Final Submittal

(Blue Paper)

MCGUIRE MARCH 2007 EXAM

EXAM NOS. 05000369, 370/2007301

MARCH 19 - 22, 2007

MARCH 29, 2007 - WRITTEN

As Given Simulator Scenario Operator Actions ES-D-2

Facility: McGuire Scenario No.: 1 Op-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

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Initial Conditions: 100% Power, 'B' Train Components in Service, '1A' Auxiliary Feedwater Pump is tagged, '1A' Diesel Generator is tagged.

Turnover: Maintain present plant conditions

Event No.	Malf. No.	Event Type*	Event Description
1		C	(RO) MSR Relief Valve Failure
2		R	(BOP) Reduce load due to Steam Leak (MSR) **TS**
3		N	(RO) Reduce load due to Steam Leak (MSR)
4		C	(BOP) PZR PORV Fails OPEN without interlock – Must close block valve. **TS**
5		I	(RO) 'D' S/G CF flow channel failure
6		C	(BOP) Charging Line Leak Upstream of Regen HX. **TS**
7		M	(CREW) Steam Break Inside Containment
			MSIVs fail to close on automatic signal – RO must close or initial signal manually
			No Automatic Safety Injection
			'A' Reactor Trip fails to open from the control room

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

PROGRAM: McGuire Operations Training

MODULE: Initial License Operator Training Class 23

TOPIC: NRC Simulator Exam

Scenario 1

REFERENCES:

1.	McGuire Technical Specifications	
2.	AP/1/A/5500/004	Rapid Downpower
3.	AP/1/A/5500/006	Loss of S/G Feedwater
4.	AP/1/A/5500/011	Pressurizer Pressure Anomalies
5.	AP/1/A/5500/001	Steam Leak
6.	AP/1/A/5500/010	NV Leakage Within Capacity of Charging Pumps
7.	EP/1/A/5000/E-0	Reactor Trip or Safety Injection
8.	EP/1/A/5000/E-2	Faulted Steam Generator Isolation
9.	EP/1/A/5000/ES 1.1	Safety Injection Termination
10.	EP/1/A/5000/FR-Z-1	Response to High Containment Pressure
11.	RP/O/A/5700/00	Classification of Emergency

Author: _____

Facility Review: _____

March 12, 2007
Rev. 4

EVENT SUMMARY

1. MSR Relief Valve Opens. Enter AP-01
2. PZR. PORV fails open. Enter AP-11
3. Steam Generator 'D' Steam Pressure Channel Failure. Enter AP-06
4. Charging Line Leak. Enter AP-10
5. Steam Break Inside Containment. PZR Level going down requires Rx. Trip and SI. Enter E-0, Z-1, E-2 then ES 1.1

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
☐	Sim. Setup	**Rod Step On**	
☐		**IC - 131**	
☐		**RUN**	
☐		**Update** Status Board, **Setup OAC** **Setup** ICCM, Turbine Displays, & Trend Recorders. **Check** Rod Step Counters agree with rod positions	See Shift Turnover Information
☐		**(M) EPQ001A** **Set = 1**	Loss of D/G "1A" Control Power
☐		**(LOA) CA009** **Set = F**	Rackout breaker for "1A" Auxiliary Feedwater Pump
☐		**(M) ISE 006A** **(M) ISE 006B**	Failure of Automatic Main Steam Isolation –both trains
☐		**(M) ISE002A** **(M) ISE002B**	Failure of automatic Safety Injection – both trains
☐		**(M) IPE001A** **(M) IPE002A**	Failure of the "A" reactor trip breaker to open from the control room.
☐			

	Bench Mark	ACTIVITY	DESCRIPTION
☐		**Freeze.**	
☐		**Update Fresh Tech. Spec. Log.**	
☐		**Fill out the NLO's Available section of Shift Turnover Info.**	
☐	Prior to Crew Briefing	**RUN**	
☐	**Crew Briefing** 1. Assign Crew Positions based on evaluation requirements 2. Review the Shift Turnover Information with the crew. 3. Direct the crew to Review the Control Boards taking note of present conditions, alarms.		
☐	T-0	Begin Familiarization Period	
☐	At direction of examiner	**(MALF) MSR003A** **Set 50** **Ramp 0** **Trigger 1**	MSR Relief leak
☐	At direction of examiner	**(MALF) NC003F** **Severity 100** **Ramp 10** **Trigger 2**	Fails PORV open without interlock control
☐	At direction of examiner	**(XMT) CF018** **Set 120** **Ramp 10** **Trigger 3**	Fails 'D' S/G CF flow channel 1 HIGH

	Bench Mark	ACTIVITY	DESCRIPTION
☐	At direction of examiner	**(MALF) NV008A** **Set 25** **Ramp 30** **Trigger 4**	Charging line leak Upstream of Regen. HX.
	At direction of examiner	**(M) SM008B** **Ramp 900** **Set 4. E6** **Trigger 5**	Steam line break inside containment.
☐	At direction of examiner		
☐			
☐	**Terminate the scenario upon direction of Chief Examiner**		

EVENT 1: MSR Relief Valve Leak AP-01 Actions

Time	Pos.	Expected Actions/ Behavior	Comments
	CREW	Recognizes trend or a decrease in load other symptom of steam leak.	**Turbine – reactor power mismatch**
	SRO	Implements AP/01 Steam Leak	
	CREW	Monitor foldout page	
	RO	Reduces load to maintain • Excores less than 100% • NC Loop D/Ts less than 60 degrees D/T • T-ave at T-ref	Take turbine to Manual via pushbutton and press GV Lower pushbutton OR if in Automatic • Depress LOAD RATE • Enter desired load rate in VARIABLE DISPLAY • Depress ENTER • Depress REFERENCE • Enter desired load in VARIABLE DISPLAY • Depress GO
	SRO	Check containment entry in Progress	**NO, Go to Step 5.**
	BOP	Check Pzr Pressure prior to event – GREATER THAN P-11.	
	BOP	Check Pzr level – STABLE OR GOING UP Go To Step 12	
	RO	Announce occurrence on page.	
	RO	Identify and isolate the leak: • Check SM PORVs - CLOSED • Check condenser dump valves – CLOSED • Check containment conditions • Check TD CA pump – OFF • Unit 2 Steam Header pressure – GREATER THAN 200 PSIG • Dispatch operator to check for leaks.	**10 MINUTES AFTER CALL FROM SRO OR RO REPORT BACK THAT STEAM IS EXITING THE TOP OF THE TURBINE BUILDING.**
	BOP	Check UST level – STABLE OR GOING UP	
	SRO	Evaluate unit shutdown	**WHEN ASKED AS MANAGEMENT – RESPOND – WHAT DO YOU RECOMMEND AND AGREE – BUT DO NOT LET THEM TRIP TRUBINE**

EVENT 2/3: Load Reduction AP-04

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	Implements AP-04	SRO may implement AP-04 Rapid down power or may choose a power level to go to.
	Crew	Monitor Foldout page Announce occurrence on page	
	RO	Check turbine control – IN AUTO	If Turbine in Manual will depress AUTO Pushbutton on DEH panel.
	RO	Check MW loop in service.	Will depress MW/MW OUT Pushbutton
	SRO	Check shutdown to Mode 3 desired.	**NO** **GO TO Step 8**
	SRO	Determine the required power reduction per table	**If asked for guidance – Go to 70% power at 10 MW/MIN**
	RO	Check control rods – IN AUTO	If not will depress AUTO pushbutton on DEH panel.
	Crew	Notify SOC of load reduction	
	RO	Initiate load reduction Take turbine to Manual via pushbutton and press GV Lower pushbutton OR if in Automatic • Depress LOAD RATE • Enter desired load rate in VARIABLE DISPLAY • Depress ENTER • Depress REFERENCE • Enter desired load in VARIABLE DISPLAY • Depress GO	
	BOP	Borates NC system per table • Determine length of time 1NV-265B will be open using Table 4.7-1 • Open 1NV-265B • When time has elapsed close 1NV-265B	
	Crew	Will stabilize and leak will reseat.	**DELETE MALFUNCTION AT 80% POWER AND CALL BACK THAT LEAK HAS ESSENTIALLY STOPPED**

EVENT 2/3: Load Reduction AP-04

Time	Pos.	Expected Actions/ Behavior	Comments
	RO	Check control rods – MOVING IN AS REQUIRED TO MAINTAIN R-AVE AT T-REF	
	RO	Display Rod Insertion Limits on OAC bu entering turn on code "RIL"	
	SRO	If at any time "CONTROL ROD LO LO LIMIT" alarm is lit comply with Tech Spec 3.1.6	
	SRO	If at anytime during this procedure C-7A is received, then ensure Transient Monitor freeze is triggered.	
	RO	Check turbine impulse pressure – GREATER THAN 260 PSIG.	
	SRO	Refer to RP/000 and RP/010	
	SRO	Notify Reactor Group Duty Engineer of load reduction	
	RO	Check target load less than 1000 MW	
	SRO	Check Unit 2 – AVAILABLE TO SUPPLY AUX STEAM	
	SRO	Dispatch an operator to check the following valves open: • 1AS-74 • 2AS-74 • 1AS-253	5 minutes after asked call back and report the valves are open.
	SRO	When P/R instruments indicate less than 48%, THEN check 'P-8 Hi PWR LO FLO RX TRIP BLOCKED"	
	SRO	Check the following: • P/R meters indicate reactor power – LESS THAN 40% • All CF flows – LESS THAN 40% • Impulse Pressure – LESS THAN 260 PSIG	**DO NOT CONTINUE IN PROCEDURE UNTIL TARGET LOAD IS REACHED ONCE TARGET IS REACHED or WHEN VALVE RESEATED GO TO STEP 62**
	RO	Dilute as necessary to maintain rods at desired position	
	SRO	Notify Primary Chemistry Notify IAE to ensure power range channels are within 4% of heat balance Return to procedure and step in effect	**SRO should go back to AP-01**

