FINAL SUBMITTAL

HARRIS EXAM
50-400/2004-301

FEBRUARY 23 - 27,2004
& MARCH 4,2004 (WRITTEN)

FINAL AS GIVEN
OPERATOR ACTIONS

F.1.g - FORM ES-D-2
OPERATOR ACTIONS

Facility: HARRIS Scenario Number: 1 Op-Test Number: I

Examiners | Operators

Initial Conditions: Reset to saved IC-164 (based on IC-32): 26% power MOL;
Run CAEP "ile2004scenario1"; CAEP includes the following intial setup items:

- AFW Pump A-SA OOS (CFW026 RACK–OUT; CFW1 13 CP_OFF)
- EVENT 7 -Reactor 'Tripfailure (RPS01B 3 3)
- EVENT 8 - AFW Pump 'B' hip (CFW1B)
- EVENT 9 - ICs-292 (LCV-I15B) RWST to CSIPs failed shut AND ICs-291 (LCV-I15D) RWST to CSIPs fail to auto open on SI or lo-lo VCT level (CVC21A 0; ZRPK701B FAIL_ASIS; ZRPK602B FAIL–ASIS)

Ensure the following:

- DEH HOLD button is illuminated
- DEH Demand window @ 195
- Both Demand Counters on Bank D @ 108 steps
- ICE-2791 ICE-284 in OFF
- Hoth Condensate Pumps in service
- One Condensate Booster Pump in service
- Reactivity Plan is provided
- Marked up copy of GP-005 to Step 118 with Step 93 noted *to* indicate maintenance in progress on Condensate Booster Pump B and all other steps marked off, including Step 14 metal temps of 350°F, Step 15 load rate 3 DEH Units, and Step 60 time of 1 how ago
- e Red Bar placed on ALB-01-6-5, ESF SYS TRN A BYPASSED OR INOPERABLE

Turnover:

The unit is at 26% power at MOL, 8 hours following a reactor startup. The plant tripped approximately 20 hours ago (12 hours before startup).

Boron concentration is 1166 ppm. Bank D rods are at 108 steps

AFW Pump 'A' was taken out of service 2 hours ago for oil replacement due to contaminants and is expected to he returned to service within the next 2 hours. 'Technical Specification 3.7.1.2 has been entered. Risk level is YELLOW.

The Hot Start pushbutton on the MSRs was depressed 1 hour ago.

PMs were performed on Condensate Booster Pump R and have been completed. The pump is ready to be placed in service. An Auxiliary Operator is standing by to start the Condensate Booster Pump. All prestart checks to start the pump are complete.

Shift orders are to place Condensate Rooster Pump B in service and continue the power ramp to 90% power and restore AFW Pump 'A'to service when it becomes available. GP-005 is being performed per Step 5.0.118.

OSI-PI is not available.

Event Number	Malfunction Number	Event 'hype*	Event Description
1	NA	N (BOP) N (SRO)	Place Second Condensate Booster Pump in service
2 (TRG E1)	I(!OR LT:459 (none *0* 0) 100 0	! (RO) I (SRO)	**Pressurizer Level** high **failure**
3 (TRG E2)	ICOR LT:486 (none 0 0) 0 0	I (BOP) I (SRO)	SG Level Low Failure
4 (TRG E3)	IMF RCS06A 650 0 Asls	I (KO) I (SRO)	Median Tavg high failure
5 (TRG E4)	IMF CND03 18 *0* Asls	C (BOP) C (SRO) R (RO)	Partial Loss of Condenser Vacuum *NOTE: INITIATE THIS EVENT DURING PERFORMANCE OF EVENT 4 AS NOTED IN BODY OF SCENARIO DUE TO TIME UNTIL THIS EVENT IS NOTED BY AVAILABLE CUES. THIS EVENT WILL ALSO REQUIRE SIMULATOR OPERATOR TO ADJUST SEVERITY.*
6 (TRG E5)	IMF MSS01C 8e+06 20:00 Asls	M (ALL)	Steam Break Inside Containment
7	RPS01B 3 3	M (ALL)	Reactor Trip failure *NOTE: INSERT MALFUNCTION DURING INITIAL SETUP OF SIMULATOR.*
8	CFW1B	C (BOP) C (SRO)	AFW Pump 'B trip ***NOTE: INSERT MALFUNCTION DURING INITIAL SETUP OF SIMULATOR.***
9	CVC21A 0 ZRPK701B FAIL ASIS ZRPK602B FAILASIS	C (RO) C (SRO)	1CS-292 (LCV-115B) RWST to CSIPs failed shut AND 1CS-291 (LCV-115D) RWST to CSIPs fail to auto open on SI or lo-lo VCT level *VOTE; MULTIPLE EVENTS REQUIRED. INSERT*

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

SCENARIO NUMBER: 1 **EVENTNUMBER:** 1 FACILITY: **Harris**

EVENT DESCRIPTION: **Place Second Condensate Booster Pump in service**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	CUE	***Shift orders direct placing a second Condensate Booster Pump in service***
	HOP	Verify Initial Conditions of OP-134, Section 5.6.1 1. One Condensate Booster Pump is in **service** per **Section** 5.5 of OP-134 2. Condensate Booster Pump B Lock-Out Relay reset Reviews CAUTION: **To** prevent damaging the CBP recirc valves. **do** not operate the second Condensate Booster Pump for more than 1.5 hours with MFP suction flow **less** than 4500 kpph. 3. **Total** feedwater **flow** is greater than 4500 kpph 4. CPD Operator and Chemistry have been notified of potential **flow** and **pressure** changes in the Condensate System.
	BOP	Direct AO to perform **prestart** checks on Condensate Booster **Pump B** per Attachment 6
	BOP	Verify CONDENSATE BOOSTER PUMP B RECIRC, ICE-261 in MODU and shut
	BOP	Reviews CAUTIQN: **There** are no Condensate Booster Pump **trips** *to* protect the pump from running without seal water.
	BOP	Place PK-2308 (PK-2307) CNDST **MSTR** PUMP B SPEED CONTROLLER to MAN and zero the demand signal.
	BOP	Verify open 1CE-268, CONDENSATE BOOSTER PUMP B DISCHARGE
	BOP	Reviews NOTE: Computer points listed in Section 6.0 of this **procedure may be** monitored for information. Reviews NOTE: When the Condensate Booster Pump control switch is placed **to** the START position, the Aux Lube Oil Pump **will start and supply** the **VSF** Coupling with oil until oil pressure is greater than or **equal** to 20 psig, **at** which time the Condensate Booster Pump starts.

COMMENTS:

SCENARIO NUMBER: 1 PVENTNUMBEK: ! FACILITY: **Harris**

EVENT DESCRIPTION: **Place Second Condensate Train in vice (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	BOP	Reviews CAUTION: The amount of time the associated recirc valve, 1CE-261 is open, should be minimized due to lack of lubrication without Condensate Booster Pump running
	BOP	Place the control switch **CONDFNSATE** BOOSTER PUMP B RECIRC 1CE-261 in the OPEN position immediately prior to starting Condensate Booster Pump B
	BOP	Reviews NOTE: Starting the second Condensate Rooster Pump may cause the previously running pump controller to reject to Manual. This is due to the speed sensor on the pump being started initially providing a speed input signal that is based on electrical noise. If the running CBP controller rejects to manual, it is permissible to return the controller to Auto once the CBP being started reaches the no-load speed. If the controller again rejects to manual, then further investigation would be required.
	BOP	Start B Condensate Booster Pump
	BOP	Directs AO to locally verify Condensate Booster Pump A Aux Lube Oil Pump has stopped
	BOP	Directs AO to check differential pressure across the Pall Replaceable Duplex Filter, as indicated between PI-01LO-2304B1 and PI-01LO-2304B2 is less than 15 PSI. IF differential pressure across the Pall Replaceable Duplex Filter is greater than or equal to 15 PSI. then direct AO to swap to the idle/out of service filter per Section 8.13. (Otherwise this Step is N/A)
	BOP	Slowly increase the demand signal on PK-2308. CNDST BSTR PUMP B SPEED CONTROLLER to match the demand signal on the previously running Condensate Booster Pump Speed Controller
	BOP	Place PK-1308, CNDST BSTR PUMP B SPEED CONTROLLER to AUTO when the demand signals are matched
	BOP	Place the control switch for CONDENSATE BOOSTER PUMP B RECIRC, 1CE-261 in the MQDU position
	BOP	Direct AO to that after 5 to 10 minutes ofrunning, verify the VSF coupling oil level is in the normal operating range

COMMENTS

SCENARIO NUMBER: 1 EVENT NUMBER: 2 FACILITY: **Harris**

EVENT DESCRIPTION: **Pressurizes Level high failure**
(TRG E1) ICOR LT:459 (none 0 0) 100 0

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	SRO RO	**Diagnose high failure** of **controlling** PRZ **level control channel, LT-459** • LI-459 **indicating** 100% • PRZ backup **heaters all** energized • Charging flow decreasing on FI-122A.1 • PRZ CONT HIGH LEVEL DEVIATION AND HEATERS **ON (ALB-009-2-1) alarming** • PRESSURIZER HIGH LEVEL ALERT (ALB-009-4-2) **alarming**
	SRO	Directs taking manual control of charging and increasing **flow**
	KO	Takes manual control of **charging** (CS-231, FK- 122.1 **CHARGING** FLOW) and **increases flow to maintain** PRZ level
	SRO	Enters and **directs the** performance of OWP-RP
	RO	Selects channels **460146**1 on PRZ Level Control Selector **(may select per ALB-309-4-1 or -4-2)**
	SRO	Directs tripping appropriate bistables
	RO	**Restores** charging (CS-231, FK-122.1 CHARGING FLOW) **and places** in automatic, if **desired**
	SRO	Refers to **TS 3.3.1** (6 hr), 3.3.3.5.a (7 day) and 3.3.3.6 (7 day) for **PRZ level channel failure**
	SRO	**Initiates repairs**

COMMENTS:

SCENARIONUMBER 1 EVENTNUMBER: 3 FACILITY: Harris

EVENT DESCRIPTION: SG Level Low Failure
(TRG E2) ICOR LT:486 (none 0 0) 0 0

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	SRO BOP	Diagnose low failure of controlling SG 'B' level channel • SG B NR LVL/SP HI/LO DEV (ALB-14-2-1B) alarming • SG 'B' level, LI-486 SB, indicating 0% • SG B FW > STM FLOW MISMATCH (ALB-14-5-1A) alarming • SG 'B' feed flow > steam flow • SG 'B' feed reg valve opening • SG 'B' level rising on operable SG level channels
	SRO	Enter and direct the actions of AOP-010, Feedwater Malfunctions
	SRO BOP	(IMMEDIATE ACTION) Check any Main Feedwater Pump tripped
	SRO BOP	(IMMEDIATE ACTION) Check initial Reactor power Less than 90%.
	SRO BOP	(IMMEDIATE ACTION) Check initial Reactor power less than 80%.
	SRO BOP	Check initial Reactor power less than 60%.
	BOP	Check DEH controlling Turbine Valves properly.
	BOP	Maintain all of the following: ■ At least one Main Feedwater Pomp running Main Feedwater flow to all Steam Generators ■ ALL Steam Generator levels greater than 30%
	BOP	Check Feedwater Regulator Valves NOT operating properly in AUTO and perform the following: • Place applicable Feedwater Regulator Valve (PK-488) in MANUAL • Maintain Steam Generator levels between 52 and 62% (REDUCE FW FLOW)
		NOTE: FK-488 will be in MANUAL for the remainder of the scenario.
		CRITICAL STEP TO PREVENT PLANT TRIP AS A RESULT OF HIGH-HIGH SG LEVEL.
	BOP	Check Main Control Room annunciators available

COMMENTS:

SCENARIO NUMBER: 1 EVENT NUMBER: 3 FACILITY: Harris

EVENT DESCRIPTION: SG Level Low Failure (CONTINUED)

