4 foot level.

____ 7. **IF** WHT level is not decreasing, **THEN** verify valve lineup for that pump.

How would Operator do this

____ 8. **IF** possible, **THEN** identify **AND** isolate the source of the WHTs in leakage.

____ 9. Continue pumping down the WHT until 10 percent level is indicated.

____ 10. Stop the pump started in Substep 7.1.2.4.

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

No # here

____ ____ 11. Close MPAS-3-002.

____ 12. Notify the NPS that the WHT has been pumped to the Unit 3 Containment.

____ 13. Monitor the WHT level.

a. **IF** level is rising, **THEN** repeat Substeps 7.1.2.2 through 7.1.2.9 as directed by the NPS.

____ 14. Verify all log entries required by Subsection 2.2 have been recorded.

REMARKS: ____________________

____

____

____

____

Date/Time Completed: ____________________

PERFORMED BY (Print)	INITIALS

REVIEWED BY: ____________________
Nuclear Plant Supervisor or SRO Designee

ES-301 Control Room Systems and Facility Walk-Through Test Outline Form ES-301-2

Facility: Turkey Point Date of Examination: 08/30/99
Exam Level: RO / SRO(I) Operating Test No.: 2

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
③ a. Sys.064/JPM #01023006300, Perform emergency diesel generator normal start test NOT DISCRIMINATING AS IS — HAS POTENTIAL see sticker	① ① (M) (A) (S)	6
b. Sys.002/JPM #01041068307, Respond to excessive RCS leakage	① (D) (S) (L) (A) ②	2
① c. Sys.012/JPM #01049002305, Trip failed instrument bistables	③ ② (A) (M) (S)	OK with [illegible] changes 7
d. Sys.061/JPM #01075025502, S/D AFW pumps during EOPs (S/D from ASD panel)	(N) (S) (L) (A) ④	4
+ e. Sys.007/JPM #01041063100, Purge the PRT (major gas volume)	② (D) (S)	5 → NEW MT
f. Sys.015/JPM #01059003100, Adjust high flux at S/D alarm (*from 9/97 SRO upgrade exam*)	③ (D) (S) (L)	7
② g. Sys.010/JPM #01041029301, Respond to low pressurizer pressure	⑤ (N) (A) (S)	good with changes 3

B.2 Facility Walk-Through

System / JPM Title	Type Code*	Safety Function
④ a. Sys.062/JPM #14003026101, Transfer instrument bus load from CVT to normal inverter (external transfer)	③ ~~X~~ (M)	6 →
⑤ + b. Sys.008/JPM #24030009300, Align emergency service water to the charging pumps	④ (D) (R)	8
+ c. Sys.059/JPM #14074013300, Establish feedwater alignment from opposite nuclear unit	⑤ (D)	4

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

add a [illegible]

" 5/10 and D "

JPM STUDENT IC SHEET

We won't do this
Let ops
at least 1 time

INITIAL CONDITIONS:

1. THE 3A EDG NORMAL START TEST IS REQUIRED TO BE PERFORMED FROM THE CONTROL ROOM.

2. ✓ THE PROCEDURE HAS BEEN OBTAINED AND CHECKED AGAINST THE OTSC INDEX.

3. ✓ ALL APPLICABLE PREREQUISITES HAVE BEEN SATISFIED. [Step 7.1.1.1]

4. ✓ 0-OSP-023.3, "EQUIPMENT OPERABILITY VERIFICATION WITH AN EMERGENCY DIESEL GENERATOR INOPERABLE," HAS BEEN COMPLETED.
[Step 7.1.1.2]

5. ✓ THE 3A EDG IS IN NORMAL STANDBY.
[Step 7.1.1.3]

6. ✓ THE NPS HAS AUTHORIZED PERFORMANCE OF THE EDG TEST.
[Step 7.1.1.4]

7. ✓ ATTACHMENT 5 AND SECTION 1 OF ATTACHMENT 2 OF 3-OSP-023.1 HAVE BEEN COMPLETED.
[Step 7.1.2.1]

8. ✓ COMMUNICATIONS HAVE BEEN ESTABLISHED WITH THE NPO WHO IS PERFORMING LOCAL EDG PRE-START CHECKS.
[Step 7.1.2.2]

INITIATING CUE:

YOU ARE THE RCO AND HAVE BEEN NOTIFIED BY THE NPO THAT ALL PRESTART CHECKS AND ALIGNMENTS HAVE BEEN SATISFACTORILY COMPLETED THROUGH STEP 7.1.2.17.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01023006300

JOB CLASSIFICATION: RCO

JPM TITLE: PERFORM THE EMERGENCY DIESEL GENERATOR NORMAL START TEST

JPM NUMBER:01023006300 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 06/10/99

NUCLEAR SAFETY IMPORTANCE: 3.00

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 15 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE: ____ DISCUSS: ____

INSTRUCTOR's INFORMATION

BOOTH OPERATOR:

1. RESET TO IC-1.
2. INSERT 3A EDG GOVERNOR FAILURE BY TOUCHING STYL INST-> A302->TRANSFORMERS & EDG 767->OVERRIDE->A DIESEL GEN SPD CHANGER->EDG 3A HYD/ELEC RAISE (SPEED)->ARM IMQ5GCRA=T.
3. LEAVE SIMULATOR FROZEN UNTIL READY TO BEGIN.

TASK STANDARDS:

1. THE EDG WILL BE SYNCHRONIZED TO THE BUS IN ACCORDANCE WITH 3-OSP-023.1.
2. THE EDG WILL BE EMERGENCY STOPPED BEFORE REACHING THE 1/2 HOUR EXCEPTIONAL RATING OF 3050 KW.

Where did this come from?

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01023006300

REQUIRED MATERIALS:

1. 3-OSP-023.1, DIESEL GENERATOR OPERABILITY TEST
2. TWO-WAY RADIO (OPTIONAL COMMUNICATIONS DEVICE)

Will we use this?

REFERENCES:

3-OSP-023.1, DIESEL GENERATOR OPERABILITY TEST

TERMINATING CUES:

EMERGENCY STOP OF THE EDG.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you?
If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. THE 3A EDG NORMAL START TEST IS REQUIRED TO BE PERFORMED FROM THE CONTROL ROOM.
2. THE PROCEDURE HAS BEEN OBTAINED AND CHECKED AGAINST THE OTSC INDEX.
3. ALL APPLICABLE PREREQUISITES HAVE BEEN SATISFIED. [Step 7.1.1.1]
4. 0-OSP-023.3, "EQUIPMENT OPERABILITY VERIFICATION WITH AN EMERGENCY DIESEL GENERATOR INOPERABLE," HAS BEEN COMPLETED. [Step 7.1.1.2]
5. THE 3A EDG IS IN NORMAL STANDBY. [Step 7.1.1.3]
6. THE NPS HAS AUTHORIZED PERFORMANCE OF THE EDG TEST. [Step 7.1.1.4]
7. ATTACHMENT 5 AND SECTION 1 OF ATTACHMENT 2 OF 3-OSP-023.1 HAVE BEEN COMPLETED. [Step 7.1.2.1]
8. COMMUNICATIONS HAVE BEEN ESTABLISHED WITH THE NPO WHO IS PERFORMING LOCAL EDG PRE-START CHECKS. [Step 7.1.2.2]

INITIATING CUES:

YOU ARE THE RCO AND HAVE BEEN NOTIFIED BY THE NPO THAT ALL PRESTART CHECKS AND ALIGNMENTS HAVE BEEN SATISFACTORILY COMPLETED THROUGH STEP 7.1.2.17.

( ) **ELEMENT: 1**

PERFORM CONTROL ROOM EDG PRESTART VERIFICATION.

STANDARDS:

__1. VERIFIED 3A EDG LOCKOUT RESET BLUE LIGHT AT VPA IS ON AND NOT FLASHING.
[Step 7.1.2.18]

__2. PRESTART VERIFICATIONS PERFORMED AT CONSOLE AS FOLLOWS:
[Step 7.1.2.19]

  __A. VERIFIED 3A EDG EMERGENCY STOP/EMERGENCY START CONTROL SWITCH IS IN THE MID POSITION.
  [Step 7.1.2.19.a]

  __B. VERIFIED 3A EDG NORMAL STOP/NORMAL START CONTROL SWITCH IS IN THE MID POSITION.
  [Step 7.1.2.19.b]

  __C. VERIFIED 3A EDG READY-TO-START RED LIGHT IS ON.
  [Step 7.1.2.19.c]

  __D. VERIFIED 3A EDG NORMAL CONTROL WHITE LIGHT IS ON.
  [Step 7.1.2.19.d]

  __E. VERIFIED 3A EDG ENGINE IDLING AMBER LIGHT IS OFF.
  [Step 7.1.2.19.e]

  __F. VERIFIED 3A EDG SPEED CHANGER IS IN THE MID POSITION.
  [Step 7.1.2.19.f]

  __G. VERIFIED 3A EDG VOLT REGULATOR IS IN THE MID POSITION.
  [Step 7.1.2.19.g]

  __H. VERIFIED THE EDG A SYNC TO 3A 4KV BUS 3AA20 SYNCHROSCOPE IS OFF.
  [Step 7.1.2.19.h]

What is critical - anything?

__I. CHECKED EDG A TO 3A 4KV BUS 3AA20 BREAKER GREEN LIGHT IS ON WITH THE CONTROL SWITCH IN MID POSITION AND SHOWING A GREEN FLAG.
[Step 7.1.2.19.i]

__J. VERIFIED THE 3A STEAM GENERATOR FEED PUMP IS RUNNING.
[Step 7.1.2.19.j]

__K. VERIFIED THE 3A CONDENSATE PUMP IS RUNNING.
[Step 7.1.2.19.k]

__L. VERIFIED THE 3A HEATER DRAIN PUMP IS RUNNING.
[Step 7.1.2.19.1]

__3. CHECKED EDG ANNUNCIATORS F 8/2, 8/3, 8/4, AND 8/5 TO BE CLEAR.
[Step 7.1.2.20]

__4. DETERMINED THAT 3A DIESEL OIL TRANSFER PUMP SWITCH REPOSITIONING IS NOT REQUIRED.
[Step 7.1.2.21]

Cue: Tell the operator that the month is August.

EVALUATOR'S NOTES:

NOTE: The operator will review the NOTES prior to Step 7.1.2.22 and may pre-stage a field operator at the Electric Fuel Priming Pump/Fuel Oil Manifold Pressure Gauge.

Will Operator
remind Plant Operator

(C) **ELEMENT: 2**

START THE 3A EDG.

STANDARDS:

ⓒ __1. PLACED THE NORMAL STOP/NORMAL START CONTROL SWITCH TO NORMAL START.
[Step 7.1.2.22]

__2. VERIFIED WITH THE NPO THAT THE ELECTRIC FUEL PRIMING PUMP STARTED WHEN THE 3A EDG STARTED.
[Step 7.1.2.22.a]

__3. VERIFIED THE EDG STARTS AND ACCELERATES TO IDLE SPEED (A EDG ENGINE IDLING AMBER LIGHT IS ON).
[Step 7.1.2.23]

__4. DIRECTED THE FIELD OPERATOR TO PERFORM STEPS 7.1.2.24 THRU 7.1.2.27.

BOOTH OPERATOR CUE: Once the amber idling light goes out, as the field operator, state "Steps 7.1.2.24 thru 27 have been completed".

EVALUATOR'S NOTES:

NOTE: Only Standard 1 is critical to this element.

( ) **ELEMENT: 3**

RECORD AFTER START (NO LOAD) DATA.
[Step 7.1.2.28]

STANDARDS:

__1. PERFORMED WHEN THE EDG HAS ACCELERATED TO RATED SPEED.

__2. NOTIFIED FIELD OPERATOR TO PERFORM ATTACHMENT 2.

__3. RECORDED THE APPLICABLE PARAMETERS ON THE AFTER START (NO LOAD) SECTION OF ATTACHMENT 1:

A. TIME EDG REACHES 900 RPM
B. EDG VOLTAGE
C. EDG HERTZ

EVALUATOR'S NOTES:

NOTE: The operator will review the CAUTIONS PRIOR TO Step 7.1.2.29.

(C) **ELEMENT: 4**

SYNCHRONIZE 3A EDG TO THE 3A 4KV BUS.

STANDARDS:

__1. PERFORMED THE FOLLOWING ACTIONS TO MATCH EDG OUTPUT PARAMETERS TO THE SYSTEM GRID:
[Step 7.1.2.29.a->g]

c A. PLACED THE EDG A SYNC TO 3A 4KV BUS 3AA20 SWITCH TO ON.
[Step 7.1.2.29.a]

Note Important

__B. CHECKED THE WHITE SYNC LIGHTS TO BE CYCLING ON.
[Step 7.1.2.29.b]

Not C

c C. ADJUSTED INCOMING VOLTAGE TO MATCH RUNNING VOLTAGE.
[Step 7.1.2.29.c]

Note Direction

c D. ADJUSTED EDG SPEED UNTIL SYNC SCOPE INDICATOR IS ROTATING SLOWLY IN THE FAST DIRECTION.
[Step 7.1.2.29.d]

c E. ADJUSTED VOLTAGE SO INCOMING IS SLIGHTLY HIGHER THAN RUNNING.
[Step 7.1.2.29.e]

How much is allowed

__F. VERIIFED ALL 3 PHASES OF EDG OUTPUT VOLTAGE AND 4 KV BUS VOLTAGE TO BE APPROXIMATELY EQUAL.
[Step 7.1.2.29.f]

__G. VERIFIED 3A EDG FREQUENCY IS BETWEEN 58.8 AND 61.2 HZ.
[Step 7.1.2.29.g]

c 2. WHEN SYNC SCOPE INDICATOR IS POINTING TO 12 O'CLOCK, CLOSED EDG OUTPUT BREAKER.
[Step 7.1.2.29.h]

or slightly before

__3. VERFIED EDG OUPUT BREAKER IS CLOSED (GREEN LIGHT OFF AND RED LIGHT ON).
[Step 7.1.2.29.h.1]

__4. PLACED THE EDG BKR 3AA20 SYNCHRONIZING SWITCH TO OFF.
[Step 7.1.2.29.i]

c __5. INCREASED EDG LOAD TO 1.0 MW (1000 KW) ON EDG 3A MW METER.
[Step 7.1.2.29.j]

What's SCALE

__6. ADJUSTED EDG VOLTAGE AS REQUIRED TO PLACE EDG REACTIVE LOAD IN THE LAG.
[Step 7.1.2.29.k]

__7. DIRECTED THE NPO TO INSPECT THE EDG FOR LEAKS OR ABNORMALITIES.
[Step 7.1.2.30]

EVALUATOR'S NOTES:

NOTE: Standards 1.A, 1.C, 1.D, 1.E, 2 and 5 are critical to this element.

(C) **ELEMENT: 5**

INCREASE EDG LOAD TO TEST OPERATING LOAD.

STANDARDS:

__1. RAISED 3A EDG LOAD UNTIL BETWEEN 2.3 AND 2.5 MW. [Step 7.1.2.31]

EVALUATOR'S NOTES:

BOOTH OPERATOR: When 3A EDG load reaches 2300 Mw, fail EDG governor so load continues to increase by pressing "mast fail".

How FAST? How much?

does this mean the oper CAN WAIT 1/2 Hr?

Spec is 15 min

(C) **ELEMENT: 6**

SHUTDOWN THE EDG.

STANDARDS:

__1. ATTEMPTED TO CONTROL EDG LOAD - UNSUCCESSFUL.

C 2. PLACED EDG EMERGENCY STOP/EMERGENCY START CONTROL SWITCH TO EMERGENCY STOP PRIOR TO REACHING THE 1/2 HR EXCEPTIONAL RATING OF 3050 KW.

is this all - what is guidance?

EVALUATOR'S NOTES:

NOTE: Operator may attempt "normal stop". This is not cause for failure as long as "emergency stop" is ultimately used.

NOTE: Standard 1 is not critical to this element

Tell the operator that the JPM is completed.

7.0 PROCEDURE

NOTE

Subsection 7.1 should be used for the monthly 3A EDG operability test except when utilizing Subsection 7.3, 3A EDG Local Rapid Start Test that is required every 184 days and should be performed every March and September.

7.1 3A EDG Normal Start Test

CAUTION

3A EDG is inoperable during the starting air isolation and engine barring checks performed in this section. B Train ESF equipment is required to be operable prior to using this section for testing 3A EDG. If B Train ESF equipment is out of service, 3A EDG may be tested using the rapid start test in Subsection 7.3.

INITIALS
CK'D VERIF

Date/Time Started:__________/__________

7.1.1 Initial Conditions

____ 1. All applicable prerequisites as listed in Section 3.0 are satisfied.

____ 2. Verify completion of 0-OSP-023.3, Equipment Operability Verification with an Emergency Diesel Generator Inoperable.

____ 3. 3A EDG is in Normal Standby Condition according to Subsection 5.1 of 3-OP-023, Emergency Diesel Generator.

____ 4. Permission has been obtained from the Nuclear Plant Supervisor to perform this section.

INITIALS
CK'D VERIF

7.1.2 Procedure Steps

NOTE

The valve alignment verification performance may be waived if the EDG is NOT being tested for the Tech Spec Periodic Surveillance AND a previous alignment verification is valid.

What are COMM LINKS ?

____ Done 1. Verify 3A EDG Systems flowpath alignment by performing Attachment 5, **AND** record performance on Attachment 2, Section 1.

____ ✓ 2. Establish communication between the Control Room **AND** the Unit 3 Diesel Generator Building.

3. At the Fuel Oil Transfer Pump Area, perform the following:

____ a. Verify 3A Diesel Oil Transfer Pump 3P10A control switch is in AUTO.

____ b. Verify the Unit 3 Main Fuel Oil Storage Tank level is greater than or equal to 21 feet, 10 inches **AND** record level on Attachment 2, Section 1.

4. Perform the following at 3A EDG:

NOTE

Makeup to EDG 3A Clg System Root Valve, 3-20-449A, is located on the lower northwest corner of the radiator grating (outside) and is operated via a reach rod protruding through the grating.

____ a. Check the Cooling Water Surge Tank level to be between the low and full marks for the STOP condition on the tank level gauge.

____ b. **IF** the water level is low, **THEN** add water to the radiator using the applicable section of 3-OP-023, EMERGENCY DIESEL GENERATOR.

INITIALS
CK'D VERIF

7.1.2.4 (Cont'd)

NOTE

The skid tank gravity fills and stops filling automatically when full.

____ c. Check LI-3-3402A, EDG 3A Fuel Oil Skid Tank Level Ind, to be greater than 200 gallons (on top of the skid tank) **AND** record volume on Attachment 2, Section 1.

____ d. **IF** necessary to fill the skid tank, **THEN** depress the PUSH TO FILL pushbutton.

NOTES

- *Normal lube oil cooler outlet oil temperature should be between 110°F and 120°F.*
- *Minimum temperature for EDG operation is 85°F.*

____ e. Check TI-3-442A, EDG 3A Lube Oil Clr Oil Temp Ind, to be greater than or equal to 100°F.

____ f. Verify the dual Fuel Filter Selector Valve has a single element selected.

____ g. Check the Governor oil level to be above the mark on the sight glass.

____ h. Verify the Governor Speed Droop control knob is set to 0 percent.

____ i. Verify the Governor Load Limit control knob is set to the MAX FUEL position.

____ j. Verify the 3A Diesel Generator Overspeed Trip Lever is reset (i.e., pulled down to latch).

____ k. Verify the Governor Select switch on panel 3C370A is selected to ELECT.

INITIALS
CK'D VERIF

7.1.2.4 (Cont'd)

l. Test the Reflash Annunciator Panels on 3C370C by performing the following:

____ (1) Depress the TEST (T) pushbutton on RA-1 **AND** check that all alarm lights flash.

____ (2) Depress the ACKNOWLEDGE (A) pushbutton on RA-1 **AND** check that all alarm lights go OFF except those previously in alarm.

____ (3) Depress the TEST (T) pushbutton on RA-2 **AND** check that all alarm lights flash.

____ (4) Depress the ACKNOWLEDGE (A) pushbutton on RA-2 **AND** check that all alarm lights go OFF except those previously in alarm.

NOTE

The engine oil level can only be accurately measured when the engine is hot and idling.

____ m. Verify the 3A engine oil level is greater than or equal to 1/2 inch below the full dipstick mark (Center North side of EDG).

____ n. Verify 3A EDG Starting Air Compressor oil level is between the level marks on the dipstick.

____ o. Verify 3A EDG Air Start Dryer Moisture Indicator, MI-3-6416A, desiccant is blue. (East side, waist level)

p. Verify starting air pressure is between 225 psig and 238 psig on each of the following **AND** record on Attachment 2:

____ (1) 3A EDG Air Reservoir Tanks A and B Press Ind, PI-3-3690A

____ (2) 3A EDG Air Reservoir Tanks C and D Press Ind, PI-3-3693A

INITIALS
CK'D VERIF

7.1.2.4 (Cont'd)

q. Open each of the following valves until the piping is clear of moisture, **THEN** Close the valves:

____ (1) 3A EDG Air Reservoir Tank A Drain, 3-70-267A

____ (2) 3A EDG Air Reservoir Tank B Drain, 3-70-268A

____ (3) 3A EDG Air Reservoir Tank C Drain, 3-70-270A

____ (4) 3A EDG Air Reservoir Tank D Drain, 3-70-271A

____ r. Verify oil level is at midpoint in the 3A Diesel Generator Oil Bath Air Filter sightglasses (nine).

____ s. Verify the air filter inlets are free of debris.

____ t. Verify 3A EDG Crankcase Air Box Drain, 3-70-255A, open approximately 25 percent **AND** verify a container is in place to catch any effluents.

____ u. Verify the Emerg Fuel Cutoff, 3-70-131A, red trip handle is pushed in (not tripped) (West side of Engine Panel).

____ v. Verify engine cooling water temperature is between 120°F and 160°F as indicated on TI-3-446A, EDG 3A Clg Wtr Lube Oil Inlet Temp, on the instrument manifold at the front of the engine.

5. Perform the following at 3A EDG Electrical Control Panel 3C12A:

____ a. Verify the Voltmeter Switch is NOT selected to OFF.

____ b. Verify the Ammeter Switch is NOT selected to OFF.

____ c. Verify the RAPID START/AUTO START Bypass keylock switch is in the NORMAL position.

CAUTION

When the Diesel Generator is stopped, the GOVERNOR CONTROL Switch should NOT be operated. If the switch is NOT in the MID position the Nuclear Plant Supervisor is required to be notified immediately.

____ d. Check the GOVERNOR CONTROL Switch to be in the MID (neutral) position.

INITIALS
CK'D VERIF

7.1.2.5 (Cont'd)

____ e. **IF** the GOVERNOR CONTROL Switch is **NOT** in the MID position, **THEN** notify the Nuclear Plant Supervisor.

CAUTION

When the Diesel Generator is stopped, the VOLTAGE ADJUST CONTROL Switch should NOT be operated. If the switch is NOT in the MID position, the Nuclear Plant Supervisor is required to be notified immediately.

____ f. Check the VOLTAGE ADJUST CONTROL Switch to be in the MID (neutral) position.

____ g. **IF** the VOLTAGE ADJUST CONTROL Switch is **NOT** in the MID position, **THEN** notify the Nuclear Plant Supervisor.

____ h. Verify the MASTER CONTROL Switch is in the NORMAL position.

____ i. Verify the EDG Bkr 3AA20 Control Switch is in the MID (neutral) position with a green flag.

____ j. Verify the EDG Bkr 3AA20 GREEN light is ON.

____ k. Verify the EDG Bkr 3AA20 Synchronizing Switch is in OFF.

____ l. Verify the D/G Lockout Relay 186/DG (orange handle)is RESET.

m. Verify the following relay targets are CLEAR:

____ (1) Loss Of Excitation Relay 140 (LFA)

____ (2) Voltage Relay

____ (3) Reverse Power Relay

____ (4) Generator Overcurrent Relay Phases A, B, & C (3 relays)

____ (5) Differential Relay Phases A, B, & C (3 relays)

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

6. Perform the following at 3A EDG Engine Control Panel 3C13A:

____ a. Verify the Immersion Heater Control and Pump Motor Switch is ON.

____ b. Verify the 3A EDG Starting Air Compressor control switch is in AUTO.

____ c. Depress the ALARM TEST and HORN SILENCE pushbuttons **AND** check that all alarm lights are operable.

____ d. **IF** air compressor is not running, **THEN** check the Air Compressor Off GREEN light to be ON.

____ e. **IF** air compressor is running in AUTO, **THEN** check the Air Compressor On RED light to be ON.

____ f. Check the Skid Tank Level, Hi RED light to be OFF.

____ g. Check the Skid Tank Level, Lo RED light to be OFF.

____ h. Check the Local WHITE light to be OFF.

____ i. Check the Normal WHITE light to be ON.

INITIALS
CK'D VERIF

7.1.2.6 (Cont'd)

NOTE

If the following conditions are satisfied, the diesel generator Ready to Start WHITE light will be ON:

EDG Governor is selected to ELECT.
Lockout Relay is reset.
Skid Tank level is not low.
Starting air pressure is greater than 215 psig.
Engine prelube oil pressure is greater than 15 psig.
Engine prelube oil temperature is greater than 100 °F
EDG exciter field breaker is closed.
Control Power fuses are OK.
Emergency Stop Signal is NOT present.
Engine speed is less than 600 rpm.
MASTER CONTROL Switch is NOT in OFF.