Event 4: Pzr PORV 1NC-36B Fails OPEN

Time	Pos.	Expected Actions/ Behavior	Comments
	BOP	Recognizes PORV Failure	Annunciators on **1AD-6** A-9, B-9, C-9
	SRO	Goes to **AP/11** Pressurizer Pressure Anomalies	
	BOP	Check actual Pzr pressure – HAS GONE DOWN **Immediate Action**	
	BOP	Check all PZR pressure channels – INDICATING THE SAME. **Immediate Action**	**YES**
	BOP	Check Pzr PORVs – CLOSED **Immediate Action**	No, NC-36B is OPEN a. Close PORVs b. If PORV will not close, THEN close PORV isolation valve.
	BOP	Check Pzr spray valves – CLOSED **Immediate Action**	
	BOP	Check Pzr PORVs - CLOSED	Close 1NC-269
	BOP	Check Pzr spray valves - CLOSED	
	SRO	Go TO Step 9	
	RO	Announce occurrence on page.	
	BOP	Check 1NV-21A - CLOSED	
	BOP	Check the following Pzr heaters – ON • 1A • 1B • 1D	
	BOP	Check 1C Pzr heaters - ON	
	BOP	Check Pzr pressure – GOING UP TO DESIRED PRESSURE	
	BOP	Check "1NC-27 PRESSURIZER SPRAY EMERGENCY CLOSE" switch – SELECTED TO "NORMAL"	
	BOP	Check "1NC-29 PRESSURIZER SPRAY EMERGENCY CLOSE" switch – SELECTED TO "NORMAL"	
	SRO	GO TO Step 24	
	BOP	Ensure "PZR PRESS REC SELECT" is on operable channel.	

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	Tech Specs. 3.4.1, 3.4.11.B.1, 3.4.11.B.2 3.4.11.B.3	When asks remove power from 1NC-35B within 1 hour **LOA NC035** **Rack out**

EVENT 5: 'D' CF Channel Flow Instrument Failure

Time	Pos.	Expected Actions/ Behavior	Comments
	BOP	Refer to annunciator responses for **1AD-4**	Per annunciator response and AP/06 the operator will swap failed channel to operable channel **1AD-4** A-4, B-4, C-4
	SRO	Enters **AP/06** Loss of S/G Feedwater	
	RO	Places Feed Regulator to Manual Restores S/G level to program level	**Immediate Action**
	RO	Checks if CF pumps speed control has failed	**Immediate Action**
	RO	Checks the following channel indicating the same: • Feed flow • Steam Flow • S/G Level	Selects operable channel Channel 2
	RO	Checks the reactor trip breakers closed > P-11	Yes
	RO	Monitor S/G NR Level	If at any time S/G NR Level approaches 17% or 83%, then trip Reactor
		Should announce occurrence on page	
	RO	Check reactor power - GREATER THAN 3%	
	BOP	Check CM/CF feeding S/G	
	RO	S/G level stable or trending to program level	
	BOP	Checks NC temperature with NC pumps on stable or trending to programmed temperature	
	RO	Check all S/G CF control valves - IN AUTO	When the following are met then return affected S/G CF control to automatic • Automatic control is desired • Affected S/G level restored to program level • Selected control channels indicated correctly • Feed flow • Steam flow • S/G level

Event 1: Steam Generator "1D" Steam Pressure Channel 1 Failure **"HIGH".**

Time	Pos.	Expected Actions/ Behavior	Comments
	RO	Check all S/G CF control bypass valves - IN MANUAL AND FULL OPEN	
	RO	Checks both CF pumps - IN AUTO	
	RO	Check all CA pumps - OFF	
	SRO	Contacts WCC to have WR written, have I&E investigate and repair failed channel and evaluate T.S.. Exit procedure	**Failure will not be repaired** **There are no Tech Specs for this instrument.**

Event 6: Charging Line Leak

Time	Pos.	Expected Actions/ Behavior	Comments
	Crew	Recognizes loss of charging.	• EMF39 counts increasing • Regenerative heat exchanger tempt increasing • CFAE Sump levels increasing **1AD-7** • H-2, I-2
	SRO	Enters **AP/10** Case 2	
	SRO	Check containment entry in progress	NO
	BOP	Check PZR level stable or going up	May close 1NV-35A here
	BOP	If at any time while in this procedure PZR level can not be maintained STABLE, then perform step 3.	
	BOP	Check PZR pressure – STABLE OR TRENDING TO 2235 PSIG.	
	RO	Check main steam line intact: • Reactor power – AT TURBINE POWER • NC Loop T-ave - STABLE	
	RO	Announce occurrence on page.	
	BOP	Estimate the leak rate **Crew should estimate about 60 gpm leak**	**Crew should control charging to get stable pressurizer level to estimate leak**
	SRO	REFER to RP/000 Classification of Emergency	
	SRO	If NC leakage exceeds Tech Spec then: • Ensure OAPFT in service • Evaluate if leakage greater than SLC 16.9.7	**Unit 2 will do OAPFT** **Call security within 10 minutes if greater than 16.9.7**
	SRO	If VCT level goes below 16% then swap suctions to FWST	
	SRO	If containment pressure goes above Tech Spec limit then evaluate placing all 4 VL AHUs in high speed.	
	BOP	Check seal leakoff on all NC pumps – LESS THAN 6 GPM.	

Event 6: Charging Line Leak

Time	Pos.	Expected Actions/ Behavior	Comments
	BOP	Check NC pump thermal barriers intact. • NC pump thermal barrier KC outlet flow **computer alarms**– NORMAL • KC Surge tank level – NORMAL • 1EMF46A – NORMAL • 1EMF-46B - NORMAL	
	SRO	Go To Step 17.	
	SRO	Check leak – Suspected on letdown line near demineralizers.	**NO go to Step 19.**
	SRO	Check leak – Known to be on normal letdown line.	**NO, go to Step 21.**
	SRO	Check leak – Known to be on VCT	**NO, go to Step 23**
	SRO/ BOP	Check leak – Known to be on Normal Charging line downstream of 1NV-244A	
	BOP	Isolate leak as follows: a. Close letdown isolation valves: • 1NV-458A • 1NV-457A • 1NV-35A • 1NV-1A and 1NV-2A b. Isolate Charging: • CLOSE 1NV-244A and 1NV-245B • Manually throttle 1NV-238 to maintain 6-10 gpm seal injection flow c. Check leak isolated. d. Establish excess letdown per G-1 e. Go to step 30	**See next page for place excess letdown in service.**
	SRO	Ensure RP notified of size and location of leak.	
	SRO	Contact station management to evaluate need to shutdown.	
	SRO	Check unit shutdown required	**NO, go to Step 35**
	SRO	When leak less than Tech Spec limits, then: • Check VCT INTACT • Check NV pump suction aligned to VCT • Evaluate OAPT status • Evaluate VL AHU status	**Tech Spec 3.4.13**
		Once excess letdown is in service and AP complete start steam leak	

Time	Pos.	Expected Actions/ Behavior	Comments
		Placing excess letdown in service per G-2	
	BOP	Check KC system alignment a. Containment pressure has remained less than 3 psig. b. All KC pumps – ON • Ensure 1KC-230A and 1KC-3A CLOSED • Ensure 1KC-18B and 1KC-228 OPEN c. Open the following valves: • 1KC-305B and 1KC-315B d. Check containment pressure – HAS REMAINED LESS BELOW 3 PSIG. Place 1NV-27A to "VCT" position	
	BOP	Place 1NV-27A to "VCT" position	
	BOP	Open 1NV-26 Wait 2 minutes Close 1NV-26	
	BOP	Check the following valves – OPEN • 1NV-94AC • 1NV-95B	
	RO	Check reactor - SUBCRITICIAL	
	BOP	Open 1NV-24B and 1NV-25B	
	BOP	Slowly open 1NV-26 while maintaining excess letdown HX temperature less than 200 degrees	
	SRO	Notify Chemistry excess letdown is in service	
	SRO	Notify engineer to document transients – when time allows	
	SRO	Return to procedure and step in effect.	

Event 7: Steam Leak Requiring Shutdown

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	May reference AP-01 Steam Leak	Ice condenser doors open Containment pressure increasing Rods moving out
	RO	a. Trip reactor d. Go to E-0 Reactor Trip or SI	Crew will trip reactor at some point based on conditions

Event 7: Steam Line Break Inside Containment

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	Enters E-0	
	Crew	Monitors Foldout page	
* **Critical to open bkr**	RO	Check Reactor Trip: • rod bottom lights • reactor trip breakers open • I/R amps decreasing	**Immediate Action** 'A' RTB will not open – must dispatch someone to open to reset SI
	RO	Check Turbine Generator tripped • TV's closed	**Immediate action**
	BOP	Check ETA and ETB energized	**Immediate action**
	RO	Check SI status light - LIT	**Immediate action**
	BOP	Check LOCA sequencers (A & B) actuated	**Immediate action**
	SRO/ RO	Announce "Unit 1 Safety Injection" on page	
	BOP	Checks ESF Monitor Light Panel • Groups 1,2 and 5 DARK • Group 3 LIT • Checks OAC in service	
	BOP	Checks Group 4, Rows A thru F LIT as Required	**NO, ensure both trains of Phase A aligned or equipment started go to step 7.f**

Event 7: **Steam Line Break Inside Containment**

Time	Pos.	Expected Actions/ Behavior	Comments
	BOP	Check LOCA Sequencer Actuated status light on energized train(s) - LIT	
	BOP	Check the following on Monitor Light Panel Group 4 LIT • C-3 • C-6 • F-4 • F-5	
	RO	Checks CA is running and at least 3 S/G's NR level > 17%	
	BOP	Checks KC pumps running	
	BOP	Checks RN pumps running	
	RO BOP	Monitor affected RN cooled components and shut down as necessary.	
	SRO	Directs Unit 2 Operator to throttle RN to minimum & start 2A RN pump	**EXAMINER CUE:** • 2A RN pump is running
	RO	Checks all S/G pressures > 775 psig	Probably NO at this time as the 'B' S/G depressurizes a. Check the following closed: • All MSIVs • All MSIV bypass valves • All SM PORVs b. If any valve open, THEN: • Initiate Main Steam Isolation • If any valve still open, then close valve.

