

**DUANE ARNOLD**

**APRIL 2001**

**FINAL, AS-GIVEN  
OPERATING TEST**

1

2

3

B.2 Facility Walk-Through		
System /JPM Title	Type Code	Safety Function
a. Manual control of Recirc MG set from MG set room <u>202002-05</u> Task 12.02	(D), (R)	1 Reactivity control
b. Return the SBDG to a Standby Readiness Condition/ Starting Diesel Air Compressor <u>264000-08</u> Task NSPEO 26.05	(D), (R), (A)	6 Electrical
c. Manually Initiate CARDOX <u>286000-03</u> Task NSPEO 9.08	(D), (R), (A) (AOP)	8 Plant Service Systems
*Type Codes: (D)irect from bank, (M)odified from bank, (N)ew , (A)lternate path, (C)ontrolroom, (S)imulator, (L)ow power, (R)CA		

Facility: <u>DAEC</u>		Date of Examination: <u>4/09001</u>
Exam level (circle one): <input checked="" type="checkbox"/> RO / SRO (I) / SRO (U)		Operating test No: _____
<b>B.1 Control Room Systems</b>		
<b>System /JPM Title</b>	<b>Type Code</b>	<b>Safety Function</b>
a. Start a CRD pump under normal conditions  <u>201001-06</u> Task 10.01	(N), (S)	1 Reactivity control
b. Rapid Restart of RFP following a reactor scram  <u>259001-11</u> Task 45.00	(N), (S), (L)	2 Reactor Water Inventory Control
c. Install EOP Defeat 5 to depressurize the reactor  <u>239001-02</u> Task 95.25	(D), (S), (L)	3 Reactor Pressure Control
d. PRA for manual startup of RCIC system to establish a cooldown  <u>217000-16</u> Task 3.04	(N), (S), (L)	4 Heat Removal from Core
e. PRA to re-energize a de-energized essential 4160V bus from the Standby Transformer  <u>262001-07</u> Task 15.05	(D) (S), (L)	6 Electrical
f. Respond to APRM Upscale and remove a flow unit from service  <u>215005-02</u> Task 99.12	(D), (S), (A)	7 Instrumentation
g. Manual Initiation of SGBT with Test Pushbuttons  <u>261000-08</u> Task 7.05	(N), (S), (A) (ESF)	9 Radioactivity Release
*Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrolroom, (S)imulator, (L)ow power, (R)CA		

Facility: <u>DAEC</u>		Date of Examination: _____	
<u>04/09/01</u>		Exam level (circle one): RO / SRO (I) / <u>SRO (U)</u>	
		Operating test No: _____	
<b>B.1 Control Room Systems</b>			
System /JPM Title	Type Code	Safety Function	
b. Restart of RFP following a reactor scram  <u>259001-11</u> Task 45.00	(N), (S), (L)	2 Reactor Water Inventory Control	
c. Install EOP Defeat 5 to depressurize the reactor  <u>239001-02</u> Task 95.25	(D), (S), (L)	3 Reactor Pressure Control	
g. Manual Initiation of SBGT with Test Pushbuttons  <u>261000-08</u> Task 7.05	(N), (S), (A) (ESF)	9 Radioactivity Release	
*Type Codes: (D)irect from bank, (M)odified from bank, (N)ew , (A)lternate path, (C)ontrolroom, (S)imulator, (L)ow power, (R)CA			

B.2 Facility Walk-Through		
System /JPM Title	Type Code	Safety Function
a. Manual control of Recirc MG set from MG set room <u>202002-05</u> Task 12.02	(D), (R)	1 Reactivity control
c. Manually Initiate CARDOX <u>286000-03</u> Task NSPEO 9.08	(D), (R), (A) (AOP)	8 Plant Service Systems
*Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrolroom, (S)imulator, (L)ow power, (R)CA		

Scenario Outline

Scenario Number ESG 13 License Exam 4/9/2001

Examiners \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Operators   SRO-1    
  RO-1    
  RO-2  

Objectives: Evaluate an increase in reactor power using Recirc; Performing Main Turbine Operational Tests; Operator response to various instrument and component malfunctions and operator response to a LOCA inside the PC.