TIME	POSITION	APPLICANTS ACTIONS OR BEHAVIOR
	SRO	Check the following Pump status: • If any Feedwater Train Pumps tripped, go to Step 11 NOTE: ONLY A FW PUMP IS OPERATING AT THIS TIME
	SRO	Go to the applicable section: • All Condensate/Feedwater flow malfunctions (other than pump trips) Section 3.1
	BOP	Check the following Recirc and Dump Valves operating properly in MODE: • Main Feedwater Pumps • Condensate Booster Primps • Condensate Pumps • ICE-293, Condensate Recirc • ICE-142, Condensate Dump To CST Isolation Valve
	BOP	Check the Condensate and Feedwater System intact
	SRO	Reviews NOTE: Pumps should be stopped in the order of higher to lower pressure. (To stop a Condensate Pump, stop a Main Feedwater Pump followed hy e Condensate Booster Pump and then the Condensate Pump.)
	BOP	Check pumps for normal operation.
	BOP	Notify Load Dispatcher of any load limitations.
	SRO	Check Reactor thermal power changed by less than 15% in any one hour period
	SRO	Exit AOP-010
	SRO	Refer to OWP-RP for SG 'B' level failure (SG 'B' Level)
	SRO	Refers to TS 3.3.1 (Items 13 and 14) - 6 hour requirement to trip bistables
	SRO	Initiate repairs

CUMMENIS:

SCENARIO NUMBER 1 EVENTNUMBER: 4 **FACILITY Harris**

EVENT DESCRIPTION: **Median Tsvg high failure (IRG E3) IMF RCS06A 650 0 AsIs**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	SRO RO	Diagnose high failure of RCS Median Select Tavg circuit • Rods inserting • TR-408 Red Pen at max output • RCS LOOPA/B/C TAVG HI/LO DEV (ALB-010-6-3A/7-3A/8-3A) all alarming • RCS TREF/TAVG HIGH-LOW (ALB-010-6-4B) alarming • PRESSURIZER CONTROL LOW LEVEL DEVIATION (ALB-009-2-2) alarming Charging flow FI-122A.1 increasing • FK-122 output increasing
	SRO	Enter and direct the actions of BOP-001, Malfunction of Rod Control and Indication System
	SRO	(IMMEDIATE ACTION) Check that < 2 control rods are dropped (IMMEDIATE ACTION) Position Rod Bank Selector Switch to MAN ACTION) Check Control Rank motion stopped
	SRO	Go to the appropriate section: • Section 3.2, Continuous Spurious Control Bank Motion
	no	Manually operate affected control hank to restore the following: ■ Equilibrium power and temperature conditions • Rods above the insertion limits of Tech Spec 3.1.3.6 and PLP-106, Technical Specification Equipment List Program and Core Operating Limits Report.
	SRO	Refers to Tech Spec 3.2.5 for DNBR Parameters due to pressure dropping below limit
	SRO	Directs restoration of Tavg band (± 5°F)

COMMENTS:

SCENARIO NUMBER: 1 EVENT NUMBER: 4 FACILITY: **Harris**

EVENT DESCRIPTION: **Median Tavg high failure (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
BOOTH OPERATOR		**NOTE: EVENT 5 (PARTIAL LOSS OF CONDENSER VACUUM) SHOULD BE STARTED WHEN T-AVG IS WITHIN 3-4°F OF T-REF. PROMPT THE LEAD EVALUATOR WHEN THIS CONDITION IS MET.**
	SRO RO	Check that instrument channel failure has not occurred by observing the following: • RCS Tavg • RCS Tref • Power Range NI channels • Turbine first stage pressure
	SRO RO	Verify proper operation of the following: • CVCS demineralizers • BTRS • Reactor Makeup Control System
	SRO	Check that this section was not entered due to control banks moving out and go to Step 6
	SRO RO	Check that neither of the following occurred: • Unexplained RCS boration • Unplanned RCS dilution
	SRO RO	Check that an automatic Rod Control malfunction occurred
	NO	Maintain manual rod control until appropriate corrective action is complete
	SRO	Exit this procedure

COMMENTS:

SCENARIO NUMBER: 1 **EVENTNUMBER: 5** **FACILITY: Harris**

EVENT DESCRIPTION: **Partial Loss of Condenser Vacuum**
(TRG E4) IMF CND03 18 0 As15

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	SRO BOP	Diagnoses lowering main condenser vacuum • Decreasing Condenser vacuum indication on MCB • CNDSR PRE TRIP LOW VACUUM alarm (ALB-020-2-4A) alarming
	SRO	Enters and directs the actions of AOP-012, Partial Loss of Condenser Vacuum
	BOP	Check Turbine in operation
	BOP	Check Condenser pressure in both Zones less than: • 5.5 inches Hg absolute and Turbine first stage pressure is greater than 60% turbine load - OR - • 5 inches Hg absolute and Turbine first stage pressure is less than 60% turbine load
	SRO BOP	Reduce Turbine load as necessary to maintain Condenser vacuum using one of the following: • GP-006, Normal Plant Shutdown from Power Operation to Hot Standby • AOP-038, Rapid Downpower
	BOP	Continue Turbine load reduction until directed otherwise by Unit SCO based on the following: • Cause of vacuum loss identified and corrected • Vacuum stable or increasing • Plant conditions require Reactor or Turbine trip
BOOTH OPERATOR		**NOTE TO SIMULATOR OPERATOR: AS SOON AS TURBINE LOAD HAS BEEN LOWERED IN RESPONSE TO LOWERING VACUUM, REDUCE MALFUNCTION SEVERITY TO 5.** **SEVERAL MINUTES AFTER REDUCING MALFUNCTION, REPORT AS AO THAT AIR INLEAKAGE WAS APPARENT CAUSE AND ICE-475, CONDENSER VACUUM BREAKER, HAS BEEN FULLY CLOSED. NOISE LEVEL IN AREA HAS DECREASED SUBSTANTIALLY. AFTER MAKING THIS REPORT, REMOVE THE MALFUNCTION.**

COMMENTS:

SCENARIO NUMBER: 1 EVENT NUMBER: 5 FACILITY: Harris

EVEN?'DESCRIPTION Partial Loss of Condenser Vacuum (CONTINUED)

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	BOP	Dispatch Operator(s) to locally perform actions of Attachment 1
	BOP	Verify the following valves shut • ICE-449. Condenser Vac Breaker • ICE-475, Condenser Vac Breaker
	SRO	Check NO Circulating Water Pumps tripped and go to Step 11
	SRO	Check conditions to determine NO failure of a Circulating Water System expansion joint is indicated and go to Step 14
	SRO	Check NO major unisolable leak in Circulating Water System exists and go to Step 17
	SRO	Check NO isolable leak between Condenser Waterbox isolation valves exists and go to Step 20
	BOP	Check Circulating Water temperatures using the following ERFIS Computer Points stable or decreasing: • TCW1930, Cooling Tower Basin Temp • TCW1940A, Condenser A Circ Water-Inlet Temp • TCW1940B, Condenser B Circ Water Inlet Temp
	SRO	Check plant shutdown initiated
	SRO	Notify Load Dispatcher of reduced load capability
	BOP	Monitor Turbine vibration levels normal
	SRO	Reviews Note: Exhaust Hood Spray may not be effective in reducing Exhaust Hood temperature above 15% Turbine load
	BOP	Check Exhaust Hood temperature less than 175°F
	SRO	Check Reactor thermal power changed by less than 15% in any one hour period

COMMENTS:

SCENARIO NUMBER: 1 EVENT NUMBER: 5 FACILITY: Harris

EVENT DESCRIPTION: Partial Loss of Condenser Vacuum (CONTINUED)

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	SRO	Check cause of loss vacuum identified and corrected
	BOP	Restore Turbine load as desired per GP-005, Power Operation
	SRO	Exit AOP-012

COMMENTS:

SCENARIO NUMBER: 1 EVENT NUMBER: 6 / 7 FACILITY: Harris

EVENT DESCRIPTION: **Steam Break Inside Containment with Failure of Reactor to Trip**
(TRG ES) IMF MSS01C 8e+06 20:00 Asis
Reactor Trip failure initiated in CAEP

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	SRO RO BOP	Diagnoses Main Steam break inside containment • Reactor power increasing • Steam flow increasing • Feed flow increasing • SG levels decreasing after initial swell • Steam pressure decreasing • RCS temperature decreasing • Containment pressure increasing • Containment radiation levels unchanged
	SRO	Orders a reactor trip and safety injection and enters PATH-I
		NOTE: DUE TO THE FAILURE OF THE AUTOMATIC AND MANUAL REACTOR TRIP, A SAFETY INJECTION IS LIKELY TO OCCUR BEFORE THE REACTOR CAN BE TRIPPED LOCALLY.
	RO	Determines reactor failed to automatically trip • Reactor trip breakers **closed** • Rod bottom lights off • Neutron **flux** NOT decreasing
	KO	Attempts manual trip of reactor
	RO	Determines manual trip NOT successful • Reactor trip **breakers** closed • Rod bottom lights **off** • Neutron flux NOT decreasing
	KO	Informs SRO of failure **of** reactor to trip automatically or manually
	SRO	Transitions to and directs the actions of FRP-S.1, Response to Nuclear **Power** Generation / ATWS
	KO	**(IMMEDIATE** ACTION) Verifies **rods** inserting automatically or manually inserts control **rods**

COMMENTS:

SCENARIO NUMBER: 1 EVENT NUMBER: 6 / 7 !8 FACILITY: Harris

EVENT DESCRIPTION: Steam Break inside Containment with Failure of Reactor to Trip (CONTINUED) – Failure of *MDAFW Pump to Start*
MDFAWP Start failure initiated in CAEP

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	BOP	(IMMEDIATE ACTION) Verifies turbine tripped • All turbine throttle valves shut • All turbine governor valves shut
	BOP	(IMMEDIATE ACTION) Determines neither Motor-Driven AFW pump is running and verifies Turbine-Driven AFW Pump operating
	RO	(IMMEDIATE ACTION) Determines reactor is not tripped and directs operator to contact or report to Control Room
		CRITICAL STEP TO DIRECT A LOCAL REACTOR TRIP TO ADD NEGATIVE REACTIVITY TO CORE.
BOOTH OPERATOR		**NOTE: AFTER APPROXIMATELY 15 SECOND DELAY, CONTACT CONTROL ROOM AS THE OPERATOR DIRECTED TO CONTACT / REPORT.**
	RO	Directs operator to locally trip the reactor by (order of preference): • Locally opening the reactor trip breakers Locally trip both rod drive MG set generator output breakers. • Locally trip both rod drive MG set motor breakers
BOOTH OPERATOR		**NOTE: APPROXIMATELY 30 SECONDS AFTER BEING DIRECTED TO LOCALLY TRIP THE REACTOR, OPEN THE REACTOR TRIP BREAKERS BY DELETING MALF RPS01B 3 3.**
	SRO	Initiate monitoring of CSFSTs

COMMENTS

SCENARIO NUMBER: 1 EVENT NUMBER: 6 / 7 / 9 FACILITY: **Harris**

EVENT DESCRIPTION: **Steam Break Inside Containment with Failure of Reastor to Trip (CONTINUED)- Failure of RWST to CSIP Suctions to Open**
CSIP Suction Valve Failure initiated in CAEP

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	RO	If SI has NOT initiated. initiate Emergency Boration • Start a boric scid pump • Open !CS-278, Emergency Boric Acid Addition valve • Verify > 30 gptn emergency boration flow • Verify > 30 gpm: CSIP flow to KCS • Verify RCS pressure < 2335 psig
	SRO	Directs RO to initiate manual SI due to only one train actuating
	RO	Attempts to manually actuate Train B SI
		NOTE: SI ACTWATED LIGHT AND SEVERAL OTHER UNEXPECTED INDICATIONS WILL BE RECEIVED DUE TQ.4 FAILURE OF SLAVE RELAY K602B WHICH IS INCLUDED AS THE INITIATING FAILURE FOR THIS E VENT. THE FOLLOWING COMPONENTS ARE AFFECTED: • ***SI Actuated light – blinks due to difference in Train SA & SB – light operated hy contact on K602 via multiplexer*** • ***SI Reset Auto-SI Blocked – Blinks when attempting to reset S1 due to Train SA reset with Train SB nofable to reset – timer started by contact on K602*** • ***LCV-115D does not auto open*** • ***LCV-115E does not auto close*** • ***CC-115 does not auto close*** • ***CC-305 does not auto close***
	KO	Identify failure of RWST suction to CSIPs to open • 1CS-291 red light off. green Bight on
	KO	Attempts to open IC§-491 and ~ ~ p o failure to SRO