Event 7: **Steam Line Break Inside Containment**

Time	Pos.	Expected Actions/ Behavior	Comments
	BOP	Checks Containment pressure has remained less than 3 psig	NO • Check Monitor light group 4, row G lit. • Stop all NC pumps while maintaining seal injection flow • Ensure all RV pumps are in manual and off • Energizr H2 igniters by depressing ON and OVERRIDE • Dispatch an operator to stop all Unit 1 NF AHUs • When time allows, check Phase B HVAC equipment per Enclosure 2
	BOP	Checks NV Pump to Cold Leg Flow gauge - indicating flow - YES checks NC pressure < 1600 psig	NO, will ensure ND mini-flow valves are open Go to step 15
	SRO	When available notifies OSM or other SRO to implement Generic Enclosure 22	**EXAMINER CUE:** **OSM will ensure Generic Enclosure 22 implemented.**
	RO	• Checks CA flow > 450 gpm and takes control of CA to maintain no load levels • checks VI header pressure > 60 psig • Maintains N/R level between 32% and 50%	
	BOP	Checks NC pumps ON and Tave stable or trending to 557 degrees OR If all NC pumps off, THEN check NC T-colds – STABLE OR TRENDING TO 557.	If not stable and decreasing crew will go to Enclosure 3 **ENCLOSURE 3 is included after the foldout pages in the script.**
	BOP	Checks Pzr PORV & Spray Valves closed	
	RO	Checks subcooling > 0 deg.	
	RO	Checks all main steam lines INTACT • All S/G pressure – STABLE OR GOING UP • All S/G - PRESSURIZED	If any S/G is faulted, THEN: a. Implement F-0 b. GO TO E-2 Faulted Steam Generator Isolation.

FR-Z-1 Response to High Containment Pressure

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	IF loss of emergency coolant recirc has occurred, THEN this procedure may be completed as time allows.	
	CREW	Monitor foldout page	
	BOP	Stop all NC pumps.	
	BOP	Ensure all RV pumps are in manual and off.	
	SRO	Dispatch operators to remove white tags and close the following breakers; • 1EMXA-R2A • 1EMXB1-6B	**LOA for 1NI-173A and 1NI-178B**
	SRO	Check containment pressure less than 15 psig.	
	SRO	Check any NS pump on - YES	
	SRO	Perform the remainder of this procedure as time allows.	
	SRO	Should exit this procedure and go to E-2.	

E-2 Faulted Steam Generator Isolation

Time	Pos.	Expected Actions/ Behavior	Comments
	CREW	Monitor foldout page	
	CREW	Maintain at least one S/G available for NC System cooldown in subsequent steps.	
	CREW	Maintain any faulted S/G secondary break isolated during subsequent recovery actions unless needed for NC System cooldown.	
	RO	Check the following – CLOSED • MSIVs • MSIV bypass valves	
	RO	Check at least one S/G pressure – STABLE OR GOING UP	
	RO	Identify faulted S/G • Any S/G pressure – GOING DOWN IN AN UNCONTROLLED MANNER OR • Any S/G – DEPRESSURIZED	**'B' is faulted**
	RO	Check faulted S/G – SM PORV - CLOSED	
	RO	Reset CA modulating valves.	
	CREW	If TD CA pump is the only source of feedwater, THEN maintain steam flow to if from at least on S/G.	
	RO * **Critical Task**	Isolate faulted S/G as follows: b. For 1B S/G 1. Check 'S/G B FDW ISOLATED" status light – LIT 2. Close 1CA - 54A 3. Close 1CA - 58A 4. Dispatch operator to unlock and close: • 1SA-2 • 1SA-78 5. Check BB valves – CLOSED • 1BB-2B • 1BB-6A 6. Close 1SM-89	**LOA SA—003** **Set = 0**

E-2 Steam Line Break

Time	Pos.	Expected Actions/ Behavior	Comments
	RO	Close 1AS-12	
	BOP	Check S/G tubes intact	
	CREW	Check S/I termination criteria: A NC subcooling based on core exit T/Cs – GREATER THAN 0° F B. Secondary heat sink C. NC pressure – STABLE OR GOING UP D..Pzr level – GREATER THAN 29% GO TO ES 1.1 Safety Injection Termination	The crew may go to E-1 Loss of Secondary Coolant for a few steps. However, they will ultimately end up in SI termination.

ES 1.1 Safety Injection Termination

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	Monitor foldout page	
	BOP	Reset the following: a. S/I b. Sequencers c. Phase A isolation d. Phase B isolation	Delete AUTO reactor trip if not already done 30 seconds after requested.
	CREW	If at any time a B/O signal occurs, then restart S/I equipment previously on.	
	BOP	Establish VI to containment. a. Open the following • 1VI-129B • 1VI-160B • 1VI-150B b. Check VI header pressure – GREATER THAN 85 PSIG.	
	SRO	Check is NS pumps should be stopped: a. Any NS pump - ON	NO, go to Step 5 If yes, perform Step 4 • Containment pressure – LESS THAN 2 PSIG • Check is LOCA inside containment has occurred NO go to step 4.e • Check operating NS pumps suctions ALIGNED TO FWST • Check operating NS pumps(s) – HAVE REMAINED RUNNING SINCE INITIAL PHASE B ISOLATION SIGNAL • Reset Containment Spray • Stop NS pumps • Close the following: • 1NS-29A and 1NS-32A • 1NS-15B and 1NS-12B

	BOP	Stop all but one NV pump.	
	BOP	Check NC pressure – STABLE OR GOING UP	
	BOP	Isolate NV S/I flowpath: a. Check NV pump – SUCTION ALIGNED TO FWST b. Check NV pumps miniflow valves – OPEN: • 1NV-150B • 1NV-151A c. Close the following valves: 1NI-9A 1NI-10B	

TERMINATE SCENARIO ONCE 1NI-9 AND 1NI -10 ARE CLOSED

E-1 Loss of Reactor or Secondary Coolant

Time	Position	Expected Actions/ Behavior	Comments
	CREW	Monitor foldout page.	
	RO	Check NC subcooling based on core exit thermocouples – GREATER THAN 0 DEGREES	
	RO	Check if main steamlines intact: • All S/G pressures stable or going up • All S/G - pressurized	**S/G B previously isolated by E-2**
	RO	Control intact S/G levels: • Check N/R level in any intact S/G – greater than 32% • Check VI header pressure – greater than 60 psig. • Throttle feed flow to maintain between 32 and 50% level	
	BOP	Check secondary EMFs normal: • EMF 334 • EMFs 24,25,26 and 27	
	BOP	Check Pzr PORVs and isolation valves • Power to all Pzr PORV isolation valves – available • All PZR PORVs – closed • At least one PZR PORV isolation valve - OPEN	NO, recheck actions already performed.
	CREW	Check S/I termination criteria: A NC subcooling based on core exit T/Cs – GREATER THAN 0° F B. Secondary heat sink C. NC pressure – STABLE OR GOING UP D..Pzr level – GREATER THAN 29% GO TO ES 1.1 Safety Injection Termination	

UNIT 1 STATUS:

Power Level: 100% NCS [B] 76 ppm Pzr [B]: 76 ppm Xe: Per OAC

Power History: At this power since startup Core Burnup: 485 EFPDs

CONTROLLING PROCEDURE: OP/1/A/6100/03 Controlling Procedure for Unit Operation

OTHER INFORMATION NEEDED TO ASSUME TO SHIFT:

"1A" Diesel Generator tagged for PM.
"1A" Motor Driven Auxiliary Feedwater Pump is white tagged for oil sample.
Unit 2 is available for Auxiliary Steam
Offsite power verification completed one hour ago.

Thunderstorms are in the area.

Maintain present plant conditions

Work Control SRO/Offsite Communicator **Jim**

Plant SRO **Joe**

NLO's AVAILABLE

Unit 1	**Unit 2**
Aux Bldg. John	**Aux Bldg. Chris**
Turb Bldg. Bob	**Turb Bldg. Mike**
5th Rounds. Carol	

Extra(s) Bill Ed Wayne Tanya

Appendix D, Rev. 9 **Scenario Outline** **Form ES-D-1**

Facility: McGuire Scenario No.: 2 Op-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: 90% Power, 'B' Train Components in Service, '1A' Auxiliary Feedwater Pump is tagged, '1A" Diesel Generator is tagged

Turnover: Turbine Valve Movement Test is complete. Increase load to 100%.

