

Facility:	Davis-Besse	Scenario No.:	4	Op Test No.:	DB NRC 2016
Examiners:	_____	Operators:	_____		SRO
	_____		_____		ATC
	_____		_____		BOP
Initial Conditions:	<ul style="list-style-type: none"> • 100% power 				
Turnover: <ul style="list-style-type: none"> • Maintain 100% power Planned: <ul style="list-style-type: none"> • Shift Routines 					
Critical tasks: 1. Control SG Pressure (CT-11)					
2. Control HPI (CT-5)					
Event No.	Malf. No.	Event Type*	Event Description		
1		C-BOP/SRO	Condensate Pump high bearing temperature		
2		C-ATC/SRO (TS)	Makeup Pump trip		
3		C-BOP/SRO	Rising condenser pressure – Mechanical Hogger failure		
4		C-ATC/SRO	Purification Demin isolates		
5		R-ATC/SRO (TS)	SG 2 tube leak		
6		M-ALL	SG 2 tube rupture		
7		C-BOP/SRO`	MSR 2 nd Stage Reheat valves fail to auto close		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

DAVIS-BESSE 2016 NRC SCENARIO 4

The scenario begins with the plant in Mode 1 and the crew maintaining 100% power. Condensate Pump 1 will develop a high bearing temperature. Condensate Pump 1 will be shut down and reactor power will be reduced as needed until within the capacity of two condensate pumps.

At the Lead Evaluator cue event 2 will be triggered resulting in the trip of the running Makeup Pump. The SRO will implement DB-OP-02512, Loss of RCS Makeup. The ATC will close MU2B, RCS Letdown isolation, close MU19, Seal Injection isolation, and close MU32, PZR level control valve. The SRO will enter the applicable TS for the Inoperable Makeup Pump (TRM8.1.1). The ATC will start the standby Makeup pump, restore MU and Seal Injection flow, and reestablish Letdown.

When Makeup is restored and Letdown reestablished the Lead Evaluator will cue event 3 resulting in rising condenser pressure. The crew will identify rising pressure from trend recorder data or from receipt of annunciator alarms 15-1-F and/or 15-2-F, Hi/Lo Condenser pressure Hi. The Unit Supervisor will enter abnormal procedure DB-OP-02518, High Condenser Pressure. The Mechanical Hogger will fail to auto start and the BOP will manually start the Mechanical Hogger. Condenser pressure will stabilize at less than 5.0 inches HgA and reactor power reduction to maintain less than or equal to 5.0 HgA will not be required. At Lead Evaluator discretion the scenario will proceed to the 4th event.

Event 4 will result in MU10B, Mixed Bed 2 Letdown Inlet, failing closed isolating the Letdown flow path. The crew will diagnose the loss of Letdown using indication of no Letdown flow and annunciator 2-2-A, Letdown Pressure High. The crew will refer to alarm procedure DB-OP-02002 and verify close MU4, Pressure Reducing Valve, and MU6, Letdown Flow Control Valve. Proper lineup will be checked and MU10B identified as being closed. MU10B will be verified open and Letdown reestablished referring to DB-OP-06006, Makeup and Purification System. The Unit Supervisor may elect to enter abnormal procedure DB-OP-02512, Makeup and Purification System Malfunctions, for the loss of Letdown flow path if not diagnosed and corrected in a timely manner using the alarm procedure.

When Letdown is restored the Lead Evaluator will cue event 5 resulting in indications of a tube leak in #2 Steam Generator (approximately 25 gpm). The crew will respond to annunciator 12-1-B, MN STM LINE 2 RAD HI, in accordance with DB-OP-06012, STM GEN/SFRCS Alarm Panel 12 Annunciator and then enter DB-OP-02531, STEAM GENERATOR TUBE LEAK. The crew will evaluate the SG leakage and determine the leak rate is in excess of T.S. 3.4.13 and start a rapid shutdown (TS).

When a rapid shutdown is in progress and at the cue of the Lead Evaluator event 6 will be triggered which will increase the tube leak to a tube rupture at approximately 300 gpm. The crew will identify with calculations/indications that the tube leak has degraded to a tube rupture at greater than 50 gpm. The Unit Supervisor will implement the Emergency Procedure by routing to section 8 for Steam Generator Tube Rupture. Attachment 8, Place MU/HPI/LPI in Service, will be performed (**CT-5, Control HPI**). The reactor will be tripped when both steam generators are on Low Level Limits or by immediate action if pressurizer level is less than 100 inches.

Event 7 will be automatically triggered with the MSR Second Stage Reheat Valves failing to auto close. The crew will identify indications of Overcooling and the Unit Supervisor will route to section 7 for Overcooling. Implementation of attachment 20, Isolate or Control Potential Source of Overcooling, should identify the MSR Second Stage Reheat Valves failing to auto close. MS314 and 199, MSR Second Stage Reheat Valves, will close if attempt to manually close is initiated. The crew may manually initiate and isolate SFRCS to terminate the overcooling. The crew will control steam generator pressure to commence a cooldown and maintain minimize subcooling margin to minimize stresses on the faulted generator tubes (**CT-11, Control SG Pressures**). At the Lead Evaluator discretion the scenario will be terminated.