COMMENTS:

SCENARIONUMBER: 1 EVENTNUMBER: **6/7** FACILITY: **Harris**

EVENT **DESCRIPTION:** **Steam Break Inside Containment with Failure of Reactor to Trip (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	BOP	Isolate Containment Ventilation by stopping the following fans: • AH-82A • AH-82B • E-5A • E-5B
	BOP	Verify Containment Ventilation valves and dampers shut
	RO	Verify reactor tripped
	BOP	Verifies turbine tripped
	SRO	Begin monitoring of foldout for FRP-S.1
	BOP	Controls AFW flow to intact SGs to maintain between 40% and 50%
		NOTE: MAY RECOGNIZE THAT STEAM BREAK IS ON SG 'C' BY THIS TIME, PARTICULARLY IF MS ISOLATION HAS OCCURRED, AND CHOOSE TO ISOLATE AFW TO SG 'C'.
	RO	Verify All Dilution Paths Isolated Reactor Makeup Water pumps OFF • FCV-114B, Reactor Makeup Water valve SHUT • 1CS-98, BTRS Bypass valve OPEN • Direct A 0 to locally verify 1CS-510, Boric Acid Ratch Tank Outlet valve SHUT
	RO	Checks for positive reactivity addition due to cooldown • Reactor tripped • Intermediate range startup rate positive
	SRO	Determines a SG is depressurizing in an uncontrolled manner and go to Step 18
	BOP	Verifies MSIVs and bypass valves closed
	BOP	Determines SG 'C' faulted due to SG pressure decreasing in an uncontrolled manner or completely depressurized

COMMENTS:

SCENARIO NUMBER: I EVENT NUMBER: 6 / 7 FACILITY: Harris

EVENT DESCRIPTION: Steam Break Inside Containment with Failure of Reactor to Trio (CONTINUED)

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	SRO	Determines SG 'A' and SG 'B' NOT faulted
	BOP	Isolates SG 'C' • Verifies PORV closed • Verifies FW Isolation closed • Verifies AFW isolated to SG • Closes Steam supply to TDAFW Pump • Verifies before seat drain isolation closed • Verifies SG blowdown isolation closed • Verifies steam analyzer isolation closed • Verifies chemical addition isolations closed
		CRITICAL STEP TO ISOLATE SG 'C' PRIOR TO EXITING FRP-S.1 TO MINIMIZE PRESSURE RISE INSIDE CONTAINMENT.
	RO	Verifies core exit thermocouples < 1200 °F
	RO	Verify reactor subcritical • Power ranges < 5% • Intermediate startup rate negative
	SRO	Implements FRPs, as required and transitions to PATH-1 due to NO Red or Orange Path conditions

COMMENTS:

SCENARIO NUMBER: 1 EVENT NUMBER: 6 / 7 **FACILITY: Harris**

EVENT DESCRIPTION: **Steam Break Inside Containment with Failure of Reactor to Trip (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	SRO	Transitions to and directs the actions of EOP **PATH-1**
	RO	Verifies reactor tripped
	BOP	Verifies turbine tripped
	BOP	Verifies power to AC safeguards buses
	RO	Verifies SI actuated
	SRO	Begins monitoring of CSFSTs
	SRO RO BOP	Begins monitoring of Foldout **A**
	RO	Verifies proper operation of emergency safeguards equipment • CSIP and RHR pumps running • SI flow > 200 gpm Main steam line isolation Containment pressure above 10 psig, with actions taken AFW flow at least 210 KPPH available

COMMENTS

SCENARIO NLMBER: 1 EVENT NUMBER: 6 / 7 FACILITY: Harris

EVENT DESCRIPTION: Steam Break Inside Containment with Failure of Reactor to Trio (CONTINUED)

TIME	POSITION	APPLICANT'S ACTIONS OR REHAVIOR
	BOP	ESFAS proper alignment using Attachment 6 • 2 CSIPs running • 2 KHR Primps running • 2 CCW Pumps running • All ESW and ESW Booster Pumps running • SI Valves properly aligned *NOTE: RWST SUCTION TO CSIP 1CS-291 FAILED TO OPEN ON SI ACTUATION. MAY HAVE BEEN RECOGNIZED BY THIS POINT AND ALREADY ATTEMPTED TO OPEA!* • Phase A proper alignment • Blowdown and SG sample valves shut • Main steam lines isolated • Containment Spray operation • RCPs stopped • Both FW Pumps tripped • FW Isolation valves closed • NEITHER MDAFW Pump operating • TDAFW Pump operating • AFW alignment (FLOW ISOLATED TO SG 'C') • Both EDGs running • Containment Fan Coolers – 1 per unit operating in slow speed • Contrul Room Ventilation in Emergency Recirc • AC Buses 1A1 and ID! energized • Air compressors 1A and 1B in Local Control Mode

COMMENTS:

SCENARIO NUMBER: 1 EVENT NUMBER: 6 / 7 FACILITY: **Harris**

EVENT DESCRIPTION: **Steam Break Inside Containment with Failure of Reactor to Trip (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	RO	Attempts to stablize RCS temperature using WR Tcold due to no RCPs ***NOTE: DUE TO FAULTED SG, RCS TEMPERATURE IS EXPECTED TO BE LOW.***
	RO	Verifies proper operation of PRZ PORVs ***NOTE: SPRAY VALVES NOT REQUIRED DUE TO NO RCPS RUNNING.***
	SRO	Determines SG 'C' faulted and transitions to and directs the actions of EPP-014, Faulted Steam Generator Isolation ***NOTE: SG SHOULD ALREADY HAVE BEEN ISOLATED PER DIRECTIONS OF FRP-S.1, BUT TRANSITION TO EPP-014 IS STILL REQUIRED.***

COMMENTS:

SCENARIO NUMBER: 1 EVENTNUMBER: 6 / 7 FACILITY: Harris

EVENT DESCRIPTION: **Steam Break Inside Containment with Failure of Reactor to Trip CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	SRO	Transitions to and directs the actions of EPP-014, Faulted Steam Generator Isolation
	BOP	Check MSIVs and bypass valves shut
	BOP	Determines SGs 'A' and 'B' are NOT faulted
	BOP	Determines SG 'C' is faulted
	SRO	Verifies SG 'C' **was previously isolated**
	BOP	Checks CST level > 10%
	BOP	Check Secondary Radiation levels normal
	BOP	Check NO SG levels increasing in an uncontrolled manner
	RO	Check SI NOT terminated by SI flow being > 200 gpm
	RO	Determines SI Termination Criteria are met • Subcooling (> 40°F) • Heat Sink (SG level > 40%) • RCS Pressure (stable / increasing) • RCS Inventory (> 30%)
		NOTE: SI TERMINATION CRITERIA WILL BE MET ONLY AFTER THE FAULTED SG HAS COMPLETED BLOWING DRY.
		CRITICAL TO TERMINATE SAFETY INJECTION TO PREVENT RCS OVERFILL AND PRESSURIZATION RESULTING IN *CHALLENGING PRZ PORVs AND/OR SAFETIES.*

COMMENTS

SCENARIONIIMBER 1 EVENTNUMBER: 6 / 7 **FACILITY: Harris**

EVENT DESCRIPTION: **Steam Break Inside Containment with Failure of Reastor to Trip (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	RO	Reset SI
	RO BOP	Manually realign safeguards equipment, if required following a loss of offsite power
	RO	Stops all but 1 CSIP
	RO	Determines RCS pressure stable or increasing
	RO	Check CSIP suction aligned to RWST
	RO	Attempts to open normal minil ow isolation valves • ICS-182 ■ ICS-196 ■ ICS-210 • ICS-214
		NOTE: TRAIN 1 VALVES (1CS-182, 1CS-196, AND ICs-210) STROKE OPEN AND THEN IMMEDIA TELY CLOSE. TRAIN A VALVE (ICs-214) WILL REMAIN OPEN IF ATTEMPTED.
	SRO	Implements Step 17b RNO by observing NOTE prior to Step 18 and going to Step 18, Establish Minimum Charging Flow and Isolate BIT flow
	RO	Shut charging flow control valve • FK-122.1
	RO	Attempts to open charging line isolation valves • 1CS-235 • 1CS-238
		NOTE: TRAIN B VALVE (1CS-235) WILL NOT OPEN. TRAIN A VALVE (1CS-238) WILL OPEN.
	SRO	Directs AO to locally open 1CS-235 (MAY OR MAY NOT DIRECT BREAKER BE OPENED FIRST -- NOT REQUIRED)
BOOTH OPERATOR		**PERFORM THE FOLLOWING TO LOCALLY OPEN VALVE 1CS-235 (DO NOT PERFORM FIRST ITEM UNLESS DIRECTED TO OPEN THE BREAKER FIRST)** **1) MRF CVC066 RACK_OUT (racks out breaker)** **2) MRF CVC067 ENGAGED (engages handwheel)** **3) MRF CVC068 100 (fully opens 1CS-235)** **REPORT AS AO THAT 1CS-235 IS OPEN**

COMMENTS,

SCENARIONUMBER: I EVENT NUMBER: 6 / 4 FACILITY: Harris

EVENT DESCRIPTION: Steam Break Imide Containment with Failure of Reactor to Trip (CONTINUED)

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	KO	Checks CSIP suction aligned to WWST
	RO	Set charging flow controller demand position to 30%
	KO	Attempts to shut BIT outlet valves • 1SI-3 • 1SI-4
		NOTE: TRAIN B VALVE (PSI-3) WILL NOT REMAIN CLOSED. TRAIN A VALVE (1SI-4) WILL CLOSE.
	SRO	Directs AO to locally close 1SI-3 (MAY OR MAY NOT DIRECT BREAKER BE OPENED FIRST – NOT REQUIRED)
BOOTH OPERATOR		PERFORM THE FOLLOWING TO LOCALLY CLOSE VALVE 1SI-3 (DO NOT PERFORM FIRST ITEM UNLESS DIRECTED TO OPEN THE BREAKER FIRST) 4) MRF 51019 RACK_OUT (racks out breaker) 5) MRF 51020 ENGAGED (engages handwheel) 6) MRF 51021 0 (fully shuts 1CS-235) REPORT AS AO THAT 1SI-3 IS CLOSED.
	RO	Verify cold and hot leg injection valves closed • 1SI-52 • 1SI-86 • 1SI-107
	RO	Establish and maintain at least 60 gpm through CSIP
		TERMINATE THE SCENARIO AFTER AT LEAST 60 GPM FLOW THROUGH THE CSIP IS ESTABLXSWED.

COMMENTS:

SCENARIO NUMBER: 1 **CRITICAL TASKS** **FACILITY: Harris**

CRITICAL TASKS IN SCENARIO 1

EVENT	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
3	BOP	Check Feedwater Regulator Valves NOT operating properly in AUTO and perform the following: • Place applicable Feedwater Regulator Valve (FK-488) in MANUAL • Maintain Steam Generator levels between 52 and 62% (REDUCE FW FLOW)
		CRITICAL STEP TO PREVENT PLANT TRIP AS A RESULT OF HIGH-HIGH SG LEVEL.
7	RO	*(IMMEDIATE ACTION)* Determines reactor is not tripped and directs operator to contact or report to Control Room
		CRITICAL STEP TO DIRECT A LOCAL REACTOR TRIP TO ADD NEGATIVE REACTIVITY TO CORE.
6	BOP	Isolates SG 'C' • Verifies PORV closed • Verifies FW Isolation closed • Verifies AFW isolated to SG • Closes steam supply to TDAFW Pump • Verifies before scat drain isolation closed • Verifies SG blowdown isolation closed • Verifies steam analyzer isolation dosed • Verifies chemical addition isolations closed
		CRITICAL STEP TO ISOLATE SG 'C' PRIOR TO EXITING FRP-S.1 TO MINIMIZE PRESSURE RISE INSIDE *CONTAINMENT.*
6	RO	Determines SI Termination Criteria arc met • Subcooling (> 40°F) • Heat Sink (SG level > 40%) • RCS Pressure (stable / increasing) • RCS Inventory (> 30%)
		CRITICAL TO TERMINATE SAFETY INJECTION TO PREVENT RCS OVERFILL AND PRESSURIZATION RESULTING IN CHALLENGING PRZ PORVs AND/OR SAFETIES.