Event No.	Malf. No.	Event Type*	Event Description
1		I	(RO) Power Range 41 Fails High **TS**
2		C	(RO) Feed Reg Valve Controller Fails go to Alternate Control
3		I	(BOP) Charging Flow Transmitter Fails Low
4		C	(RO/BOP) EKVA Breaker Opens (Inverter Output Breaker) **TS**
5		N	(RO) Load Reduction due to Steam Generator Tube Leak / Rods fail to move in auto
6		R	(BOP) Boration due to Steam Generator Tube Leak
			(CREW) Steam Generate Tube Leak requiring shutdown **TS**
7		M	Steam Generator Tube Rupture 'C' S/G
			'C' S/G MSIV will not close – Crew must use S/G PORVs to Cooldown
			Failure of Phase 'A' Train 'A' in automatic
			1NV-222 will not open automatically on Safety Injection signal.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

PROGRAM: McGuire Operations Training

MODULE: Initial License Operator Training Class 23

TOPIC: Nuclear Regulatory Commission Simulator Exam

Scenario 2

REFERENCES:

1.	McGuire Technical Specifications	
2.	OP/1/A/6100/003	Controlling Procedure for Unit Operation
3.	AP/1/A/5500/004	Rapid Downpower
4.	AP/1/A/5500/010	NC System Leakage Within Capacity of both NV Pumps
5.	AP/1/A/5500/016	Malfunction of Nuclear Instrumentation
6.	AP/1/A/5500/006	S/G Feedwater Malfunction
7.	AP/1/A/5500/015	Loss of Vital or Aux Control Power
8.	EP/1/A/5000/E-0	Reactor Trip or Safety Injection
9.	EP/1/A/5000/E-3	Steam Generator Tube rupture
10.	RP/O/A/5700/000	Classification of Emergency

Author: _____

Facility Review: _____

March 12, 2007
Rev. 2

EVENT SUMMARY

1. Power Range N-41 Fails
2. Feed regulating valve controller failure
3. Charging Flow transmitter fails
4. Loss of Vital Power EKVA
5. Load reduction due to steam generator tube leak.
6. SGTL. Enter AP-10
7. Manual Rx Trip and SI. Enter E-0
8. Implement F-0 and Go to E-3 from E-0 step 21

SIMULATOR OPERATOR INSTRUCTIONS

—	Bench Mark	ACTIVITY	DESCRIPTION
☐	Sim. Setup	**Rod Step On**	
☐		**IC - 132**	
☐		**RUN**	
☐		**Update** Status Board, **Setup OAC** **Setup** ICCM, Turbine Displays, & Trend Recorders. **Check** Rod Step Counters agree with rod positions	See Shift Turnover Information
☐		**(M) EPQ-001A** **Set = Insert**	Loss of D/G "1A" Control Power
☐		**(LOA) CA-009** **Set = Rack Out**	Rack out breaker for "1A" Auxiliary Feedwater Pump
☐		**(MALF) SM-006C** **Insert**	'C" MSIV will not close on ruptured S/G
☐		**(M) ISE-003A**	Phase A Train A isolation fails to actuate automatically
☐		**(M) NV-010B**	1NV-222B Will not open automatically
☐		**(M) IRE-010B8** **(M) IRE-010F2**	Control Rod B8 stuck Control Rod F2 stuck

	Bench Mark	ACTIVITY	DESCRIPTION
☐		**Set the following to Trigger 5:** **ANN: AD12-B03 Set = OFF** **ANN: AD12-B04 Set = OFF**	
☐			
☐		**Freeze.**	
☐		**Update Fresh Tech. Spec. Log.**	
☐		**Fill out the NLO's Available section of Shift Turnover Info.**	
☐	Prior to Crew Briefing	**RUN**	
☐	**Crew Briefing** 1. Assign Crew Positions based on evaluation requirements 2. Review the Shift Turnover Information with the crew. 3. Direct the crew to Review the Control Boards taking note of present conditions, alarms.		
☐	T-0	Begin Familiarization Period	
☐	At direction of examiner	**(MALF) ENB013B** **Set = 200** **Trigger 1**	Fails Power Range N41 High Voltage
☐	At direction of examiner	**(MALF) IFE009A1** **Ramp 10** **Delay 10** **Severity 100** **Trigger 2**	S/G 'A' Feedwater Controller Failure – Normal fails
☐	At direction of examiner	**(XMT) NV044** **Set = 0** **Ramp 30** **Delay 10** **Trigger 3**	Fails Charging Line flow transmitter

	Bench Mark	ACTIVITY	DESCRIPTION
☐	At direction of examiner	**(MAL) EPL003A** **Insert** **Trigger 4**	Loss of vital power
☐	1EVIA Actions per AP	**Set the following to Event Trigger 8:** **LOA: IPE007** **Set = Door Open** **ANN-AD02-E01** **Set = AS IS** **Delay = 5 sec** **ANN-AD02-C-7** **Set = AS IS** **Delay = 5 sec** **ANN-AD02-C-6** **Set = AS IS** **Delay = 5 sec** **Activate Trigger 8** **Delete MAL – EPL003A** **DELETE:** **(M) ANN-AD02, E-1, C-6, & C-7** **and** **Activate Trigger 5** **Close Door** **IPE007** **Set = Door Closed**	5 minutes after being dispatched to battery room, report to the CR that 'AC Output NO.1" located on 1EVIA Manual Bypass switch is open. There is no apparent reason why it tripped and no visible damage. • Simulates IAE activities in **Step 1 of Encl 10**. • Notify CR, breakers are opened to SSPS and Prot. Cab 1. • As NLO, notify CR that the "AC Output NO.1" breaker on 1EVIA Manual Bypass switch panel is 'TRIPPED" and will close per AP-15 guidance. • Simulates restoring power to 1EKVA. • Inform CR that the breaker is closed and voltage on 1EKVA is 120v and IAE need to complete step 8 of Encl 10. • Simulates closing breakers in SSPS cabinet after EVIA breaker is closed in • Clears annunciators for SNSWP and Lo and Lo Levels. • **This simulates results of IAE actions per step 8 of Encl 10**
☐	At direction of examiner	**(MALF) SG-001C** **Set 40** **Ramp 300**	Initiates a S/G tube leak on 'C' steam generator

	Bench Mark	ACTIVITY	DESCRIPTION
		Trigger 6	
☐	At direction of examiner or at 80% power	**(MAL) SG-001C** **Set = 430**	Will increase tube leak after load reduction has commenced.
☐		**(MAL) EP-002A** **(MAL) EP-002B** **Trigger 7** **Set event trigger 7 to Train A Safety Injection**	Initiates a U1 LOOP when Safety Injection is initiated
☐			
☐	**Terminate the scenario upon direction of Chief Examiner**		

EVENT: Load Increase After Turbine Valve Movement Test

Time	Pos.	Expected Actions/ Behavior	Comments
	Crew	Reviews requirement of OP	
	RO	Enters load increase into DEH panel	
	BOP	Dilutes as required	

EVENT 1: **Power Range N-41 Fails High**

Time	Pos.	Expected Actions/ Behavior	Comments
	RO	Recognizes Power Range N-41 failure.	Annunciators on **1AD-2**: A-1, A-3, A-8, B-1, B-3, C-8
	SRO	Implements AP-16, (Case 3) Malfunction of Nuclear Instrumentation.	
	RO	Place control rods in Manual. (**Immediate Action**)	
	RO	Check S/G levels at program level.	
	RO	Announce occurrence on the page.	
	RO	Check P/R channels – ONLY ONE CHANNEL FAILED	
	RO	Position "PR TO S/G PROGRAM LEVEL CHANNEL DEFEAT" switch to defeat inoperable channel.	
	RO	Secure any power increase in progress.	
	RO	Check interlocks in required state: • P-7 • P-8 • P-10	
	BOP	Perform the following actions at the 'MISCELLANOUS CONTROL AND INDICATION PANEL" drawer • Rod stop bypass • Power mismatch bypass	
	BOP	Perform the following actions at the "DETECTOR CURRENT COMPARATOR" drawer. • Upper Section to failed channel position • Check defeat light for upper section - LIT • Lower Section to failed channel position • Check defeat light for lower section - LIT	

EVENT 1: Power Range N-41 Fails High

Time	Pos.	Expected Actions/ Behavior	Comments
	BOP	Perform the following actions at the "COMPARATOR AND RATE" drawer. • Place the "COMPARATOR CHANNEL DEFEAT" switch to the failed channel position. • Check the "COMPARATOR DEFEAT " light - LIT	
	BOP	Trip bistables of failed channel. Remove fuses	
	RO	Check the following status lights for the failed channel – LIT • "NUC OVERPOWER ROD STOP" • P/R HI FLUX LO STPT • P/R HI FLUX HI STPT • P/R HI FLUX RATE	
	RO	Check the following annunciator lights – LIT • "P/R HI VOLTAGE FAILURE • P/R HI FLUX HI STPT ALERT • P/R HI FLUX RATE ALERT	
	RO	Check the following status lights on 1SI-18 – LIT • P/R LO SETPOINT TRAIN A TRIP BLOCKED • P/R LO SETPOINT TRAIN B TRIP BLOCKED	
	RO	If desired return reg valves to AUTO.	
	RO	Ensure operable P/R channel selected to record on NIS recorder	

EVENT 1: **Power Range N-41 Fails High**

Time	Pos.	Expected Actions/ Behavior	Comments
	RO	Adjust control rods to maintain T-ave at T-ref.	
	RO	WHEN T-ave within 1 degree of T-ref and auto rod control is desired, then return control rods to AUTO.	
	SRO	Have IAE trip bistables within 6 hours. • OPDT • OTDT	
	RO	WHEN IAE competes Step 19, THEN check status light for affected P/R For P/RT 41 • NC LOOP A OPDT RX TRIP • NC LOOP A OTDT RX TRIP	
	SRO	Contacts WCC to write WR, have I&E repair PR 41	**Failure will not be repaired**
	SRO	Evaluates Tech Specs: **T.S 3.3.1.2** **3.3.1.3** **3.3.1.6** **3.3.1.16b** **3.3.1.16c** **3.3.1.16d** **3.3.1.7**	

Event 2: Feed Reg Valve Failure

Time	Pos.	Expected Actions/ Behavior	Comments
	BOP	Refer to annunciator responses for **1AD-4** • A-1, B-1, C-1	
	SRO	Enters AP/06 Loss of S/G Feedwater	
	RO	Places Feed Regulator to Manual Restores S/G level to program level	***Immediate Action*** ***Must go Alternate Control***
	RO	If CF pump speed control has failed, THEN: • Adjust affect CF pump(s) in "OCS MAN" • Adjust CF pump speed as necessary to restore S/G levels to program.	***Immediate Action***
	RO	Checks the following channel indicating the same: • Feed flow • Steam Flow • S/G Level	
	RO	Checks the reactor trip breakers closed > P-11	Yes
	SRO	If at any times S/G NR level approaches 17% or 83% then: • Trip reactor • Go To E-0 Reactor Trip	
	RO	Announce occurrence on the page.	
	RO	Check Reactor power > 3%.	
	BOP	Check CM/CF feeding S/G	
	RO	S/G level stable or trending to program	
	BOP	Checks NC temperature with NC pumps on stable or trending to programmed temperature	
	RO	Check all S/G CF control valves – IN AUTO. NO. Go to RNO.	
	RO	When levels restored to program, places the S/G CF Control valves back in Auto	
	RO	Check all S/G CF control bypass valves – IN MANUAL AND FULL OPEN.	