____ j. Check the Ready To Start WHITE light to be ON.

____ k Check the Low Start Air Press RED light to be OFF.

____ l. Check the Control Power On GREEN light to be ON.

____ m. Check the Overspeed Trip WHITE light to be OFF.

____ n. Check the Hot Engine Alarm RED light to be OFF.

____ o. Check the Hi Crankcase Pressure AMBER light to be OFF.

____ p. Check the Low Water Pressure Trip AMBER light to be OFF.

____ q. Check the Low Lube Oil Pressure AMBER light to be OFF.

____ r. Check the Low Lube Oil Temp WHITE light to be OFF.

____ s. Check the Start Failure WHITE light to be OFF.

INITIALS
CK'D VERIF

7.1.2.6 (Cont'd)

CAUTION

When the Diesel Generator is stopped, the GOVERNOR CONTROL Switch should NOT be operated. If the switch is NOT in the MID position, the Nuclear Plant Supervisor is required to be notified immediately.

____ t. Check the GOVERNOR CONTROL Switch to be in the MID (neutral) position.

____ u. IF the GOVERNOR CONTROL Switch is NOT in the MID position, THEN notify the Nuclear Plant Supervisor.

____ v. Verify the NORMAL STOP/START control switch is in the MID (neutral) position.

____ w. Verify the IDLE RELEASE/START control switch is in the MID (neutral) position.

____ x. Verify the EMERG STOP/START control switch is in the MID (neutral) position.

y. Record the following prestart information on Attachment 2, Section 2:

____ (1) 3A EDG Start counter reading (inside 3C13A).

____ (2) EDG-A Total Hour Meter reading.

(3) Oil pressure indicated on 3A Diesel Gen Lube Oil Pp After filter Pressure Ind, PI-3-207A, obtained by:

____ (a) Open 3A EDG Lube Oil To Turbocharger and Gear Train PI-3-207A Isol, 3-70-288A.

____ (b) Record indicated oil pressure.

____ ____ (c) Close 3A EDG Lube Oil To Turbocharger and Gear Train PI-3-207A Isol, 3-70-288A.

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

____ 7. Place the RAPID START/AUTO START Bypass keylock switch to BYPASS.

CAUTION

With the MASTER CONTROL Switch in OFF, ALL Start Signals to the Diesel Generator are Disabled.

NOTE

Placing the MASTER CONTROL switch to the OFF or LOCAL position will cause Control Room Annunciator F8/5, EDG A MASTER CONTROL SW OFF-NORMAL to actuate.

____ 8. Notify the Unit 3 RCO that the MASTER CONTROL Switch is being turned OFF.

____ 9. Place the MASTER CONTROL Switch in OFF.

10. Perform the following to ensure the engine cylinders are clear of any fluids or other contaminants:

a. Unlock and close the following air start isolation valves:

____ (1) 3A EDG Starting Air Right Side Isolation, 3-70-261A.

____ (2) 3A EDG Starting Air Left Side Isolation, 3-70-300A.

____ b. Open the engine test cocks (twenty).

____ c. Observe the state of the area around each test cock (e.g., oily, discolored, or evidence of previous drainage).

____ d. Obtain the manual engine barring tool from the North wall of the 3B EDG Room.

____ e. Remove the North cover for access to the flywheel area of 3A EDG.

____ f. Manually bar-over 3A EDG one complete revolution.

____ g. Replace the North flywheel cover.

INITIALS
CK'D VERIF

7.1.2.10 (Cont'd)

____ h. Inspect for fluids or other substances exhausted from any engine cylinder test cock (twenty places).

____ i. **IF** any abnormal findings at the engine cylinder test cocks are identified, **THEN** notify the Nuclear Plant Supervisor.

____ ____ j. Close the engine cylinder test cocks (twenty).

k. Open one Air Start Isolation Valve as follows: (N/A valve not opened)

____ ____ (1) Even month - Open and Lock 3A EDG Starting Air Right Side Isolation Valve, 3-70-261A.

____ ____ (2) Odd month - Open and Lock 3A EDG Starting Air Left Side Isolation Valve, 3-70-300A.

l. Verify air pressure is approximately 190 psig on one of the following gauges **AND** record on Attachment 2, Section 2. (N/A PI not being used):

____ (1) Even month - Air to Pinion Engaging Air Motors, PI-3-205A.

____ (2) Odd month - Air to Pinion Engaging Air Motors, PI 3-3691A.

____ m. Return the barring tool to the North wall of the 3B EDG room.

NOTE

The Cooling Water System contains chromates, and if any cooling system leakage is observed, the NPS and Chemistry are required to be notified.

____ n. Perform a general inspection around the 3A Diesel Engine and its auxiliaries **AND** notify the Nuclear Plant Supervisor of any signs of significant leakage.

____ o. Place clean white rags over the air start motor exhausts (4).

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

NOTE

In order to prevent start failures of the 3A EDG, IVs in Substep 7.1.2.10 are required to be completed prior to continuing on with this section of the procedure.

____ 11. Verify independent verification requirements in Substep 7.1.2.10 have been completed prior to proceeding with this procedure.

NOTE

Returning the MASTER CONTROL switch to the NORMAL position will cause Control Room Annunciator F 8/5, EDG A MASTER CONTROL SW OFF-NORMAL to clear.

____ 12. Notify the Unit 3 RCO that the MASTER CONTROL Switch is being returned to NORMAL.

____ 13. Place the MASTER CONTROL switch to NORMAL.

____ 14. Place the RAPID START/AUTO START Bypass keylock switch to NORMAL.

____ 15. Verify the diesel generator radiator is free from debris.

CAUTION

Do not place hands on or near fan belt.

(7/11) Completion

____ 16. Verify the diesel fan belt is in good condition (i.e., not frayed, twisted, etc.) and positioned properly in the pulley grooves.

____ 17. Verify the day tank level is between 4 feet 10 inches and 6 feet 2 inches on LG-3-1428A, A-Diesel Gen Day Tank Level Gauge (at the 3A EDG Day Tank (3T23A) Room) **AND** record level on Attachment 2, Section 1.

____ 18. At Unit 3 Control Room VPA, verify the 3A-EDG Lockout Reset BLUE light is ON.

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

19. At Unit 3 Control Room Console, perform the following:

____ a. Verify the 3A Diesel Generator EMERGENCY STOP/EMERGENCY START control switch is in the MID (neutral) position.

____ b. Verify the 3A Diesel Generator NORMAL STOP/NORMAL START control switch is in the MID (neutral) position.

____ c. Check 3A Diesel Generator Ready To Start RED light to be ON.

____ d. Check 3A Diesel Generator Normal Control WHITE light to be ON.

____ e. Check 3A Diesel Generator Engine Idling AMBER light to be OFF.

____ f. Verify the 3A Diesel Gen Speed Changer is in the MID (neutral) position.

____ g. Verify the 3A Diesel Gen Volt Regulator is in the MID (neutral) position.

____ h. Verify the EDG A Sync to 3A 4KV Bus 3AA20 Synchroscope Control Switch is OFF.

____ i. Check the EDG A to 3A 4KV Bus 3AA20 Breaker GREEN light to be ON, the control switch in the MID position **AND** the control switch has a green flag.

____ j. Verify the 3A Steam Generator Feed Pump is running **OR** is racked out **OR** both Steam Generator Feed Pumps are secured.

____ k. Verify the 3A Condensate Pump is running **OR** is racked out **OR** all Condensate Pumps are secured.

____ l. Verify the 3A Heater Drain Pump is running **OR** is racked out **OR** all Heater Drain Pumps are secured.

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

20. Check that the following Control Room annunciators are clear:
    a. F 8/2, EDG A TROUBLE
    b. F 8/3, EDG A BKR OVERCURRENT TRIP
    c. F 8/4, DIESEL OIL DAY TANK A HI/LO LEVEL
    d. F 8/5, EDG A MASTER CONTROL SW OFF-NORMAL

21. **IF** this run is during January, April, July, or October, **THEN** position the 3A Diesel Oil Transfer Pump 3P10A control switch to OFF.

NOTES

- *When the 3A EDG Normal Stop/Normal Start switch is placed to the Normal Start position (spring return to normal), the 3A EDG will start and accelerate to idle speed, (450 rpm), and maintain for 60 seconds before releasing to accelerate to full speed, (900 rpm).*
- *When the 3A EDG accelerates to full speed, the following actions occur:*
  - *a) The DG 3A Ready to Start RED light will go OFF. (600 rpm)*
  - *b) The generator field will flash. (800 rpm)*
- *Substep 7.1.2.22.a will require an Operator to be at the Electric Fuel Priming Pump or the Fuel Oil Manifold Pressure Gauge.*
- *Electric Fuel Priming Pump will start when performing Substep 7.1.2.22 and stop in less than 4 seconds.*

22. Momentarily place the 3A EDG NORMAL STOP/NORMAL START switch to NORMAL START (spring return to normal).
    a. Verify the Electric Fuel Priming Pump started when 3A EDG was started by monitoring the Fuel Oil Pressure Gauge **OR** watching the pump shaft.

23. Verify the 3A EDG starts and accelerates to idle speed, 450 rpm (the DG3A Engine Idling AMBER light will be ON when the engine reaches idle speed).

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

NOTE

A lack of oil on the rags indicates a failure of the lubricators for the Air Start Motors. Foreign particles (Rust, dirt, etc.) may indicate impending Air Start Motor failure.

____ PLT 24. Remove and inspect the rags placed over the Air Start Motor exhausts for evidence of oil and foreign particles.

____ PLT 25. <u>IF</u> NO oil is present <u>OR</u> there is evidence of foreign particles on the rags, <u>THEN</u> notify the Nuclear Plant Supervisor of a possible air start malfunction.

CAUTION

Loss of crankcase vacuum in conjunction with a decrease of one or more cylinder exhaust pyrometer reading(s) could be indicative of fuel oil line or fitting failure in the crankcase area and fuel oil intrusion of the lube oil. When fuel oil intrusion is substantiated by the smell of fuel oil at the lube oil dipstick opening, the EDG is required to be shut down and not restarted until lube oil quality (absence of fuel oil) is determined to be acceptable.

NOTE

Guidelines for Determining EDG Crankcase Vacuum/Pressure are provided in Enclosure 2.

____ PLT 26. Slowly Open 3A EDG Crankcase Vacuum Gauge, PI-3-6679A, Isol, 3-70-283A.

____ PLT 27. While the diesel is running, periodically monitor crankcase vacuum at PI-3-6679A.

____ a. <u>IF</u> the diesel crankcase vacuum is lost in conjunction with a decrease of one or more cylinder exhaust pyrometer readings, <u>THEN</u> notify the Nuclear Plant Supervisor that the diesel should be shutdown <u>AND</u> the lube oil quality checked.

28. <u>WHEN</u> 3A EDG reaches rated speed (900 rpm), <u>THEN</u> record the After Start data on the following attachments:

____ a. Attachment 1, Section 2

____ b. Attachment 2, Section 3

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 5.
2. PREPARATIONS FOR REFUELING ARE IN PROGRESS.
3. THE RHR SYSTEM IS IN SERVICE.
4. ALL RCPs ARE STOPPED.
5. THE RCS IS WATER SOLID AT 300 PSIG AND 170 DEG. F.
6. ALL S/Gs ARE INTACT.
7. CHARGING AND LETDOWN ARE IN SERVICE.
8. CCW IS IN SERVICE WITH 3 HEAT EXCHANGERS AND 2 PUMPS.
9. CHILLED WATER HAS BEEN ESTABLISHED FOR THE NORMAL CONTAINMENT COOLERS.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: RESPOND TO EXCESSIVE RCS LEAKAGE

JPM NUMBER: 01041068307 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 05/26/99

NUCLEAR SAFETY IMPORTANCE: 4.00

COMBINED IMPORTANCE: 4.50

TIME VALIDATION: 24 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

1. Reset to IC-4, Stop the 3B RCP, Acknowledge any alarms and freeze simulator
2. TOUCH SYS. MAT->RCS->MAIN RCS HYD->TOUCH COLD LEG BREAK ->RCS COLD LEG LEAKAGE LOOP B->SET TVHH CLB=.02

TASK STANDARDS:

RCS INVENTORY MAINTAINED.

REQUIRED MATERIALS:

1. 3-ONOP-041.3
2. 3-ONOP-041.8

REFERENCES:

3-ONOP-041.3, EXCESSIVE REACTOR COOLANT SYSTEM LEAKAGE
3-ONOP-041.8, SHUTDOWN LOCA [MODE 5 OR 6]

TERMINATING CUES:

RCS INVENTORY MAINTAINED.

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND THE SIMULATOR WILL PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 5.
2. PREPARATIONS FOR REFUELING ARE IN PROGRESS.
3. THE RHR SYSTEM IS IN SERVICE.
4. ALL RCPs ARE STOPPED.
5. THE RCS IS WATER SOLID AT 300 PSIG AND 170 DEG. F.
6. ALL S/Gs ARE INTACT.
7. CHARGING AND LETDOWN ARE IN SERVICE.
8. CCW IS IN SERVICE WITH 3 HEAT EXCHANGERS AND 2 PUMPS.
9. CHILLED WATER HAS BEEN ESTABLISHED FOR THE NORMAL CONTAINMENT COOLERS.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

EVALUATOR'S NOTES:

NOTE 1: It is permissible to add an additional operator for balance of plant operations.

NOTE2 : The operator may go to 3-ONOP-041.3 (element 1), or go directly to 3-ONOP-041.8 (element 6).

( ) **ELEMENT: 1**

MAINTAIN RCS INVENTORY.
[3-ONOP-041.3, Step 1]

Maintain what
level Band

STANDARDS:

__1. CHARGING FLOW INCREASED AS NECESSARY. [Step 1.a]

__2. ADDITIONAL CHARGING PUMPS STARTED AS NECESSARY. [Step 1.b]

__3. LETDOWN ISOLATED WHEN CHARGING FLOW IS MAXIMIZED. [step 1.c]

__4. ACTIONS PERFORMED FROM MEMORY.

EVALUATOR'S NOTES:

NOTE: The Letdown flow path is via HCV-142 which is controlled from VPB. The operator will take HCV-142 potentiometer setting to zero to isolate letdown.

Verify with
Procedure

( ) **ELEMENT: 2**

OBTAIN 3-ONOP-041.3.

STANDARDS:

__1. 3-ONOP-041.3 OBTAINED.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 3**

CHECK RCS INVENTORY DECREASING.
[3-ONOP-041.3, Step 2]

STANDARDS:

__1. CHECKED PRESSURIZER LEVEL TREND.

LI?

Are there any preferred instruments

__2. CHECKED CHARGING/LETDOWN FLOW RATE MISMATCH.

INDICATIONS

INSTRUMENTS

EVALUATOR'S NOTES:

NOTE: While the procedure does not specify how to check inventory, the operator may use any combination of the standards listed to come to the conclusion that inventory is still decreasing.

( ) **ELEMENT: 4**

VERIFY CHARGING FLOW AT MAXIMUM.
[3-ONOP-041.3, Step 3a]

STANDARDS:

__1. CHARGING FLOW VERIFIED AT MAXIMUM.

EVALUATOR'S NOTES:

NOTE: Maximum charging flow is all available charging pumps operating with maximum output demanded without lifting the charging pump safeties.

How will Opr do this?

What is Set pT

( ) **ELEMENT: 5**

VERIFY LETDOWN ISOLATED.
[3-ONOP-041.3, Step 3b]

STANDARDS:

__1. LETDOWN ISOLATION VERIFIED BY ENSURING HCV-142 POTENTIOMETER IS AT ZERO OUTPUT.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 6**

EVALUATE CONDITIONS TO CHOOSE RECOVERY PROCEDURE.
[Step 4]

STANDARDS:

__1. CHECKED UNIT MODE STATUS (MODE 5) AND WENT TO STEP 6 AND SUBSEQUENTLY TO STEP 8 AND THEN TO STEP 9.

( ) **ELEMENT: 7**

OBTAIN 3-ONOP-041.8

STANDARDS:

__1. 3-ONOP-041.8 OBTAINED

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 8**

CHECK IF RHR PUMPS SHOULD BE STOPPED.
[3-ONOP-041.8, Steps 1a -> 1e]

STANDARDS:

__1. REVIEWED CAUTIONS PRIOR TO STEP 1.

__2. RHR PUMPS CHECKED TO SEE IF ANY ARE RUNNING - YES.
[Step 1a]

__3. RCS LEVEL CHECKED TO BE ADEQUATE FOR PLANT CONDITIONS AS FOLLOWS:
[Step 1b]

are these OOS?

A. DRAIN DOWN LEVEL (LI-6421 OR LI-6423) >23% - OOS.
(OR)
B. COLD CAL PZR LEVEL (LI-462) >10% - YES.

__4. OBSERVED RCS LEVEL DECREASING.
[Step 1c]

Cue: ***When the operator reviews Step 1.c RNO, as the NPS, tell the operator: "We are maintaining RCS inventory with the charging flow method. Continue with Step 1."***

sufficient?

why tell operator?

__5. MAINTAINED CHARGING FLOW.
[Step 1c RNO c 1) a)]

__6. RHR FLOW CHECKED TO BE < 3000 GPM BY OBSERVING FI-605 ON VPB. - NO.
[Step 1d]

__7. REDUCED RHR FLOW TO < 3000 GPM BY MANIPULATING FCV-605 CONTROLLER ON VPB.
[Step 1d RNO]

__8. RHR PUMPS CHECKED TO BE CAVITATING BY OBSERVING PUMP AMPS AND FLOW INDICATIONS. - NO.
[Step 1e]

__9. OBSERVED PRZ LEVEL TO BE DECREASING AND TRANSITIONED TO STEP 1f.
[Step 1e RNO e2)]

EVALUATOR'S NOTES:

NOTE: For step 1c RNO (standard 5), charging is already at maximum satisfying step 13 'Charging Flow' method of maintaining RCS inventory.

(C) **ELEMENT: 9**

PLACE BOTH RHR PUMPS IN STANDBY.
[3-ONOP-041.8, Step 1f]

STANDARDS:

__1. BOTH RHR PUMPS STOPPED AND PLACED IN STANDBY.

EVALUATOR'S NOTES:

NOTE: RHR pumps are placed in Standby by stopping them and ensuring the control switches are left in the MID position.

( ) **ELEMENT: 10**

ISOLATE LETDOWN AND KNOWN DRAIN PATHS.
[3-ONOP-041.8, Step 2]

STANDARDS:

__1. EXCESS LETDOWN VALVES CHECKED TO BE CLOSED:

A. CV-387
B. HCV-137

__2. NORMAL LETDOWN VALVES CLOSED:

A. CV-200A
B. CV-200B
C. CV-200C
D. LCV-460

__3. RHR LETDOWN TO CVCS VALVE, HCV-142, CLOSED.

EVALUATOR'S NOTES:

NOTE 1: The Excess Letdown valves and HCV-142 are expected to be closed. The Normal Letdown valves may still be open and if so, the operator will close them now.

NOTE: Step 3 is reviewed and transition to step 5 is made from the step 3 RNO column.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01041068307

Last often obtain
1 or 2 readings from
Core Exit TC
Enough to Evaluate Response

( ) **ELEMENT: 11**

CALCULATE TIME UNTIL RCS REACHES SATURATION TEMPERATURE BASED ON PRE-EVENT AND/OR CURRENT CONFIGURATION.
[3-ONOP-041.8, Step 5]

How to plot?
list
Attach
Procedure
Paper

STANDARDS:

1. TIME TO SATURATION DETERMINED BY PLOTTING RCS HEATUP RATE:

__A. CORE EXIT TCs PLOTTED EVERY MINUTE FOR 5 MINUTES. [Step 5.a.1]

__B. RCS HEATUP RATE CALCULATED. [Step 5.a.2]

CUE: *Once the operator recognizes the requirement to plot temperature, say "the STA has been directed to plot temperatures and the heatup rate is 5 deg./min. Determine the time to reach saturation."*

__C. TIME REQUIRED TO REACH SATURATION IN RCS DETERMINED. [Step 5.a.3]

__D. RESULTS REPORTED to NPS. [Step 5.a.4]

__E. PROCESS REPEATED EVERY 15 MINUTES UNTIL RHR COOLING IS RESTORED.

__F. TIME TO REACH RCS SATURATION IS VERIFIED LESS THAN THE TIME REQUIRED FOR CONTAINMENT CLOSURE FROM THE ONOP (STEP 5) CHART.

EVALUATOR'S NOTES:

NOTE: Operator should determine that time to reach saturation is less than the time required for containment closure and continue ~~on with~~ step 6. Plant is in "none of the above configurations."

(C) **ELEMENT: 12**

INITIATE ACTIONS TO PROTECT PERSONNEL WORKING IN AFFECTED UNIT'S CONTAINMENT.
[3-ONOP-041.8, Step 6]

STANDARDS:

c 1. PERSONNEL IN CONTAINMENT EVACUATED:

   A. ANNOUNCEMENT MADE OVER THE PLANT PAGE. [Step 6.a.1]

   B. CONTAINMENT EVACUATION ALARM ACTUATED. [Step 6.a.2]

   C. ANNOUNCEMENT MADE OVER THE PLANT PAGE. [Step 6.a.3]

Y 2. HP SHIFT SUPERVISOR DIRECTED TO DETERMINE CONTAINMENT RADIOLOGICAL ENTRY REQUIREMENTS.
[Step 6.b.1]

CUE: ***As H.P. Supervisor, state that containment entry is <u>NOT</u> allowed at this time.***

Y 3. R-11 & R-12 PERIODICALLY MONITORED TO DETERMINE CONTAINMENT RADIATION CONDITIONS.

EVALUATOR'S NOTES:

NOTE: Standards 2 & 3 are not critical to this element.

(C) **ELEMENT: 13**

INITIATE ACTIONS TO ESTABLISH CONTAINMENT CLOSURE.
[3-ONOP-041.8, Step 7]

STANDARDS:

__1. NOTIFIED ANPS/NPS OF REQUIREMENT TO CLOSE ANY OPEN CONTAINMENT PENETRATIONS:

A. EQUIPEMENT HATCH
B. PERSONNEL HATCH
C. EMERGENCY ESCAPE HATCH
D. ANY OTHER KNOWN RCS OPENINGS
[Step 7.a]

How to Clos. this?

CUE: ***As ANPS/NPS, acknowledge notification.***

✓2. PHASE "A" CONTAINMENT ISOLATION MANUALLY ACTUATED BY DEPRESSING PUSHBUTTON(S) ON VPB.
[Step 7.b.1]

__3. VERIFIED PHASE "A" VALVES ARE CLOSED BY OBSERVING WHITE STATUS LIGHTS ON VPB BEING BRIGHT.
[Step 7.b.2]

EVALUATOR'S NOTES:

NOTE: ANPS/NPS/NWE would issue directions to close containment penetrations...Standard 2 is critical to this element.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01041068307

(C) **ELEMENT: 14**

ESTABLISH CONTAINMENT COOLING.

N.T.C. **STANDARDS:**

X 1. REVIEWED CAUTION PRIOR TO STEP 8.

__2. 3 CCW Hx VERIFIED IN SERVICE (FROM INITIAL CONDITIONS).
[Step 8.a.1]

__3. CCW PUMPS VERIFIED <u>ONLY TWO</u> ARE RUNNING.
[Step 8.a.2]

__4. NORMAL CONTAINMENT COOLERS WERE CHECKED TO BE ALIGNED TO CHILLED WATER (FROM INITIAL CONDITIONS).
[Step 8.b]

N.T.C. X 5. VERIFIED NO RCPS WERE RUNNING.
[Step 8.c]

__6. RESET PHASE 'A' CONTAINMENT ISOLATION.
[Step 9.a]

__7. OPENED CCW TO NORMAL CONTAINMENT COOLER VALVES, MOV-1417 AND MOV-1418.
[Step 9.b]

N.T.C. X 8. RECOGNIZED THAT CCW PUMPS WERE NOT ALIGNED TO THE NORMAL CONTAINMENT COOLERS AND DIRECTED AN OPERATOR TO RESTART THE CHILLED WATER SYSTEM.
[Step 9.c]

__9. NORMAL CONTAINMENT COOLERS RESET AND STARTED.
[Step 9.d]

__10. STARTED AT LEAST TWO EMERGENCY CONTAINMENT FILTER FANS.
[Step 9.e.1]

__11. <u>ONLY TWO</u> EMERGENCY CONTAINMENT COOLERS STARTED.
[Step 9.e.2]

EVALUATOR'S NOTES:

NOTE: Standards 1 - 5 and 8 are not critical to this element.

( ) **ELEMENT: 15**

CHECK RCS LEVEL IN PREPARATION TO REFILL RCS.
[Step 10]

STANDARDS:

__1. REVIEWED CAUTIONS PRIOR TO STEP 10.

__2. PRESSURIZER LEVEL LI-3-462 CHECKED TO BE </= 50%. [Step 10.a]

__3. PRESSURIZER LEVEL LI-3-462 CHECKED TO BE </= 10%. [Step 10.a]

EVALUATOR'S NOTES:

NOTE: Operator performs Step 10, verifies pressurizer level is less than 50% and then less than 10% on LI-3-462 and then performs Step 11.