SHIFT TURNOVER

The unit is at 16% power at MOL, 8 hours following a reactor startup. The plant tripped approximately 20 hours ago (12 hours before startup).

Boron concentration is 1166 ppm. Bank D rods are at 105 steps.

AFW Punip 'A' was taken out of service 2 hours ago for oil replacement due to contaminant8 and is expected to be returned to service within the next 2 hours. Technical Specification 3.7.1.2 has been entered. Risk level is YELLOW

The Hot Start pushbutton on the MSRs was depressed 1 hour ago

PMs were performed on Condensate Booster Pump B and have been completed, The pump is ready to be placed in service. An Auxiliary Operator is standing by to start the Condensate Rooster Pump. All prestart checks to start the pump arc complete.

Shift orders are to place Condensate Booster Pump B in service and continue the power ramp to 90% power and restore AFW Pump 'A' to service when it becomes available.
GP-005 is being performed per Step 5.0.1 IS.

OSI-PI is not available

SCENARIO #1

POWERTRAX Operating Strategy Generator Module
SimMOL_strtup_Hir/MOL_synch/MOL_upb
Date: 05/06/03
Time: 16:39:49
Page: 1

Step	Date	Time	Power	ppm B	Gal Bor	Gal Dil	R Step	AFD	AO-XE	K Effective
1	010102	090000	15.0	1158	0	60	115	5.2	-3.1	0.99491
2	080102	071500	18.0	1157	0	19	118	5.8	-3.2	0.99491
3	010102	073000	21.0	1157	0	6	121	6.3	-3.3	0.99491
4	010102	074500	24.0	1156	9	0	124	6.6	-3.3	0.99498
5	010102	080000	27.0	1157	28	0	127	6.9	-3.4	0.99491
6	010102	081500	30.0	1161	33	0	132	7.2	-2.5	0.99491
7	010102	083000	33.0	1164	31	0	137	7.5	-3.6	0.99491
R	010102	084500	36.0	1168	31	0	141	9.8	-3.6	0.99491
Y	010102	090000	39.0	1172	28	0	145	8.1	-3.6	0.99491
10	010102	091500	42.0	1175	27	0	148	8.4	-3.9	0.99491
11	010102	093000	45.0	1178	29	0	151	8.7	-3.7	0.99191
12	010102	094500	48.0	1181	42	0	154	9.0	-3.7	0.99491
13	010102	100000	51.0	1186	27	0	158	9.4	-3.6	0.99491
14	010102	101500	54.0	1189	28	0	161	9.7	-3.6	0.99491
15	010102	103000	57.0	1192	27	0	164	10.0	-3.5	0.99491
16	010102	101500	60.0	1194	16	0	166	10.1	-3.5	0.99491
17	010102	110000	63.0	1196	18	0	168	10.1	-3.4	0.99491
18	010102	111500	66.0	1198	19	0	171	10.3	-3.2	0.99491
19	010102	113000	69.0	8200	6	0	174	10.5	-3.1	0.99491
20	010102	114500	72.0	1201	11	0	176	10.4	-2.9	0.99491
21	010102	120000	35.0	1202	6	0	179	10.5	-2.7	0.99491
22	010102	121500	78.0	1203	3	0	182	10.5	-2.4	0.99490
23	010102	123000	81.0	1203	0	52	185	10.5	-2.2	0.99490
24	010102	124500	84.0	1202	0	49	187	10.2	-8.9	0.99491
25	010102	130000	84.0	1201	25	0	190	10.0	-1.5	0.88491
26	010102	131500	90.0	1204	13	0	197	In.7	-1.2	0.99491
27	010102	133000	93.0	1205	1	0	204	11.5	-0.9	0.99491
28	010102	134500	96.0	1205	0	285	211	12.0	-0.5	Q.99492
29	010102	140000	100.0	1198	171	0	218	11.6	-0.2	0.99490
30	010102	160000	100.0	1218	0	952	218	9.3	2.1	0.99189
31	010102	200000	100.0	1195			218	6.8	5.3	0.99490
					621	1422				

PREPARED BY:_____ DATE _____

REVIEWED BY:_____ DATE _____

Facility: HARRIS **Scenario Number:** 2 Op-Test Number: 1

Examiners **Operators**

Initial Conditions: Reset to saved IC-160 (based on IC-18); 100% power BOL;
Run CAEP "ile2004scenario2"; CAEP includes the following intial setup items:

- AFW Pump A-SA OOS (CFW026 RACK_OUT; CFW113 CP_OFF)
- HDP A OOS (CND065 RACK-OUT);
- Power lowered by 25 MWe and increased boron concentration by 2 ppm; Allowed plant to stabilize.
- EVENT 9 - NIS Intermediate Range Compensating Voltage Low Failure (NIS6A 1E-9)

Turnover: The unit is at 100% power at BOL, with equilibrium xenon conditions.

Boron concentration is 1238 ppm. Bank D rods are at 215 steps.

AFW Pump 'A' was taken out of service 2 hours ago for oil replacement due to contaminants and is expected to be returned to service within the next 2 hours. Technical Specification 3.7.1.2 has been entered. Risk level is YELLOW.

HDP 'A' was tagged out of service 3 hours ago for bearing replacement and is not expected back for the next several days.

Shift orders are to maintain power at 100% and restore AFW Pump 'A' to service when it becomes available. GP-005 was completed prior to removing HDP 'A' from service. The plant has been stable for 3 weeks.

OSI-PI is not available.

Event Number	Malfunction Number	Event Type*	Event Description
1 (TRG E1)	ICOR PT:308A (none 0 0) 13001:30 IOR XB10007B (none 0 0) OFF	I (HOP) I (SRO)	S/G A PORV Pressure Transmitter PT-308 fails high with failure of S/G A PORV open indication ***NOTE: MULTIPLE EVENTS ON SAME TRIGGER.***
2 (TRG E2)	ICOR LT:112 (none 0 0) 100 0	I (RO) I (SRO)	LT-112, VCT Level, High Failure

Event Number	Malfunction Number	Event Type*	Event Description
3 (TRG E3)	IMF CRF03A 2 21	C (RO) C (SRO)	Dropped Control Rod F2
4	NA	R (RO) N (BOP) N (SRO)	Power Reduction
5 (TRG E4)	IMF CVC23A	C (RO) C (SRO)	Boric Acid Pump Trip
6 (TRG E5)	IMF EPS05A IMF DSG01 1	C (ALL)	Loss of Power to an ESF Bus with Failure of EDG to Load ***NOTE: MULTIPLE EVENTS ON SAME TRIGGER.***
7 (TRG E6)	IMF CRF03B 2 23	M (ALL)	Second Dropped Control Rod K14
8 (TRG E7)	IMF PRS01 40 5:00 Asls	M (ALL)	Pressurizer Steam Space Break
9	IMF NIS6A 1E-9	I (RO) I (SRO)	NIS Intermediate Range Compensating Voltage Low Failure ***NOTE: INSERT MALFUNCTION DURING INITIAL SETUP OF SIMULATOR.***

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

SCENARIO NUMBER: 2 EVENT NUMBER: 1 FACILITY: **Harris**

EVENT DESCRIPTION: **S/G A PORV Pressure Transmitter PT-308 fails high with Failure of S/G A PORV open indication**
(TRG E1) ICOR PT:308A (none 0 0) 1300 1.30
IOR XB1O007B (none 0 0) OFF

TIME	POSITION	APPLICANT'S ACTIONS OK BEHAVIOR
	CUE	• ALB-014-8-5, COMPUTER ALARM STEAM GENERATORS • SG **A** PORV open (open indication failed) • RCS temperature lowering • Steam flow increasing
	BOP	Determines cause of alarm is SG **'A' PORV** open due to failed **high** pressure transmitter. using alarm screen to determine cause since SG PORV does not indicate open or determined by **MA** station indication
	SRO	Directs operator to take manual control of SG 'A' PORV and close per requirements of OMM-001 • Condition / cause communicated to SRO • SRO provides concurrence to take manual control • SRO provides control limits • Appropriate procedure implemented when plant stabilized • Log entry made when controller in manual
	BOP	Places SG 'A'PORV controller in manual
	BOP	Closes SG **'A'** PORV
	SRO	Initiates repairs
	SRO	Reviews Tech Spec 3.3.3.5.band determines the PORV is still operable

COMMENTS:

SCENARIONUMHER 2 EVENT NUMBER: 2 FACILITY: **Harris**

EVENT DESCRIPTION: **LT-112, VCT Level, High Failure**
(TRG E2) iCOR LT:11? *(none 0 0) 100 0*

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	CUE	• ALB-007-5-5, COMPUTER ALARM CHEM & VOL SYSTEMS • ICs-I20 (LCV-115A), Letdown VCT / Holdup Tank, aligns to HUT
	SRO	Enters and directs the actions of AOP-003. Malfunction of Reactor Makeup Control
	RO	Check IA a vailable
	SRO	D :termines LK-I 12 output has failed and goes to Section 3.1, LT-112 or LT-115 Malfunction
	SRQ	(CONTINUOUS ACTION) Assesses effects of LT-1 12 failure (Attachment 1)
	RO	Determines failure is NOT due to LT-1 15 and go to **Step 8**
	RO	Determines failure caused by LT-112
	RO	Monit r VCT level using either: • ERJIS point LCS0115 • LI-115
	RO	Determines that LT-112 is failed high and places ICS-120 (LCV-115A), Letdown VCT / Holdup Tank, to VCT position
	RO	(CONTINUOUS ACTION) Maintain VCT level above 20% using auto makeup
	RO	(CONTINUOUS ACTION) Maintain VCT level below 70% by manually diverting to HUT as needed
	RO	(CONTINUOUS ACTION) Maintain VCT level above 5% *auto*switchover point to RWST

COMMENTS:

SCENARIO NUMBER: 2 EVENT NUMBER: 2 FACILITY: **Harris**

EVENT DESCRIPTION: **LT-112, VCT Level, High Failure (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR **BEHAVIOR**
	SRO	**Determines** LT-1 12 has failed high and directs Maintenance to lift leads in SSPS for auto switchover to RWST **(Step 18)**
	RO	Maintain LCV-115A in VCT position

COMMENTS:

SCENARIO NUMBER: 2 EVENT NUMBER: ? FACILITY: **Harris**

EVENT DESCRIPTION: **Dropped Control Rod F2**
(TRG E3) IMF CRFOJA 2 2)

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	CUE	• ALB-009-3-3, PRZ CONT LOW PKESS AND HEATERS ON, alarming (*CLEARS IN APPROXIMATELY 1 MINUTE*) • ALB-013-4-2, POWER RANGE HIGH NEUTRON FLCX RATE ALERT, alarming • ALB-013-4-5, POWER RANGE CHANNEL DEVIATION, alarming • ALB-013-5-3, POWER RANGE IJPPEK DETECTOR HIGH FLUX DEV OR AUTO DEFEAT, alarming • ALB-013-5-4. POWER RANGE LOWER DETECTOR HIGH FLUX DEV OR AUTO DEFEAT, alarming • ALB-013-7-4, ONE ROD AT BOTTOM. alarming • ALB-OI3-8-1. **RANK** D FULL ROD WITHDRAWAL, alarming • ALB-013-8-5, COMPUTER ALARM **ROD DEV/SEQ NIS** PWR RANGE 'TILTS, alarming ■ RCS temperature decreasing • **Contml** rods stepping out until C-11 interlock • DRPI indicates Rod F2 dropped
	SRO	Enters and directs the actions of AOP-001, Malfunction of Rod Control **and** indication System
	RO	(IMMEDIATE ACTION) Check that **LESS** THAN TWO control rods are dropped
	RO	(IMMEDIATE ACTION) Position Rod Rank Selector Switch to MAN
	RO	(IMMEDIATE ACTION) Check Control Bank motion STOPPED
	SRO	Go To Section 3.1, Dropped Control **Rod**
	SRO	Record the time at which the rod dropped
	RO BOP	Adjust one of the following to equalize Tavy with Tref: • Turbine load **using** OP-131.01. AOP-038, or GP-006 • **Boron concentration**
	SRO	Direct an operator to check ALL Rod Control Power and Logic **Cabinets** for normal operation, as follows • NO Blown **fuses** • NO other visible malfunctions
BOOTH OPERATOR		**NOTE: REPORT THAT POWER CABINET IAC HAS A BLOWN FUSE.**
	SRO	Direct Maintenance to perform corrective action on ALL affected Rod Control Power and Logic Cabinets