Event 2: Feed Reg Valve Failure

Time	Pos.	Expected Actions/ Behavior	Comments
	RO	Check both CF pumps – IN AUTO.	
	RO	Check all CA pumps - OFF	
	SRO	Contacts WCC to have WR written, valve and evaluate T.S. Exit procedure	**Failure will not be repaired** **No Tech Specs.**

Event 3: Charging Flow Transmitter Failure

Time	Pos.	Expected Actions/ Behavior	Comments
	BOP	Recognizes reduced charging flow indication	***Annunciator 1AD-7, G-2*** ***NV-238 will be opening***
	CREW	Refers to Annunciator response for AD-7 G-2	
	BOP	Take manual control of normal charging	
	SRO	Call WCC SRO	
		NOTE: The following steps apply ONLY if this failure was misdiagnosed and letdown was isolated.	**IF letdown was NOT isolated, go to Event 4 (Loss of EKVA) at Examiner's discretion.**
	SRO	Implements AP/12, Loss of Letdown, Charging, or Seal Injection	
	CREW	Determines loss of charging has NOT occurred.	
	BOP	Reports PZR level < 96%	
	BOP	Reports annunciator 1AD-7, I-2 is dark.	
	RO	Stops power change if applicable	
	RO	Announce occurrence on page	**U2 can make page if asked.**
	SRO	Determines AP entered due to loss of letdown and goes to step 36	
	BOP	Ensures letdown isolations (NV-457A, NV-458A and NV-35A) are closed	
	BOP	Ensures charging flow going down to maintain PZR level	
	BOP	Reports 1AD-7, I4 has remained dark.	
	BOP	Reports NV-21A closed	
	BOP	Operates PZR heaters as needed	
	BOP	Reports NV-1A and 2A open	
	SRO	Goes to step 48 to restore normal letdown	**Insert Trigger 4 (Loss of EKVA) at examiner's discretion.**

Event 4: EKVA Failure

Time	Pos.	Expected Actions/ Behavior	Comments
	CREW	Recognizes a loss of Channel 1	Numerous annunciators. **Channel 1 Status lights lit**
	SRO	Implements AP/15, Loss of Vital or Aux Control Power	
	RO	If channel 1 failed THEN place control rods in manual. If controlling S/G channel failed, THEN: • Place affected CF control valves in manual. • Restore S/G levels to program. • Go to Step 3.	**Immediate Actions**
	RO	Ensure the following switches are selected to operable channel on each S/G. • Feed Flow • Steam Flow • S/G Level	
	SRO	Check ND in RHR Mode	NO, Go to Step 7
	BOP	Check all Pzr pressure channels indicated the same. NO, if controlling channel malfunctioning then: • Place Pzr pressure master in manual • Adjust Pzr Master output to 50% • Place PZR PRESS CNTRL SELECT" switch to backup switch. • Place "PZR PRESS MASTER" in AUTO as desired.	
	BOP	Check all Pzr level channels indicated the same NO. • Place Back-up channel in service • Reduce charging to minimum while maintaining 6 gpm per pump • Pzr at program level. • Energize Pzr heaters as desired.	

Event 4: EKVA Failure

Time	Pos.	Expected Actions/ Behavior	Comments
	RO	Check MSIVs - OPEN	
	RO	Check all CF control valves – IN AUTO	
	SRO	Check Vital AC panelboard 1EKVA energized. NO • Dispatch NLO to 1A D/G room with Encl 30 • Establish letdown or excess letdown • If VCT reaches 16%, align NV pump suction to FWST.	SRO should hand off Enclosure 1 to the BOP to establish normal letdown.
	SRO	Check Vital AC panelboard 1EKVD energized.	
	SRO	Check KXA energized.	
	BOP	Reports Battery Chargers are running.	
	SRO	Check all Vital DC panelboards energized as follows: • OAC in service • The following energized EVDA, EVDB, EVDC, EVDD • GO TO Step 31.	
	SRO	Check Vital AC panelboards energized: **1EKVA – NO** Announce on page Go to Step 33	**U2 will make announcement if requested**
	SRO	Dispatch an operator to perform the following while continuing in this procedure. • Determine the cause of the alarm • Restore power to 1EKVA per Enclosure 10.	
		ENCLOSURE 10	***Simulator runner: See instructions on how to restore EKVA***
	SRO	Dispatch IAE to open breakers in 7300 cabinets.	
	SRO	Ensures breakers are open before restoring power to 1EKVA.	

	SRO	On 1EVIA Manual Bypass switch panel check closed "AC OUTPUT TO NO. 1" breaker – CLOSED **NO**, Directs NLO to close breaker Go to step 8	
	SRO	Dispatch IAE to close breakers in 7300 cabinets & SSPS cabinets	
	SRO	Exit enclosure and returns to Step 34 in body of procedure	
	SRO	Go to Step 81	
	BOP	Check EMF Trip II alarms - RESET	
	BOP	Restores 1EMF 38, 39 and 40 to service	
	BOP	Establishes VQ flowpath	
		Tech Spec 3.8.7 A.1 3.8.9 B.1	
		NLO should reclose any breakers previously opened per enclosure	
		Steam generator tube leak begins now.	

Event 5: SG Tube Leak on "C" S/G

Time	Pos.	Expected Actions/ Behavior	Comments
	Crew	Recognizes symptoms of SG Tube Leak	**Annunciators:** **1RAD1** **D-1, D-2, D-3** **B-1, C-1** **1RAD3** **E-5**
	SRO	Enters AP-10 Case 1	
	RO	Checks PZR level Stable or going up NO.	
	BOP	Performs the following • Charging flow <175 gpm • Ensures 1NV-238 opening • Open 1NV-241 maintain 6 gpm seal flow • Isolate letdown • Start 1A NV pump	With 40 gpm leak, starting 2nd NV pump is NOT expected.
Critical	SRO	IF PZR level going down with max Charging flow Direct Tripping of Reactor and ensure S/I initiated.	NO
	CREW	Identifies "C" S/G as ruptured	EMF-73 Trip 2 (comes in first and higher than others) EMF-26 in Trip 2 and higher than the others
	SRO	Refer to RP/000	
	SRO	Determines leak exceeds Tech Spec limits. Ensure OAPFT put in service per the OP, Encl 4.4 Directs another SRO to evaluate SLC 16.9.7	**U2 RO will place OAPFT in service.** **Another SRO will evaluate SLC 16.9.7**
	CREW	Check if unit shutdown required: Determines leak < 90 gpm (less than VCT makeup capability) Determines greater than T.S. 125 gpd	
	SRO	Implements AP/04, Rapid Downpower	

EVENT 6: Load Reduction due to Tube Leak AP-04

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	Implements AP-04	SRO may implement AP-04 Rapid down power or may choose a power level to go to.
	Crew	Monitor Foldout page Announce occurrence on page	
	RO	Check turbine control – IN AUTO	
	RO	Check MW loop in service.	NO, will depress MW IN pushbutton.
	SRO	Check shutdown to Mode 3 desired. **NO** GO TO Step 8	
	SRO	Determines shutdown via rx trip at 15% is appropriate.	
	BOP	Enters target load of 180 MWe	
	SRO	Determine the required power reduction per table	Be in Mode 3 in 3 hrs. Power change of 90%: SRO will probably choose reduction rate of 10-72 MW / minute.
	RO	Reports control rods – IN AUTO	
	Crew	Notify SOC of load reduction	
	RO	Initiate load reduction	
	BOP	Borates NC system per table	Opens and closes NV-265B as directed by the OP.
	RO	Reports control rods moving in as required.	
	RO	Monitors Rod Insertion Limits on OAC Adhere to T.S. 3.1.6 if Rod Lo Lo Limit alarms	
	RO	Reports Impulse pressure greater than 260 psig	
	SRO	Directs OSM to refer to RP/000 and RP/10	
	CREW	Notifies Rx Engineering of load reduction	

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	Checks if U2 available to supply Aux Steam	
	SRO	Dispatches NLO to ensure Aux Steam valves are open.	
	SRO	Holds at procedure step 24 until reactor power < 40%	**When power at 80% OR examiner's discretion, increase SG leak to 430 gpm.**
Critical	SRO	Direct Tripping of Reactor and ensure S/I initiated.	**WHEN the reactor is tripped, go to the next event.** IF the SRO returns to AP/10 Step 1 RNO g. prior to directing reactor trip and SI continue on this page.
	SRO	From AP/10, step 1 RNO g.: IF PZR level going down with max Charging flow: Dispatches 2 operators to isolate steam supply to "C" S/G per Enclosure 3 of AP/10 Direct Tripping of Reactor and ensure S/I initiated.	**Insert:** **LOA SA-002 = 0** **Report back in 2 minutes that 1SA-1 and 1SA-77 are closed.**