(C) **ELEMENT: 16**

REFILL THE REACTOR COOLANT SYSTEM WHEN PRZ LEVEL < 10%.
[Step 11]

Why not?

STANDARDS:

__1. AT LEAST ONE HHSI PUMP ALIGNED FOR HOT LEG INJECTION AS FOLLOWS:

NOTE: The procedure does not directly address the situation the RCO will encounter; the HHSI MOVs are deenergized. to be successful the RCO will have to direct field operators to locally close the MOV breakers.

of

__A. DIRECTED SNPO TO CLOSE BREAKER 30737.

__B. DIRECTED SNPO TO CLOSE BREAKER 30732.

AND/OR

__C. DIRECTED NPO TO CLOSE BREAKER 30621.

who will get this Info

BOOTH INSTRUCTIONS:
Close breakers: touch sys mat->safety system->safety system process->MOV869->breaker loa local close/trip(mech)->set TCM2D07M=T->MOV866A(B)->breaker loa local close/trip (mech)->set TCM2D05(6)M=T

BOOTH OPERATOR CUE: **Report as field operators that the breakers are closed.**

__D. OPENED MOV-869.
[Step 11.a.1.a]

__E. OPENED MOV-866A AND/OR MOV-866B.
[Step 11.a.1.b]

__2. AT LEAST ONE HHSI PUMP STARTED.
[Step 11.b]

__3. RCS REFILLING CONTINUED UNTIL EITHER OF THE FOLLOWING TWO CONDITIONS ARE SATISFIED:

A. RHR COOLING HAS BEEN RESTORED.

((OR))

B. LI-462, PRZ LEVEL COLD CAL, IS GREATER THAN 50%. [Step 11.c]

EVALUATOR'S NOTES:

NOTE: It is not necessary to wait until the pressurizer level is restored to 50% as long as the operator states that they are filling to that level.

Tell operator the JPM is completed.

FOLDOUT FOR PROCEDURE 3-ONOP-041.3

1. **3-EOP-E-0 TRANSITION CRITERIA**
   IF Unit 3 is in Modes 1 through 3 greater than 1000 psig with the Safety Injection System aligned for injection, **AND** either of the following occurs, **THEN** verify the Reactor tripped **AND** go to 3-EOP-E-0, REACTOR TRIP OR SAFETY INJECTION:
   a. RCS leakage greater than charging pump capcity and letdown isolated.
   b. PZR level - CAN NOT BE MAINTAINED GREATER THAN 12%[50%]

2. **3-ONOP-041.7 TRANSITION CRITERIA**
   IF Unit 3 is in Modes 3 Less than 1000 psig with the Safety Injection system flow paths isolated or Mode 4, **AND** either of the following occurs, **THEN** go to 3-ONOP-041.7, SHUTDOWN LOCA [Mode 3 (less than 1000 psig) OR 4]:
   a. RCS Leakage greater than charging pump capacity and letdown isolated.
   b. PZR controlling RCS pressure with a bubble **AND** PZR level - CAN NOT BE MAINTAINED GREATER THAN 12%[50%]
   c. PZR Water solid and PZR level decreasing with maximum charging flow and letdown isolated.

3. **3-ONOP-041.8 TRANSITION CRITERIA**
   IF Unit 3 is in Mode 5 or 6 **AND** either of the following occurs, **THEN** go to 3-ONOP-041.8, SHUTDOWN LOCA [MODE 5 OR 6]
   a. RCS Leakage greater than charging pump capacity **AND** letdown isolated.
   b. RCS DRAINDOWN level less than 23%.

4. **3-ONOP-033.2 TRANSITION CRITERIA**
   IF the reactor is operating in MODE 6 with the refueling cavity filled, **THEN** Go to 3-ONOP-033.2, REFUELING CAVITY FAILURE

   3-ONOP-033.2 TRANSITION CRITERIA
   IF any Process Radiation Monitor alarms while performing this procedure, **THEN** perform 3-ONOP-067, RADIOACTIVE EFFLUENT RELEASE while continuing with this procedure.

6. PRMS R-11 OR R-12 INCREASING
   IF R-11 **OR** R-12 increasing, **THEN** close Containment Instrument Air Valves, CV-3-2819 and CV-3-2826, **AND** Containment Sump Pump Discharge Valves, CV-3-2821 and CV-3-2822.

7. **ADVERSE CONTAINMENT CONDITIONS**
   Adverse containment conditions are defined as either a containment atmosphere temperature greater than or equal to 180°F **OR** containment radiation levels greater than or equal to 1.3E5 R/hr. Under these conditions the setpoint values in brackets, [ ], are required to be used.

   IF containment temperature subsequently falls below 180°F, **THEN** normal setpoint values may be used. **IF** containment radiation level subsequently falls below 1.3×10^5 R/hr **AND** TSC staff has determined that the integrated dose to containment is less than 10^6 Rads, **THEN** normal setpoint values may be used.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTES

- *STEP 1 in an IMMEDIATE ACTION step.*
- *Foldout page shall be monitored throughout this procedure.*

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	**Maintain RCS Inventory**	
	a. Maintain RCS Inventory as directed by the NPS: • Maintain program level **OR** • Maintain ordered band for operational mode **OR** • Maintain unit water solid (if unit water solid prior to event)	
	b. Start additional charging pumps as necessary to maintain RCS Inventory	
	c. IF charging flow is maximum, THEN isolate letdown flow	
2	**Check RCS Inventory Decreasing**	Go to Step 10.
3	**Verify The Following:**	Return to Step 1.
	a. Charging flow - MAXIMUM	
	b. Letdown flow - ISOLATED	
4	**Check Unit In Mode 1 Through 3 Greater Than 1000 psig With Safety Injection System Aligned For Injection**	Go to Step 6.
5	**Manually Trip The Reactor AND Go To 3-EOP-E-0, REACTOR TRIP OR SAFETY INJECTION**	
6	**Check Unit Operating Mode 3 Less Than 1000 psig With Safety Injection Blocked Or Mode 4**	Go to Step 8.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	**Go To 3-ONOP-041.7, SHUTDOWN LOCA [MODE 3 (LESS THAN 1000PSIG) OR MODE 4]**	
8	**Check Unit Operating Mode 5 or 6 With Refueling Cavity NOT FILLED**	Go to 3-ONOP-033.2, REFUELING CAVITY SEAL FAILURE.
9	**Go To 3-ONOP-041.8, SHUTDOWN LOCA [MODE 5 OR 6]**	
10	**Monitor RCS Leakage**	
	a. Perform The Following:	
	1) Determine RCS leak rate using the appropriate leak rate procedure • 3-OSP-041.1, REACTOR COOLANT SYSTEM LEAKRATE CALCULATION **OR** • 3-OSP-041.2, REACTOR COOLANT SYSTEM VISUAL LEAK INSPECTION **AND** LEAK EVALUATION	
	2) Attempt to identify the source of the leak	
	3) Check if the leak is isolable	3) Go to Step 11.
	4) Isolate the leak as following: • **IF** leakage is from the RHR System, **THEN** perform ATTACHMENT 1 **OR** • Plant Clearance	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTIONS

- *Changes in RCS pressure may result in inaccuracies in RCS level readings.*
- *If the refueling Cavity is flooded, then go to 3-ONOP-033.2, REFUELING CAVITY SEAL FAILURE.*
- *If entering this procedure from 3-ONOP-050, Loss Of RHR, then go to step 21.*

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	**Check If RHR Pumps Should Be Stopped**	
	a. RHR pumps - ANY RUNNING	a. Go to STEP 2
	b. RCS LEVEL - ADEQUATE FOR PLANT CONDITIONS • Drain Down Level 1) LI-3-6421 - GREATER THAN 23% 2) LI-3-6423 - GREATER THAN 23% **<u>OR</u>** √ • Pressurizer Level, LI-3-462 - GREATER THAN 10%	b. Perform the following: 1) Stop both RHR pumps and place them in standby. 2) Go to STEP 2.
	c. Check RCS Level - STABLE <u>OR</u> INCREASING →	c. Perform the following: 1) Maintain RCS inventory using the following methods while continuing with this procedure: Already MAX → a) Charging flow (Step 13). b) RWST Gravity Feed (Step 14). c) VCT Overpressure Feed (Step 15).
	d. RHR flow - LESS THAN 3000 GPM →	d. Reduce RHR flow to 3000 gpm
	e. RHR pumps - CAVITATING No ✓	e. Perform the following: 1) <u>IF</u> level stable or increasing, <u>THEN</u> go to appropriate plant procedure as determined by the Nuclear Plant Supervisor. 2) <u>IF</u> level decreasing, <u>THEN</u> go to Step 1f.
	f. Stop both RHR pumps and place them in standby.	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	**Isolate Letdown And Known Drain Paths**	
	a. Excess letdown isolation valves - CLOSED • CV-3-387, Excess Letdown Isolation Valve From Cold Leg To Excess Letdown Heat Exchanger • HCV-3-137, Excess Letdown Flow Controller	a. Manually close valves.
	b. Normal Letdown isolation valves - CLOSED • CV-3-200A, LTDN Orifice Stop Valve - 45 gpm • CV-3-200B, LTDN Orifice Stop Valve - 60 gpm • CV-3-200C, LTDN Orifice Stop Valve - 60 gpm • LCV-3-460, High Pressure Letdown Isolation From Loop B Cold Leg	b. Manually close valves.
	c. RHR letdown Isolation Valves - CLOSED • HCV-3-142, RHR LTDN to CVCS	c. Manually close valve.
3	**Check RCS Operating In A Drain Down <u>OR</u> Reduced Inventory Configuration Prior To The Event**	Go to step 5

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	**Determine The Time To saturation Based On Existing Conditions**	
	a. Determine Time to saturation from Figure 1	
	b. Time to reach RCS saturation (boiling) - LESS THAN REQUIRED TIME FOR CONTAINMENT CLOSURE FROM TABLE BELOW	b. OBSERVE THE CAUTION PRIOR TO STEP 10, **AND** GO TO STEP 10.

Plant Configuration	Containment Closure Time
Configuration 1: 1. RCS cold legs, RCPs, or intermediate legs have openings totaling one square inch or greater **AND** 2. Rx Vessel upper plenum and RCS hot legs **NOT** vented with a minimum of 72 square inch opening	25 minutes
Configuration 2: 1. RCS cold legs, RCPs, or intermediate legs have openings totaling one square inch or greater **AND** 2. Rx Vessel upper plenum or RCS hot legs vented with a minimum of 72 square inch opening	115 minutes
None of the above configurations	120 minutes

c. Go to Step 6

5 **Determine Time To Saturation By Plotting RCS Heatup Rate**

a. Plot RCS heatup rate

1) Plot core exit TCs every minute for five minutes

2) Calculate RCS heatup rate

3) Determine time required to reach saturation in RCS

4) Report results to Unit RCO and NPS

5) Repeat this step every 15 minutes until RHR cooling is restored

b. Time to reach RCS saturation (boiling) - LESS THAN REQUIRED TIME FOR CONTAINMENT CLOSURE FROM TABLE BELOW

b. OBSERVE THE CAUTION PRIOR TO STEP 11, **AND** GO TO STEP 11.

Plant Configuration	Containment Closure Time
Configuration 1: 1. RCS cold legs, RCPs, or intermediate legs have openings totaling one square inch or greater **AND** 2. Rx Vessel upper plenum and RCS hot legs **NOT** vented with a minimum of 72 square inch opening	25 minutes
Configuration 2: 1. RCS cold legs, RCPs, or intermediate legs have openings totaling one square inch or greater **AND** 2. Rx Vessel upper plenum or RCS hot legs vented with a minimum of 72 square inch opening	115 minutes
* None of the above configurations	120 minutes

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	**Initiate Actions To Protect Personnel Working In UNIT 3 Containment**	
	a. Evacuate Non-essential Personnel In Containment	
	1) Announce over the plant PA system: • "Attention all personnel inside Unit 3 Containment Evacuate Unit 3 Containment"	1) Request NPS pass supervisory announcement over MTX-900 radio to order personnel out of containment.
	2) Sound the containment evacuation alarm	2) Notify Health Physics Shift Supervisor **OR** Operations Department personnel inside containment to order all personnel to evacuate the containment building.
	3) Announce over the plant PA system: • "Attention all personnel inside Unit 3 Containment Evacuate Unit 3 Containment"	3) Request NPS pass supervisory announcement over MTX-900 radio to order personnel out of containment.
	b. Protect personnel inside containment as follows:	
	1) Direct H.P Shift Supervisor to determine Containment radiological entry requirements based on current plant conditions	
	2) Direct personnel teams inside containment to abide by updated H.P. requirements **OR** exit containment	
	c. Periodically monitor R-3-11 **AND** R-3-12 to determine containment radiation conditions	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	**Initiate Actions To Establish Containment Closure:**	
	a. Direct personnel to close any open containment penetrations • Equipment Hatch • Personnel Hatch • Emergency Escape Hatch • Any other known RCS openings	
	b. Actuate Containment Isolation Phase A:	
	1) Manually actuate Containment isolation phase A	
	2) Verify Containment isolation phase A valve white lights on VPB - ALL BRIGHT	2) **IF** any containment isolation phase A valve is **NOT** closed, **THEN** manually close valve. **IF** valve(s) can **NOT** be manually closed, **THEN** manually or locally isolate affected containment penetration.

3 in serv

CAUTION

If only two CCW Heat Exchangers are in service AND MOV-3-749A and MOV-3-749B are OPEN, then two CCW Pumps shall be maintained in Pull-To-Lock.

2 PP's

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	**Check CCW System Status**	
	a. Verify Proper CCW System Operation for containment cooling:	
	1) CCW Heat Exchangers - THREE IN SERVICE	1) Perform the following: a) Start or stop CCW pumps to establish ONLY ONE RUNNING CCW PUMP. b) <u>IF</u> MOV-3-749A <u>AND</u> MOV-3-749B are open, <u>THEN</u> stop and place in Pull-To-Lock all except one CCW pump. c) Go to Step 8b.
	2) CCW pumps - ONLY TWO RUNNING	2) Start or stop CCW pumps to establish ONLY TWO RUNNING CCW PUMPS.
	b. Check Normal Containment Coolers - ALIGNED TO THE CHILLED WATER SYSTEM	b. Go to Step 9
	c. Stop any running RCPs	

How will Oper do this visual check?

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	**Establish Containment Cooling:**	
	a. Reset containment isolation phase A	a. Stop any running RCPs **AND** go to STEP 9e.
	b. Open CCW to Normal Containment Cooler valves • MOV-3-1417 • MOV-3-1418	b. Stop any running RCPs **AND** go to Step 9e.
	c. Check CCW Pumps - ALIGNED TO NORMAL CONTAINMENT COOLERS ?/ →	c. Direct an operator to restart the Chilled Water System
	d. Reset and start normal containment coolers	
	e. Start emergency containment cooling equipment as follows: 1) Emergency containment filter fans - AT LEAST TWO RUNNING 2) Emergency containment coolers - ONLY TWO RUNNING	

CAUTIONS

- *Personnel working in containment should be warned prior to refilling the RCS to avoid inadvertent contamination of personnel working near RCS openings.*
- *The NPS SHALL evaluate the necessity of evacuating non-essential personnel inside containment*
- *Only borated water should be added to the RCS to maintain adequate shutdown margin.*

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	Check RCS Level:	
	a. RCS level * Drain Down Level what if anything will xlate show * LI-3-6421 - LESS THAN **OR** EQUAL TO 23% **OR** * LI-3-6423 - LESS THAN **OR** EQUAL TO 23% **OR** true ✓ * Pressurizer Level, LI-3-462 - LESS THAN **OR** EQUAL TO 50%	a. Perform the following: 1) Maintain RCS inventory using the following method(s) while continuing with this procedure: a) Charging flow (Step 13). b) RWST Gravity Feed (Step 14). c) VCT Overpressure Feed (Step 15). 2) Go to Step 16.
	b. RCS level * Drain Down Level ? Will xlate show anything? * LI-3-6421 LESS THAN **OR** EQUAL TO 14% **OR** * LI-3-6423 LESS THAN **OR** EQUAL TO 14% **OR** ✓ * Pressurizer Level, LI-3-462 - LESS THAN **OR** EQUAL TO 10%	b. Go to STEP 13

STEP | **ACTION/EXPECTED RESPONSE** | **RESPONSE NOT OBTAINED**

11 **Refill The RCS As Follows:**

a. Align at least one High-head SI pump for hot leg injection as follows:

1) Align at least one train of safety injection as follows:

* Verify the following A train SI equipment aligned for injection
a) SI To Hot Leg, MOV-3-869, - OPEN

b) Loop A Hot Leg Safety Injection, MOV-3-866A - OPEN

* Verify the following B train SI equipment aligned for injection

a) SI To Hot Leg, MOV-3-869, - OPEN

b) Loop B Hot Leg Safety Injection, MOV-3-866B - OPEN

5

b. Start at least one HI-Head SI pump

c. Refill RCS with HHSI until either of the following conditions satisfied:

* RHR cooling - RESTORED

OR

* LI-3-462, PZR Level Cold Cal - GREATER THAN 50%.

12 **Go To Step 16**

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

CAUTIONS

- *The Diesel Generator should NOT be operated at rated speed (900 rpm) and unloaded for extended periods of time (over 4.5 hours). A minimum of 25 percent of load should be applied in a timely manner to reduce the possibility of SOUPING which can result in an exhaust system fire.*

What is that?

- *The following guidelines are required to be followed to reduce the probability of EDG overload conditions without Main Generator Lockout protection:*

  1) *If the 3A 4KV bus is NOT powered via the auxiliary transformer (3AA02 open) special attention is required to be given to the 3A EDG operating parameters during parallel operation to the system and the EDG is required to be tripped upon indication of impending overload.*

  2) *If the 3A 4KV bus is powered via the auxiliary transformer (3AA02 closed) no special precautions are required as protection is provided by the Main Generator Lockout.*

  3) *Starting any of the following pumps may cause an EDG paralleled to the affected 4160V bus to trip and may damage the EDG:*

     a) *Reactor Coolant Pump*

     b) *Condensate Pump*

     c) *Steam Generator Feed Pump*

     d) *Heater Drain Pump*

     e) *Circulating Water Pump*

What may Damage the EDG the Start of equipment or Tripping?

29. Perform the following to match 3A EDG output parameters to the system grid:

____ a. Place the EDG A Sync to 3A 4KV Bus 3AA20 switch to ON.

____ b. Check the WHITE synchronizing lights to be cycling ON.

____ c. Using the A Diesel Gen Volt Regulator, adjust Incoming to match Running indicated voltage.

INITIALS
CK'D VERIF

7.1.2.29 (Cont'd)

____ d. Using the A Diesel Gen Speed Changer, adjust engine speed so that the pointer on the Synchroscope is rotating slowly in the FAST direction.

____ e. Using the A Diesel Gen Volt Regulator, adjust Incoming voltage slightly higher than Running voltage.

____ f. Using the A Diesel Kilovolts indicator and 3A 4KV Bus Voltmeter, verify voltages are approximately equal between the 3A Diesel Generator output **AND** the 3A 4KV Bus for all three phases.

What is the APPX EQUAL?

____ g. Verify 3A Diesel Generator frequency is between 58.8 and 61.2 Hz on the A Diesel Hertz indicator.

____ h. **WHEN** the Synchroscope pointer is at 12 o'clock position, **THEN** close the diesel generator breaker by placing the EDG A to 3A 4KV Bus 3AA20 switch to the CLOSE position (spring return to normal).

____ (1) Verify the Diesel Generator Breaker 3AA20 has closed (Breaker GREEN light is OFF and RED light is ON).

____ i. Place the EDG Bkr 3AA20 Synchronizing Switch to OFF.

____ j. Turn the A Diesel Gen Speed Changer in the RAISE direction **AND** slowly increase diesel generator load to approximately 1.0 MW (1000 KW) on A Diesel Megawatts indicator.

INITIALS
CK'D VERIF

7.1.2.29 (Cont'd)

NOTE

The following voltage adjustment will place the generator reactive load in lag.

k. Perform the following to adjust the reactive load:

What is value - what is momentary

____ (1) While monitoring the A Diesel Amps indicator, momentarily position the A Diesel Gen Volt Regulator to RAISE.

(2) **IF** A Diesel Amps increased, **THEN** perform the following:

____ (a) Slowly LOWER the voltage reg ? until amps stop decreasing and start to increase (lead).

____ (b) Slowly RAISE the voltage until A Diesel Amps increase (Slightly in lag).

OR

____ (3) **IF** A Diesel Amps decreased, **THEN** slowly RAISE the voltage until A Diesel Amps increase (Slightly in lag).

NOTE

The Cooling Water System contains chromates, and if any cooling system leakage is observed, the NPS and Chemistry are required to be notified.

____ 30. Perform the following at 3A EDG:

____ a. Inspect the EDG for any leaks or abnormalities.

____ b. Inspect the bucket under the air box drain for any additional accumulation of fluids resulting from the start **AND** record results on Attachment 2, Section 2.

____ c. **IF** Cooling Water System leakage is observed, **THEN** plug floor drains under air skid and on south side of engine.

INITIALS
CK'D VERIF

7.1.2 (Cont'd)

CAUTION

The EDG load shall not exceed 2750 KW and generator amperage shall not exceed 477 amps.

31. Perform the following in the Control Room:

What is MCR SCALE

____ a. Turn the A Diesel Gen Speed Changer in the RAISE direction **AND** increase diesel generator load until it is between 2.3 and 2.5 MW (2300-2500 KW).

NOTE

The following voltage adjustment will place the generator reactive load in lag.

b. Perform the following to adjust the reactive load:

____ (1) While monitoring the A Diesel Gen Amps indicator, momentarily position the A Diesel Gen Volt Regulator to RAISE.

(2) **IF** A Diesel Amps increased, **THEN** perform the following:

____ (a) Slowly LOWER the voltage until amps stop decreasing and start to increase (lead).

____ (b) Slowly RAISE the voltage until A Diesel amps increase (Slightly in lag).

OR

____ (3) **IF** A Diesel Amps decreased, **THEN** slowly RAISE the voltage until A Diesel Amps increase (Slightly in lag).

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 1 AT 100% POWER.
2. THE 3C CONDENSATE PUMP IS OUT OF SERVICE.
3. 3B S/G PRESSURE TRANSMITTER, PT-485, HAS FAILED LOW AND ITS BISTABLES HAVE BEEN TRIPPED.
4. ALL OTHER ALIGNMENTS AND EQUIPMENT CONDITIONS ARE NORMAL.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

JOB CLASSIFICATION: RCO

JPM TITLE: TRIP INSTRUMENT BISTABLES IN RESPONSE TO A FAILURE OF LT-484, 3B STEAM GENERATOR LEVEL TRANSMITTER

JPM NUMBER: 01049002305 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 05/25/99
NUCLEAR SAFETY IMPORTANCE: 4.00

COMBINED IMPORTANCE: 4.00

TIME VALIDATION: 12 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

1. Reset to IC-1.
2. Take 3C condensate pump out of service [Touch sys mat ->main power distribution-> 4KV & 480VAC->3C4KVBUS->12 ->breaker position->set TAF1D6CP=3].
3. Take 3B S/G Pressure transmitter, PT-485, out of service by failing the transmitter low.[Touch steam pressure->P485->PT485->TRANSMITTER FAIL LOW->SET TFS1MBLW=T].
4. Trip the following bistables:
   Rack #16 BS-3-484
   Rack #17 BS-3-485A, BS-3-485B
   Rack #18 BS-3-488B-1, BS-3-488B-2, BS-3-488C
5. Acknowledge alarms and hang clearance tags on racks 16, 17, and 18 and 3C condensate pump switch.
6. Put simulator in freeze.

TASK STANDARDS:

1. NO REACTOR PROTECTION OR SAFEGUARDS ACTION INITIATED.
2. MINIMUM CHANNELS OPERABLE MAINTAINED.
3. CORRECT BISTABLES IDENTIFIED AND TRIPPED.

REQUIRED MATERIALS:

1. KEY #3 TO HAGAN RACKS
2. 3-ONOP-049.1 "DEVIATION OR FAILURE OF SAFETY RELATED OR REACTOR PROTECTION CHANNELS"

REFERENCES:

1. 3-ONOP-049.1, "DEVIATION OR FAILURE OF SAFETY RELATED OR REACTOR PROTECTION CHANNELS"

TERMINATING CUES:

APPROPRIATE BISTABLES HAVE BEEN MANUALLY TRIPPED.

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND THE SIMULATOR WILL PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. THE UNIT IS IN MODE 1 AT 100% POWER.
2. THE 3C CONDENSATE PUMP IS OUT OF SERVICE.
3. 3B S/G PRESSURE TRANSMITTER, PT-485, HAS FAILED LOW AND ITS BISTABLES HAVE BEEN TRIPPED.
4. ALL OTHER ALIGNMENTS AND EQUIPMENT CONDITIONS ARE NORMAL.

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

BOOTH INSTRUCTIONS: **Fail 3B S/G level transmitter, LT-484, high. [Touch STEAM PRESSURE->STREAM GEN ->L484->LT-484->TRANSMITTER FAIL HIGH ->SET TFF1M1BH=T]**

( ) **ELEMENT: 1**

OBTAIN REQUIRED MATERIALS.