COMMENTS

SCENARIO NUMBER: *2* EVENT NUMBER: *3* FACILITY: **Harris**

EVENT DESCRIPTION: **Dropped Control Rod F2 (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	SRO	Review the following Technical Specifications: • 3.1.1.1, Boration Control – **Shutdown** Margin – **Modes** 1& 2 • 3.1.3.1, Movable Control Assemblies – Group Height • **3.1.3.5, Shutdown Kod** Insertion Limit • 3.1.3.6, **Control Rod** Insertion Limits • 3.2.1, **Axial** Flux Difference • 3.2.4, **Quadrant Power Tilt Ratio**
	SRO	**Notify the following:** • Manager – Operations • Reactor Engineering
	RO	**Check** Reactor Power **AT** OR ABOVE P-10 **(10%).**
	RO / BOP	**Reset any negative rate trip alarm at the NIS cabinets**
	SRO	Lower turbine load as recommended by Reactor Engineering
BOOTH OPERATOR		**NOTE: AS MANAGER – SHIFT OPERATIONS, INFORM THE CREW THAT YOU HAVE CONSULTED WITH REACTOR ENGINEERING, AND A DECISION HAS BEEN MADE TO REDUCE POWER TO LESS THAN 90% WITHIN THE NEXT 20 MINUTES USING AOP-038, "RAPID DOWNPOWER," TO FACILITATE ROD RECOVERY.**

COMMENTS:

SCENARIO NUMBER: 2 EVENT NUMBER: 4 **FACILITY: Harris**

EVENT DESCRIPTION: **Power Reduction**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	CUE	***Power reduction to less than 90% within the next 20 minutes has been directed to allow for dropped rad recovery.***
	SRO	Direct the actions of AOP-038, "Rapid Downpower" after discussing Reactor Trip Criteria using Attachment 1
	SRO	Notify Load Dispatcher that the Unit is reducing load
	SKO	Determine required boric acid addition for desired power reduction using AOP-038, Attachment 2 (206 gallons)
	SRO	Notify Radwaste Control Room to be prepared for the increased water processing requirements due to boration
	SRO	Check that a planned load reduction will NOT take the Unit to Turbine shutdown
	SRO	Determine reactor power change will NOT exceed 15% in a one hour period
	SRO	Directs Tavg-Tref maintilined within ± 2°F
	RO	Check Kod Control in NOT in AUTO and maintains Tavg-Tref within ± 2°F
	RO	Energize all available PRZ Backup heaters
	BOP	Check the DEH System in AUTO
	BOP	Perform the following at the DEH panel Direct AO to go to Termination Cabinet Room to check VIDAM • Depress the Load Kate MW/MIN pushbutton • Enter desired rate in DEMAND display • Depress ENTER pushbutton • Depress *KEF* pushbutton • Enter desired load in DEMAND display • Depress ENTER pushbutton Check HOLD pushbutton 11 I' • Depress GO pushbutton • Verify the value in the REFERENCE display lowers

COMMENTS :

SCENARIO NUMBER: 2 EVENT NUMBEK: 4/5 FACILITY Harrir

EVENT **DESCRIPTION:** **Power Reduction (Continued) / Boric Acid Pump Trip**
TRG E4 IMF CVC23A

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
BOOTH OPERATOR		**NOTE: AFTER BORATION IS STARTED, INSERT NEXT MALFUNCTION TO TRIP RUNNING BORIC ACID PUMP.**
	RO	Commence RCS boration as required to maintain Control Rods above the Rod Insertion Limit
	CUE	• ALB-006-8-4, BORIC ACID FLOW DEVIATION, alarming • Boric Acid Pump A-SA tripped • RCS temperature NOT responding
		NOTE: ALB-006-8-4 WILL QNLYEE IN AN ALARM CONDITION IF THE BORATION IS PERFORMED USING NORMAL BORATION. RAPID BORATION WILL NOT RESULT IN THIS ALARM WHEN THE PUMP TRIPS.
	SRO	Directs RO *to* start standby boric acid pump to allow continuing boration
BOOTH OPERATOR		**NOTE: IF OPERATOR SENT TO INVESTIGATE, REPORT BREAKER FOR PUMP CLOSED, BUT MOTOR IS EXTREMELY HOT TO TOUCH.**
	XO	Starts standby Boric Acid Pump
	RO	Restarts boration flow
	SRO	Initiates repairs to pump
	BOP / RO	Verify Generator load and Reactor power lowering
	BOP	Maintain Generator reactive load (VARs, within guidelines
	BOP	When Turbine load is less than 95%, then dispatch an operator to open 3A and 3B Feedwater Heater vents per OP-136, Shutdown of Feedwater Heaters 3A and 3B
	RO	Check T_{avg} within 2°F of T_{ref}.
	BOP	Check Power level at the target value

COMMENTS:

SCENARIO NUMBER: 2 EVENTNUMBER: 6 FACILITY: Harris

EVENT DESCRIPTION: Loss of Power to an ESP Bus with Failure of EDG to load
(TRG E5) IMF EPS05A
IMF DSG01 A

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
BOOTH OPERATOR		NOTE: INSERT NEXT MALFUNCTION FOR LOSS OF POWER AFTER CREW HAS REDUCED POWER
	CUE	• Multiple system alarms • Loss of power to Bus 1A-SA • EDG 1A-SA fails to load
	SRO	Enters and directs the actions of AOP-02 , Loss of One Emergency AC Bus (6.9KV) or One Emergency DC Bus (125V)
	RO	(IMMEDIATE ACTION) Determines no CSIP running and isolates letdown by closing any open orifice isolation valves
	SRO	VERIFY at least one Emergency AC Bus is ENERGIZED
	SRO	Notes that EAL must he entered at Entry Point X
	SRO	REFER TO the following Tech Specs: • 3.0.3 (Due to loss of 2/4 containment rad monitors and CVIS affect on CNMT vacuum reliefs) • 3.3.3.1 Kadiation Monitoring for Plant Operations (Due to inoperable Control Room Outside Air Intake Monitors) • 3.4.6.1 RCS Leak Detection (Due to RM-3502A inop) • 3.6.5 Vacuum Relief System 3.8.1.1 AC Sources Operating • 3.8.3.1 Onsite Power Distribution - Operating
	SRO	Go to Section 3.1 for Loss of Emergency Bus 1A-SA

COMMENTS

SCENARIO NUMBER: 2 **EVENS** NUMBER: *6* **FACILITY: Harris**

EVENT DESCRIPTION: **Loss of Power to an ESF Bus with Failure of EDG *to* Load (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	BOP	Check EDG A is running properly • Voltage • Frequency
	BOP	Check Bus 1A-SA is NOT energized and place EMERGENCY STOP switch for EDG A in EMER STOP
	RO	Check B Train CSIP – NOT running
	RO	Start B Train CSIP
	RO	Adjust HC-186.1, RCP Seal WTK INJ Flow, to establish seal injection flow as necessary to maintain the following: • Less than 31 gpm total flow to all RCPs • Between 8 and 13 gpm to all RCPs
	BOP	Start CSIP Room Ventilation per OP-172, Reactor Auxiliary Building HVAC System
	RO	Verify any CCW Pump - running
	RO	Verify Charging and Letdown flow per OP-107, Chemical and Volume Control System, to maintain Pressurizer level
	BOP	Control AFW as necessary to maintain reactor power and S/G levels
BOOTH OPERATOR		**NOTE: INSERT NEXT MALFUNCTION FOR SECOND DROPPED ROD AFTER CREW HAS DETERMINED DESIRED ACTIONS FOR AFW FLOW AT POWER AT LEAD EXAMINER'S DISCRETION.**
	SRO	Directs securing or acknowledges securing TDAFW Pump by closing 1MS-70
	BOP	Secure TDAFW Pump by closing 1MS-70

COMMENTS:

SCENARIO NUMBER: 2 EVENT NUMBER: 7 FACILITY: Harris

EVENT DESCRIPTION: Second Dropped Contml Rod K14 / Reactor Trip
TRG E6 IMF CRF03B 2 23

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	CUE	- ALB-013-7-3, **TWO *OR*** MORE **RODS AT** BOTTOM, **alarming** • DRPI indicates dropped Rod K14
	SRO	Determines a second dropped rod has occurred and orders Reactor Trip
		CRITICAL STEP TO TRIP REAC OR WHEN SECOND DROPPED ROD OCCURS.
	SRO	Enters and directs the action of PATH-1
	RO	(IMMEDIATE ACTION) Verify Reactor Trip: • Trip breakers KTA and BYA – open • Trip breakers **RTB** and **BYB** – open • Rod bottom lights – not available due to loss of power • Neutron flux decreasing
	BOP	(IMMEDIATE ACTION) Verify Turbine Trip: • All turbine throttle valves – shut • All turbine governor valves - shut
	BOP	(IMMEDIATE ACTION) Verify Power To AC Emergency Buses: • Check AC emergency bus IA-SA – deenergized • Check AC emergency bus IB-SB - energized • Check bus voltages • Check 6.9 KV bus IA-SA breakers - open • Check 6.9 KV bus IB-SB breakers – closed

COMMENTS:

SCENARIO NUMBER: 2 EVENT NUMBER: 4 FACILITY: Harris

EVENT DESCRIPTION: Second Dropped Control Rod K14 / Reactor Trip (CONTINUED)

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR

	RO	(IMMEDIATE ACTION) Check NO SI Actuation and NOT required
		• Check all of the following dark:
		  • SI Actuated bypass permissive light
		  ■ ALB-11-2-2
		  • ALR-11-5-1
		  ■ ALB-11-5-3
		  • ALB-12-1-4
		• CNMT pressure < 3.0 PSIG
		• PRZ pressure > 1850 PSIG
		• Steam pressure > 601 PSIG

	SRO	Transition to and direct the actions of EOP-EPP-004, Reactor Trip Response
	SRO	Implement Function Restoration Procedures As Required
	RO	Check blowdown isolated
	RO	Check RCS temperature and control AFW flow to stabilize temperature
	KO	Check RCPs running
	BOP	Check Feed System Status: • Verify feed reg valves – SHUT • Establish AFW flow to SGs using MDAFW Pump B and TDAFW Pump as necessary
	RO	Verify all control rods fully inserted
	RO	Check PRZ Level > 17%

COMMENTS:

SCENARIO NUMBER: 2 EVENT NUMBER: 8 FACILITY: Harris

EVENT DESCRIPTION: **Pressurizer Steam Space Break / Single Train SI**
(TRG E7) IMF PRS01 40 5:00 Asls

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
BOOTH OPERATOR		**NOTE: INSERT NEXT MALFUNCTION FOR PRZ STEAM SPACE BREAK AFTER CREW HAS CHECKED PRZ LEVEL < 17%.**
	CUE	• RCS pressure decreasing • PRZ level increasing • Containment temperature increasing • Containment pressure increasing
	SRO	Directs SI Actuation due to loss of subcooling and transitions and directs the actions of PATH-1, Entry Point A
	RO	Manually initiates Safety Injection or verifies automatic Safety Injection
	SRO	Foldout A applies
	RO	Trips RCPs when RCS pressure decreases below 1400 psig after verifying SI flow greater than 200 gpm
		CRITICAL STEP TO TRIP RCPs WHEN TRIP CRITERIA MET.
	RO	Verify CSIP B and RHR Pump B operating
	RO	Verify SI flow > 200 gpm
	RO	Verify RCS pressure > 230 psig
	BOP	Check MS Line Actuation occurs when Containment pressure exceeds 3 psig
	RO	Verify Containment Pressure has remained below 10 psig
	BOP	Verify at least 210 KPPH AFW flow available
	BOP	Verify alignment of components from actuation of ESFAS signals using PATH-1 guide, Attachment 6
	RO	Control feed flow and steam dump to stabilize RCS temperature at 557 °F
	RO	Energize AC Bus 1B1
	RO	Check PRZ PORVs closed

COMMENTS:

SCENARIONUMBER 2 EVENT NUMBER: 8 FACILITY. **Harris**

EVEN1 DESCRIPTION: **Pressurizer Steam Space Break / Single Train SI (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	RO	Verify at least one PORV Block Valve open
	RO	Check PRZ spray valves closed
	RO	Check NO SGs depressurizing in an uncontrolled manner or completely depressurized
	BOP	Check secondary radiation normal
	RO	Check containment pressure NOT normal and goes *to* Entry Point C
	SRO	Foldouts A and B apply
	RO	Maintain RCS seal injection flow between 8 and 13 gpm
	BOP	Maintain at least 210 KPPH AFW flow to SGs until at least one SG is above 25% [40%]
	BOP	Control feed flow to maintain proper SG levels
	BOP	Verify Bus 1B1 is energized
	RO	Verify PRZ PORVs closed
	RO	Verify at least one PORV Block Valve open
	RO	Check RCS subcooling not adequate

COMMENTS:

SCENARIO NIJMBEK: 2 EVENT NUMBER 8/9 FACILITY: Harris

EVEN'!' DESCRIPTION: **Pressurizer Steam Space Break / Single Train SI (CONTINUED)**
NIS Intermediate Range Compensating Voltage Low Failure
NIS COMP VOLT FAILURE initiated in CAEP

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	RO	Check NO Containment Spray Pumps operating
	RO	Determines NIS Intermediate Range Compensating Voltage is failed low and manually energizes both Source Range channels
	RO	Checks RCS pressure > 230 psig
	RO	Checks RCS pressure stable
	RO	Stops RHR Pump B
	BOP	Checks SG pressures stable or increasing
	RO	Checks RCS pressure stable
	RO	Open the CCW Return from MHR HX Valve, 1CC-167
	RO	Maintain Train B CCW flow to the non-essential header
	BOP	Verify 1B-SB energized by offsite power
	BOP	Verify Bus 1B1 energized
	BOP	Verify compressor 1B running
	BOP	Load the following: • Train B CRDM fans • Turbine Normal Bearing Oil Pump
	BOP	Stop the DC Bearing Oil Pump
	BOP	Continue attempts to restore offsite power to Emergency Bus 1A-SA

COMMENTS:

SCENARIO NUMBER: 2 EVENTNYMRER 8 **FACILITY: Harris**

EVENT DESCRIPTION: **Pressurizer Steam Space Break / Single Train SI (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OW BEHAVIOR
	BOP	Verify EDG B running unloaded
	RO	Reset SI
	BOP	Shutdown EDG B per OP-155, Section 7.0
	RO	Determine RHR Train B capable of Cold Leg Recirculation
	BOP	Verify Auxiliary and Radwaste Processing Building Radiation normal
	RO	**Check** RCS pressure greater than **230 psig**
	SRO	Transition to EOP-EPP-009, Post LOCA Cooldown and Depressurization
		TERMINATE THE SCENARIO AFTER THE TRANSITION TO EPP-009 IS ANNOUNCED.

COMMENTS:

SCENARIO NUMBER: 2 EVENT NUMBER: 10 FACILITY: Harris

EVENT DESCRIPTION: Classifies the Event

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	SRO	Classifies the event as an Site Area Emergency (EAL 2-1-3)
		NOTE: SAE BASED ON BREACH OF RCS BARRIER AND CONTAINMENT PRESSURE IN EXCESS OF 3 PSIG.

COMMENTS:

SCENARIO NUMBER: 2 CKITICAL. 'TASKS FACILITY: **Harris**

CRITICAL TASKS IN SCENARIO 2

EVENT	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
7	SRO	Determines a second dropped rod has occurred and orders Reactor Trip
		CRITICAL STEP TO TRIP REACTOR WHEN SECOND DROPPED ROD OCCURS.
8	RO	Trips RCPs when RCS pressure decreasesbclow 1400 psig after verifying SI flow greater than 200 gpm
		CRITICAL STEP TO TRIP RCPs WHEN TRIP CRITERIA MET.

SHIFT TURNOVER

The unit is at 100% power at BOL, with equilibriumxenon conditions

Boron concentration is 1238 ppm. Bank D rods are at 215 steps

AFW Pump 'A' was taken out of service 2 hours ago for oil replacement due to contaminants and is expectedtn be returned to service within the next 2 hours. Technical Specification3.7.1.2 has been entered. Risk level is YELLOW.

HDP 'A' was tagged out of service 3 hours ago for bearingreplacement and is not expected back for the next several days.

Shift orders are to maintain power at 100%and restore AFW Pump 'A' to service when it becomes available. GP-005 was completed prior to removing HDP 'A' from service. The plant has been stable for 3 weeks.

OSI-PI is not available

SCENARIO #2

Facility: HARRIS | Scenario Number: 3 | Op-Test Number: 1

Examiners | Operators

Initial Conditions: Reset to saved **IC-Io0** (based on IC-]8); 100% power BOL;
Run CAEP "ile2004scenario3"; CAEP includes the following intial setup items:

- AFW Pump A-SA OOS (CFW026 RACK_OUT; CFW113 CP_OFF)
- HDP A OOS (CND065 RACK_OUT);
  Power lowered hy 25 MWe and increased boron concentration by 2 ppm; Allowed plant to stabilize.
- **EVENT 7 - Failure** of MSIV on Ruptured SG to close – can he closed locally (MSS-5C 2)
  EVENT 8 • Partial failure of Automatic Phase A isolation signal (Train B Phase A Slave Relay for select CNMT Phase A valves fails to energize when required). ISH-287, ICs-I1 & !SW-242 (ZRPK622B Deenergize)

Turnover: The unit is at approximately 99% power at BOL, with equilibrium xenon conditions.

Boron concentration is 1238 ppm. Bank D rods are at 215 steps

AFW Pump 'A' was taken nut of service 2 hours ago for oil replacement due to contaminants and is expected to be returned to service within the next 2 hours. Technical Specification 3.7.1.2 has been entered. Risk level is YELLOW.

HDP 'A' was tagged out of service 3 hours ago for bearing replacement and is not expected back for the next several days.

Shift orders are to maintain current power level and restore AFW Pump 'A' to service when it becomes available. GP-005 was completed prior to removing HDP 'A' from service. The plant had been stable for 3 reeks prior tu removing the Heater Drain Pump from service

OSI-PI is not available

Event Number	Malfunction Number	Event Type*	Event Description
1	IMF GEN05 100 (TKG E1)	C (BOP) C (SRO)	Main Generator Oscillations
2	MRF CCW047 0 0 IMF CCW01A (TRG E2)	C (RO) C (SRO)	Operating CCW Pump Trip with failure of standby pump to automatically start ***NOTE: MULTIPLE EVENTS ON SAME TRIGGER.***
3	ICOR FT:477 (none 0 0) 5 0 (TRG E3)	I (BOP) I (SRO)	Feed Water Flow High Failure
4	IMF CFW12B ICOR PS: 1006 (none 0 0) 0 0 (TRG E4)	C (BOP) C (SRO) R (RO)	Heater Drain Pump Trip with Failure of Turbine to Automatically Runback ***NOTE: MULTIPLE EVENTS ON TRIGGER 4.***
5	IMFCRF 14B (TRG E4)	R (RO)	Auto Rod Failure - Rods Fail To Move *NOTE: MULTIPLE EVENTS ON TRIGGER 4.*
6	ICOR PT:444 (none 0 0) 2500 1:00 (TRG E5)	I (RO) I (SRO)	Pressurizer Pressure High Failure
7	IMF SGN05C 420 10:00 Asls (TRG E6)	M (ALL)	SG Tube Rupture
8	MSS-SC 2	C (RO) C (SRO)	Failure of MSIV on Ruptured SG to close - can be closed locally ***NOTE: INSERT MALFUNCTION DURING INITIAL SETUP OF SIMULATOR.***
9	ZRPK622B Deenergize	C (BOP)	Partial failure of Automatic Phase A Isolation signal (Train B Phase A Slave Relay for select CNMT Phase A valves fails to energize when required). 1SI-287, 1CS-11 & 1SW-242 ***NOTE: INSERT MALFUNCTION D WRING INITIAL SETUP OF SIMULATOR.***

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

SCENARIO NUMBER: 3 **EVENT NUMBER:** 1 **FACILITY:** Harris

EVENT **DESCRIPTION.** **Main Generator Oscillations**
(TRG E1) IMF GEN05 100

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	CUE	• ALB-022-9-4, COMPUTER ALARM GEN / EXCITER SYSTEMS, alarms and clears, then alarms again and clears as Generator Voltage exceeds high and low alarm setpoint while oscillating • Generator voltage oscillating
	SRO	Directs the BOP to refer to APP-ALB-022-9-4
	BOP	Determines alarming point is JEE1568A in Group 2 using one of the following: • ERFIS Group Display ALB 22 • *EMFIS* Alarm CRT • Generator voltage and Mvar indications
	BOP	ESTABLISH ERFIS Group Display "GENMON", "GENMON1", or "GENMON4", as necessary
	BOP	Reviews NOTE: ERFIS Point JEE1568A, ***GEN*** GROSS REACTIVE POWER, may indicate an impending or actual generator voltage regulator failure (ALB-022-4-2).
	SRO	Directs the BOP to place generator voltage regulator in manual and adjust for proper voltage
	BOP	Places generator voltage regulator in manual and adjusts for proper voltage • Place the regulator in **TEST** • Operate GENBKATOR BASE ADJUSTER switch to restore Generator voltage to 22KV • Verify Generator operating per the Generator Capability Curve
	BOP	Check for the following: • EI-525, GENERATOR FREQUENCY, stable at 60 Hz. • EI-520, GENERATOR PHASE VOLTS, stable at 22 KV. • EI-540, GEN EXCITER FIELD VOLTS stable • EI-541, GEN EXCITER FIELD CURRENT stable
		NOTE: VOLTAGE REGULATOR WILL BE REQUIRED TO BE OPERATED IN MANUAL FOR REMAINDER OF SCENARIO.
	SRO	Initiates repairs

COMMENTS:

SCENARIO NUMBER: **3** EVENT NUMBER: 2 FACILITY: **Harris**

EVENT DESCRIPTION: **Operating CCW Pump** Trip **with failure of standby pump to automatically start**
(TRG E2) MRF CCW047 0 0
IMF CCW01A

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	CUE	Diagnose trip of CCW Pump 1A-SA and failure of CCW Pump 1B-SB to automatic start • Numerous alarms on ALB-005 due to no CCW flow • Breaker indication on CCW Pump 1A-SA • Failure of CCW Pump 1B-SB to start
	SRO	Enters and directs the actions of AOP-014, Loss of Component Cooling Water
	KO	Start CCW Pump 1B-SB
	R 0	Check CCW header pressure greater than 52 psig
	KO	Dispatch AO to check condition of the breaker and the pump
	RO	Verify adequate ESW cooling water flow to the associated CCW heat exchanger
	KO	Check RHR NOT in service
	SRO	Refer to TS 3.7.3, Component Cooling Water System
		NOTE: MAY PERFORM AP-618 FOR OPERABILITY.
	SRO	Contact Maintenance to determine the cause of the CCW pump failure, and initiate corrective action

COMMENTS,

SCENARIO NUMBER: **3** EVENT NUMBER **3** FACILITY: **Harris**

EVENT DESCRIPTION: **Feed Water Flaw High Failure**
(TRG E?) ICOR FT:477 (none 0 0) 5 0

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	CUE	Diagnose low failure of controlling SG 'A' feed flow channel • SG A STM > FW FLOW MISMATCH (ALB-014-4-1B) alarming • FI-477 indicating *5* • SG 'A' feed reg valve closing • SG 'A' level decreasing • SG 'A' actual feed flow < steam flow
	SRO	Enter and direct the actions of AOP-010, Feedwater Malfunctions
	BOP	(IMMEDIATE ACTION) Check NO Main Feedwater Pump tripped
	BOP	Takes MANUAL control of FK-478 prior to direction in AOP-010 to feed per OMM-001 instructions
	BOP	Check DEH controlling Turbine Valves properly
	BOP	Maintain all of the following: • At least one Main Feedwater Pump running • Main Feedwater flow to all Steam Generators • ALL Steam Generator levels greater than 30%
	BOP	Check Feedwater Regulator Valves NO1 operating properly in AUTO and perform the following: • Place applicable Feedwater Regulator Valve (FK-478) in MANUAL • Maintain Steam Generator levels between *52* and 62% (REDUCE FW FLOW)
		CRITICAL STEP TO PREVENT PLANT TRIP AS A RESULT OF LOW SG LEVEL.
	BOP	Check Main Control Room annunciators available
	BOP	Check the following Pump status: • NO Feedwater Train Pumps tripped • Only one HDP operating