Event 7: SGTR on "C" S/G E-0 Evaluation

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	Enters E-0	
	Crew	Monitors Foldout page	
	RO	Check Reactor Trip: • rod bottom lights • reactor trip breakers open • I/R amps decreasing	*Immediate action* All rod bottom lights will not be lit due to 2 rods being stuck out. Per RNO RO will trip Reactor and SRO and RO should determine the Reactor is tripped.
	RO	Check Turbine Generator tripped • TV's closed	*Immediate action*
	BOP	Check ETA and ETB energized	*Immediate action – NO, ETA is de-energized*
	RO	Check SI status light - LIT	*Immediate action*
	BOP	Check LOCA sequencers (A & B) actuated	*Immediate action – NO "A" train LOCA sequencer not actuated.*
	SRO/ RO	Announce "Unit 1 Safety Injection" on page	
	BOP	Checks ESF Monitor Light Panel • Groups 1,2 and 5 DARK • Group 3 LIT - **NO** • Checks OAC in service	**BOP should manually open NV-222B**
	BOP	Checks Group 4, Rows A thru F LIT as Required NO – go to RNO YES, go to Step 8	Auto actuation of Phase A was blocked BOP will • ensure both trains Phase A Isolation are initiated **BOP may have done this earlier.**
	BOP	Step 7.g. Reports the following on Monitor Light Panel Group 4 are now LIT • C-3 • C-6 • F-4 • F-5	
	RO	Step 8: Checks CA is running and at least 3 S/G's NR level > 17%	

Time	Pos.	Expected Actions/ Behavior	Comments
	BOP	Checks KC pumps running	
	BOP	Checks RN pumps running	
	SRO	Directs Unit 2 Operator to throttle RN to minimum & start 2A RN pump	**EXAMINER CUE:** • 2A RN pump is running
	RO	Checks all S/G pressures > 775 psig	
	BOP	Checks Containment pressure has remained less than 3 psig	
	BOP	Checks NV Pump to Cold Leg Flow gauge - indicating flow - YES checks NC pressure < 1600 psig Ensure ND mini-flow (ND-67B) open Go to Step 15	
	SRO	When available notifies OSM or other SRO to implement Generic Enclosure 22	**EXAMINER CUE:** **OSM will ensure Generic Enclosure 22 implemented.**
	RO	• Checks CA flow > 450 gpm and takes control of CA to maintain no load levels • checks VI header pressure > 60 psig • Maintains N/R level between 11% and 50%	
	BOP	Checks NC pumps OFF and T-cold stable or trending to 557 degrees	If not stable and decreasing SRO may hand off to RO to complete Enclosure 3.
	BOP	Checks Pzr PORV & Spray Valves closed	
	RO	Checks subcooling > 0 deg.	
	RO	Checks all main steam lines INTACT	
	RO/ BOP	Report S/G tube rupture parameters indicate that S/G tubes NOT intact	PER RNO Implement F-0 and Go to E-3
	SRO	Implement CSF Status Trees and go to E-3	

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	Enter E-3	
	CREW	Monitor foldout page	
	RO	Identify "C" as the ruptured S/G	
	RO	Check at least one S/G - AVAILABLE FOR NC SYSTEM COOLDOWN	
Critical	RO	Isolate steam flow from ruptured S/Gs as follows: • checks ruptured S/G PORV closed • check S/G 1B and 1C INTACT **(NO)** • check 1BB-3B and 1BB-7A Closed **(NO)** • close 1SM-95	Dispatch operator to close 1SA-1 and 1SA-77. May have been performed earlier in AP/10. **LOA SA-002 = 0**
Critical	RO / SRO	Close the following on ruptured S/Gs: • MSIV **(NO)** • MSIV bypass valve MSIV on 'C" will not close. RO will have to close other MSIVs. • Initiate MSI • Reset MSI and SM PORVs • Off/Rest on dumps • Locally close valves per Enclosure 3 Close SM-14, SM-15, AS-12, TL-3. Local dispatch if valves have not power.	
Critical	RO	Checks ruptured S/G NR levels greater than 11% Isolates feed flow to "C" S/G • Close 1CA-50B • Close 1CA-46B	
	RO	Check closed on ruptured S/G • MSIV • MSIV bypass valve	**NO**
	RO	Check ruptured S/G pressure – GREATER THAN 280 PSIG.	
	BOP	Check any NCP running	**NO**
	BOP	Check Pzr Pressure – GREATER THAN 1955 PSIG. (If no, block lo press steamline isol)	

Time	Pos.	Expected Actions/ Behavior	Comments
	RO & BOP	Initiate a NC system cooldown as follows: Determine required core exit temperature based on lowest ruptured S/G pressure. Check: • COND AVAILABLE FOR STEAM DUMP" status light – LIT **(NO)** • MSIV on intact S/Gs OPEN **(NO)** – go to RNO for Step 10.f	
Critical	RO & BOP	Ensure PORV isolation open If Pzr pressure is greater than 1955 psig, then depressurize to 1900 psig using Pzr PORV. Depress "BLOCK" on low pressure steam line isolation block switches Maintain NC pressure less than 1955 psig. Ensure Main Steam Isolation reset. Ensure S/G PORVs reset. Dump steam using all intact S/Gs PORVs at maximum rate as follows: • Close S/G PORV manual loader on ruptured S/G • Place intact S/G PORV manual loaders at 50% • Select "MANUAL" on "SM PORV MODE SELECT" • Adjust manual loader on intact S/G PORVs as required to control intact S/G depressurization rate at approximately 2 psig per second. Check low pressure steamline isolation – BLOCKED Check core exit T/Cs – less than required temperature.	T/C's will be greater than required temperature, so the SRO will continue in the procedure while RO continues to dump steam.
	RO	Control intact S/G levels (22-50%)	
	BOP	Checks Pzr PORV and isolation valves	
	BOP / SRO	Resets: S/I, Sequencers, Phase 'A' SRO dispatches operator to open "A" train DC sequencer control power	**MAL EQB-002A**

Time	Pos.	Expected Actions/ Behavior	Comments
	BOP	Establish VI to containment Opens 1VI-129B, 1VI-160B and 1VI-150B Check header pressure > 85 psig	
	BOP	Check is NC System cooldown should be stopped as follows: • CETCs less than required temperature • Stop cooldown	Procedure hold point until CETCs less than required temperature.
	RO	Check ruptured S/G pressure – STABLE OR GOING UP	
	RO	Check NC subcooling based on CETCs greater than 20 degrees.	
	BOP	Depressurize NC System • Check ruptured S/G NR level less than 73% • Check normal spray available **(NO)** • Initiate depressurization using max spray • If spray becomes ineffective then use PORV. (go to step 19) Do not continue until any of the following conditions are satisfied. • NC Subcooling < 0 • PZR level >76% OR • NC pressure < ruptured S/G pressure & PZR level > 11% Close PORV Check NC pressure – GOING UP.	Normal spray not available due to no reactor coolant pumps.
	CREW	Checks for S/I termination criteria 1. NC subcooling greater than 0 degrees 2. Secondary heat sink 3. NC pressure – stable or going up 4. Pzr level greater than 11%	
	BOP	Stop NI pumps and one NV pump	
	BOP	Check NV pump suction aligned to FWST Open 1NV-150B & 1NV-151A Close 1NI-9A &1NI-10B	
Terminate Scenario			

SHIFT TURNOVER INFORMATION

UNIT 1 STATUS:

Power Level: 90% NCS [B] 99 ppm Pzr [B]: 99 ppm Xe: Per OAC

Power History: 90% Turbine Valve Movement Complete Core Burnup: 485 EFPDs

CONTROLLING PROCEDURE: OP/1/A/6100/03 Controlling Procedure for Unit Operation, Enclosure 4.4 Step 3.3.25

OTHER INFORMATION NEEDED TO ASSUME TO SHIFT:

Increase load to 100%.
"1A" Diesel Generator tagged for PM.
"1A" Motor Driven Auxiliary Feedwater Pump is white tagged for PM
Unit 2 is available for Auxiliary Steam
Thunderstorms are in the area
Offsite Power Verification PT completed one hour ago

Increase load to 100%.

Work Control SRO/Offsite Communicator **Jim**

Plant SRO **Joe**

NLO's AVAILABLE

Unit 1	Unit 2
Aux Bldg. John	**Aux Bldg. Chris**
Turb Bldg. Bob	**Turb Bldg. Mike**
5TH Rounds. Carol	
Extra(s) Bill Ed Wayne	**Tanya**

NOT USED

Appendix D, Rev. 9 **Scenario Outline** **Form ES-D-1**

Facility: McGuire Scenario No.: Spare Op-Test No.: _____

Examiners: _____ Operators: _____

Initial Conditions: 75% Power, 'B' Train Components in Service, '1A' Auxiliary Feedwater Pump is tagged, '1A' Diesel Generator is tagged

Turnover: Increase Power at 2 Mw/minute to 100%

Event No.	Malf. No.	Event Type*	Event Description
1		N	(RO) Increasing Load to 100%
2		R	(BOP) Dilution
3		I	(BOP) VCT Level Channel I Fails Low
4		C	(RO) Voltage Regulator Failure
5		C	(BOP) Trip "B" Cond Booster Pump with Failure of Standby Pump to Start
6		C	(RO) Feedwater Pump Trip/Failure of the Turbine to Runback in Automatic
7		M	ATWS/Loss of Heat Sink **(TS)**
			'B' Motor Driven Auxiliary Feedwater Pump trips
			Turbine Driven Auxiliary Feedwater Pump trips
			Reactor Trip Breakers will not open from the Control Room
			Steam Generator PORV opens – must close block valve