STANDARDS:

__1. SILENCED ANNUNCIATOR.

__2. OBTAINED 3-ONOP-049.1.

NOT Perform APP ACTIONS

* If we don't want Oper to do APP- stalled state in INITIAL CONDITIONS

EVALUATOR'S NOTES:

NOTE: Normally this task is shared between the RCO and the ANPS.

Cue: **If asked, tell the operator to perform the actions as directed by ONOP-049.1.**

( ) **ELEMENT: 2**

IDENTIFY MALFUNCTIONIONING PROTETCTION INSTRUMENTATION CHANNEL.
[Step 5.1]

STANDARDS:

__1. CHANNEL IDENTIFIED BY INSTRUMENT LOOP NUMBER: LT-484.

__2. CHANNEL COMPARED TO ADJACENT CHANNELS AND KNOWN PLANT PARAMETERS AND CONDITIONS.

EVALUATOR'S NOTES:

Note 1: The operator will compare the failed high LT-484 with its adjacent channels, LT-485 and Lt-486 which will be reading normally.

Fail to Just ABOVE set pt - NOT Full scale

Note 2: The operator will determine that no plant transient condition exists.

( ) **ELEMENT: 3**

VERIFY NO APPLICABLE CONTROL TRANSFER SWITCHES.
[Step 5.2]

STANDARDS:

__1. OBSERVED THAT THE FAILED CHANNEL, LT-484, IS PROTECTION ONLY.

EVALUATOR'S NOTES:

NOTE: There is no applicable transfer switch for this failure.

( ) **ELEMENT: 4**

VERIFY THAT NO OFF-NORMAL CONDITIONS EXIST ON THE ADJACENT CHANNELS.
[Step 5.3]

STANDARDS:

__1. LOOP METER INDICATIONS ARE LOOKED AT AND VERIFIED CONSISTENT WITH NORMAL VALUES.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 5**

REFER TO TECH SPECS AND VERIFY MINIMUM CHANNELS OPERABLE. [Step 5.4]

STANDARDS:

__1. IDENTIFIED NEED TO REFERENCE TECH SPECS.

Cue: ***When the need to reference Tech Specs is identified, tell the operator that the NPS is doing that and to continue with the procedure.***

Is this ok?

Let Operator do this

EVALUATOR'S NOTES:

None

Which will require no Actions

Plant in stable - JPM Validated at 12 minutes - see no problem -

( ) **ELEMENT: 6**

VERIFIED ATTACHMENTS 1, 2, & 3 ARE NOT REQUIRED TO BE PERFORMED AND A TEST SEQUENCER PROCESSOR HAS NOT FAILED. [Steps 5.5, 5.6, 5.7, 5.8]

STANDARDS:

NO ACTION

__1. IDENTIFIED THAT A 4KV/480V LOAD CENTER UNDERVOLTAGE CHANNEL HAS NOT FAILED.

__2. IDENTIFIED THAT A TURBINE STOP VALVE CLOSURE CHANNEL HAS NOT FAILED. NO ACTION

__3. IDENTIFIED THAT A TURBINE STOP OIL CHANNEL HAS NOT FAILED. NO ACTION

__4. IDENTIFIED THAT A TEST SEQUENCER PROCESSOR NOR AN EAGLE 21 CHANNEL HAS FAILED. NO ACTION

Cue: ***When these issues are raised by the operator, role play as the ANPS and acknowledge that the situations presented by Steps 5.5 through 5.8 do not exist.***

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 7**

DETERMINE THAT ALL BISTABLES FOR LT-484 CANNOT BE THROWN. (Step 5.9)

STANDARDS:

✓ 1. READ STEP 5.9 AND DETERMINED THAT AN UNDESIRABLE ENGINEERED SAFETY FEATURE ACTUATION WILL BE INITIATED IF BISTABLES ARE THROWN.

__ 2. READ THE NOTE PRIOR TO STEP 5.9.1.

__ 3. REQUESTED GUIDANCE FROM THE ANPS PRIOR TO CONTINUING.

Cue: ***When the operator identifies that a reactor trip will occur if all of the bistables listed in Attachment 4 are thrown, direct the operator to:***

"Place all bistable switches for the affected loop in the test position using Attachment 4 that will not result in a reactor trip."

Cue: ***If the operator fails to recognize that a reactor trip will occur if all of the listed bistables are thrown, direct the operator to:***

"Place all bistable switches for the affected loop in the test position using Attachment 4."

EVALUATOR'S NOTES:

Note 1: Page 28 of Attachment 4 lists the 6 bistables that would normally be thrown for a failure of LT-484. In this case, 1 of the 6 bistables should not be thrown: BS-3-484B-1.

Note 2: Only Standard 1 is critical to this element.

(C) **ELEMENT: 8**

PLACE BISTABLES IN THE TEST POSITION.
[Step 5.9.1 & 5.9.2]

STANDARDS:

__1. EVALUATED ATTACHMENT 4, PAGE 28 OF 53 AND IDENTIFIED WHICH BISTABLE CANNOT BE THROWN (BS-3-484B-1).

__2. OBTAINED NPS PERMISSION TO THROW REMAINING BISTABLES LISTED ON PAGE 28 OF 53.

Why critical

Cue: ***As the NPS, grant permission to throw remaining bistables listed on Page 28 of 53.***

c
__3. OBTAINS KEY #3 TO HAGAN RACKS.

How do they handle this in simulator?

Cue: ***The operator will explain that Key #3 will need to be checked out from the NPS. The examiner should role play as the NPS and give the key to the operator.***

✓4. PROCEEDED TO HAGAN RACK 3 AND PLACED THE FOLLOWING BISTABLE SWITCHES TO TEST:

- __A. BS-3-484-1
- __B. BS-3-484-2
- __C. BS-3-484A-1
- __D. BS-3-484A-2
- __E. BS-3-484B-2

__5. VERIFIED BISTABLE STATUS IN HAGAN RACK 3 BY OBSERVATION OF THE ASSOCIATED STATUS LIGHTS.

__6. VERIFIED BISTABLE STATUS IN CONTROL ROOM BY OBSERVING POSTAGE STAMP BISTABLE LIGHTS ARE LIT FOR EACH OF THE 5 BISTABLES THROWN.

__7. VERIFIED THE FOLLOWING ANNUNCIATORS ARE LIT:

  __A. C 2/2

  __B. C 1/2

EVALUATOR'S NOTES:

not

NOTE: Only Standards 3 & 4 are critical to this Element.

(C) **ELEMENT: 9**

EVALUATE NECESSITY OF PLACING BYPASS SWITCHES AT AMSAC PANEL TO BYPASS.
[Step 5.10]

STANDARDS:

__1. REVIEWED STEP 5.10 AND DETERMINED IT WAS APPLICABLE FOR THE FAILURE OF LT-484.

__2. DIRECTED THE FIELD OPERATOR TO PLACE THE BYPASS SWITCH FOR STEAM GENERATOR LEVEL CHANNEL II (LI-3-484) TO THE BYPASS POSITION AT THE AMSAC PANEL USING ATTACHMENT 5 OF 3-ONOP-049.1.

What does this do

EVALUATOR'S NOTES:

Booth Operator: **Acknowledge the directions given by the operator and place the failed channel switch to Bypass at the AMSAC Panel. [SYS MAT ->REACTOR->EAGLE 21/AMSAC->AMSAC->PROCESSOR A LEVEL 2 BYPASS SWITCH->SET TCL4L2BA=T]**

( ) **ELEMENT: 10**

EVALUATE THE NECESSITY OF RESETTING THE STEAM DUMP TO CONDENSER.
[Step 5.11]

STANDARDS:

__1. REVIEWED STEP 5.11 AND DETERMINED IT WAS NOT APPLICABLE FOR THE FAILURE OF LT-484.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 11**

COMPLETE ADMINISTRATIVE REQUIREMENTS.
[STEP 5.12 & 5.13]

STANDARDS:

__1. IDENTIFIED THE NEED TO INITIATE A PWO AND NOTIFY THE I&C SUPERVISOR.

Cue: ***When the need for a PWO and I&C Supervisor notification are stated, role play as the ANPS and tell the RCO:***

"That is being handled by another operator."

__2. IDENTIFIED THE NEED TO COMPLETE SUBSECTION 5.9 AND ISSUE A CLEARANCE.

TELL THE RCO THAT THE JPM IS COMPLETE.

To Hardey

How difficult to TAG?

and write pwo for ADmin.

5.0 SUBSEQUENT ACTIONS

5.1 Verify instrument loop failure by comparison to adjacent loops and known plant parameters and conditions.

5.2 Verify applicable control transfer switches are in the position which eliminates the failed loop.

5.3 Verify no off-normal conditions exist on the adjacent channels which are to remain in service.

5.4 Refer to Technical Specifications 3/4.3, Instrumentation, **AND** verify the minimum channels operable.

5.4.1 Take appropriate actions as specified in Technical Specifications.

CAUTION

The failed channel bistable(s) is required to be placed in the tripped mode within 6 hours of the failure determination, except if other channel bistable(s) are in the tripped or test position and would result in an undesired Engineered Safety Features actuation or Reactor Trip actuation. The overall effect of a failure of this type is a reduction of instrumentation redundancy and, therefore, a possible reduction in plant protection.

5.5 **IF** a 4KV bus/480V load center undervoltage channel has failed, **THEN** perform Attachment 1.

5.6 **IF** a turbine stop valve closure channel has failed, **THEN** perform Attachment 2.

5.7 **IF** a turbine auto stop oil channel has failed, **THEN** perform Attachment 3.

NOTE

If I&C determines a Test Sequence Processor for an Eagle-21 Channel has failed, then that associated Eagle-21 Channel may remain in service if Attachment 6 is performed once per shift. (Reference Safety Evaluation JPN-PTN-SEIS-95-001)

What will Operator do Here

5.8 **IF** I&C determines a Test Sequence Processor on an Eagle-21 Channel has failed **AND** no off-normal bistables are lit, **THEN** perform Attachment 6 once per shift until the associated Eagle-21 Channel is removed from service for repair.

5.9 **<u>IF</u>** any other channel has failed **<u>AND</u>** an undesirable Engineered Safety Features actuation will **<u>NOT</u>** be initiated, **<u>THEN</u>** perform the following:

<u>NOTE</u>

*IF plant conditions are such that not all bistables associated with the failed channel may be tripped due to an undesired RPS or ESF actuation, **THEN** place only the bistables which will **NOT** cause an RPS or ESF actuation in the test/tripped position (follow action of Tech. Spec. 3/4.3 for those bistables which were not placed in the tripped condition).*

5.9.1 Place all bistable switches for the affected loop in test position using Attachment 4.

5.9.2 Verify bistables tripped by observing corresponding status light (VPB) On.

5.10 **<u>IF</u>** any of the following channels are failed, **<u>THEN</u>** place the Bypass Switch(es) for the failed channel to Bypass position at the AMSAC panel using Attachment 5:

5.10.1 Any Steam Generator Level Channel I (LI-3-474, LI-3-484, or LI-3-494)

<u>OR</u>

5.10.2 Any Steam Generator Level Channel II (LI-3-475, LI-3-485, or LI-3-495)

<u>OR</u>

5.10.3 PT-3-446

<u>OR</u>

5.10.4 PT-3-447

OTSC

NOTE

The following step is to allow automatic operation of the Steam Dump to Condenser System during a turbine trip subsequent to a failure of PT-3-447, First Stage Pressure Channel.

5.11 IF First Stage Pressure Channel, PT-3-447 has failed AND Steam Dump to Condenser has armed, THEN place the Steam Dump to Condenser Mode Selector switch to RESET and return to AUTO. 0805-97

5.12 Initiate a Plant Work Order AND notify the I&C Supervisor.

5.13 IF maintenance is NOT to be performed immediately, THEN verify Subsection 5.9 complete AND issue a clearance for each bistable switch that was placed in the tripped position in accordance with 0-ADM-212, In-Plant Equipment Clearance Orders.

ATTACHMENT 4
(Page 28 of 53)

FAILED CHANNEL BISTABLE LIST

L-3-484 **Steam Generator B Narrow Range Level** **Ref Dwgs 5610-T-D-17; 5610-T-L1, Sh 3 and 19**

Max Deviation As Compared to other Channels **10% LEVEL DEVIATION**

RACK No.	BISTABLE No.	BISTABLE FUNCTION	STATUS LIGHT	ANNUNCIATOR	FUNC-TION	LOGIC AFFECTED
3	BS-3-484-1	HI Level Logic	S/G B HI LEVEL LC484-1		P	2/3 channels on 1/3 S/G, high S/G level (N/R 80%) for turbine trip, with P-7 satisfied causing reactor trip signal
3	BS-3-484-2	HI Level Alarm		C 2/2 SG B NARROW RANGE HI LEVEL	C	
3	BS-3-484A-1	Lo Lo Level Logic	S/G B LO LO LEVEL LC484A1		P	2/3 channels on 1/3 S/G, low low level (10%)
3	BS-3-484A-2	Lo Lo Level Alarm		C 1/2 SG B NARROW RANGE LO/LO-LO LEVEL	C	
3	BS-3-484B-1 NOT PLACE	Lo Level Logic	S/G B LO LEVEL LC484B1		P	1/2 channels on 1/3 S/G, low level (10%), with 1/2 low feedwater flow (665,000 lb/hr<steam flow) on same S/G
3	BS-3-484B-2	Lo Level Alarm		C 1/2 SG B NARROW RANGE LO/LO-LO LEVEL	C	

C - CONTROL RELATED
P - RX PROTECTION RELATED
S - SAFETY INJECTION RELATED

Caution in Procedure

JPM STUDENT IC SHEET

Not Tell O/e this - until read

INITIAL CONDITIONS:

1. UNIT 3 REACTOR TRIPPED FROM 100% POWER.
2. ALL AFW PUMPS AUTOMATICALLY STARTED AND HAVE BEEN RUNNING FOR APPROXIMATELY 1 HOUR.
3. EOP(S) ARE IN PROGRESS.
4. 3A 4KV BUS IS POWERED FROM THE STARTUP TRANSFORMER.
5. 3B 4KV BUS IS POWERED FROM THE 3B EDG.
6. PLANT CONDITIONS DO NOT ALLOW FOR ENTRY INTO THE AFW PUMP AREA ~~IF REQUIRED.~~
7. PLANT CONDITIONS REQUIRE CONTINUED USE OF THE AFW SYSTEM.

INITIATING CUE:

YOU ARE THE RCO AND YOU HAVE BEEN DIRECTED BY THE ANPS TO COMPLY WITH THE CAUTIONS IMMEDIATELY PRECEDING STEP 21 OF EOP-E-0.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01075025502

JOB CLASSIFICATION: RCO

JPM TITLE: SHUTDOWN AFW PUMP(S) DURING EMERGENCY PLANT OPERATIONS

JPM NUMBER: 01075025502 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 05/26/99

NUCLEAR SAFETY IMPORTANCE: 0.00

COMBINED IMPORTANCE: 0.00

TIME VALIDATION: 15 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

1. Reset to IC-60
2. Press NO OP and unfreeze frozen models. Run AFW flow to maximum and feed S/Gs to >25%.
3. Parallel 3A EDG with unit 3 S/U transformer and place 3A 4KV bus on the unit 3 S/U transformer. Shutdown (normal stop) 3A EDG.
4. When S/G levels >25%, reduce AFW flow to zero.
5. Freeze simulator until ready to begin.

TASK STANDARDS:

1. "C" AFW PUMP SHALL BE SHUTDOWN USING THE APPLICABLE SHUTDOWN METHOD.

2. A SECOND AFW PUMP WILL BE SHUTDOWN USING THE APPLICABLE SHUTDOWN METHOD.

REQUIRED MATERIALS:

1. ACCESS TO 3-OP-075

REFERENCES:

1. 3-OP-075, AUXILIARY FEEDWATER SYSTEM

TERMINATING CUES:

THE "C" AND A SECOND AFW PUMP HAVE BEEN SHUTDOWN.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT 3 REACTOR TRIPPED FROM 100% POWER.
2. ALL AFW PUMPS AUTOMATICALLY STARTED AND HAVE BEEN RUNNING FOR APPROXIMATELY 1 HOUR.
3. EOP(S) ARE IN PROGRESS.
4. 3A 4KV BUS IS POWERED FROM THE STARTUP TRANSFORMER.
5. 3B 4KV BUS IS POWERED FROM THE 3B EDG.
6. PLANT CONDITIONS DO NOT ALLOW FOR ENTRY INTO THE AFW PUMP AREA ~~IF REQUIRED.~~
7. PLANT CONDITIONS REQUIRE CONTINUED USE OF THE AFW SYSTEM.

INITIATING CUE:

YOU ARE THE RCO AND YOU HAVE BEEN DIRECTED BY THE ANPS TO COMPLY WITH THE CAUTIONS IMMEDIATELY PRECEDING STEP 21 OF EOP-E-0.

( ) **ELEMENT: 1**

OBTAIN 3-OP-075, SECTION 6.2, FOR SHUTTING DOWN AN AFW PUMP DURING PERFORMANCE OF THE EOPs.

STANDARDS:

__1. OBTAINED A COPY OF 3-OP-075, SECTION 6.2.

__2. VERIFIED PROCEDURE IN OTSC BOOK.

EVALUATOR'S NOTES:

Note: The Operator will not be able to check for OTSCs in the simulator in the usual manner. When the need to check for OTSCs is recognized, tell the operator, ***"There are no outstanding OTSCs on 3-OP-075."***

Why not able to check ?

( ) **ELEMENT: 2**

ATTEMPT TO RESET AFW ACTUATION SIGNALS.
[Step 6.2.2.1 & 6.2.2.2]

Are Other Conditions

STANDARDS:

M+S

__1. RESET AMSAC AND VERIFIED THE RED AMSAC ACTUATED LIGHT IS OUT ON PANEL 3C04 (VPA).
[Step 6.2.2.1.a]

__2. CHECKED IF SI HAS BEEN RESET.
[Step 6.2.2.1.b]

__③ no CHECKED IF LOSS OF VOLTAGE SIGNAL HAS BEEN RESET AS INDICATED BY BOTH S/U TRANSF. BREAKERs BEING CLOSED.
[Step 6.2.2.1.c]

__4. VERIFIED BOTH SGFPs SEMAPHORES ARE GREEN-FLAGGED.
[Step 6.2.2.1.d]

__5. CHECKED IF NR S/G LEVEL IN ALL 3 S/Gs IS GREATER THAN 15%.
[Step 6.2.2.1.e]

~~Crit Step~~ → Step 6.2.2.2 cannot be performed

EVALUATOR'S NOTES:

NOTE 1: The Loss of Voltage signal cannot be reset according to initial conditions.
[Step 6.2.2.2]

( ) **ELEMENT: 3**

REVIEW PROCEDURE STEP 6.2.2.3 FOR APPLICABILITY.

STANDARDS:

__1. REVIEWED STEP 6.2.2.3 AND TRANSITIONED CORRECTLY TO 6.2.2.4.

EVALUATOR'S NOTES:

NOTE: The Operator does not transition forward to Step 6.2.2.7 because all 3 AFW pumps are running.

(C) **ELEMENT: 4**

SHUTDOWN "C" AUXILIARY FEEDWATER PUMP.

STANDARDS:

__1. REVIEWED CAUTION AND NOTES PRIOR TO STEP 6.2.2.4 AND CHOSE "C" AFW PUMP TO SHUTDOWN FIRST.

__2. REVIEWED Step 6.2.2.4 FOR APPLICABILITY AND DETERMINED THAT "C" AFW PUMP T&T VALVE COULD NOT BE CLOSED.

__3. REVIEWED Step 6.2.2.5.a FOR APPLICABILITY AND DETERMINED THAT THE FIELD OPERATOR COULD NOT LOCALLY TRIP THE AFW PUMP USING THE MECHANICAL TRIP MECHANISM.

__4. DISPATCHED AN OPERATOR TO SHUTDOWN "C" AFW PUMP LOCALLY UTILIZING THE ALTERNATE SHUTDOWN PANEL CONTROLS.
[Step 6.2.2.5.b]

EVALUATOR'S NOTES:

NOTE 1: Standard 4 is critical to this element.

NOTE 2: It is not imperative that the operator shutdown the "C" AFW pump first, especially because the shutdown of the pump will not occur using the T&T valve.

CUE: ***You are now the administrative RCO and you have been directed to trip the "C" AFW pump from the Unit 3 Alternate Shutdown Panel.***

NOTE: The Alternate Shutdown Panel in the simulator can be used for the following steps.

(C) **ELEMENT: 5**

SHUTDOWN "C" AUXILIARY FEEDWATER PUMP LOCALLY UTILIZING THE ALTERNATE SHUTDOWN PANEL CONTROLS.
[Step 6.2.2.5.b]

STANDARDS:

__1. ✓ OPENED THE KEY CONTROL BOX ON UNIT 3 ASP.
[Step 6.2.2.b.1]

__2. ✓ OBTAINED THE UNIT 3 ASP KEYS.
[Step 6.2.2.b.2]

__3. ✓ OPENED THE LOCKED BOX ON THE SOUTH WALL OF THE 3B 4160KV BUS ROOM.
[Step 6.2.2.b.2]

CUE: ***On simulator, the switches are kept in the plant page box in the unit 3 alternate shutdown panel area. Provide a transfer switch to the student when requested.***

__4. OBTAINED ONE OF THE REMOTE/LOCAL CONTROL TRANSFER SWITCH KEYS.
[Step 6.2.2.b.3]

__5. INSERTED THE KEY INTO THE TRANSFER SWITCH FOR MOV-6459C.
[Step 6.2.2.b.4]

U 6. POSITIONED THE SWITCH TO THE LOCAL POSITION.
[Step 6.2.2.b.4]

U 7. POSITIONED THE ASP CONTROL SWITCH FOR MOV-6459C TO THE CLOSED POSITION.
[Step 6.2.2.b.5]

EVALUATOR'S NOTES:

NOTE 1: Standards 6 and 7 are critical to this element.

(C) **ELEMENT: 6**

SHUTDOWN A SECOND AUXILIARY FEEDWATER PUMP.

STANDARDS:

What INSTRument reviewed?

__1. RECOGNIZED A CONTINUOUS AVERAGE FLOW OF 60 GPM CANNOT BE MAINTAINED ON THE REMAINING AFW PUMPS.
[Step 6.2.2.6]

Cue: ***"The NPS directs the shutdown of a second AFW pump."***

__2. REVIEWED CAUTION AND NOTES PRIOR TO STEP 6.2.2.7.

__3. DIRECTED FIELD OPERATOR TO STAND BY THE AFW PUMP STEAM SUPPLY MOV BREAKER.
[Step 6.2.2.7.a]

BOOTH OPERATOR CUE: ***Report back as the field operator that you are in position.*** ?

__4. CLOSED THE AFW PUMP STEAM SUPPLY MOV. Will MOV Travel Back open? Why open Breaker?
[Step 6.2.2.7.b]

__5. DIRECTED THE FIELD OPERATOR TO LOCALLY OPEN THE SUPPLY BREAKER TO THE VALVE.
[Step 6.2.2.7.c]

Booth Operator: **sys mat->feedwater->aux f/w steam. Touch MOVs ->Breaker LOA local close/trip (mech)->MOV-1405 set TCF5MA27=F->MOV-1404 set TCF5M527=F->MOV-1403 set TCF5MB28=F**

BOOTH OPERATOR CUE: ***Report back as the field operator that the breaker is open.***

CAN Oper see this from ASP?

EVALUATOR'S NOTES:

NOTE: Standard 4 is critical to this element.

Terminate the JPM at this point.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
20	**Verify SI Flow:**	
	a. RCS pressure - LESS THAN 1600 PSIG[2000 PSIG]	a. Go to Step 21.
	b. High-head SI pump flow indicator - CHECK FOR FLOW	b. Manually start pumps and align valves to establish an injection flowpath.
	c. RCS pressure - LESS THAN 250 PSIG[650 PSIG]	c. Go to Step 21.
	d. RHR pump flow indicator - CHECK FOR FLOW	d. Manually start pumps and align valves to establish an injection flowpath.

CAUTIONS

- ***This series of cautions is applicable to multiple AFW pump operation throughout the rest of the EOP network.***
- ***If two AFW pumps are operating on a single train, one of the pumps needs to be shutdown within one hour of the initial start signal.***
- ***If two AFW trains are operating, continuing to operate a single AFW pump with an average flow of less than 60 gpm for greater than one hour may damage the pump.***
- ***When either of the above operating conditions exist, a pump(s) should be shutdown using 3-OP-075, AUXILIARY FEEDWATER SYSTEM, Section 6.2, to minimize the potential for damaging the pump(s).***

21	**Verify AFW Valve Alignment - PROPER EMERGENCY ALIGNMENT**	Manually align valves to establish proper AFW alignment.

INIT

6.2 Shutdown of AFW Pump(s) during Emergency Plant Operations

CAUTION

This section of the procedure may ONLY be used when the EOPs are in effect.

6.2.1 Initial Conditions

1. AFW pumps have been operating due to automatic actuation of the system.
2. AFW pump(s) needs to be shut down due to extended parallel pump operation **OR** due to low flow conditions.