Initial Conditions: Plant startup is in progress with reactor power is at 50%.

Turnover: Reactor power is at 50%. Continue the up power and at 60%, perform STP NS930001, "Main Turbine Operational Tests"

Event No.	Malf. No.	Event Type	Event Description
1		R	<b>1C05</b> Increase reactor power with Recirc (K/A 202002 A4.01)
2		N	<b>BOP</b> Startup "A" Standby Filter Unit
3		I/C	<b>BOP</b> Perform STP NS930001, Main Turbine Operational Tests". The Overspeed Trip Device and Mechanical Trip Valve Test and Backup Overspeed Trip Circuits Test will be UNSAT which requires that the turbine be unloaded immediately. (K/A 241000 K4.13)
4		I/C	<b>1C05</b> Main Condenser Hotwell Reject Valve fails open
5		I/C	<b>1C05</b> Main Generator backup lockout relay does not trip and an open transfer of the non-essential buses occur when the primary lockout relay trips. (K/A 262001 K4.03)
6		I/C	<b>1C05</b> GEMAC variable leg break (K/A 216000 A2.03)
7		M	<b>Crew</b> Perform actions of EOP 1 and EOP 2 as drywell pressure and temperature rise. (K/A 295024)
8		I/C	<b>BOP</b> HPCI fails to Auto start (K/A 206000 A3.03)
9		I/C	<b>BOP</b> Containment Spray valves will not open (K/A 226001 A2.05)
10		I/C	<b>1C05 and BOP</b> Level oscillations occur when the Saturation Curve is entered. (K/A 216000 A2.08)
11		M	<b>Crew</b> Perform the actions required by RPV Flooding. (K/A 295028)

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

Scenario Outline

Scenario Number ESG 11 License Exam 4/9/2001

Examiners \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Operators **SRO 1** \_\_\_\_\_  
**RO 1** \_\_\_\_\_  
**RO 2** \_\_\_\_\_

Objectives:

Initial Conditions:

Turnover: The plant is operating at 90% power. The upcoming refueling outage has been delayed due to a fuel shipment being damaged by a delivery semi-truck wreck. The outage is scheduled to start in eleven days. One ADS valve PSV-4402 bellows failure alarm activated yesterday and the safety function of PSV-4402 has been declared inoperable. T.S. Section 3.4.3.A actions have been identified. Heavy rains have caused flood warnings to be declared for the Cedar River.

Event No.	Malf. No.	Event Type	Event Description
1		R	<b>1C05</b> Power reduction to 80% power with Recirc.
2		N	<b>SRO</b> <b>BOP</b> STP 3.6.1.7-01, Drywell to Suppression Chamber Vacuum Breaker Operability Test
3		I/C	<b>SRO</b> <b>BOP</b> Spurious Group 6 Isolation (HPCI)
4		I/C	<b>SRO</b> <b>1C05</b> "B" RFP minimum flow valve CV-1611 fails open
6		I/C	<b>SRO</b> <b>BOP</b> Degradation of "A" EHC Pump with "B" failing to auto start
7		I/C	<b>SRO</b> <b>1C05</b> "E" APRM fails upscale
8		M	<b>ALL</b> Spurious Group 1 Isolation
9		I/C	"A" RHR containment spray valves will not enable
10		I/C	2 SRVs and their vacuum breakers fail open

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

Scenario Outline

Scenario Number ESG 12 License Exam 4/9/2001

Examiners \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Operators **SRO 1** \_\_\_\_\_  
**RO 1** \_\_\_\_\_  
**RO 2** \_\_\_\_\_

Objectives: Evaluate a reactor power decrease with the Reactor Recirculation System; Startup of the Service Water systems; Response to various instrument failures

Initial Conditions: HPCI is in day 9 of 14, it has been repaired The system is available but, not operable. The crew is to startup service water systems for sampling.

Turnover: The plant is operating at 90% power.