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

PROGRAM: McGuire Operations Training

MODULE: Initial License Operator Training Class 23

TOPIC: NRC Simulator Exam

Scenario SPARE

REFERENCES:

1.	McGuire Technical Specifications	
2.	OP/1/A/6100/003	Controlling Procedure for Unit Operation
3.	AP/1/A/5500/05	Generator Voltage and Electric Grid Disturbances
4.	AP/1/A/5500/03	Load Rejection
5.	EP/1/A/5000/E-0	Reactor Trip or Safety Injection
6.	EP/1/A/5000/FR-S-1	Response to Nuclear Generation/ATWS
7.	EP/1/A/5000/FR-H.1	Loss of Heat Sink
8.	RP/0/A/5700/000	Classification of Emergency
9.	OP/1/A/6100/010	Annunciator Response procedures

Author: _____

Facility Review: _____

March 12, 2007
Rev. 2

EVENT SUMMARY

1. VCT Level Channel fails low.
2. Voltage regulator failure.
3. "B" Cond Booster Pump trips. Standby pump fails to auto-start.
4. 1A Feedwater pump trip. Turbine fails to runback automatically. Must manually close the governor valves per AP-03
5. High temperature and thrust bearing wear on 1B Main Feedwater Pump. Pump trips, resulting in reactor trip signal.
6. Reactor fails to trip from the Control Room. Enter FR-S.1
7. CA pumps trip, resulting in loss of Heat Sink. Enter FR-H.1

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
☐	Sim. Setup	**Rod Step On**	
☐		**IC - 135**	
☐		**RUN**	
☐		**Update** Status Board, **Setup OAC** **Setup** ICCM, Turbine Displays, & Trend Recorders. **Check** Rod Step Counters agree with rod positions	See Shift Turnover Information
☐		**(M) CA 009B** **(M) CA 005**	"B" CA pump trips on overcurrent TDCAP trips
☐		**(M) IPE 001A** **(M) IPE 001B** **(M) IPE 002A** **(M) IPE 002B**	Failure of the reactor trip breakers to open from the control room.
☐		**(M) DEH 002B6**	Blocks automatic turbine runback.
☐		**(MALF) EPQ001A**	'A' D/G tagged out
☐		**(LOA) CA009**	'A" CA pump racked out
☐		**(MALF) SM002A** **Set 100** **Trigger 6**	S/G PORV Fails Open **Insert when ATWS occurs.**

	Bench Mark	ACTIVITY	DESCRIPTION
☐		**Freeze.**	
☐		**Update Fresh Tech. Spec. Log.**	
☐		**Fill out the NLO's Available section of Shift Turnover Info.**	
☐	Prior to Crew Briefing	**RUN**	
☐	**Crew Briefing** 1. Assign Crew Positions based on evaluation requirements 2. Review the Shift Turnover Information with the crew. 3. Direct the crew to Review the Control Boards taking note of present conditions, alarms.		
☐	T-0	Begin Familiarization Period	
☐	At direction of examiner	**(XMT) NV-001** **Severity = 0** **Ramp 5** **Trigger 1**	VCT Level Channel 1 fails low. Auto makeup starts
☐	At direction of examiner	**(PLP) PLP-014** **Set = 207** **Trigger 2**	Voltage Regulator Failure MVAR increases to 751
☐	At direction of examiner	**(XMT) CM-024** **Severity = "as is"** **Trigger 3** **(OVR) CM-048C** **Set = ON** **Trigger 3** **Activate Trigger 3** **WHEN 1C CBP is manually started, delete:** **(XMT) CM-24**	1B CBP trips. 1C CBP fails to auto start (due to failed CF Pump suction pressure transmitter)

	Bench Mark	ACTIVITY	DESCRIPTION
	When plant stabilizes and at direction of examiner	**(MAL) LF-003A**	Trips 1A CF Pump causing a runback. Turbine fails to runback in auto.
☐	At direction of examiner	**(XMT) LF 003B** **Trigger 4 - ALL** **(XMT) LF 0046** **Set 240** **(XMT) LF066** **Set 260** **(XMT) LF 060** **Set 260**	High temperature on 1B CF pump bearings
☐	At direction of examiner	**(MALF) LF 003B** **Trigger 5**	1B CF pump trips.
	Wait at least 2 minutes after FWPT trip **AND** 30 seconds after directed to locally trip the reactor.	**DELETE the following malfunctions:** **(M) IPE 001A** **(M) IPE 001B** **(M) IPE 002A** **(M) IPE 002B**	Locally trips the reactor.
☐	At direction of examiner	**(MALF) SM002A** **Set 100** **Trigger 6**	Fails open S/G PORV **Insert when ATWS occurs.**
☐			
☐	**Terminate the scenario upon direction of Chief Examiner**		

Events 1 & 2 Increase Load per OP/1/A/6300/003 Controlling Procedure for Unit Operation

Time	Pos.	Expected Actions/ Behavior	Comments
	RO	Put load increase in DEH	
	BOP	Will dilute per OP	
	SRO	Provide oversight	

Event 3: VCT Level Channel 1 Fails Low

Time	Pos.	Expected Actions/ Behavior	Comments
	BOP	Recognizes auto makeup to VCT	**Annunciator 1AD-7, D-3**
	RO	May stop turbine load increase	
	SRO / BOP	Refers to ARP. Determines level channel failure and stops auto makeup. Per ARP for AD-6, F12: Refer to OP/1/A/6150/09 to control makeup flow manually.	**Annunciator 1AD-6, F12.**

Events 4: Voltage Regulator Failure

Time	Pos.	Expected Actions/ Behavior	Comments
	RO	Recognizes increase in generator MVARs	
	SRO	Implements AP/05	
	SRO	Announce occurrence on page	**U2 may make announcement if requested.**
	SRO	Implements Encl 1 (Abnormal Generator or Grid voltage)	
	RO	Reports generator tied to grid	
	CREW	Monitors Generator Capability Curve (Enclosure 4)	
	CREW	Determines that MVARs exceeds Generator Capability Curve	
	RO	Reduces MVARS by pressing "LOWER" on "Voltage Adjust"	
	RO	Reports MVARs within limits of capability curve.	
	SRO / RO	Checks status of voltage regulator Dispatches NLO to check for local alarms Contacts dispatcher to check status of grid	
	RO	Monitors Generator Bearing 10 vibration on OAC	
	SRO	Contacts Engineer and Maintenance for guidance	**Eng and Maint will determine next course of action and will contact you.**
	RO	Reports Voltage Regulator in AUTO	
	SRO	IF notified by TCC that RTCA would be inadequate, THEN:	This step is Not applicable
	RO	When generator voltage is stable, adjusts bus voltage per the Data Book Operating Schedule.	
	SRO	Exits the AP	

Events 5: 1B Condensate Booster Pump trip with failure of 1C CBP to auto start

Time	Pos.	Expected Actions/ Behavior	Comments
	RO / BOP	Recognize secondary transient Per ARP, one possible cause is feed supply failure.	**AD-4, C1, C2, C3, C4 momentarily flashes.** The ARP does not provide actions to deal with tripped booster pump. **Also, OAC alarm on Low CBP discharge header pressure.**
	BOP	Manually start 1C CBP	Will start per Ops management expectations – auto action that didn't occur. Will cause the following annunciators: **1AD-5, H4, H5** **1AD-8, B6**
	CREW	Will monitor the plant to ensure it stabilizes	

Event 6: Feedwater Pump Trips with Failure of Turbine to Runback in Automatic

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	Enters AP-03 Load Rejection	**Annunciator:** **1AD-5, A1**
	RO	Ensures Control Rods in Auto	***This is an immediate action step.***
	RO	Check Turbine Generator Tied to Grid and output going down. NO Reduce load in fast action until impulse pressure is 400-410 psig. Go to Step 3	NO, RO will have to reduce turbine load in manual by closing the governor valves.
	RO	Checks Control rods moving in as required & aligned with associated bank.	
	BOP	Checks proper CM system operation: • Standby Hotwell and Condensate Booster pumps RUNNING • 1CM-420 – OPEN	BOP must manually start standby Hotwell pump. Standby CBP isn't available due to previous failure.
	RO	Ensures impulse pressure < 410 psig	
	RO	Announce occurrence on page.	**U2 may make announcement if requested.**
	RO	Check P/R meters less than 20%	No
	SRO	Designates an operator to continuously monitor reactor power and go to step 9.	
	RO	Checks condenser dump valves modulating open	
	BOP	Check 'IPB AIR FLOW TROUBLE' alarm 'DARK'	
	BOP	Check Pzr pressure control response • Ensure Pzr heaters are in auto • Pzr Spray control valves are in auto • Pzr PORVs – CLOSED • Pzr spray control valves - CLOSED	
	RO	Check load rejection – DUE TO LOSS OF CF PUMP.	

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	Dispatch operator as necessary to determine cause of CF pump trip.	
	RO	Ensure running CF pump properly responds in AUTO as follows: • Monitor discharge pressure • Monitor S/G NR levels	At this time bearing temperature and thrust bearing wear alarms will start to come in on running pump.
	RO	Check turbine impulse pressure – LESS THAN 260 PSIG	NO
	SRO	Will have to make decision to trip other FWPT based on high bearing temperature and thrust bearing wear annunciator. This will start the ATWS/Loss of Heat Sink event.	