6.2.2 Procedure Steps

1. Check to determine if the following AFW actuation signals are reset:
   - a. ✓ AMSAC (The red AMSAC ACTUATED on 3C04 is out)
   - b. SI (ERDADS display indicates SI reset)
   - c. Loss of Voltage (Both S/U transformer breakers closed)
   - d. Last Steam Generator Feedwater Pump Tripped (Switch semaphore flag and light agree)
   - e. Steam Generator Level in ALL S/Gs greater than 15% on the narrow range indication
2. **IF** an AFW actuation signal is present, **THEN** attempt to reset the actuation signal(s).
3. **IF** only one pump is operating in each train, **THEN** observe CAUTION and NOTES prior to Substep 6.2.2.7 **AND** go to Substep 6.2.2.7.

go to step 6.2.2.7

INIT

6.2.2 (Cont'd)

CAUTION

Under certain accident conditions, radiation levels in the area of the AFW pump cage may NOT permit access for tripping or resetting of the AFW pump T&T valve or pump governor.

Operator must ask-

NOTES

- ***If the shutdown AFW pump is required for service AND it trips on overspeed during the attempted restart, 3-ONOP-075, Auxiliary Feedwater System Malfunction, Attachment 5, will need to be used to restore the pump to operating status.***
- 1st ***When tripping an AFW pump using the T&T valve, the C AFW pump is preferred.***
- ***Substeps 6.2.2.4 and 6.2.2.5 should only be used to trip the first pump in the train with two AFW pumps running.***

4. IF ALL of the AFW actuation signals are reset, **THEN** momentarily place the T&T valve control switch for the desired AFW pump to CLOSED. NO

5. IF any of the AFW actuation signals can NOT be reset, **THEN** perform one of the following:

   a. IF the area of the AFW pumps is accessible, **THEN** dispatch an operator to locally trip the desired AFW pump using the mechanical trip mechanism ONLY. NO

RAD Levels High

Not get in area

INIT

6.2.2 (Cont'd)

CAUTION

Operation of the T&T valve from the Alternate Shutdown Panel (ASP) blocks ALL automatic and remote start signals for the AFW pump from both units.

NOTE

The C AFW pump T&T valve can be operated from the Unit 3 ASP and the B AFW pump T&T valve can be operated from the Unit 4 ASP.

b. IF any of the AFW actuation signals can NOT be reset AND the area of the AFW pumps is inaccessible, THEN dispatch an operator to trip the desired AFW pump using the Unit 3(4) Alternate Shutdown Panel (ASP) controls as follows:

(1)✓ Open the key control box on the Unit 3(4) ASP.

(2) Obtain the Unit 3(4) ASP keys AND open the locked box on the south wall of the Unit 3(4) B 4160KV Bus Room.

(3) Obtain one of the REMOTE/LOCAL control transfer switch keys.

(4) Insert the key into the ASP transfer switch for MOV-6459C(B) AND place the switch in the LOCAL position.

(5) Place the ASP control switch for MOV-6459C(B) in the CLOSED position.

6. WHEN a continuous average flow of 60 gpm on the remaining AFW pump(s) can NO longer be maintained, THEN observe CAUTION and NOTES prior to Substep 6.2.2.7 AND continue with Substep 6.2.2.7.

INIT

6.2.2 (Cont'd)

CAUTION

Do not continue with this section of the procedure if only one AFW pump is running and no other source of feedwater is available to the unit.

NOTES

- *Shutdown of the AFW pump using the steam supply MOV allows for an automatic restart once the governor control has been reset.*
- *If the AFW pump governor can NOT be reset due to radiological conditions, a minimum wait time of 30 minutes is required prior to attempting to restart the AFW pump using the MOV.*
- *Substep 6.2.2.7 should be used to shut down a single pump in a single train.*

Will Opr Tell Location of MOV? He should!

7. Perform the following to stop the AFW pump:

   a. Station operator(s) at the AFW pump steam supply MOV breaker(s) in preparation to isolate the steam to the AFW pump.

   b. **WHEN** the operator is in position, **THEN** manually close the AFW pump steam supply MOV(s).

   c. **WHEN** the MOV indicates full closed, **THEN** have the field operator locally open the supply breaker(s) to the valve(s).

   d. **IF** the AFW pump cage is accessible, **THEN** request an operator be dispatched to reset the governor by rotating the governor knob towards the lowest setting, **AND** when the pump stops rotating, returning the knob to the maximum setting.

8. **WHEN** plant conditions allow the AFW actuation signals to be reset **AND** an alternate source of water is available to the S/Gs, **THEN** restore the AFW System alignment using the appropriate sections **AND** attachments of this procedure as directed by the NPS/TSC.

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. PRT OXYGEN CONCENTRATION IS 3% BY VOLUME.
2. ALL APPLICABLE PROCEDURAL PREREQUISITES ARE SATISFIED.
3. INITIAL CONDITIONS OF APPLICABLE PROCEDURE SECTION ARE SATISFIED.

INITIATING CUE:

YOU ARE THE RCO AND THE ANPS HAS DIRECTED YOU TO PURGE THE PRT TO REDUCE OXYGEN CONCENTRATION (MAJOR GAS VOLUME).

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: PURGE THE PRT (MAJOR GAS VOLUME)

JPM NUMBER: 01041063100 JPM TYPE: NORMAL PATH

JPM REV. DATE: 05/14/99

NUCLEAR SAFETY IMPORTANCE: 2.00

COMBINED IMPORTANCE: 2.00

TIME VALIDATION: 23 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM:__X__ SIMULATE:_____ DISCUSS:_____

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

1. Reset to IC-1
2. Touch sys mat->reactor coolant system->pressurizer relief tank->P472->offset in output->setTVH1P720=-0.02
3. Freeze simulator until ready to begin

TASK STANDARDS:

1. PRT OXYGEN CONCENTRATION < 2% BY VOLUME.
2. VENT HEADER PRESSURE REMAINS WITHIN SPECIFICATIONS.
3. PRT PARAMETERS ARE IN NORMAL BAND.

REQUIRED MATERIALS:

1. 3-OP-041.3, PRESSURIZER RELIEF TANK, SECTION 7.5

REFERENCES:

1. 3-OP-041.3, PRESSURIZER RELIEF TANK

TERMINATING CUES:

1. CHEMISTRY REPORT THAT OXYGEN IS < 2% BY VOLUME.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. PRT OXYGEN CONCENTRATION IS 3% BY VOLUME.
2. ALL APPLICABLE PROCEDURAL PREREQUISITES ARE SATISFIED.
3. INITIAL CONDITIONS OF APPLICABLE PROCEDURE SECTION ARE SATISFIED.

INITIATING CUES:

YOU ARE THE RCO AND THE ANPS HAS DIRECTED YOU TO PURGE THE PRT TO REDUCE OXYGEN CONCENTRATION (MAJOR GAS VOLUME).

( ) **ELEMENT: 1**

OBTAIN 3-OP-041.3

NO VALUE

STANDARDS:

__1. PROCEDURE OBTAINED.

__2. OTSC INDEX CHECKED.

EVALUATOR'S NOTES:

Note: The Operator will not be able to check for OTSCs in the simulator in the usual manner. When the need to check for OTSCs is recognized, tell the operator, ***"There are no outstanding OTSCs on 3-OP-041.3."***

( ) **ELEMENT: 2**

DIRECT SNPO TO MONITOR EVOLUTION AT WASTE/BORON PANEL. [CAUTION prior to step 7.5.2.1]

NO VALUE

STANDARDS:

__1. REVIEWED CAUTIONS PRIOR TO STEP 1.

__2. DIRECTED SNPO TO MONITOR THE EVOLUTION AT THE WASTE/BORON RECYCLE PANEL AND REPORT ANY PROBLEMS.

BOOTH OPERATOR CUE: **As SNPO, tell operator that you are monitoring the Waste/Boron Panel.**

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 3**

ALIGN SYSTEMS FOR VENTING THE PRT.

STANDARDS:

✓ 1. CV-3-519A, PRIMARY WATER TO CONTMT ISOL, VERIFIED OPEN. [Step 7.5.2.1]

__2. REVIEWED NOTE PRIOR TO STEP 7.5.2.2.

✓ 3. SNPO DIRECTED TO CLOSE THE FOLLOWING VALVES:

  Sim / A. ✓ LOCAL HOLDUP TANKS HEADER TO VH, 1122. [Step 7.5.2.2]

  B. VH TO COVER GAS SUPPLY CROSS CONNECTION, 4627. [Step 7.5.2.3]

BOOTH OPERATOR CUE: ***Respond as the SNPO and report that the requested valves are closed.***

EVALUATOR'S NOTES:

NOTE: Standard 2 is not critical to this element.

(C) **ELEMENT: 4**

INITIATE PRT VENTING.

STANDARDS:

__1. CV-3-549, PRT VENT VALVE OPENED. [Step 7.5.2.4]

EVALUATOR'S NOTES:

None

(C) ELEMENT: 5

FILL THE PRT WITH PRIMARY WATER.

STANDARDS:

__1. REVIEWED CAUTION PRIOR TO STEP 7.5.2.5.

C2. PRT MAKEUP VALVE, CV-3-519B, OPENED.
[Step 7.5.2.5]

__3. PRT LEVEL MONITORED ON LI-3-470.
[Step 7.5.2.6]

__4. PRT PRESSURE MONITORED ON PI-3-472.
[Step 7.5.2.6]

What is pressure

What is level Originally

How long to let fill to 95

CUE: After level has been increased by ~10%, tell the operator that level is 95%.

C5. CV-3-519B CLOSED WHEN LEVEL APPROACHES 95% OR PRESSURE APPROACHES 10 PSIG
[Step 7.5.2.6]

EVALUATOR'S NOTES:

NOTE: Standards 1, 3 & 4 are not critical to this element.

Why critical?

(C) **ELEMENT: 6**

PURGE PRT WITH NITROGEN.

No value

STANDARDS:

C 1. CHEMISTRY DIRECTED TO MONITOR THE GAS ANALYZER UNTIL PRT OXYGEN CONCENTRATION IS < 2% BY VOLUME. [Step 7.5.2.7]

BOOTH OPERATOR CUE: **As the chemistry technician tell the operator that you are monitoring the gas analyzer and will notify control room personnel when the oxygen concentration is less than 2% by volume.**

Why is this Here? Not in Procedure

__2. PRT PRESSURE MONITORED ON PI-3-472. No value

EVALUATOR'S NOTES:

NOTE: Standard 2 is not critical to this element.

BOOTH OPERATOR CUE: **As the chemistry technician, tell the operator that the oxygen concentration in the PRT is now at 1.8% and trending downward.**

Why critical?

(C) **ELEMENT: 7**

TERMINATE NITROGEN PURGE OF PRT.

psig not %

STANDARDS:

c 1. PRT VENT VALVE, CV-3-549, CLOSED WHEN PRT PRESSURE HAS DECREASED TO APPROXIMATELY 6%.
[Step 7.5.2.8]

__2. REVIEWED CAUTION PRIOR TO STEP 7.5.2.9.

__3. CV-3-519A, PRIMARY WATER TO CONTMT ISOL, CLOSED.
[Step 7.5.2.9]

Are these Local or ?

U 4. SNPO DIRECTED TO OPEN THE FOLLOWING VALVES:

No VALVE

A. HOLDUP TANKS HEADER TO VH, 1122.
[Step 7.5.2.10]

B. VH TO COVER GAS SUPPLY CROSS CONNECTION, 4627.
[Step 7.5.2.11]

BOOTH OPERATOR CUE: **Respond as the SNPO and tell the operator that the valves are open.**

__5. CONTINUED WITH SECTION 7.1 TO DRAIN THE PRT.
[Step 7.5.2.12]

EVALUATOR'S NOTES:

NOTE: Standards 2 and 3 are not critical to this element.

(C) **ELEMENT: 8**

DRAIN THE PRT.

NO VALUE

STANDARDS:

__1. Sim/ SNPO DIRECTED TO CLOSE LCV-3-1003A.
[Step 7.1.2.1]

BOOTH INSTRUCTIONS: **On simulator from prt mimic, touch liquid waste disposal diamond->LCV-1003A->local handswitch->set TAA21003=0**

BOOTH OPERATOR CUE: **Respond as SNPO and tell the operator that the valve is closed.**

__2. CV-3-523, PRT DRAIN VALVE, OPENED.
[Step 7.1.2.2]

NO VALUE

__3. Sim/ SNPO DIRECTED TO START EITHER RCDT PUMP.
[Step 7.1.2.3]

BOOTH INSTRUCTIONS: **On simulator from liquid waste disposal mimic, touch A RCDT pump->local handswitch->set TAA2PTA=2**

BOOTH OPERATOR CUE: **Respond as SNPO and tell the operator that the 3A RCDT pump has been started.**

CUE: ***After a few minutes, tell the operator the desired level has been reached.***

__4. Sim/ WHEN LEVEL REACHES DESIRED LEVEL, SNPO DIRECTED TO STOP RCDT PUMP.
[Step 7.1.2.4]

NO VALUE

BOOTH INSTRUCTIONS: **On simulator from liquid waste disposal mimic, touch A RCDT pump->local handswitch->set TAA2PTA=0**

BOOTH OPERATOR CUE: **Respond as SNPO and tell the operator that the 3A RCDT pump has been stopped.**

__5. CV-3-523, PRT DRAIN VALVE, CLOSED.
[Step 7.1.2.5]

__6. No Value SNPO DIRECTED TO PLACE LCV-3-1003A IN AUTO.
[Step 7.1.2.6]

BOOTH INSTRUCTIONS: **On simulator from liquid waste disposal mimic, touch LCV-1003A->local handswitch->set TAA21003=1**

BOOTH OPERATOR CUE: **Respond as SNPO and tell the operator that LCV-3-1003A control switch has been placed in AUTO.**

Not ✓ __7. CONTINUED WITH STEP 7.5.2.13.

EVALUATOR'S NOTES:

NOTE: Standard 7 is not critical to this element.

( ) **ELEMENT: 9**

VERIFY PRT OXYGEN CONCENTRATION < 2% BY VOLUME.
[Step 7.5.2.13]

STANDARDS:

__1. CHEMISTRY CONTACTED FOR VERIFICATION THAT PRT OXYGEN CONCENTRATION IS < 2% BY VOLUME.
[Step 7.5.2.13]

BOOTH OPERATOR CUE: **Respond as the chemistry technician and tell the operator that the oxygen concentration is 1.0%.**

EVALUATOR'S NOTES:

Terminate the JPM at this point.

7.5 Purging the PRT to Reduce Oxygen or Hydrogen Concentration (Major Gas Volume)

INITIALS
CK'D VERIF

Date/Time Started: ____________________

7.5.1 Initial Conditions

____ Done 1. All applicable prerequisites listed in Section 3.0 are satisfied.

____ 3% 2. Oxygen concentration of the PRT is 2 percent by volume or greater, **OR** hydrogen concentration is four (4) percent by volume or greater.

> **NOTE**
>
> *Large volumes of gases from other sources are not expected to be vented to the vent header during this evolution.*

____ ok 3. No evolutions are planned which would require letdown to the CVCS Holdup Tanks while the PRT is being vented.

____ ok 4. A waste gas compressor is in operation or in Auto and operable.

7.5.2 Procedure Steps

> **CAUTIONS**
>
> - ***PRT pressure should not exceed 10.0 psig during this evolution.***
> - ***Vent header pressure should not exceed 3.0 psig during this evolution.***
> - ***An operator should be stationed at the Waste/Boron Panel to monitor this evolution and should notify the RCO immediately if the process should need to be discontinued due to Vent Header pressure, compressor malfunction, etc.***

____ 1. Open or verify open Primary Water to Cntmt Isol, CV-3-519A.

INITIALS
CK'D VERIF

7.5.2 (Cont'd)

NOTE

In the following steps, the process may be limited by Vent Header or PRT vent capability to dispense of the pressure resulting from the makeup. CV-3-549 and CV-3-519B should be closed and reopened as required to continue filling and venting the PRT until the desired level is obtained and pressure vented down to 6 to 8 psig.

____ ____ 2. Close Holdup Tanks Header to VH, 1122.

____ ____ 3. Close VH to Cover Gas Supply Cross Connection, 4627.

____ 4. Open or verify open PRT Vent Valve, CV-3-549.

CAUTION

If a Containment Isolation or Safety Injection signal is actuated, CV-3-519B must be closed to ensure containment integrity.

____ 5. Open PRT Makeup Valve, CV-3-519B.

____ 6. **WHEN** PRT level approaches 95 percent on LI-3-470, **OR** PRT pressure approaches 10 psig on PI-3-472, **THEN** close PRT Makeup Valve, CV-3-519B.

____ 7. Have Chemistry monitor the Gas Analyzer until the PRT oxygen reading is less than 2 percent oxygen by volume.

____ ____ 8. **WHEN** PRT pressure indicated on PI-3-472 has decreased to approximately 6 psig (as controlled by nitrogen supply regulator), **THEN** close PRT Vent Valve, CV-3-549.

INITIALS
CK'D VERIF

7.5.2 (Cont'd)

CAUTION

DO NOT proceed with this section of the procedure until oxygen levels in the PRT are reduced to less than 2 percent by volume.

____ ____ 9. Close Primary Water to Cntmt Isol, CV-3-519A

____ ____ 10. Open Holdup Tanks Header to VH, 1122.

____ ____ 11. Open VH to Cover Gas Supply Cross Connection, 4627.

____ 12. Drain PRT to normal operating band in accordance with Subsection 7.1, Draining the PRT.

____ 13. **IF** the oxygen concentration is two (2) percent by volume or greater, **OR** the hydrogen concentration is greater than two percent by volume or greater, **THEN** repeat this section.

____ 14. Verify all log entries specified in Subsection 2.2 have been logged.

Date/Time Completed: ________________

PERFORMED BY (Print)	INITIALS
__________	______
__________	______
__________	______

REVIEWED BY: ________________
Nuclear Plant Supervisor or SRO Designee

END OF TEXT

7.0 INFREQUENT OPERATION

7.1 Draining the PRT

INITIALS
CK'D VERIF

Date/Time Started: ____________________

7.1.1 Initial Conditions

____ 1. All applicable prerequisites in Section 3.0 are satisfied.

____ 2. An excessive level exists or maintenance is to be performed.

> **CAUTION**
>
> ***Changes in PRT level with a PORV open, may affect RCS draindown level indication.***

7.1.2 Procedure Steps

____ 1. Close the RCDT to Pump Suction Valve, LCV-3-1003A.

____ 2. Open the PRT Drain Valve, CV-3-523.

____ 3. Start either RCDT pump, 3A or 3B. Pump Started: ____________

____ 4. **WHEN** the desired level is attained, **THEN** stop the RCDT pump.

____ ____ 5. Close the PRT Drain Valve, CV-3-523.

____ 6. Place the RCDT to Pump Suction Valve, LCV-3-1003A, to AUTO.

____ 7. Verify all log entries specified in Subsection 2.2 have been logged.

Date/Time Completed: ____________________

PERFORMED BY (Print)	INITIALS
____________________	________
____________________	________
____________________	________

REVIEWED BY: ______________________________
Nuclear Plant Supervisor or SRO Designee

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT IN MODE 3.
2. NIS SOURCE RANGES ARE OPERATIONAL.
3. ALL PREREQUISITES ARE MET.

INITIATING CUE:

YOU ARE THE UNIT 3 RCO AND THE NPS HAS DIRECTED THAT THE HIGH FLUX AT SHUTDOWN ALARM BE ADJUSTED USING 3-OSP-059.6 FOR NIS SOURCE RANGE CHANNEL, N-31.

Why Test this?

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01059003100

JOB CLASSIFICATION: RCO

JPM TITLE: ADJUST HIGH FLUX AT SHUTDOWN ALARM

JPM NUMBER: 01059003100 JPM TYPE: NORMAL PATH

JPM REV. DATE: 05/14/99

NUCLEAR SAFETY IMPORTANCE: 2.00

COMBINED IMPORTANCE: 3.00

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE:_____ DISCUSS:_____

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

* Reset to IC-3
* Unfreeze simulator
* Trip reactor
* Acknowledge alarms
* Stabilize plant
* Freeze simulator until exam begins

TASK STANDARDS:

1. THE HIGH FLUX AT SHUTDOWN ALARM IS SET APPROXIMATELY 1/2 DECADE ABOVE EXISTING COUNT RATE.

REQUIRED MATERIALS:

1. 3-OSP-059.6, HIGH FLUX AT SHUTDOWN

REFERENCES:

1. 3-OSP-059.6, HIGH FLUX AT SHUTDOWN

TERMINATING CUES:

1. THE HIGH FLUX AT SHUTDOWN ALARM SETPOINT IS VERIFIED CORRECT FOR THE SHUTDOWN SOURCE RANGE COUNT RATE.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT IN MODE 3.
2. NIS SOURCE RANGES ARE OPERATIONAL.
3. ALL PREREQUISITES ARE MET.

INITIATING CUES:

YOU ARE THE UNIT 3 RCO AND THE NPS HAS DIRECTED THAT THE HIGH FLUX AT SHUTDOWN ALARM BE ADJUSTED USING 3-OSP-059.6 FOR NIS SOURCE RANGE CHANNEL, N-31.

why Tell Operator thi

( ) ELEMENT: 1

OBTAIN COPY OF 3-OSP-059.6.

STANDARDS:

__1. OBTAINED PROCEDURE 3-OSP-059.6.

CUE: ***Provide procedure when correctly identified.***

__2. VERIFIED PROCEDURE 3-OSP-059.6 AGAINST OTSC INDEX.

EVALUATOR'S NOTES:

NOTE 1: OTSCs cannot be verified in the simulator.

NOTE 2: Operator may review sections 2, 3 and 4 of 3-OSP-059.6

( ) ELEMENT: 2

RECORD METER READING.
[Step 7.1.1]

STANDARDS:

__1. NIS CHANNEL N-31 CPS NEUTRON LEVEL READING WAS RECORDED.

EVALUATOR'S NOTES:

75 counts +/- 10

(C) **ELEMENT: 3**

POSITION SELECTOR SWITCHES.
[Steps 7.1.2 through 7.1.5]

STANDARDS:

__1. AUDIO COUNT RATE CHANNEL SELECTOR SWITCH ON NIS PANEL N-34 PLACED TO "SR N-32."
[Step 7.1.2]

__2. ON NIS PANEL N-31, "LEVEL TRIP" SWITCH PLACED TO "BYPASS."
[Step 7.1.3]

__3. ON NIS PANEL N-31, "HIGH FLUX AT SHUTDOWN" SWITCH PLACED TO "BLOCK."
[Step 7.1.4]

__4. ON NIS PANEL N-31, "OPERATION SELECTOR" SWITCH PLACED TO "LEVEL ADJ."
[Step 7.1.5]

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 4**

CALCULATE HIGH FLUX AT SHUTDOWN ALARM SETPOINT.

STANDARDS:

__1. ALARM SETPOINT CALCULATED AT 1/2 DECADE ABOVE THE SOURCE RANGE COUNT RATE FROM STEP 7.1.1 (3.16 x N-31 CPS).
[Step 7.1.6]

__2. CALCULATED ALARM SETPOINT RECORDED IN PROCEDURE
[Step 7.1.6]

EVALUATOR'S NOTES:

3.16 x 75 = 237 (=/-10%)

NOTE: Standard 2 is not critical to this element.

(C) **ELEMENT: 5**

ADJUST N-31 INDICATED CPS TO THE CALCULATED SETPOINT.
[Step 7.1.7]

STANDARDS:

__1. "LEVEL ADJ" POTENTIOMETER ON NIS PANEL N-31 ADJUSTED SO THAT CPS METER INDICATES THE CALCULATED ALARM SETPOINT.

EVALUATOR'S NOTES:

NOTE: 200 to 300 cps is acceptable

(C) **ELEMENT: 6**

ADJUST HIGH FLUX AT SHUTDOWN BISTABLE TRIP SETPOINT.
[Step 7.1.8]

STANDARDS:

__1. NIS PANEL N-31 DRAWER OPENED.
[Step 7.1.8.1]

__2. ADJUSTED TRIP POTENTIOMETER IN DRAWER (CARD NC103 HIGH FLUX AT SHUTDOWN) FULLY CLOCKWISE.
[Step 7.1.8.2]

__3. ADJUSTED TRIP POTENTIOMETER COUNTERCLOCKWISE UNTIL THE "HIGH FLUX AT SHUTDOWN" STATUS LIGHT ON THE FRONT OF THE DRAWER COMES ON.
[Step 7.1.8.3]

__4. NIS PANEL N-31 DRAWER CLOSED.
[Step 7.1.8.4]

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 7**

VERIFY HIGH FLUX AT SHUTDOWN BISTABLE SETPOINTS.
[Step 7.1.9]

STANDARDS:

__1. AT NIS PANEL N-31, "LEVEL ADJ" POTENTIOMETER ADJUSTED COUNTERCLOCKWISE UNTIL "HIGH FLUX AT SHUTDOWN" STATUS LIGHT TURNED OFF.
[Step 7.1.9.1]

__2. CPS NEUTRON LEVEL ALARM RESET READING RECORDED.
[Step 7.1.9.2]

__3. AT NIS PANEL N-31, "LEVEL ADJ" POTENTIOMETER ADJUSTED CLOCKWISE UNTIL "HIGH FLUX AT SHUTDOWN" STATUS LIGHT TURNED ON.
[Step 7.1.9.3]

__4. CPS NEUTRON LEVEL ALARM READING RECORDED.
[Step 7.1.9.4]

__5. COMPARISON MADE TO DETERMINE IF ACCEPTANCE CRITERIA WAS MET USING ENCLOSURE 1.
[Step 7.1.9.5]

EVALUATOR'S NOTES:

Standard 2:	110 cps (+/- 10%)
Standard 4:	230 cps (+/_ 10%)
Standard 5:	acceptable reset for 230 cps trip is 75 to 120 cps.