COMMENTS:

SCENARIO NUMBER: 3 EVENT NUMBER 3 FACILITY: Harris

EVENT DESCRIPTION: Feed Water Flow Low Failure (CONTINUED)

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
		NOTE: EVEN THOUGH ONLY ONE HDP IS OPERATING, THE CREW SHOULD GO TO SECTION 3.1 FOR THE FAILURE OF THE FEED FLOW TRANSMITTER.
	SRO	Go to the applicable section' • All Condensate/Feedwater flow malfunctions (other than pump trips! Section 3.1
	BOP	Check the following Recirc and Dump Valves operating properly in MODU : • Main Feedwater Pumps • Condensate Booster Pumps Candensate Pumps • ICE-293. Condensate Kecirc • 1CE-142. Condensate Dump To CST Isolation Valve
	BOP	Check the Condensate and Feedwater System intact
	BOP	Check pumps for normal operation
	SRO	Notify Load Dispatcher of any load limitations
	SRO	Check Reactor thermal power changed by less than 15% in any one hour period
	SRO	Exit AOP-0 10
	SRO	Refer to OWP-RP-OX for SG 'A' feed flow failure .SF/FF Loop 1)
	BOP	• Selects Channel 476 on FS-478Y for feed flow control in accordance with OWP-RP-08 Selects Channel 47.5 on FS-478Z for steam flow control in accordance with OWP-RP-08
	SRO	Refers to TS 3.3.1 (Item 14)- 6 hour requirement to trip bistables
	BOP	Restores Feed Reg Valve controller to AUTO when level stable at program with feed flow and steam flow matched
	SRO	Initiate repairs

COMMENTS:

SCENARIO NUMBER: 3 EVENT NUMBER: 4 / 5 FACILITY: **Harris**

EVENT **DESCRIPTION:** **Heater Drain Pump Trip with Failure of Turbine to Automatically Runback and Failure of Auto Rod Control**
(TRG E4) IMF CFW12B, ICOR PS:1006 (none 0 0) 0 0, IMF CRF 14B

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
BOOTH OPERATOR		**NOTE: ENSURE ALL FEED REG VALVES HAVE BEEN RETURNED TO AUTOMATIC CONTROL PRIOR TO INSERTING THIS EVENT.**
	CUE	Diagnoses trip of Heater Drain **Pump '3'** • ALB-019-3-2A, HTR DRN PUMP B O/C TRIP-GND, alarming • ALB-019-4-4A, CND BSTK PUMP A SUCT **LOW** PRESS. alarming • ALB-019-5-4A, CND BSTR PUMP B SUCT LOW PKESS, alarming • SG levels decreasing Reactor Power increasing
	SRO	Enters and directs the actions of AOP-010, Feedwater Malfunctions
	BOP	(IMMEDIATE ACTION) Check *NO* Main Feedwater Pump tripped Turbine **Valves** properly
	BOP	Check D-B sequencing Maintain all of the following: • At least one Main Feedwater **Pump** running
	BOP	Maintain all of the follc • Main Feedwater flow to all Steam Generators • ALL Steam Generator levels greater than 30%
	BOP	Check Main **Control** Room annunciators **available**
	BOP	Check the following Pump status: **NO** Feedwater Train Pumps tripped • Both HDPs tripped
	SRO	Go to the applicable section: • Loss of Running Pumps (including BOTH Heater Drain Pumps) Section 3.2
	BOP	Maintain all of the **following:** • At **least** one Main Feedwater Pump **running** • Main Feedwater **flow** to all Steam Generators • ALL Steam Generator **levels** greater than 308

COMMENTS:

SCENARIO NUMBER 3 | EVENT NUMBER 4 / 5 | FACILITY Harris

EVENT DESCRIPTION **Heater Drain Pump Trip with Failure of Turbine to Automatically Runback and Failure of Auto Rod Control (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	BOP	Check Main Steam pressure less than PORV controller setpoint
	BOP	Check proper Steam Dump Valve operation
	BOP	Check SG levels trending to between 52% and 62%.
	RO	Check PZR PORVs shut.
	RO	Check PZR pressure trending to 2235 psig
	RO	Check PZR Level trending *to* reference level
	BOP	Align Main Feedwater Pump control switches, as applicable: • Tripped Pump - STOP (spring-return to AUTO) • Pump Recirc Valves Tripped Pump - SHUT
	BOP	Check both Heater Drain Pumps tripped
	BOP	Check the heater and MSDT high-high level alarms clear
	BOP	Check load NOT less than or equal to 90%
	BOP	Commence load reduction to target using one of the following: • AOP-038, Rapid Downpower
	SRO	Discuss Reactor Trip Criteria using Attachment 1

COMMENTS:

SCENARIO NUMBER: 3 EVENT NIJMBER: 4 / 5 FACILITY: Harris

EVENT DESCRIPTION: Heater Drain Pump Trip with Failure of Turbine to Automatically Runback and Failure of Auto Rod Control (CONTINUED)

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	SRO	Notify Load Dispatcher that the Unit is reducing load
	RO	Determine, required boric acid addition for desired power reduction using AOP-038, Attachment 2 (206 gallons)
	RO	Notify Radwaste Control Room to he prepared for the increased water processing requirements due to boration
	SRO	Check that a planned load reduction will NOT take the unit to Turbine shutdown
	SRO	Notify Chemistry that Reactor power change will exceed 15% in a one hour period.
	RO	Check Rod Control in AUTO.
	RO	Energize all available PRZ Backup heaters
	BOP	Check the DEH System in AUTO
	BOP	Perform the following at the DEH panel: • Direct AO to go to Termination Cabinet Room to check VIDAR • Depress the Load Rate MW/MIN pushbutton • Enter desired rate (NOT to exceed 45 MW/MIN) in DEMAND display • Depress ENTER pushbutton • Depress REF pushhutton • Enter desired load in DEMAND display • Depress ENTER pushbutton Check HOLD pushbutton lit • Depress GO pushbutton • Verify the value in the REFERENCE display lowers

COMMENTS:

SCENARIONUMBER: 3 EVENT NCMBER: 4/5 FACILITY: Harris

EVENT DESCRIPTION: **Heater Drain Pump Trip with Failure of Turbine to Automatically Runback and Failure of Auto Rod Control (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	RO	Commence RCS boration as required to maintain Control Rods above the Rod *Insertion Limit*
	BOP	Verify Generator load and Reactor power lowering
	BOP	Maintain Generator reactive load(VARs) within guidelines
	SRO	When Turbine load is less than 95%, then dispatch an operator to open 3A and 3B Feedwater Heater vents per OP-136, Shutdown of Feedwater Heaters 3A and 3B
	RO	Check T_{avg} within 5°F of T_{ref}
	RO	Check control rods inserting to reduce Tavg - Tref mismatch and determines that a failure of automatic rod control has occurred
	RO	Determines that entry conditions to AOP-001 have been met
	SRO	Enters and directs the actions of AOP-001
	RO	(IMMEDIATE ACTION) CHECK that LESS TIIAN TWO control rods are dropped.
	RO	(IMMEDIATE ACTION) POSITION Rod Bank Selector Switch to MAN.
	RO	*(IMMEDIATE ACTION) CHECK Control Bank motion STOPPED.*
	SRO	Go to the applicable section: • Section 3.3, Failure of a Control Bank To Move
	RO	CHECK that AT LEAST ONE of the following conditions is present: ALB 13-7-1, ROD CONTROL URGENT ALARM, is ALARMED.
	RO	MOVE the Control Bank to equalize Tavg with Tref.
	SRO	Direct RO and BOP to ADJUST 'Turbine load OR Boron concentration to equalize Tavg with Tref.
	SRO	Directs actions to initiate repairs of automatic rod control failure

COMMENTS:

SCENARIONUMBER: 3 EVENT NUMBER: 4 / 5 **FACILITY. Harris**

EVENT DESCRIPTION. **Heater Drain Pump Trip with Failure of Turbine to Automatically Runback and Failure of Auto Rod Control (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	BOP	Check Power level at the target value
	RO	Borate or dilute as necessary to maintain AFD (Curve F-X-21 as close to the target value as possible while maintaining rods above the Rod Insertion Limit (Curve F-12-1)
	SRO	Request Chemistry obtain RCS boron samples
	RO	Align RCS makeup for AUTO operation using OP-107, Chemical and Volume Control System
	SRO	Notify the Load Dispatcher that power reduction is complete
	SRO	Returns to AOP-010
	SRO	Dispatch an operator tu check the following seated, observing tailpipes: • MSR Relief Valves • SG Safety Valves
	BOP	Check Hotwell level trending to between 71% and 76%.
	[illegible]	Reset Loss of Load interlocks C7A and C7B
	SRO	Notify Load Dispatcher of any load limitations
	[illegible]	Check Reactor thermal [illegible] w changed by less than 15% in a [illegible] one hour period
	RO	Within 1.5 hours of load rejection, check control rods above insertion limits
	SRO	Exit AOP-010

COMMENTS:

SCENARIO NUMBER: 3 **EVENT NUMBER:** 1 **FACILITY:** **Harris**

EVENT **DESCRIPTION:** Pressurizer Pressure ***High*** **Failure**
(TKG E5) ICOR PT:444 (none 0 0) 2500 1:00

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	CUE	Diagnoses high failure of Pressurizer Pressure channel P-444 • PRESSURIZER HIGH PRESS DEVIATION CONTROL (ALB-009-3-1), alarming o PRESSURIZER RELIEF DISCHARGE HIGH TEMP (ALB-009-8-2), alarming o PRESSURIZER HIGH-LOU' PRESS (ALB-009-5-1j, alarming • PRESSURIZER RELIEF TANK HIGH-LOU' LEVEL., **PRESS** OR TAMP (ALB-009-8-1), alarming • PRZ heaters off • PRZ sprays open • PRZ PORV **4448** momentarily **open** o PRZ pressure lowering on other channels
	SRO	Enters and directs **the** actions of BOP-019, Malfunction of RCS Pressure Control
	RO	(IMMEDIATE ACTION) Check that **a** bubble exists in the PRZ
	RO	(IMMEDIATE ACTION) Verifies proper operation of PRZ PORVs AND **associated** block valves **by** closing PORV 444B
	RO	(IMMEDIATE **ACTION)** 'lakes **manual** control of pressurizer **pressure** by either: • Placing master controller PK-444A in manual, or • Placing **heaters and spray valves** i&—
	SRO	Sets Rx Trip limits for high **and** low pressure
	SRO	Cio TO Section 3.1, Pressure Control Malfunctions While Operating With a Pressurizer Bubble
	RO	Monitor PRZ pressure **by** observing other reliable indication
		Check plant in **MODE** 1 OR 2
		Check PKZ pressure controlled
	RO	(CONTINIJOUS ACTION) Check PRZ pressure 7335 PSIG OK LESS

COMMENTS:

SCENARIO NIJMBER 3 **EVENT** NUMBER: *6* **FACILITY:** **Harris**

EVENT DESCRIPTION **Pressurizer Pressure *High* Failure (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	RO	Check all of the PRZ POKV block valves open
	RO	Check that a malfunction of PT-444 has occurred
	RO	Verify PK-444A in MANUAL
	KO	Control PRZ pressure as follows: • Adjust PK-444A output as necessary, to attempt to restore and maintain PRZ pressure • Check both PRZ spray valve controllers in AUTO and both spray valves operating as desired • Check all PRZ heaters operating as desired
	RO	Check both of the following conditions present: • PRZ pressure is controlled • Status of a normal spray valve or a PRZ heater bank is controlled
	SRO	Refer to Technical Specification 3.2.5, DNB Parameters
	RO	Refer to Attachment 3, Pressure Control Malfunction Symptoms — Bubble in Pressurizer
	SRO	Direct Maintenance to investigate and repair the PRZ Pressure Control System component malfunction

COMMENTS:

SCENARIO NUMHEK: 3 EVENT NUMBEK: 7 FACILITY: **Harris**

EVENT DESCRIPTION: **SG Tube Rupture**
(TRG E6) IMF SGN05C 420 10:00 AsIs

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	CUE	Diagnoses SGTR by multiple radiation monitor alarms, including: • CEV high alarm • Steamline 'C' alert • Steamline 'C' high alarm
	SRO	Determines SG tube rupture has occurred. orders a Reactor Trip and Safety Injection, and entors and directs the actions of PATH-1
		NOTE: MAY MAKE ATTEMPTS TO PERFORM ACTIONS OF AOP-016, EXCESSIVE PRIMARY PLANT LEAKAGE, BEFORE DETERMINING THAT LEAKAGE IS IN EXCESS OF CAPABILITIES TO PERFORM A CONTROLLED PLANT SHUTDOWN.
	RO	(IMMEDIATE ACTION) Verify Reactor Trip • 'Trip breakers RTA arid RYA – open Trip breakers RTB and BYH – open • Rod bottom lights – lit • Neutron flux decreasing
	BOP	[IMMEDIATE ACTION) Verify Turbine 'Trip • All turbine throttle valves – shut All turbine governor valves - shut
	BOP	(IMMHUIATE ACTION) Verify Power To AC Emergency Buses • Check AC emergency buses IA-SA and 15-SB – energized by offsite pvwer or EDGs • Check bus voltages • Check 6.9 KV bus IA-SA breaker breaker 105 (OFFSITE) – closed • Check 6.9 KV bus lB-SB breaker breaker 125 (OFFSITE) – closed

COMMENTS:

SCENARIO NUMBER: 3 EVENT NUMBER: 7 / 9 FACILITY: Harris

EVENT DESCRIPTION: SG 'Tube Rupture (CONTINUED)
Partial Failure of Automatic Phase A Isolation Signal
PHASE A FAILURE initiated by CAEP

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	RO	(IMMEDIATE ACTION) Actuates SI Actuation and determines SI has actuated • SI Actuated bypass permissive light LIT • ALB-11-5-3, REACTOR TRIP MANUAL SI
	SRO	Initiate monitoring the Critical Safety Function Status Trees
	SRO	Evaluate EAL network using Entry Point X
	SRO	Foldout A applies
	RO	Verify all CSIPs and RHR Pumps running
	RO	Verify SI flow > 200 gpm
	RO	Verify RCS pressure > 230 psig
	BOP	Verify Main Steam Isolation NOT actuated, NOR required
	RO	Verify Containment pressure has remained < 10 psig
	BOP	Verify ≥ 210 KPPH AFW flow
	BOP	Verify alignment of components from actuation of ESFAS signals using PATH-1 Guide, Attachment 6
	BOP	Determines the following Phase A valves failed to close and manually closes them: • 1SI-287, ACCUMULATORS & PRZ PORV N2 SUPPLY. • 1CS-11, LTDN ISOL VLV • 1SW-242, NNS CNMT FAN CLRS OUTLET ISOL
		CRITICAL TO COMPLETE PHASE A ISOLATION WHICH FAILED TO AUTOMATICALLY ACTUATE.
	RO	Control RCS temperature using AFW flow and steam dumps
		NOTE: MAY ISOLATE AFW TO SG 'C' ANYTIME MINIMUM LEVEL OF 25% IS MET, BUT NOT REQUIRED UNTIL DIRECTED BY PROCEDURE.

COMMENTS:

SCENARIO NUMBER: 3 EVENT NUMBER: 7/8 FACILITY: **Harris**

EVENT DESCRIPTION: **SG Tube Rupture (CONTINUED)**
Failure of MSIV on Ruptured SG to Close
MSIV FAILURE initiated by CAEP

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	BOP	Energize buses 1A1 and 1B1
	RO	Verify proper PRZ PORV and spray valve response
	BOP	Determines NO SGs are faulted
	BOP	Determines SG 'C' is ruptured • Abnormal secondary radiation levels • Uncontrolled level increase
	BOP	When SG 'C' level is > 25%, isolates AFW flow to SG 'C'
	SRO	Transitions to and directs the actions of PATH-2 at Entry Point J
	SRO	Foldout 'C' applies
	SRO	Implement Functional Restoration Procedures as required
	RO	Determines RCP trip criteria is NO?' met
	BOP	Identifies ruptured SG as SG 'C'
	BOP	Isolate SG 'C' • Adjust ruptured SG 'C' PORV controller to 88% and verify proper operation • Shut faulted SG 'C' steam supply valve, 1MS-72, to TDAFW pump (may have been performed earlier for RCS temperature control) • Verify SG blowdown isolation valves shut • Verify SG 'C' Main Steam Drain isolation valves shut • Verify SG 'C' Main Steam Isolation Bypass valve shut • Attempt to shut SG 'C' Main Steam Isolation valve
		CRITICAL TO ISOLATE STEAM SUPPLY TO TDAFW PUMP TO ISOLATE POTENTIAL RELEASE PATH.

COMMENTS:

SCENARIO NUMBER: 3 EVENT NUMBER. 7 / 9 FACILITY: Harris

EVENT DESCRIPTION: **SG Tube Rupture (CONTINUED)**
Failure of MSIV on Ruptured SG to Close

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	BOP	Determines SG 'C' Main Steam Isolation valve failed to shut • Shut all remaining Main Steam Isolation valves and bypasses • Place both Steam Dump interlock switches to OFF / RESET • Use intact SG PORVs for all further steam dumping • Direct operator to locally isolate SG 'C' using PATH-2 Guide, Attachment 1 • Verify SG 'A' and 'B' MSIV and bypass valves shut
		CRITICAL TO CLOSE SG 'A' AND 'B' MSIVs AND PLACE STEAM DUMP INTERLOCK SWITCHES IN OFF / RESET TO PREVENT STEAMING RUPTURED SG.
	BOP	Isolate feed flow to SG 'C' when level > 25%
		CRITICAL TO ISOLATE FEED FLOW TO SG 'C' TO PREVENT OVERFILLING RUPTURED SG.
	BOP	Check ruptured SG 'C' pressure > 260 psig
	RO	When PRZ pressure decreases below 2000 psig, block low steam pressure SI signal
	BOP	Check SG 'A' and 'B' both available for RCS cooldown
	SRO	Determine required Core Exit Temperature based on SG 'C' pressure
	BOP	Check condenser NOT available and dump steam from SG 'A' and 'B' at maximum rate using SG PORVs
	BOP	When Core Exit Temperatures are less than target temperature • Stop the RCS cooldown • Maintain CETs less than target temperature
	SRO	Continue recovery actions during cooldown
	RO	Mainmin RCP seal injection between 8 and 13 gpm
	BOP	Control feed flow to maintain SG 'A' and 'B' levels between 25% and 50%

COMMENTS:

SCENARIO NUMBER: 3 EVENT NUMBER: 7 FACILITY: **Harris**

EVENT DESCRIPTION: **SG Tube Rupture (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	BOP	Verify at least 210 KPPH AFW flow available
	RO	Verify power available to PRZ PORV Block valves
	RO	Check PRZ PORVs closed
	RO	Verify at least one PRZ PORV Block valve open
	RO	If PRZ PORV actuates, verify proper operation
	RO	Reset SI
	SRO	If offsite power lost, manually realign safeguards equipment
	RO	Reset Phase A and Phase B
	RO	Establish IA and N2 to Containment
	RO	Check RCS pressure > 230 psig
	RO	Stop both RHR pumps
	RO	When Core Exit Temperatures are less than target temperature • Stop the RCS cooldown • Maintain CETs less than target temperature
	SRO	DO NOT continue until cooldown complete
	BOP	Check SG 'C' pressure stable or increasing
	RO	Check RCS subcooling greater than 30 °F using the computer

COMMENTS:

SCENARIONUMBER: 3 EVENT NUMBER. 7 **FACILITY: Harris**

EVENT **DESCRIPTION:** **SG Tube Rupture (CONTINUED)**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	RO	Depressurize the RCS using normal spray until one of the following conditions met: - PRZ level ≥ 75% • RCS subcooling ≤ 10°F • RCS pressure < SG 'C' pressure AND PRZ level > 10%
		CRITICAL TO DEPRESSURIZE THE RCS TO MINIMIMZE PRIMARY TO SECONDARY LEAKAGE.
		TERMINATE THE SCENARIO AFTER THE DEPRESSURIZATION HAS BEEN COMPLETED.

COMMENTS.

SCENARIO NUMBER: 3 EVENT NUMBER: 9 FACILITY: Harris

EVENT DESCRIPTION: **Classifies the Event**

TIME	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
	SRO	Classifies the event as an Alert (EAL 2-1-2)
		NOTE: ALERT BASED ON BREACH OF RCS BARRIER (SGTR).

COMMENTS:

SCENARIO NUMBER: 3 | CRITICAL TASKS | FACILITY: Harris

CRITICAL TASKS IN SCENARIO 3

EVENT	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
3	BOP	Check Feedwater Regulator Valves NOT operating properly in AUTO and perform the following: • Place applicable Feedwater Regulator Valve (FK-478) in MANUAL • Maintain Steam Generator levels between 52 and 62% (REDUCE FW FLOW)
		CRITICAL STEP TO PREVENT PLANT TRIP AS A RESULT OF HIGH-HIGH SG LEVEL.
9	BOP	Determines the following Phase A valves failed to close and manually closes them: • 1SI-287, ACCUMULATORS & PRZ PORV N2 SUPPLY • 1CS-11, LTDN ISOL VLV • 1SW-242, NNS CNMT FAN CLRS OUTLET ISOL
		CRITICAL TO COMPLETE PHASE A ISOLATION WHICH FAILED TO AUTOMATICALLY ACTUATE.
7	HOP	Isolate SG 'C' • Adjust ruptured SG 'C' PORV controller to 88% and verify proper operation • Shut faulted SG 'C' steam supply valve, INS-72, to TDAFW pump (m y have been performed earlier fur RCS temperature control) • Verify SG blowdown isolation valves shut • Verify SG 'C' Main Steam Drain isolation valves shut • Verify SG 'C' Main Steam Isolation Bypass valve shut • Attempt to shut SG 'C' Main Steam Isolation valve
		CRITICAL TO ISOLATE STEAM SUPPLY TO TDAFW PUMP TO ISOLATE POTENTIAL RELEASE PATH.
8	BOP	Determines SG 'C' Main Steam Isolation valve failed to shut • Shut all remaining Main Steam Isolation valves and bypasses • Place both Steam Dump interlock switches to OFF / RESET • Use intact SG PORVs for all further steam dumping • Direct operator to locally isolate SG 'C' using PATH-? Guide, Attachment 1 • Verify SG 'A' and 'B' MSIV and bypass valves shut
		CRITICAL TO CLOSE SG 'A' AND 'B' MSIVs AND PLACE STEAM DUMP INTERLOCK SWITCHES IN OFF / RESET TO PREVENT STEAMING RUPTURED SG.
7	BOP	Isolate feed flow to SG 'C' when level > 25%
		CRITICAL TO ISOLATE FEED FLOW TO SG 'C' TO PREVENT OVERFILLING RUPTURED SG.

SCENARIO NUMBER: 3 CRITICAL ACTIONS FACILITY: Harris

CRITICAL TASKS IN SCENARIO 3 (Continued)

EVENT	POSITION	APPLICANT'S ACTIONS OR BEHAVIOR
7	RO	Depressurize the RCS using normal spray until one of the following conditions met: • PRZ level ≥ 75% • RCS subcooling ≤ 10 °F • RCS pressure < SG 'C' pressure AND PRZ level > 10%
		CRITICAL TO DEPRESSURIZE THE RCS TO MINIMIMZE PRIMARY TO SECONDARY LEAKAGE

SHIFT TURNOVER

The unit is at approximately 99% power at BOL, with equilibrium xenon conditions.

Boron concentration is 1238 ppm. Bank D sods are at 215 steps.

AFW Pump 'A' was taken out of service 2 hours ago for oil replacement due to contaminants and is expected to be returned lo service within the next 2 hours. Technical Specification 3.7.1.2 has been entered. Risk level is YELLOW.

HDP 'A' was tagged out of service 3 hours ago for bearing replacement and is not expected back for the next several days.

Shift orders are to maintain current power level and restore AFW Pump 'A' tn service when it becomes available. GP-005 was completed prior to removing HDP 'A' from service. The plant had been stable for 3 weeks prior to removing the Heater Drain Pump from service.

OSI-PI is not available.

SCENARIO #3