Event 7: ATWS with a loss of Heat Sink

	Pos.	Expected Actions/ Behavior	Comments
	Crew	Recognizes ATWS	
	SRO	Goes to E-0	
	RO	Checks Reactor trip: • All rod bottom lights LIT • Reactor trip and bypass breakers OPEN • I/R amps – Going Down	RO should attempt to trip reactor using switches.
	SRO	Recognizes reactor did not trip and implements F-0 and goes to FR-S.1	
Critical	RO	Checks Reactor trip: • All rod bottom lights LIT • Reactor trip and bypass breakers OPEN I/R amps – Going Down	Manually inserts rods
	RO	Checks turbine trip: • All throttle valves closed • All governor valves closed	Manually trips turbine if not already done.
	Crew	Monitors fold out page	
	BOP	Checks proper CA pump status: • MD CA pumps – ON • Check N/R level in at least 3 S/Gs greater than 17%	1A Tagged out 1B tripped on overcurrent TD CA tripped on over speed
	BOP	Initiates emergency boration of NC system: • Ensures one NV pumps ON • Opens 1NV-265B • Starts both boric acid transfer pumps • Checks emergency boration flow > 30 gpm • Checks 1NV-244A and 1NV-245B OPEN • Checks Pzr pressure < 2335 psig	
	BOP	Close 1VQ-1A,1VQ-6A,1VQ-2B & 1VQ-5B	

	Pos.	Expected Actions/ Behavior	Comments
	SRO	If an S/I signal exists or occurs perform Encl. 3	
	SRO	Checks the following trips have occurred: • Reactor trip • Turbine trip **If less than 5% will go to step 17 in BOLD at bottom of page.**	Dispatches operator to open: • Reactor trip breakers • Reactor trip bypass breakers • M/G Set Generator Breakers • M/G set Motor Breakers
	RO	Controls S/G levels: • Checks NR level in at least one S/G > 11% • Checks VI header pressure > 60 psig • Throttles feed flow to maintain S/G NR level between 11% and 50%	If CA flow is less than 700 gpm, then start pumps and align valves as required. Maintain total CA flow greater than 700 gpm until at least on S/G NR level greater than 11%
	BOP	Checks all dilution paths ISOLATED • Places NC System M/U controller to OFF • Places Reactor Makeup water pumps to STOP	
	RO	Checks steam lines intact: • All S/G pressures – Stable or Going UP • All S/G pressurized	If any S/G depressurized or pressure going down in an uncontrolled manner ensure the following closed: • All MSIVs • All MSIV bypass valves
	BOP	Checks NC T-colds – Stable or Going UP	
	RO	Checks Core Exit T/Cs < 1200 degrees	
	SRO	Checks the reactor subcritical: • P/R channels < 5% • I/R SUR – NEGATIVE • W/R Neutron Flux < 5%	Yes
	SRO	**Calls chemistry to obtain current boron concentration**	**STEP 17**
	SRO	Refers to RP/000 Classification of Emergency	
	SRO	Return to procedure and step in effect.	Due to RED Path on Heat Sink goes to H-1.
	SRO	Goes to FR-H.1	
	Crew	Determines feed flow is less than 450 gpm but not due to operator action	

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	Checks to see if heat sink is required: • NC Pressure > greater than any non-faulted S/G pressure • Any NC T-hot – greater than 350 degrees	Yes
	Crew	Monitor foldout page	At this point in the scenario Feed and Bleed criteria may be met. **Feed & bleed steps are on page 17**
Critical	SRO	IF Feed and Bleed Criteria met go to step 20 From foldout page criteria.	
	BOP	Check at least one of the following NV pumps – AVAILABLE: • 1A NV Pump • 1B NV Pump	
	RO	Check if NC system feed and bleed should be initiated: • Check W/R level in at least 3 S/Gs – LESS THAN 24%	NO, go to step 6. **IF** feed & bleed criteria met, these steps are described on page 17 of this guide.
	RO	Ensure S/G BB and NM valves closed Per Enclosure 3.	
	RO	Attempt to establish CA flow to at least one S/G as follows: • Check power to both motor driven pumps – AVAILABLE • Ensure control room CA valves aligned per Enclosure 4. • Start all available CA pumps. • Check TD CA pump running. • Check total flow to S/G(s) – GREATER THAN 450 GPM	GO TO Step 8.
	RO	Check steam dumps: "STEAM DUMP SELECT" - IN T-AVE MODE. Perform the following: 1. Ensure 'STM PRESS CONTROLLER" setpoint at 1092 psig. 2. Place "STM PRESS CONTROLLER" in manual. 3. Adjust "STM PRESS CONTROLLER" output to equal "STEAM DUMP DEMAND" signal. 4. Place "STEAM DUMP SELECT" in steam pressure mode. 5. Place "STM PRESS CONTROLLER" IN auto.	
	BOP	Stop all NC pumps.	

	RO	Reset Feedwater Isolation as follows: Check the following alarms – DARK: • 1AD-5, G-6 Inner Doghouse Level Hi • 1AD-5, H-6 Outer Doghouse Level Hi Dispatch operator to block Feedwater Isolation signal PER Enclosure 6. Check S/I – HAS BEEN ACTUATED	***INSERT 5 MINUTES AFTER REQUESTED*** **MALF ISE 007A** **MALF ISE 007B** **BLOCK BOTH** Allows reset of FW Isolation
	BOP	Check CM System in service: • Hotwell pumps – ON • Condensate Booster pumps – ON • Check CF pumps – AT LEAST ONE AVAILABLE TO START	NO, go to step 15.
	BOP	Depressurize Pzr to less than 1905 PSIG as follows: • Check Pzr pressure – GREATER THAN 1905 PSIG. • Ensure pressure is maintained above 1845 PSIG until Pzr S/I signal is blocked in step 16. • Check normal letdown in service. • Depressurize Pzr to less than 1905. • Close Pzr spray valves. • Open 1NV-21A • Close 1NV-13B and 1NV-16A • Turn off Pzr heaters • Raise charging flow up to 200 GPM.	
	BOP	Block Pzr S/I actuation circuit and Low Pressure Steamline Isolation • Check P-11 status light – LIT • Depress 'BLOCK' on Pzr S/I block switches. • Depress 'BLOCK' on Low Pressure Steamline block switches. • Designate operator to control Pzr pressure per Enclosure 8.	

Time	Pos.	Expected Actions/ Behavior	Comments
Critical	RO	Attempt to establish feed flow from CM system as follows: • Check hotwell pumps – AT LEAST 2 PUMPS ON • Check condensate booster pumps – AT LEAST 2 PUMPS ON • Check 'CF Header Pressure" – GREATER THAN 500 PSIG. • Depressurize at least one S/G to less than 5000 PSIG in the following steps. • Close MSIV on S/Gs not to be depressurized. • Check condenser available. • Place 'STM PRESS CONTROLLER' in manual. • Check 'STEAM DUMP SELECT' – IN STEAM PRESSURE MODE. • When P-12 LO LO TAVG status light lit – then place steam dumps in bypass interlock. • When S/G pressure is less than 500 PSIG, then stabilize pressure less than 500 psig. • Close the following valves CF-35,30,28,26 • Place the following in manual and close manual loaders for all CF control and bypass valves. • Depress and release the Feedwater Isolation reset pushbuttons. • Check feed and bleed established. – NO` • Align feed flow: • Open Valves on S/G to be feed. • Throttle open SF control bypass valve for S/G to be fed. • Check if Step 17.q or 17.r – IMPLEMENTED – NO go to stepp17.w • Check feedwater flow to depressurized S/G – FLOW INDICATED. - YES	
Terminate Scenario When Feed Flow has been established to one S/G			

Feed & Bleed steps of FR-H.1 (starting at step 20)

Time	Pos.	Expected Actions/ Behavior	Comments
	SRO	Perform steps 21-25 quickly to establish Feed & Bleed	
	BOP	Ensures all NC pumps are off	
	BOP	Initiates S/I	
	BOP	Reports "NV PMP TO COLD LEGS FLOW" indicating flow.	
	BOP	Establishes NC bleed path as follows: Reports PORV isolations open Opens 2 PORVs Aligns N_2 to PORVs from CLAs	
	BOP	Reports 2 PORVs and isolation valves open	
	BOP	Isolates NV recirc flowpath	
	BOP	Turns off PZR heaters	
	SRO	Directs one of the ROs to perform Enclosure 9 (Subsequent S/I actions) while continuing in FR-H.1	**If asked, U2 is NOT available to perform Enclosure 9.**
	CREW	Maintain heat removal by maintaining feed & bleed path	
		Resets S/I and sequencers	
		Reports containment pressure < 3 psig	
		Establishes VI to containment by opening 1VI-129B 1VI-160B 1VI-150B	
	SRO	Check containment H_2 Dispatches NLO to place H_2 Analyzers in service per Encl 5.	
	BOP	Reports NS pumps not on.	
	RO	Closes CA flow control valves	
	SRO	Returns to step 10 to establish Heat Sink with CF or CM	

Note to Examiner: Be sure SRO classifies event at end of scenario.

UNIT 1 STATUS:

Power Level: 75% NCS [B] 1136 PPM Pzr [B]: 1136 PPM Xe: Per OAC

Power History: Returning to power after repair of FWPT Core Burnup: 250 EFPDs

CONTROLLING PROCEDURE: OP/1/A/6100/03 Controlling Procedure for Unit Operation Enclosure 4.1 Step 3.28.

OTHER INFORMATION NEEDED TO ASSUME TO SHIFT:

"1A" Diesel Generator tagged for PM.
"1A" Motor Driven Auxiliary Feedwater Pump is white tagged for oil sample.
Unit 2 is available for Auxiliary Steam.

Thunderstorms are in the area.

Crew will perform the following:

Increase power at 2 MW/min to 100% power.

Work Control SRO/Offsite Communicator **Jim**

Plant SRO **Joe**

NLO's AVAILABLE

Unit 1	**Unit 2**
Aux Bldg. John	**Aux Bldg. John**
Turb Bldg. Bob	**Turb Bldg. Greg**
5th Rounds. Carol	
Extra(s) Bill Ed Wayne Tanya	