(C) **ELEMENT: 8**

RETURN SOURCE RANGE DRAWER TO NORMAL
(Steps 7.1.10 through 7.1.13)

STANDARDS:

__1. ON NIS PANEL N-31, "LEVEL ADJ" POTENTIOMETER ADJUSTED FULLY COUNTERCLOCKWISE.
[Step 7.1.10]

__2. ON NIS PANEL N-31, "OPERATION SELECTOR" SWITCH PLACED TO "NORMAL."
[Step 7.1.11]

__3. ON NIS PANEL N-31, "LEVEL TRIP" SWITCH PLACED TO "NORMAL."
[Step 7.1.12]

__4. ON NIS PANEL N-31, "HIGH FLUX AT SHUTDOWN" SWITCH PLACED TO "NORMAL."
[Step 7.1.13]

EVALUATOR'S NOTES:

Inform the operator that the JPM has been completed.

7.0 PROCEDURE

7.1 Source Range Channel N-31

INIT Date/Time Started:______________________

——— 7.1.1 Record SOURCE RANGE CPS NEUTRON LEVEL (NIS panel N-31)

N-31______________CPS

——— 7.1.2 Place AUDIO COUNT RATE CHANNEL, CHANNEL SELECTOR switch to SR N32 (NIS panel N-34).

——— 7.1.3 Place LEVEL TRIP switch to BYPASS (NIS panel N-31).

——— 7.1.4 Place HIGH FLUX AT SHUTDOWN switch in BLOCK (NIS panel N-31).

——— 7.1.5 Place OPERATIONS SELECTOR switch to LEVEL ADJ (NIS panel N-31).

——— 7.1.6 Calculate the High Flux at Shutdown alarm setpoint at one-half decade above the SOURCE RANGE CPS NEUTRON LEVEL recorded in Step 7.1.1:

3.16 x CPS = ______________ Alarm CPS

——— 7.1.7 Adjust LEVEL ADJ potentiometer clockwise to obtain the calculated Alarm CPS indication on SOURCE RANGE CPS NEUTRON LEVEL meter (NIS panel N-31)

7.1.8 Adjust the High Flux at Shutdown bistable trip setpoint as follows:

——— 1. Open the SOURCE RANGE drawer (NIS panel N-31).

——— 2. Adjust TRIP potentiometer fully clockwise (card NC103 HIGH FLUX AT SHUTDOWN, inside N-31 drawer).

——— 3. Adjust TRIP potentiometer counter clockwise until HIGH FLUX AT SHUTDOWN status light (N-31 drawer front) turns ON.

——— 4. Close the SOURCE RANGE drawer (NIS panel N-31).

INITIALS
CK'D VERIF

7.1.9 Verify the High Flux at Shutdown bistable setpoints as follows:

____ 1. Adjust LEVEL ADJ potentiometer (N-31 drawer front) counterclockwise until HIGH FLUX AT SHUTDOWN status light turns OFF.

____ 2. Record SOURCE RANGE CPS NEUTRON LEVEL (NIS panel N-31) for High Flux at Shutdown alarm reset.

__________ Reset CPS

____ 3. Adjust LEVEL ADJ Potentiometer (N-31 drawer front) clockwise until HIGH FLUX AT SHUTDOWN status light turns ON.

____ 4. Record SOURCE RANGE CPS NEUTRON LEVEL (NIS panel N-31) for High Flux at Shutdown alarm trip.

__________ Alarm CPS

____ 5. Verify the alarm and reset CPS are within acceptance criteria range indicated on Enclosure 1.

____ ____ 7.1.10 Adjust LEVEL ADJ potentiometer (NIS panel N-31) fully counterclockwise.

____ ____ 7.1.11 Place OPERATION SELECTOR switch (NIS panel N-31) to NORMAL.

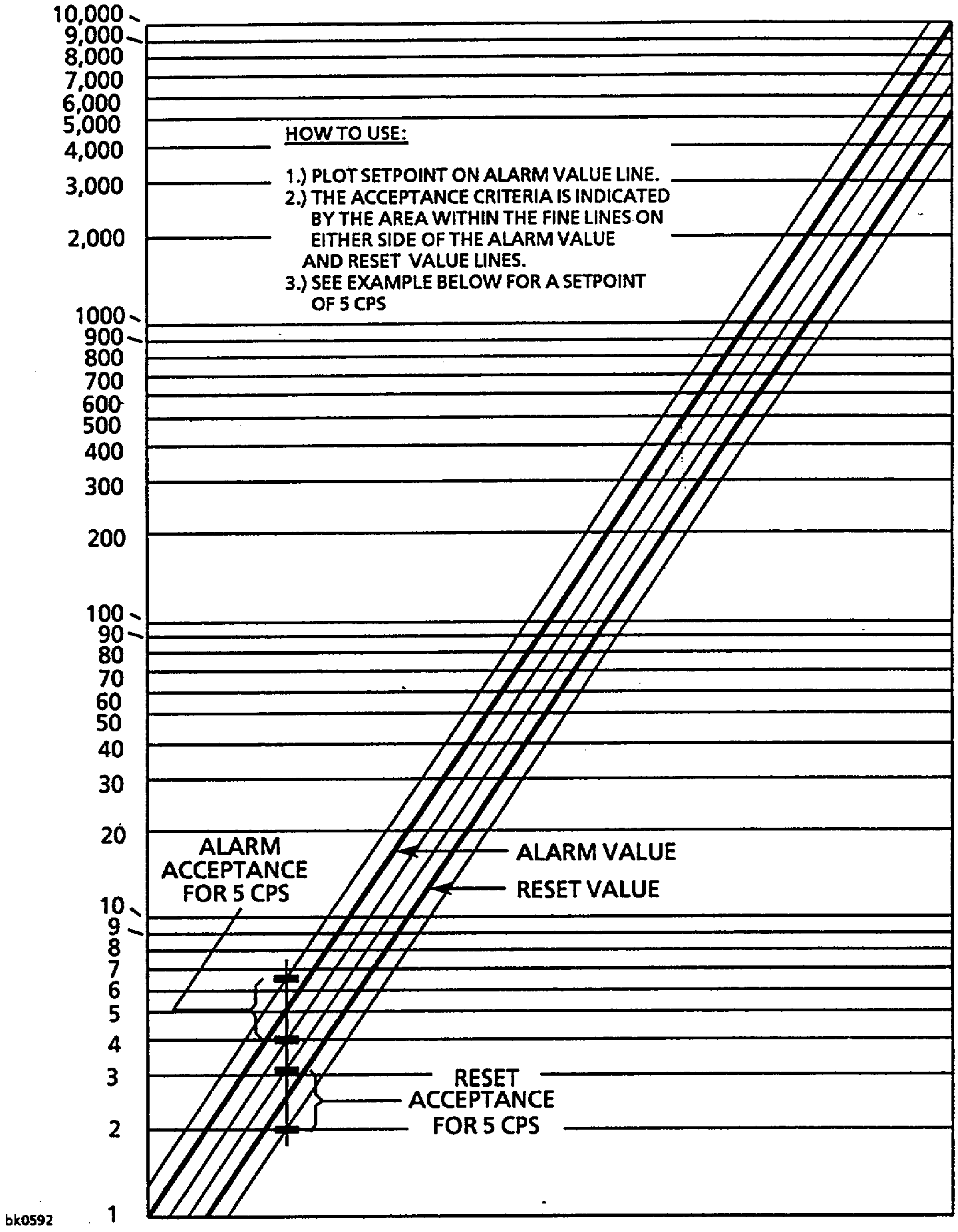
____ ____ 7.1.12 Place LEVEL TRIP switch (NIS panel N-31) to NORMAL.

____ ____ 7.1.13 Place HIGH FLUX AT SHUTDOWN switch (NIS panel N-31) to NORMAL

ENCLOSURE 1

(Page 1 of 1)

HIGH FLUX AT SHUTDOWN ACCEPTANCE CRITERIA FOR ALARM AND RESET



HOW TO USE:

1.) PLOT SETPOINT ON ALARM VALUE LINE.
2.) THE ACCEPTANCE CRITERIA IS INDICATED BY THE AREA WITHIN THE FINE LINES ON EITHER SIDE OF THE ALARM VALUE AND RESET VALUE LINES.
3.) SEE EXAMPLE BELOW FOR A SETPOINT OF 5 CPS

FINAL PAGE

/TNM/dt/lr/bvc

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT IN MODE 3.

2. ALL PLANT SYSTEMS are operable ~~REQUIRED~~ FOR MODE 3 OPERATION ~~ARE IN AUTOMATIC.~~

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01041029301

JOB CLASSIFICATION: REACTOR CONTROL OPERATOR

JPM TITLE: RESPOND TO LOW PRESSURIZER PRESSURE

JPM NUMBER: 01041029301 JPM TYPE: ALTERNATE PATH

JPM REV. DATE: 05/24/99

NUCLEAR SAFETY IMPORTANCE: 4.00

COMBINED IMPORTANCE: 4.00

TIME VALIDATION: 5 MINUTES

*** THIS JPM MAY BE USED FOR SIMULATOR TESTING ONLY ***

INSTRUCTOR's INFORMATION

BOOTH INSTRUCTIONS:

1. RESET TO IC-3. TOUCH PRESSURIZER LEVEL->P444->PT444->TRANSMITTER FAIL HIGH->ARM TFH1TU44=T->RECALL->PC444G->CONTROLLER FAIL HIGH->ARM TFH244GH=T. OPEN TRIP BREAKERS, ACKNOWLEDGE ALARMS & STABILIZE PLANT. FREEZE SIMULATOR UNTIL READY TO BEGIN.

2. PT-444 fails high and PZR Spray valve PCV-455A controller remains at 100% demand even after the master controller has been placed in manual and driven to zero demand.

INITIATING CUES:

OBSERVATION OF ANY OF THE FOLLOWING SYMPTOMS:

1. ANN. A9/2: PZR CONTROL HI/LO PRESS
2. ANN. A9/5: PZR PRESSURE CONTROLLER HI OUTPUT
3. INDICATED PRESSURIZER PRESSURE < 2235 PSIG
4. PI 444 NOT IN AGREEMENT WITH OTHER RCS PRESSURE INSTRUMENTATION

TASK STANDARDS:

1. ACTIONS TO STABILIZE PZR PRESSURE PERFORMED FOR THE FAILED PRESSURE TRANSMITTER PER 3-ONOP-041.5.
2. WHEN PRESSURE REDUCTION CAN NOT BE CONTROLLED, REQUIRED ACTIONS OF 3-ONOP-041.5 SHALL BE PERFORMED.

REQUIRED MATERIALS:

1. 3-ONOP-041.5
2. 3-ARP-097.CR, CONTROL ROOM ANNUNCIATOR RESPONSE

REFERENCES:

1. 3-ONOP-041.5, PRESSURIZER PRESSURE CONTROL MALFUNCTION
2. 3-ARP-097.CR, CONTROL ROOM ANNUNCIATOR RESPONSE

TERMINATING CUES:

1. 3C RCP IS TRIPPED PER 3-ONOP-041.5 TO STABILIZE PRESSURIZER PRESSURE.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #01041029301

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND THE SIMULATOR WILL PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT IN MODE 3.

2. ALL PLANT SYSTEMS Are Operable ~~REQUIRED~~ FOR MODE 3 OPERATION ~~ARE IN AUTOMATIC.~~

INITIATING CUE:

AS THE UNIT RCO, RESPOND TO PLANT CONDITIONS.

BOOTH INSTRUCTIONS:

Shortly after simulator is taken to run, press MAST FAIL to insert PT444 & PCV-3-445A failures.

(C) **ELEMENT: 1**

TAKE REQUIRED ACTIONS TO STABILIZE PRESSURE TRANSIENT.

STANDARDS:

Imm Actions

__1. COMPARED PI-444 AND PI-445 AND DETERMINED PT-444 HAS FAILED HIGH.
[Step 1.a & 1.b]

√ C __2. ✓ CLOSED PCV-455C USING CONSOLE CONTROL SWITCH.
[Step 1.a.RNO(1)]

√ C __3. TOOK MANUAL CONTROL OF PC-444J AND DROVE Master? CONTROLLER DEMAND DOWN.
[Step 1.a.RNO(2)]

__4. RECOGNIZED PZR SPRAY VALVE CONTROLLER, PCV-455A, AT 100% OPEN DEMAND AND PRESSURE STILL DECREASING.
[Step 1.a.RNO(2)]

C __5. TOOK MANUAL CONTROL OF PZR SPRAY VALVE, PCV-455A AND ATTEMPTED TO CLOSE PCV-455A. Will close

EVALUATOR'S NOTES:

NOTE 1: Standards 2, 3, & 5 are Critical to this element.

NOTE 2: Operator should perform these Immediate Action Steps from memory.

NOTE 3: When the Operator drives the master controller closed, PCV-455B controller will follow it. PCV-455C will remain at 100% output until the operator takes manual control of the spray valve.

( ) **ELEMENT: 2**

CHECK BOTH PZR PORVS CLOSED.
[Step 2]

STANDARDS:

__1. OBSERVED GREEN LIGHT INDICATION FOR PORV-455C AND PORV-456 ON THE CONSOLE.

EVALUATOR'S NOTES:

NOTE 1: Both PORVs will display green light indication.

NOTE 2: Operator should perform these Immediate Action Steps from memory.

( ) **ELEMENT: 3**

VERIFIED PZR SPRAY VALVES CLOSED.

STANDARDS:

__1. OBSERVED PZR PRESSURE STILL DECREASING. [Step 3]

__2. PLACED PZR SPRAY VALVE PCV-455A CONTROLLER IN MANUAL AND ATTEMPTED TO CLOSE.

__3. VERIFIED NORMAL SPRAY VALVE PCV-455B AND AUX. SPRAY VALVE, CV-3-311, CLOSED.

EVALUATOR'S NOTES:

NOTE 1: The Operator may also place PCV-455B in MANUAL and attempt to close it. PCV-455B is already closed, so this action will be of no consequence.

NOTE 2: The operator may have already attempted to close spray valves while performing Step 1 RNO. It does not matter if the action to close PCV-455A is done during Step 1 or Step 3.

NOTE 3: Operator should perform these Immediate Action Steps from memory.

( ) **ELEMENT: 4**

OBTAIN PROCEDURE.

How to know when to obtain procedure ?

STANDARDS:

___1. OBTAINED COPY OF 3-ONOP-041.5, PRESSURIZER PRESSURE CONTROL MALFUNCTION.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 5**

CHECK PZR SAFETY VALVES CLOSED.

STANDARDS:

__1. CHECKED PZR PORV/SAFETY ACOUSTIC MONITOR LIGHTS - OFF. [Step 4.a]

__2. CHECKED PZR SAFETY LINE TEMPERATURE INDICATIORS AT OR NEAR NORMAL. [Step 4.b]

EVALUATOR'S NOTES:

NOTE 1: Acoustic Monitor indicators on the PRMS cabinets will be OFF.

NOTE 2: PZR Safety Line temperatures will be normal.

TI 3-465
467
469

ADD to Here

⑤ STABLE or Increasing - Pressure

⑥ above Normal Press

( ) **ELEMENT: 6**

EVALUATE PZR PRESSURE.

STANDARDS:

__1. DETERMINED IF PRZ PRESSURE WAS ABOVE, BELOW, OR AT NORMAL PRESSURE AND IF IT WAS INCREASING OR DECREASING OR STABLE.
[Step 5 & 6]

__2. BASED ON DECREASING PZR PRESSURE, TRANSITIONED TO STEP 10.
[Step 6. RNO]

__3. AT STEP 10, RECONFIRMED PZR PRESSURE WAS DECREASING.

__4. REVIEWED STEP 11 & STEP 11 RNO FOR APPLICABILITY AND CONTINUED ON TO STEP 12.

Cue: ***If the operator identifies the need to refer to E-0, say: "E-0 will be handled by another operator. Continue with ONOP-041.5."***

EVALUATOR'S NOTES:

NOTE 1: PZR pressure will be decreasing slowly.

NOTE 2: The Reactor is already tripped (both RTBs open).

( ) **ELEMENT: 7**

CHECKED PZR HEATERS OPERATION.

STANDARDS:

__1. VERIFIED ALL PZR HEATERS - ON.
[Step 12.a]

__2. CHECKED PZR HEATERS CAPABLE OF MAINTIANING PRESSURE.
[Step 12.b]

__3. DISPATCHED OPERATOR TO PERFORM ATTACHMENT 1, PZR HEATER OUTPUT WORKSHEET & NOTIFY THE ELECTRICAL DEPARTMENT.
[Step 12 RNO b. & c.]

How? Lists?

LOCAL ACTION

How - what is expected

Cue: ***Inform operator that the ANPS will coordinate performance of Attachment 1.***

EVALUATOR'S NOTES:

NOTE: Operator may not perform Standard 3 because it is based on suspected diminished PZR heater output. The Operator will recognize that the real reason for decreasing PZR pressure is the stuck open spray valve.

What is criteria

? How will Operator know of diminished PZR Heater output if not perform ATT - What is expected?

( ) **ELEMENT: 8**

CHECK IF A PORV IS LEAKING.

STANDARDS:

__1. CONCLUDED NO PORV WAS LEAKING BASED ON PZR RELIEF LINE TEMPERATURES, PRT LEVEL, PRT TEMPERATURE, PRT PRESSURE AND PORV/SAFETY ACOUSTIC MONITORS.
[Step 13]

__2. TRANSITIONED TO STEP 15.
[Step 13 RNO]

EVALUATOR'S NOTES:

NOTE: PORV Tail Pipe temperatures may be elevated due to the earlier lifting of PORV PCV-455C. The Operator should still conclude no PORV is leaking.

( ) **ELEMENT: 9**

CHECK IF A PZR SAFETY IS LEAKING.

STANDARDS:

__1. MONITORED PZR SAFETY LINE TEMPERATURES, PRT CONDITIONS AND ACOUSTIC MONITORS AND CONCLUDED NO SAFETIES WERE LEAKING.
[Step 15]

EVALUATOR'S NOTES:

None

( ) ELEMENT: 10

CHECK FOR RCS LEAKAGE CAUSING PRESSURE TO DECREASE.

STANDARDS:

__1. REQUESTED ASSISTANCE TO MONITOR RCS LEAKAGE USING 3-OSP-041.1.
[Step 16]

CUE: ***Role play as the NPS and say "Another operator will perform OSP-041.1. Continue with ONOP-041.5."***

__2. DETERMINED PRESSURIZER PRESSURE WAS DECREASING.
[Step 17]

EVALUATOR'S NOTES:

None

( ) ELEMENT: 11

DETERMINE IF ~~A STUCK OPEN~~ PZR SPRAY VALVE IS PREVENTING PRESSURE STABILIZATION.

should be worded like this
is LEAKING or FAILURE TO CLOSE

STANDARDS:

__1. REVERIFIED OPEN INDICATION ON PCV-455A CONTROLLER.
[Step 18]

? What about leaking — Ho
will oper determine this ?

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 12**

REDUCE PZR SPRAY FLOW.

455A in MANUAL
455B & closed

& C

STANDARDS:

___ 1. RECONFIRMED SPRAY VALVES IN MANUAL WITH B LOOP NORMAL SPRAY AND AUX SPRAY VALVES CLOSED.
[Step 19.a]

3311

___ 2. RECONFIRMED REACTOR SHUTDOWN.
[Step 19.b]

C 3. STOPPED THE 3C RCP.
[Step 19.c]

CUE: ***When the Operator expresses the need to use OP-041.1 to stop the 3C RCP, as the NPS, say "OP-041.1 has already been reviewed. The RCP is ready to be stopped."***

___ 4. CHECKED PRESSURE TO BE STABLE.
[Step 19.d]

How Long to Review & Stop PP - Key are in our ONOP -

EVALUATOR'S NOTES:

NOTE 1: Only Standard 3 is Critical to this Element.

NOTE 2: Step 19.c tells the Operator to stop the RCP using 3-OP-041.1. This event would normally be handled using a team approach. In the interest of time, the NPS intervenes and tells the operator to trip the RCP after the operator identifies the need to use the OP.

NOTE 3: With pressurizer heaters on, Step 19.d will be satisfied because pressure will slowly increase following 3C RCP trip.

Terminate the JPM at this time.

FOLDOUT FOR PROCEDURE 3-ONOP-041.5

1. FAILED INSTRUMENT ISOLATION

    a. IF any Pressurizer Pressure control Instrument Loop fails, THEN place applicable control switches to a position which isolates the failed instrument.

2. IF PZR pressure cannot be maintained greater than 2000 psig, THEN perform the following:

    a. Continue efforts to restore PZR pressure and

    b. Trip the reactor and turbine and go to 3-EOP-E-0, REACTOR TRIP OR SAFETY INJECTION.

3. PORV ISOLATION/LEAKING PORV IDENTIFICATION

    a. IF any PORV is OPEN OR Leaking AND pressure is less than 2235 psig, THEN CLOSE the applicable PORV and/or Block valve.

    b. The following are indications of leakage from a PZR PORV and should be used to identify and isolate a leaking PORV:

        1) PZR relief line temperature, TI-3-463, INCREASING.

        2) PZR relief tank level, LI-3-470, INCREASING.

        3) PZR relief tank temperature, TI-3-471, INCREASING.

        4) PZR relief tank pressure, PI-3-472, INCREASING.

        5) PZR PORV/SAFETY ACOUSTIC MONITOR, LEDs LIT.

4. OPEN/LEAKING PZR SAFETY VALVE IDENTIFICATION

    a. The following are indications that a PZR safety is open or leaking:

        1) PZR Safety line temperature, TI-3-465, INCREASING or at saturation temperature associated with the PZR relief tank pressure per Attachment 2.

        2) PZR Safety line temperature, TI-3-467, INCREASING or at saturation temperature associated with the PZR relief tank pressure per Attachment 2.

        3) PZR Safety line temperature, TI-3-469, INCREASING or at saturation temperature associated with the PZR relief tank pressure per Attachment 2.

        4) PZR relief tank level, LI-3-470, INCREASING.

        5) PZR relief tank temperature, TI-3-471, INCREASING.

        6) PZR relief tank pressure, PI-3-472, INCREASING.

        7) PZR PORV/SAFETY ACOUSTIC MONITOR, LEDs LIT.

5. SPURIOUS ACTUATION OF CV-3-311 AUXILIARY SPRAY VALVE due to fire in Containment or 3B 4KV Switchgear Room

    a. IF pressurizer pressure is decreasing and Auxiliary Spray Valve, CV-3-311, is suspect, THEN reduce charging to one charging pump on slow speed AND close charging to RCS Control Valve HCV-3-121.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTES

- *Steps 1 through 3 are IMMEDIATE ACTION steps.*
- *Foldout page is required to be monitored throughout this procedure.*

CAUTION

The Master Controller should be operated carefully (Normal controller output for 2235 psig is 42.5 percent demand; 92 percent demand will open PCV-3-455C). If the following conditions are met, an excessive increase in controller output could cause Power Operated Relief Valve PCV-3-455C to open:

1. ***PCV-3-455C hand switch in AUTO.***
2. ***Pressurizer pressure is greater than or equal to 2000 psig, or OMS switch in LO Press Ops.***

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	**Check PZR Pressure Control Instrument Loop Not Failed**	
	a. Check PT-3-444 - NOT FAILED by comparison with adjacent pressure channels and known plant parameters	a. Perform the following: (1) Verify PCV-3-455C <u>OR</u> MOV-3-536 CLOSED. (2) Take manual control of PC-3-444J, PZR PRESS CONTROL (3) <u>IF</u> manual control of PC-3-444J is <u>NOT</u> effective, <u>THEN</u> perform the following: * Take manual control of PZR spray valves. * Take manual control of PZR heaters.
	b. Check PT-3-445 - NOT FAILED by comparison with adjacent pressure channels and known plant parameters	b. Perform the following: (1) Verify PCV-3-456 <u>OR</u> MOV-3-535 CLOSED.

Not explain what action is required

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	**Check PORVs Closed** • PCV-3-455C - CLOSED • PCV-3-456 - CLOSED	Perform the following: • <u>IF</u> PZR pressure is less than 2335, <u>THEN</u> manually close PORVs. <u>IF</u> any PZR PORV can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve.

CAUTION

A fire in containment or the 3B 4KV Switchgear Room may cause spurious actuation of and give false valve position indication for Auxiliary Spray Valve, CV-3-311.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	**Check PZR Spray Valves Closed** • PZR pressure normal	<u>IF</u> PZR pressure less than normal, <u>THEN</u> perform the following: a. Verify PZR Spray valves closed. • Place PZR Spray Loop C, PCV-3-455A in MANUAL and CLOSE. • Place PZR Spray Loop B, PCV-3-455B in MANUAL and CLOSE. • Verify Aux Spray Valve CV-3-311 CLOSED.
4	**Check PZR Safety Valves Closed** a. PZR PORV/Safety acoustic monitor LEDs - NOT LIT b. PZR safety line temperatures at or near normal • PZR safety line temperature, TI-3-465 • PZR safety line temperature, TI-3-467 • PZR safety line temperature, TI-3-469	
5	**Check PZR Pressure Stable Or Increasing**	NO Perform the following: • Continue efforts to restore PZR pressure control. What is this?

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	**Check Pressurizer Pressure Above Normal Value**	Not Above Normal Go to Step 10.
7	**Restore Pressurizer Pressure Using Manual Pressure Control**	
8	**Check If Automatic Pressure Control Can Be Established**	
	a. PZR pressure controls - OPERABLE	a. Perform the following: (1) Notify the Instrument and Controls Department. (2) Continue efforts to restore Automatic pressure control. (3) Return to Step 7.
	b. RCS Pressure - STABLE	b. Continue efforts to restore RCS pressure **AND** return to Step 7.
9	**Establish Automatic Pressurizer Pressure Control**	
	a. Place Pressurizer Pressure Controls in AUTOMATIC using 3-OP-041.2, PRESSURIZER OPERATION	
	b Verify PZR pressure controls operating in - AUTOMATIC MODE	b. Perform the following: (1) Re-establish manual pressure control. (2) Re-establish normal pressurizer pressure. (3) Notify the Instrument and Controls Department. (4) Return to Step 7.
	c. Go to appropriate Plant Procedure as determined by the Nuclear Plant Supervisor	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	**Check Pressurizer Pressure Low Or Decreasing**	Go to Step 20.
11	**Maintain PZR Pressure Greater Than 2000 PSIG** • Check PZR pressure greater than 2000 psig • Maintain PZR pressure greater than 2000 psig	a. Restore pressure to greater than 2000 psig. b. IF pressure can NOT be maintained greater than 2000 psig, THEN perform the following: • Continue efforts to restore pressure and • Trip the Reactor and turbine and go to 3-EOP-E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1.
12	**Check PZR Heaters Operable**	Perform the following:
	a. Check PZR Heaters ON	a. Perform the following: * Verify PZR Control Group Heater Distribution Panel B-11 Breakers, West Electrical Penetration Room, CLOSED. * Verify PZR Backup Group A Heater Distribution Panel B-12 Breakers, West Electrical Penetration Room, CLOSED. * Verify PZR Backup Group B Heater Distribution Panel B-13 Breakers, West Electrical Penetration Room, CLOSED.
	b. Check PZR htrs capable of maintaining pressure	b. Dispatch an operator to perform Attachment 1, Pressurizer Heater Output Worksheet, to determine heater output. c. Notify the Electrical Department.
13	**Check If A PORV Is Leaking** No → * PZR relief line temperature, TI-3-463 - INCREASING or at the saturation temperature associated with the PZR relief tank pressure according to Attachment 2 * PZR relief tank level, LI-3-470 - INCREASING * PZR relief tank temperature, TI-3-471 - INCREASING OR above ambient temperature for containment conditions * PZR relief tank pressure PI-3-472 - INCREASING * PZR PORV/Safety Acoustic Monitor, LEDS Lit	Go to Step 15.

What is ATT 2

How many will Operator Check?

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	**Isolate The Leaking PORV**	Perform the following:
	a. Isolate the leaking PORV * Close either MOV-3-535 **OR** * Close MOV-3-536	a. **IF** the block valve can **NOT** be closed, **THEN** perform the following: * **IF** MOV block indicating lights are LIT **AND** the MOV will **NOT** operate from the console, **THEN** notify the Electrical Department. * **IF** MOV block valve indicating lights are **NOT** lit, **with the NPS permission**, reclose the breaker and operate the MOV from the switch on the console.
	b. Check the following to see if the leaking PORV has been isolated: * PZR relief line temperature DECREASING * PZR relief tank level STABLE * PZR relief tank temperature STABLE or DECREASING * PZR relief tank pressure STABLE * PZR PORV/SAFETY acoustic monitor LEDs - NOT LIT	b. **IF** the leaking PORV has **NOT** been isolated, reopen the applicable PORV BLOCK valve, **THEN** repeat Step 14a and Step 14b for the opposite PORV.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	**Determine If A Leaking PZR Safety Is Causing Pressure To Decrease**	
	a. Check if a PZR Safety is leaking * PZR safety line temperature, TI-3-465 - INCREASING or at saturation temperature associated with the PZR relief tank pressure per Attachment 2 * PZR safety line temperature, TI-3-467 - INCREASING or at saturation temperature associated with the PZR relief tank pressure per Attachment 2 * PZR safety line temperature, TI-3-469 - INCREASING or at saturation temperature associated with the PZR relief tank pressure per Attachment 2 * PZR relief tank level, LI-3-470 - INCREASING * PZR relief tank temperature, TI-3-471 - INCREASING * PZR relief tank pressure, PI-3-472 - INCREASING * PZR PORV/SAFETY ACOUSTIC MONITOR - LEDs LIT	a. Go to Step 16.
	b. Refer to Technical Specifications for a leaking PZR SAFETY	
16	**Determine If RCS Leakage Is Causing Pressure To Decrease** • Monitor RCS Leakage using 3-OSP-041.1, RCS LEAK RATE CALCULATION	
17	**Check Pressurizer Pressure Decreasing**	Go to Step 20.
18	**Determine If PZR Spray Valve Leakage Or Failure To Close Is Preventing RCS Pressure Stabilization**	Go to Step 20.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	**Reduce PZR Spray Flow As Follows**	
	a. Verify PZR Spray valves closed • Place PZR Spray Loop C, PCV-3-455A in MANUAL and CLOSE • Place PZR Spray Loop B, PCV-3-455B in MANUAL and CLOSE • Verify Aux Spray Valve, CV-3-311 CLOSED	
	b. Check Reactor Shutdown	b. **WHEN** the Reactor is shutdown, **THEN** continue with Step 19c.
	c. Stop RCPs to reduce PZR Spray flow as follows: * Stop either the 3B or the 3C RCP using 3-OP-041.1, REACTOR COOLANT PUMP	
	d. Check pressure stable or increasing yes//	d. **IF** pressure continues to decrease, **THEN** repeat Step 19c and 19d for the other RCP.
20	**Check RCS Pressure Stable**	Return to Step 5.
21	**Check If Automatic Pressure Control Can Be Established** • Pressurizer Pressure Control Channel Operable	Perform the following: 1. Notify the Instrument and Controls Department. 2. Continue efforts to establish Automatic Pressure Control. 3. Return to Step 20.
22	**Establish Automatic Pressurizer Pressure Controls** a. Place Pressurizer Pressure Controls in AUTOMATIC using 3-OP-041.2, PRESSURIZER OPERATION b. Verify PZR pressure controls operating in automatic mode	Perform the following: • Re-establish manual pressure control. • Re-establish normal PZR pressure. • Notify I&C Department. • Return to Step 20.

Will operator use 041.1?
Or just STOP PP

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. CVT 4Y07A IS POWERING VITAL AC INSTRUMENT BUS 4P09.
2. 4D NORMAL INVERTER IS IN STANDBY AND READY FOR LOADING.
3. ALL APPLICABLE PROCEDURE PREQUISITES ARE SATISFIED.

INITIATING CUE:

YOU ARE THE NPO AND YOU HAVE BEEN DIRECTED BY THE NWE TO TRANSFER VITAL AC INSTRUMENT BUS 4P09 FROM THE CVT TO THE 4D INVERTER (EXTERNAL TRANSFER).

2 Critical
Rev'n to Positions

Review JPM
Prior to being
Modified

What was changed?

JOB CLASSIFICATION: NPO

JPM TITLE: TRANSFER INSTRUMENT BUS LOAD FROM CVT TO NORMAL INVERTER (EXTERNAL TRANSFER)

JPM NUMBER: 14003026101 JPM TYPE: NORMAL PATH

JPM REV. DATE: 05/08/99

NUCLEAR SAFETY IMPORTANCE: 3.00

COMBINED IMPORTANCE: 4.00

TIME VALIDATION: 45 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM:_____ SIMULATE:__X__ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

1. 4D NORMAL INVERTER IS POWERING 4P09 INSTRUMENT AC BUS.
2. CVT 4Y07A IS BACK IN STANDBY.

REQUIRED MATERIALS:

1. 0-OP-003.3, 120V VITAL INSTRUMENT AC SYSTEM

REFERENCES:

1. 0-OP-003.3, 120V VITAL INSTRUMENT AC SYSTEM

TERMINATING CUES:

4D NORMAL INVERTER IS POWERING VITAL INSTRUMENT BUS 4P09.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. CVT 4Y07A IS POWERING VITAL AC INSTRUMENT BUS 4P09.
2. 4D NORMAL INVERTER IS IN STANDBY AND READY FOR LOADING.
3. ALL APPLICABLE PROCEDURE PREQUISITES ARE SATISFIED.

INITIATING CUES:

YOU ARE THE NPO AND YOU HAVE BEEN DIRECTED BY THE NWE TO TRANSFER VITAL AC INSTRUMENT BUS 4P09 FROM THE CVT TO THE 4D INVERTER (EXTERNAL TRANSFER).

JOB PERFORMANCE MEASURE WORKSHEET – JPM #14003026101

( ) **ELEMENT: 1**

OBTAIN REQUIRED MATERIAL.

STANDARDS:

__1. PROCEDURE 0-OP-003.3 OBTAINED.

__2. PROCEDURE VERIFIED AGAINST OTSC INDEX.

Cue: ***Once procedure has been correctly identified and the need to verify procedure against the OTSC Index has been expressed, provide the operator with the procedure.***

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 2**

VERIFY 4D NORMAL INVERTER IS NOT SUPPLYING A VITAL INSTRUMENT AC BUS.
[Step 7.6.2.1]

what if inverter in ALT.

STANDARDS:

__1. REVIEWED NOTE PRIOR TO STEP 7.6.2.1.

✓2. INSTRUMENT AC SELECTOR SWITCH 4P09A VERIFIED IN THE "ALTERNATE" POSITION PER TABLE 13 ON ~~PAGE 52~~.

CUE: ***Indicate on the switch that it is in the position specified by the operator.***

EVALUATOR'S NOTES:

None

? Could this step be critical - what if inverter is supplying a Vital Bus (C.L.)

( ) **ELEMENT: 3**

DETERMINE WHICH INSTRUMENT AC SELECTOR SWITCH SHOULD BE USED.
[Step 7.6.2.2]

STANDARDS:

__1. SELECTION MADE AS INDICATED ON TABLE 14 ON PAGE 53.

__2. SELECTION RECORDED IN SPACE PROVIDED ON STEP 7.6.2.2.

EVALUATOR'S NOTES:

NOTE: The Operator should have selected Instrument AC Selector Switch 4P09A.

( ) **ELEMENT: 4**

VERIFY NORMAL POWER AVAILABLE LIGHT IS ON.
[Step 7.6.2.3.a]

STANDARDS:

__1. NORMAL POWER AVAILABLE LIGHT VERIFIED ON.

CUE: ***Point to the light specified by the operator and say "ON."***

EVALUATOR'S NOTES:

The Operator should have gone to the South wall of the Cable Spreading Room and located 4P09A Instrument AC Selector Switch Panel.

( ) ELEMENT: 5

TEST THE SYNCH VERIFICATION LIGHT.
[Step 7.6.2.3.b]

STANDARDS:

__1. SYNCH SWITCH PLACED TO SYNCH LAMP TEST POSITION.

CUE: ***Point to the position indicated by the operator.***

__2. SYNCH VERIFICATION LIGHT VERIFIED TO COME ON.

CUE: ***After the Operator identifies the indication, point to the light and say 'ON'.***

EVALUATOR'S NOTES:

None

( ) ELEMENT: 6

PERFORM A SYNCH CHECK.
[Step 7.6.2.3.c]

STANDARDS:

__1. THE SYNCH SWITCH WAS PLACED TO SYNCH CHECK PUSH POSITION.

Cue: ***Point to the position indicated by the operator.***

__2. REVIEWED NOTE PRIOR TO STEP.
[Step 7.6.2.3.c(2)]

__3. THE SYNCH SWITCH WAS DEPRESSED AND HELD. [Step 7.6.2.3.c(2)]

Cue: ***After the Operator identifies the required switch position, point to the switch and say "DEPRESSED AND HELD."***

__4. THE SYNCH VERIFICATION LIGHT VERIFIED OFF [Step 7.6.2.3.c(3)]

Cue: ***After the Operator identifies the required indication, point to the Sync Verification light and say "OFF."***

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 7**

POSITION THE INSTRUMENT AC SELECTOR SWITCH TO NORMAL. [Step 7.6.2.3.d]

STANDARDS:

__1. TABLE 14 ON PAGE 53 USED TO IDENTIFY 4P09A INSTRUMENT AC SELECTOR SWITCH.

C__2. 4P09A INSTRUMENT AC SELECTOR SWITCH WAS PLACED TO THE NORMAL POSITION INDICATED BY TABLE 14.

Cue: ***When identified, point to the switch position indicated.***

EVALUATOR'S NOTES:

NOTE: 4P09A should be identified and aligned to "NORMAL".
NOTE: Standard 1 is NOT critical.

(C) **ELEMENT: 8**

PLACE ALTERNATE SOURCE TRANSFER SWITCH 4Y07B TO BACKUP TO NORMAL INVERTER (4Y07)4D POSITION.
[Step 7.6.2.3.e]

Tol? /C

STANDARDS:

✓ 1. TABLE 15 ON PAGE 54 WAS USED TO DETERMINE REQUIRED POSITION.

__2. ALTERNATE SOURCE TRANSFER 4Y07B SWITCH WAS UNLOCKED AND POSITIONED TO THE BACKUP TO NORMAL INVERTER (4Y07)4D POSITION AS DIRECTED BY TABLE 15.

Cue: ***When correctly identified, point at the switch position indicated.***

EVALUATOR'S NOTES:

NOTE 1: The operator should have left the Cable Spreading Room and gone to the Inverter Room which is located behind the Control Room. Alternate Source Transfer Switch, 4Y07B, is located on the West wall.

NOTE 2: 4Y07B should be positioned to "BACKUP TO NORMAL INVERTER (4Y07) 4D."

Note: ELEMENT #9 requires opening the front of the inverter control cabinet which presents some risk of electrical shock. You should choose to have the Operator describe where the switch is, what it looks like, and how to operate it rather than opening the cabinet.

Do you have a drawing / picture or print of the / cabinet (switch)

Option - describe cabinet & switch above

(C) **ELEMENT:** ⑨

PLACE THE SYNCH REFERENCE SELECTOR SWITCH (SW-2) IN THE 4D INVERTER TO THE NORMAL (DOWN) POSITION. [Step 7.6.2.4]

STANDARDS:

Cue: ***Tell the Operator to describe this switch manipulation. Do not allow the operator to open the cabinet.***

__1. SWITCH SW-2 WAS POSITIONED IN THE NORMAL (DOWN) POSITION.

Cue: ***Confirm to the Operator the Sync reference selector switch (SW-2) is in the normal down position.***

EVALUATOR'S NOTES:

NOTE: The switch is a toggle switch, on the inside of the cabinet door.

( ) **ELEMENT: 10**

VERIFY PROPER INDICATIONS ON THE NORMAL INVERTER.

STANDARDS:

What Happens if the Values are not within spec? What will Operator do?

__1. IN SYNCH LIGHT VERIFIED ON.
[Step 7.6.2.5.a]

CUE: ***When identified by the operator, point at the light and say "ON."***

__2. ALTERNATE SOURCE AVAILABLE LIGHT VERIFIED ON.
[Step 7.6.2.5.b]

CUE: ***When identified by the operator, point at the light and say "ON."***

__3. SYNC REFERENCE NORMAL LIGHT ON.
[Step 7.6.2.5.c]

CUE: ***When identified by the operator, point at the light and say "ON."***

__4. STATIC SWITCH OUTPUT LOAD VERIFIED LESS THAN 63 AMPS.
[Step 7.6.2.5.d]

What is Normal?

CUE: ***Point to an output < 63 amps on the meter.***

__5. INVERTER OUTPUT VOLTAGE VERIFIED BETWEEN 119 TO 125 VAC.
[Step 7.6.2.5.e]

CUE: ***Point to an output of 120 VAC on the meter.***

__6. DC INPUT VOLTAGE VERIFIED BETWEEN 125V TO 138V DC.
[Step 7.6.2.5.f]

CUE: Point to an input of 128 VDC on the meter.

EVALUATOR'S NOTES:

None

( ) **ELEMENT: 11**

VERIFY THE OFF-NORMAL LIGHTS ARE OFF.
[Step 7.6.2.5.g]

STANDARDS:

___1. DC VOLTAGE LOW LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__2. LINE #1 TO GROUND LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__3. LINE #2 TO GROUND LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__4. ALTERNATE SOURCE SUPPLYING LOAD LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__5. REVERSE POLARITY LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__6. FAN FAILURE LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__7. LOW AC VOLTAGE LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__8. SYNC REFERENCE EXTERNAL LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__9. OUT OF SYNCH LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__10. HIGH TEMPERATURE LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

__11. MANUAL BYPASS SW IN ALTERNATE SOURCE TO LOAD POSITION LIGHT VERIFIED OFF.

CUE: ***When identified by the operator, point at the light and say "OFF."***

EVALUATOR'S NOTES:

Terminate the JPM at this point.

7.6 Transfer of Bus Load from CVT to Normal Inverter (External Transfer)

INITIALS
CK'D VERIF

Transfer from Inverter ____________ Date/Time Started: ________/________

NOTE

To transfer load from CVT to Inverter (internal transfer) refer to Subsection 7.4.

7.6.1 Initial Conditions

___ DWP/ 1. All applicable prerequisites listed in Section 3.0 are satisfied.

NOTE

Enclosure 1 provides a reference for Typical Normal Vital AC Inverter Switch Locations, or Enclosure 2 provides a reference for Typical Spare Vital AC Inverter Switch Locations as applicable.

___ DWP/ 2. The applicable Normal Inverter is in Standby in accordance with Subsection 5.1 of this procedure.

7.6.2 Procedure Steps

NOTE

When operating on a CVT, the associated vital inverter or the spare inverter is required to be placed in service within 24 hours to comply with Technical Specification 3.8.3.1.

___ 1. Verify that the applicable Normal Inverter is NOT supplying a Vital Instrument AC bus by verifying the Instrument AC Selector Switch alignment per Table 13.

INITIALS
CK'D VERIF

7.6.2 (Cont'd)

NOTE

Initials should be entered for the applicable inverter. N/A should be entered for all others.

TABLE 13

For 120V Vital Instrument AC Inverter	Verify in ALTERNATE	Verify in NORMAL	Verify in NORMAL	INIT
3A (3Y01)	3P07A	-----	-----	
4A (4Y01)	4P07A	-----	-----	
3B (3Y02)	3P08A	-----	-----	
4B (4Y02)	4P08A	-----	-----	
3C (3Y05)	3P06A	-----	-----	
4C (4Y05)	4P06A	-----	-----	
3D (3Y07)	3P09A	-----	-----	
4D (4Y07)	[✓ 4P09A]	-----	-----	

____ 2. Using Table 14, determine which Instrument AC Selector Switch should be used and record: ____________

3. Perform the following steps at the appropriate Instrument AC Selector Switch panel in the Cable Spreading Room:

____ a. Verify that the Normal Power Available light is ON.

b. Test the Synch Verification Light as follows:

____ (1) Position the Synch Switch to SYNCH LAMP TEST.

(2) Verify Synch Verification Light comes ON.

INITIALS
CK'D VERIF

7.6.2.3 (Cont'd)

c. Perform a synch check as follows:

____ (1) Position the Synch Switch to SYNCH CHECK PUSH.

> **NOTE**
>
> *In the following Steps (1) and (2) the bright light will go OFF, but a slight glow is expected. This is acceptable.*

____ (2) Depress and hold the Synch Switch.

____ (3) Verify that the Synch Verification Light stays OFF.

____ d. Place the Instrument AC Selector Switch to the position indicated in Table 14.

> **NOTE**
>
> *Initials should be entered for the applicable inverter. N/A should be entered for all others.*

TABLE 14

When Substituting NORMAL INVERTER	For INSERVICE CVT	Place INSTRUMENT AC SELECTOR SWITCH	To SUPPLY Position	INIT	I/V
3A (3Y01)	3Y01A	3P07A	NORMAL		
4A (4Y01)	4Y01A	4P07A	NORMAL		
3B (3Y02)	3Y02A	3P08A	NORMAL		
4B (4Y02)	4Y02A	4P08A	NORMAL		
3C (3Y05)	3Y05A	3P06A	NORMAL		
4C (4Y05)	4Y05A	4P06A	NORMAL		
3D (3Y07)	3Y07A	3P09A	NORMAL		
4D (4Y07)	4Y07A	4P09A	NORMAL		

INITIALS
CK'D VERIF

7.6.2.3 (Cont'd)

____ e. Place the Alternate Source Transfer Switch to the position indicated in Table 15.

NOTE

Initials should be entered for the applicable inverter. N/A should be entered for all others.

TABLE 15

When Substituting NORMAL INVERTER	For INSERVICE CVT	Place ALTERNATE SOURCE TRANSFER SWITCH	To Position (LOCKED)	INIT	I/V
3A (3Y01)	3Y01A	3Y01B	BACKUP TO NORMAL INVERTER (3Y01) 3A		
4A (4Y01)	4Y01A	4Y01B	BACKUP TO NORMAL INVERTER (4Y01) 4A		
3B (3Y02)	3Y02A	3Y02B	BACKUP TO NORMAL INVERTER (3Y02) 3B		
4B (4Y02)	4Y02A	4Y02B	BACKUP TO NORMAL INVERTER (4Y02) 4B		
3C (3Y05)	3Y05A	3Y05B	BACKUP TO NORMAL INVERTER (3Y05) 3C		
4C (4Y05)	4Y05A	4Y05B	BACKUP TO NORMAL INVERTER (4Y05) 4C		
3D (3Y07)	3Y07A	3Y07B	BACKUP TO NORMAL INVERTER (3Y07) 3D		
~~4D (4Y07)~~	~~4Y07A~~	4Y07B	BACKUP TO NORMAL INVERTER (4Y07) 4D		

____ ____ 4. Place the Sync Reference Selector Switch (SW-2) inside the applicable Normal inverter to the NORMAL (DOWN) position.

5. Verify the following at the Normal Inverter:

____ a. IN SYNC - light ON

____ b. ALTERNATE SOURCE AVAILABLE - light ON

____ c. SYNC REFERENCE NORMAL - light ON

____ d. Static Switch Output load less than 63 amps

INIT

7.6.2.5 (Cont'd)

____ e. Inverter Output Meter Voltage between 119 to 125VAC.

____ f. DC Input voltage 125 to 138V DC

g. Verify the following off-normal lights are OFF:

____ (1) DC VOLTAGE LOW - light OFF

____ (2) LINE #1 TO GROUND - light OFF

____ (3) LINE #2 TO GROUND - light OFF

____ (4) ALTERNATE SOURCE SUPPLYING LOAD - light OFF

____ (5) REVERSE POLARITY - light OFF

____ (6) FAN FAILURE - light OFF

____ (7) LOW AC VOLTAGE - light OFF

____ (8) SYNC REFERENCE EXTERNAL - light OFF |

____ (9) OUT OF SYNC - light OFF

____ (10) HIGH TEMPERATURE - light OFF

____ (11) MANUAL BYPASS SW IN ALTERNATE SOURCE TO LOAD POSITION - light OFF

____ 6. **IF** desirable to de-energize the inverter which has just been removed from service, **THEN** enter Subsection 6.1 of this procedure.

____ 7. Verify all log entries specified in Subsection 2.2 have been recorded.

____ 8. Complete QA Record Page.

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT 3 CCW SURGE TANK LEVEL IS DECREASING AND CANNOT BE MAINTAINED.
2. 3-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, DIRECTS PERFORMANCE OF ATTACHMENT 1.

INITIATING CUE:

YOU ARE THE SNPO AND HAVE BEEN DIRECTED TO PERFORM 3-ONOP-030, ATTACHMENT 1, CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #24030009300

JOB CLASSIFICATION: SNPO

JPM TITLE: ALIGN EMERGENCY SERVICE WATER TO THE CHARGING PUMPS

JPM NUMBER: 24030009300 JPM TYPE: NORMAL PATH

JPM REV. DATE: 05/11/99

NUCLEAR SAFETY IMPORTANCE: 4.00

COMBINED IMPORTANCE: 4.00

TIME VALIDATION: 10 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM:_____ SIMULATE:__X__ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

EMERGENCY COOLING WATER BEING SUPPLIED TO 3C CHARGING PUMP

REQUIRED MATERIALS:

3-ONOP-030, ATTACHMENT 1

REFERENCES:

1. 3-ONOP-030, COMPONENT COOLING WATER MALFUNCTION

TERMINATING CUES:

EMERGENCY COOLING WATER ESTABLISHED TO 3C CHARGING PUMP.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT 3 CCW SURGE TANK LEVEL IS DECREASING AND CANNOT BE MAINTAINED.

2. 3-ONOP-030, COMPONENT COOLING WATER MALFUNCTION, DIRECTS PERFORMANCE OF ATTACHMENT 1.

INITIATING CUES:

YOU ARE THE SNPO AND HAVE BEEN DIRECTED TO PERFORM 3-ONOP-030, ATTACHMENT 1, CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS.

( ) **ELEMENT: 1**

OBTAIN REQUIRED MATERIALS.

STANDARDS:

__1. OBTAINED 3-0N0P-030, ATTACHMENT 1.

__2. OBTAINED HOSES.

EVALUATOR'S NOTES:

Note: Hoses are located on a hand cart in the Northwest corner of the Unit 3 Charging Pump room.

(C) **ELEMENT: 2**

CONNECT EMERGENCY COOLING WATER TO CHARGING PUMPS.

STANDARDS:

Not C 1. REVIEWED NOTES PRIOR TO STEP 1.

Cue: ***If asked if a Loss of Off Site Power has occurred, say "No."***

__2. CONNECTED CAM LOCK FITTING END OF EMERGENCY COOLING WATER SUPPLY HOSE TO SERVICE WATER CONNECTION INSIDE CHARGING PUMP ROOM, 3-70-179A.
[Step 1]

CUE: ***Confirm cam lock fitting "Connected" to 3-70-179A.***

Why Critical?

__3. CONSULT WITH UNIT RCO TO DETERMINE DESIRED CHARGING PUMP.
[Step 2]

CUE: ***Tell operator "3C charging pump."***

Why?

__4. VERIFIED DESIRED CHARGING PUMP STOPPED OR RUNNING AT MAXIMUM SPEED.
[Step 3]

How

CUE: ***Confirm 3C charging pump "Stopped."***

__5. CONNECTED QUICK DISCONNECT FITTING END OF EMERGENCY COOLING WATER SUPPLY HOSE TO EMERGENCY HOSE CONNECTION ON CHARGING PUMP 3C OIL COOLER, 3-10-299.
[Step 4c]

CUE: ***Confirm emergency service water supply hose "Connected." to 3-10-299.***

Not C __6. REVIEWED NOTE PRIOR TO STEP 5.

Why Critical __7. CONNECTED QUICK DISCONNECT FITTING END OF EMERGENCY COOLING WATER OUTLET HOSE TO EMERGENCY HOSE CONNECTION TO CHRG PUMP C OIL COOLER, 3-10-298.
[Step 5c]

CUE: ***Confirm emergency service water supply hose "Connected." to 3-10-298.***

Not C __8. REMOVED COVER FROM FLOOR DRAIN TO BE USED.
[Step 6]

Solid cover?

??

CUE: ***Confirm drain cover "Removed."***

Not C __9. ROUTED OPEN END OF EMERGENCY COOLING WATER OUTLET HOSE TO FLOOR DRAIN BEING USED IN CHARGING PUMP ROOM.
[Step 7]

CUE: ***Confirm drain hose "Routed to selected drain."***

EVALUATOR'S NOTES:

NOTE: Standards 1 and 6 are not critical to this element.

(C) **ELEMENT: 3**

INITIATE EMERGENCY COOLING WATER FLOW TO CHARGING PUMPS.

STANDARDS:

Are these really critical?

?

__1. CLOSED CCW TO 3C CHARGING PUMP OIL COOLER 3-825E. [Step 8c]

CUE: ***Confirm 3-825E "Fully clockwise with handwheel down."***

__2. CLOSED CCW FROM 3C CHARGING PUMP OIL COOLER 3-825F. [Step 9c]

CUE: ***Confirm 3-825F "Fully clockwise with handwheel down."***

__3. OPENED SERVICE WATER CONNECTION INSIDE CHARGING PUMP ROOM ROOT VALVE, 3-70-179. [Step 10]

CUE: ***Confirm 3-10-179 "Handle in line with pipe."***

__4. OPENED SERVICE WATER CONNECTION INSIDE CHARGING ROOM ROOM ISOLATION VALVE, 3-70-179A. [Step 11]

CUE: ***Confirm 3-10-179A "Handle in line with pipe."***

__5. ESTABLISHED SERVICE WATER TO DESIRED CHARGING PUMP BY OPENING EMERGENCY HOSE CONNECTION TO 3C CHARGING PUMP OIL COOLER VALVE, 3-10-299.
[Step 12c]

CUE: ***Confirm 3-10-299 "Fully counter clock wise with handwheel up."***

__6. ADJUSTED SERVICE WATER FLOW FROM 3C CHARGING PUMP TO PROVIDE MAXIMUM FLOW BY OPENING EMERGENCY HOSE CONNECTION TO 3C CHARGING PUMP OIL COOLER VALVE, 3-10-298.
[Step 13c]

CUE: ***Confirm "Counter clock wise with maximum flow into the drain."***

N/C __7. REVIEWED STEP 14 AND DETERMINED STEP TO NOT BE APPLICABLE.
[Step 14]

N/C __8. NOTIFIED UNIT RCO OF CHARGING PUMP STATUS.
[Step 15]

CUE: ***Acknowledge notification as RCO.***

EVALUATOR'S NOTES:

Elements 7 & 8 are not critical to this element.

( ) **ELEMENT: 4**

MONITOR HYDRAULIC COUPLING TEMPERATURE.

STANDARDS:

__1. REVIEWED CAUTION PRIOR TO STEP 16.

__2. MONITORED HYDRAULIC COUPLING OIL OUTLET TEMPERATURE 3C CHARGING PUMP FLUID DRIVE OIL, TI-3-6718. [Step 16]

***CUE:** Indicate temperature at 170 degrees on gauge.*

EVALUATOR'S NOTES:

TERMINATE THE JPM AT THIS POINT.

ATTACHMENT 1

(Page 1 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

NOTES

- *Emergency cooling water SUPPLY hose has a quick disconnect fitting on one end and a cam lock fitting on the other end.*
- *Loss of offsite power in coincidence with a loss of CCW will require the diesel driven service water pump to be in service in order to provide emergency cooling water to the charging pumps.*

1. Connect cam lock fitting end of emergency cooling water supply hose to Service Water Connection Inside Unit 3 Charging Pump Room, 3-70-179A.

2. Consult with Unit 3 RCO to determine desired charging pump.

3. Verify desired charging pump is stopped **OR** running at maximum speed.

4. Connect quick disconnect fitting end of emergency cooling water supply hose to emergency hose connection on desired charging pump.

   a. Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-291

   OR

   b. Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-289

   OR

   c. Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-299

NOTE

Emergency cooling water OUTLET hose has a quick disconnect fitting on one end and no fitting on the other end.

5. Connect quick disconnect fitting end of emergency cooling water outlet hose to emergency hose connection on desired charging pump.

   a. Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-290

   OR

   b. Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-288

   OR

   c. Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-298

ATTACHMENT 1
(Page 2 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

6. Remove cover from floor drain to be used in Charging Pump Room.

7. Route open end of emergency cooling water outlet hose to floor drain being used in Charging Pump Room.

8. Isolate CCW to hydraulic oil cooler on desired charging pump:

    a. Close CCW to A Charging Pump Oil Cooler Inlet, 3-825A

    OR

    b. Close CCW to B Charging Pump Oil Cooler Inlet, 3-825C

    OR

    c. Close CCW to C Charging Pump Oil Cooler Inlet, 3-825E

9. Isolate CCW from hydraulic oil cooler on desired charging pump:

    a. Close CCW from A Charging Pump Oil Cooler Inlet, 3-825B

    OR

    b. Close CCW from B Charging Pump Oil Cooler Inlet, 3-825D

    OR

    c. Close CCW from C Charging Pump Oil Cooler Inlet, 3-825F

10. Open Service Water Connection Inside Unit 3 Charging Pump Room Root Valve,3-70-179.

11. Open Service Water Connection Inside Unit 3 Charging Pump Room, 3-70-179A.

12. Establish service water to desired Charging Pump:

    a. Open Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-291

    OR

    b. Open Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-289

    OR

    c. Open Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-299

ATTACHMENT 1
(Page 3 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

13. Adjust service water flow from desired charging pump to provide maximum flow.

    a. Open Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-290

    OR

    b. Open Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-288

    OR

    c. Open Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-298

14. **IF** service water flow is not obtained, **THEN** have the Service Water System placed in service using 0-OP-012, SERVICE WATER SYSTEM, using any available pump including the diesel driven SWP D.

15. Notify Unit 3 RCO that emergency cooling water has been established to desired charging pump.

Add this step on ~~225°~~ 190° + criteria

CAUTION

Maximum charging pump oil temperature is 220°F.

16. Monitor oil temperatures on running charging pump.

Criteria step

17. **IF** hydraulic coupling oil outlet temperature on running charging pump exceeds 185°F, **THEN** perform the following:

    a. Notify Unit 3 RCO that operating charging pump should be stopped.

    b. Consult with Unit 3 RCO to determine if emergency cooling water should be realigned to a different charging pump.

    c. **IF** Unit 3 RCO determines that emergency cooling water must be realigned to a different charging pump, **THEN** go to Step 20 of this attachment.

18. **IF** Unit 3 RCO determines that emergency cooling water to charging pumps is no longer required, **THEN** go to Step 20 of this attachment.

19. Return to Step 16 of this attachment.

20. Verify charging pump being supplied with emergency cooling water is stopped.

ATTACHMENT 1
(Page 4 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

21. Isolate emergency cooling water flow from previously running charging pump:

    a. Close Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-290

    OR

    b. Close Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-288

    OR

    c. Close Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-298

22. Isolate emergency cooling water flow to previously running charging pump:

    a. Close Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-291

    OR

    b. Close Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-289

    OR

    c. Close Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-299

23. Reestablish CCW to hydraulic oil cooler on previously running charging pump:

    a. Open CCW to A Charging Pump Oil Cooler Inlet, 3-825A

    OR

    b. Open CCW to B Charging Pump Oil Cooler Inlet, 3-825C

    OR

    c. Open CCW to C Charging Pump Oil Cooler Inlet, 3-825E

ATTACHMENT 1
(Page 5 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

24. Reestablish CCW from hydraulic oil cooler on previously running charging pump.

    a. Open CCW from A Charging Pump Oil Cooler Inlet, 3-825B

    OR

    b. Open CCW from B Charging Pump Oil Cooler Inlet, 3-825D

    OR

    c. Open CCW from C Charging Pump Oil Cooler Inlet, 3-825F

25. Disconnect emergency cooling water outlet hose from previously running charging pump.

26. Close Service Water Connection Inside Unit 3 Charging Pump Room Root Valve,3-70-179.

27. Close Service Water Connection Inside Unit 3 Charging Pump Room, 3-70-179A.

28. Disconnect emergency cooling water supply hose from previously running charging pump.

29. **IF** emergency cooling water must be realigned to a different charging pump, **THEN** return to Step 2.

30. Disconnect emergency cooling water supply hose from Service Water Connection Inside Unit 3 Charging Pump Room, 3-70-179A.

31. Return emergency cooling water supply and outlet hoses to their designated storage locations.

32 Replace cover on floor drain used for emergency cooling water.

33. Notify Unit 3 RCO that emergency cooling water alignment has been terminated.

FINAL PAGE

ATTACHMENT 1
(Page 1 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

NOTES

- *Emergency cooling water SUPPLY hose has a quick disconnect fitting on one end and a cam lock fitting on the other end.*
- *Loss of offsite power in coincidence with a loss of CCW will require the diesel driven service water pump to be in service in order to provide emergency cooling water to the charging pumps.*

1. Connect cam lock fitting end of emergency cooling water supply hose to Service Water Connection Inside Unit 3 Charging Pump Room, 3-70-179A.
2. Consult with Unit 3 RCO to determine desired charging pump.
3. Verify desired charging pump is stopped **OR** running at maximum speed.
4. Connect quick disconnect fitting end of emergency cooling water supply hose to emergency hose connection on desired charging pump.

   a. Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-291

   OR

   b. Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-289

   OR

   c. Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-299

NOTE

Emergency cooling water OUTLET hose has a quick disconnect fitting on one end and no fitting on the other end.

5. Connect quick disconnect fitting end of emergency cooling water outlet hose to emergency hose connection on desired charging pump.

   a. Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-290

   OR

   b. Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-288

   OR

   c. Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-298

ATTACHMENT 1
(Page 2 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

6. Remove cover from floor drain to be used in Charging Pump Room.

7. Route open end of emergency cooling water outlet hose to floor drain being used in Charging Pump Room.

8. Isolate CCW to hydraulic oil cooler on desired charging pump:

   a. Close CCW to A Charging Pump Oil Cooler Inlet, 3-825A

   OR

   b. Close CCW to B Charging Pump Oil Cooler Inlet, 3-825C

   OR

   c. Close CCW to C Charging Pump Oil Cooler Inlet, 3-825E

9. Isolate CCW from hydraulic oil cooler on desired charging pump:

   a. Close CCW from A Charging Pump Oil Cooler Inlet, 3-825B

   OR

   b. Close CCW from B Charging Pump Oil Cooler Inlet, 3-825D

   OR

   c. Close CCW from C Charging Pump Oil Cooler Inlet, 3-825F

10. Open Service Water Connection Inside Unit 3 Charging Pump Room Root Valve,3-70-179.

11. Open Service Water Connection Inside Unit 3 Charging Pump Room, 3-70-179A.

12. Establish service water to desired Charging Pump:

   a. Open Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-291

   OR

   b. Open Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-289

   OR

   c. Open Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-299

ATTACHMENT 1
(Page 3 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

13. Adjust service water flow from desired charging pump to provide maximum flow.

    a. Open Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-290

    OR

    b. Open Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-288

    OR

    c. Open Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-298

14. **IF** service water flow is not obtained, **THEN** have the Service Water System placed in service using 0-OP-012, SERVICE WATER SYSTEM, using any available pump including the diesel driven SWP D.

15. Notify Unit 3 RCO that emergency cooling water has been established to desired charging pump.

CAUTION

Maximum charging pump oil temperature is 220°F.

16. Monitor oil temperatures on running charging pump.

17. **IF** hydraulic coupling oil outlet temperature on running charging pump exceeds 185°F, **THEN** perform the following:

    a. Notify Unit 3 RCO that operating charging pump should be stopped.

    b. Consult with Unit 3 RCO to determine if emergency cooling water should be realigned to a different charging pump.

    c. **IF** Unit 3 RCO determines that emergency cooling water must be realigned to a different charging pump, **THEN** go to Step 20 of this attachment.

18. **IF** Unit 3 RCO determines that emergency cooling water to charging pumps is no longer required, **THEN** go to Step 20 of this attachment.

19. Return to Step 16 of this attachment.

20. Verify charging pump being supplied with emergency cooling water is stopped.

ATTACHMENT 1
(Page 4 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

21. Isolate emergency cooling water flow from previously running charging pump:

    a. Close Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-290

    OR

    b. Close Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-288

    OR

    c. Close Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-298

22. Isolate emergency cooling water flow to previously running charging pump:

    a. Close Emergency Hose Connection to Charging Pump A Oil Cooler, 3-10-291

    OR

    b. Close Emergency Hose Connection to Charging Pump B Oil Cooler, 3-10-289

    OR

    c. Close Emergency Hose Connection to Charging Pump C Oil Cooler, 3-10-299

23. Reestablish CCW to hydraulic oil cooler on previously running charging pump:

    a. Open CCW to A Charging Pump Oil Cooler Inlet, 3-825A

    OR

    b. Open CCW to B Charging Pump Oil Cooler Inlet, 3-825C

    OR

    c. Open CCW to C Charging Pump Oil Cooler Inlet, 3-825E

ATTACHMENT 1
(Page 5 of 5)

CONTROL OF EMERGENCY COOLING WATER TO CHARGING PUMPS

24. Reestablish CCW from hydraulic oil cooler on previously running charging pump.
    a. Open CCW from A Charging Pump Oil Cooler Inlet, 3-825B

    OR

    b. Open CCW from B Charging Pump Oil Cooler Inlet, 3-825D

    OR

    c. Open CCW from C Charging Pump Oil Cooler Inlet, 3-825F
25. Disconnect emergency cooling water outlet hose from previously running charging pump.
26. Close Service Water Connection Inside Unit 3 Charging Pump Room Root Valve,3-70-179.
27. Close Service Water Connection Inside Unit 3 Charging Pump Room, 3-70-179A.
28. Disconnect emergency cooling water supply hose from previously running charging pump.
29. **IF** emergency cooling water must be realigned to a different charging pump, **THEN** return to Step 2.
30. Disconnect emergency cooling water supply hose from Service Water Connection Inside Unit 3 Charging Pump Room, 3-70-179A.
31. Return emergency cooling water supply and outlet hoses to their designated storage locations.

32 Replace cover on floor drain used for emergency cooling water.

33. Notify Unit 3 RCO that emergency cooling water alignment has been terminated.

FINAL PAGE

/JBS/dt/ev/sw

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. UNIT 3 IS IN MODE 3 WITH NO AUXILIARY FEEDWATER AVAILABLE TO ITS STEAM GENERATORS.
2. UNIT 4 IS IN MODE 1.
3. OPERATORS ARE PERFORMING STEP 7 OF 3-ONOP-075, AUXILIARY FEEDWATER SYSTEM MALFUNCTION.
4. UNITS 1 & 2 ARE NOT AVAILABLE TO SUPPLY FEEDWATER TO UNIT 3.

INITIATING CUE:

YOU ARE THE NPO AND HAVE BEEN GIVEN DIRECTION TO PERFORM STEPS 7a, 7b, and 7c OF 3-ONOP-075 TO ESTABLISH FEEDWATER FLOW TO UNIT 3 STEAM GENERATORS FROM UNIT 4.

JOB PERFORMANCE MEASURE WORKSHEET-JPM #14074013300

JOB CLASSIFICATION: NPO

JPM TITLE: ESTABLISH FEEDWATER ALIGNMENT FROM OPPOSITE NUCLEAR UNIT

JPM NUMBER: 14074013300 JPM TYPE: NORMAL PATH

JPM REV. DATE: 06/10/99

NUCLEAR SAFETY IMPORTANCE: 4.00

COMBINED IMPORTANCE: 4.00

TIME VALIDATION: 25 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM:_____ SIMULATE:__X__ DISCUSS:_____

INSTRUCTOR's INFORMATION

TASK STANDARDS:

THE APPLICABLE VALVES HAVE BEEN ALIGNED TO PROVIDE WATER TO UNIT 3 FROM UNIT 4.

REQUIRED MATERIALS:

1. VALVE WRENCH

REFERENCES:

1. 3-ONOP-075, AUXILIARY FEEDWATER SYSTEM MALFUNCTION

TERMINATING CUES:

NOTIFICATION TO UNIT 3 RCO OF FEEDWATER SYSTEM ALIGNMENT FOLLOWING COMPLETION OF STEP 7c OF 3-ONOP-075.

READ TO THE TRAINEE

During the performance of this task, I will tell you which steps to simulate or discuss. Explain each step BEFORE you do it. Do you understand my directions to you? If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I WILL DESCRIBE THE GENERAL CONDITIONS FOR THE TASK YOU WILL PERFORM AND PROVIDE THE INITIATING CUES.

INITIAL CONDITIONS:

1. UNIT 3 IS IN MODE 3 WITH NO AUXILIARY FEEDWATER AVAILABLE TO IT'S STEAM GENERATORS.
2. UNIT 4 IS IN MODE 1.
3. OPERATORS ARE PERFORMING STEP 7 OF 3-ONOP-075, AUXILIARY FEEDWATER SYSTEM MALFUNCTION.
4. UNITS 1 & 2 ARE NOT AVAILABLE TO SUPPLY FEEDWATER TO UNIT 3.

INITIATING CUES:

YOU ARE THE NPO AND HAVE BEEN GIVEN DIRECTION TO PERFORM STEPS 7a, 7b, and 7c OF 3-ONOP-075 TO ESTABLISH FEEDWATER FLOW TO UNIT 3 STEAM GENERATORS FROM UNIT 4.

EVALUATOR'S NOTES:

None

( ) ELEMENT: 1

OBTAIN REQUIRED OFF-NORMAL OPERATING PROCEDURE.

STANDARDS:

__1. 3-ONOP-075 OBTAINED.

Cue:* *Provide 3-ONOP-075 to the Operator.

EVALUATOR'S NOTES:

None

(C) **ELEMENT: 2**

OPEN THE UNIT 1&2 FEEDWATER SUPPLY TO THE S/G FEEDWATER HEADER ISOLATION VALVES ON UNIT 3.

STANDARDS:

__1. THE FOLLOWING VALVES WERE OPENED ON UNIT 3: [Step 7.a]

- 3-20-514

Cue: ***The valve handle is fully counter clockwise and the valve stem is fully up.***

- 3-20-515

Cue: ***The valve handle is fully counter clockwise and the valve stem is fully up.***

- 3-20-516

Cue: ***The valve handle is fully counter clockwise and the valve stem is fully up.***

EVALUATOR'S NOTES:

NOTE: These rising stem valves are located on the Unit 3 feedwater platform adjacent to their respective main feedwater bypass control valves.

(C) **ELEMENT: 3**

OPEN THE UNIT 1&2 FEEDWATER SUPPLY HEADER ISOLATION VALVE ON UNIT 3.

STANDARDS:

__1. VALVE 3-20-510 WAS UNLOCKED AND OPENED. [Step 7.b]

Cue: ***The valve handle is fully counter clockwise and the valve stem is fully up.***

EVALUATOR'S NOTES:

NOTE 1: This rising stem valve is located on a platform inside the Unit 3 blowdown cage. The operator will have to climb a permanent ladder to the platform. The valve is a few feet south of the Unit 3 Condensate Storage Tank.

NOTE 2: This valve requires an operator "A" key to open it.

( ) **ELEMENT: 4**

REVIEW STEP 7.c AND 7.c.RNO 1 FOR APPLICABILITY.

STANDARDS:

__1. REVIEWED STEP 7.c AND TRANSITIONED TO RNO COLUMN.

__2. REVIEWED STEP 7.c.RNO 1 AND DETERMINED IT WAS NOT APPLICABLE.

EVALUATOR'S NOTES:

Note: These actions are taken based on the Initial Conditions.

(C) **ELEMENT: 5**

OPEN UNIT 1&2 FEEDWATER SUPPLY TO S/G FEEDWATER ISOLATION VALVES ON UNIT 4.

STANDARDS:

__1. THE FOLLOWING VALVES WERE OPENED ON UNIT 4: [Step 7.c.RNO 2]

- 4-20-514

Cue: ***The valve handle is fully counter clockwise and the valve handle is fully up.***

- 4-20-515

Cue: ***The valve handle is fully counter clockwise and the valve handle is fully up.***

- 4-20-516

Cue: ***The valve handle is fully counter clockwise and the valve handle is fully up.***

EVALUATOR'S NOTES:

NOTE: These rising handle valves are located on the Unit 4 feedwater platform adjacent to their respective main feedwater bypass control valves.

(C) **ELEMENT: 6**

OPEN THE UNIT 1&2 FEEDWATER SUPPLY HEADER ISOLATION VALVE ON UNIT 4.

STANDARDS:

__1. VALVE 4-20-510 WAS OPENED.
[Step 7.c.RNO 3]

Cue: ***The valve is fully counter clockwise and will not turn any more.***

EVALUATOR'S NOTES:

NOTE 1: This valve is located approximately 10′ above ground level and is accessed from the ground by using a chain fall. The valve is a few feet south of the Unit 3 Condensate Transfer pump.

NOTE 2: This valve requires an operator "A" key to open it.

(C) **ELEMENT: 5**

NOTIFY UNIT 3 RCO OF COMPLETION OF FEEDWATER VALVE ALIGNMENTS.

STANDARDS:

__1. RCO NOTIFIED OF SYSTEM ALIGNMENT.

Cue: As the RCO acknowledge the notification by the operator.

EVALUATOR'S NOTES:

Tell the Operator JPM has been completed.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	**Try To Establish Unit 2 Or 4 Feedwater Flow To At Least One S/G:**	
	a. Locally open Unit 1 and 2 Feedwater Supply To S/G Feedwater Header Isolation Valves • 3-20-514 • 3-20-515 • 3-20-516	
	b. Locally open Unit 1 and 2 Feedwater Supply Header Isolation Valve, 3-20-510	
	c. Verify feedwater from Unit 2 - AVAILABLE	c. Perform the following: 1) Verify feedwater available from Unit 4. <u>IF</u> feedwater from Unit 4 is <u>NOT</u> available, <u>**THEN**</u> observe NOTE prior to Step 8, <u>**AND**</u> go to Step 8. 2) Locally open Unit 1 and 2 Feedwater Supply To S/G Feedwater Header Isolation Valves • 4-20-514 • 4-20-515 • 4-20-516 3) Locally open Unit 1 and 2 Feedwater Supply Header Isolation valve, 4-20-510 4) Adjust power on Unit 4 to establish adequate flow to both units. 5) Go to Step 7f.
	d. Locally open Feedwater Tie Isolation Valve to Units 3 and 4 from Units 1 and 2	
	e. Request Unit 2 power be adjusted as necessary for maximum feedwater pressure	
	f. Verify Feedwater Bypass Isolation - RESET	
	g. Adjust Feedwater Bypass Valves to restore S/G level to GREATER THAN 6%	g. <u>IF</u> feedwater flow can <u>NOT</u> be established, <u>**THEN**</u> observe NOTE prior to Step 8, <u>**AND**</u> go to Step 8.
	h. Maintain S/G levels: 1) Narrow range level in at least one S/G - GREATER THAN 6% 2) Control feed flow to maintain levels between 15% and 50%	
	i. Return to Step 2	

*/TW/dt/sw/sw