Event No.	Malf. No.	Event Type	Event Description
1		R	<b>1C05</b> Decrease power with Recirc by 60 MWe. (K/A 202002 A4.01)
2		N	<b>SRO</b> Direct the BOP operator to start service water systems <b>BOP</b> Startup RHRSW/ESW for sampling. (400000 A4.01)
3		I/C	<b>SRO</b> Direct crew response to XFV actuation <b>BOP</b> Respond to XFV-4642A failing in an intermediate position (K/A 223002 A1.01)
4		I/C	<b>SRO</b> Direct the BOP operator to verify the Group 3 isolation completed. <b>BOP</b> A group 3B isolation occurs with a failure of CV-4371A (K/A 223002 A1.02)
5		I/C	<b>SRO</b> Direct operator response to a trip of one Recirc pump. <b>1C05</b> "B" Recirc MG set trips (K/A 202002 A2.01)
6		I/C	<b>BOP</b> HPCI spurious initiation (K/A 206000 A2.17)
7		M	<b>ALL</b> HPCI steam line break in the Steam Tunnel (K/A 295032 EA1.05)
8		I/C	<b>BOP</b> "B" RHR loop flow indicator fails (K/A 219000 A1.02)
9		I/C	<b>BOP</b> HPCI fails to isolate (K/A 223002 A2.01)

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

Facility:	Date of Examination:	Operating Test Number:		
<b>1. GENERAL CRITERIA</b>		Initials		
		a	b	c
a.	The operating test conforms with the previously approved outline; changes are consistent with sampling requirements (e.g., 10 CFR 55.45, operational importance, safety function distribution).	MC	JMD	AMS
b.	There is no day-to-day repetition between this and other operating tests to be administered during this examination.	MC	JMD	AMS
c.	The operating test shall not duplicate items from the applicants' audit test(s)(see Section D.1.a).	MC	JMD	AMS
d.	Overlap with the written examination and between operating test categories is within acceptable limits.	MC	JMD	AMS
e.	It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.	MC	JMD	AMS
<b>2. WALK-THROUGH (CATEGORY A &amp; B) CRITERIA</b>		-	-	-
a.	Each JPM includes the following, as applicable: <ul style="list-style-type: none"> <li>• initial conditions</li> <li>• initiating cues</li> <li>• references and tools, including associated procedures</li> <li>• validated time limits (average time allowed for completion) and specific designation if deemed to be time critical by the facility licensee</li> <li>• specific performance criteria that include:                             <ul style="list-style-type: none"> <li>- detailed expected actions with exact criteria and nomenclature</li> <li>- system response and other examiner cues</li> <li>- statements describing important observations to be made by the applicant</li> <li>- criteria for successful completion of the task</li> <li>- identification of critical steps and their associated performance standards</li> <li>- restrictions on the sequence of steps, if applicable</li> </ul> </li> </ul>	MC	JMD	AMS
b.	The prescribed questions in Category A are predominantly open reference and meet the criteria in Attachment 1 of ES-301.	NA MC	NA	N/A
c.	Repetition from operating tests used during the previous licensing examination is within acceptable limits (30% for the walk-through) and do not compromise test integrity.	MC	JMD	AMS
d.	At least 20 percent of the JPMs on each test are new or significantly modified.	MC	JMD	AMS
<b>3. SIMULATOR (CATEGORY C) CRITERIA</b>		-	-	-
a.	The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.	MC	JMD	AMS
Printed Name / Signature		Date		
a. Author	<u>Michael Fisher / Michael Fisher</u>	<u>4/3/01</u>		
b. Facility Reviewer(*)	<u>JMD / Mike Davis</u>	<u>4/3/01</u>		
c. NRC Chief Examiner (*)	<u>Ann Marie Stone / Ann Marie Stone</u>	<u>4/6/01</u>		
d. NRC Supervisor (*)	<u>David E. Hill / David E. Hill</u>	<u>4/6/01</u>		
(*) The facility signature is not applicable for NRC-developed tests; two independent NRC reviews are required.				

Facility:		Date of Exam:		Scenario Numbers: / /		Operating Test No.:		
QUALITATIVE ATTRIBUTES						Initials		
						a	b	c
1.	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events.	MC	JMB	AMS				
2.	The scenarios consist mostly of related events.	MC	JMB	AMS				
3.	Each event description consists of <ul style="list-style-type: none"> <li>• the point in the scenario when it is to be initiated</li> <li>• the malfunction(s) that are entered to initiate the event</li> <li>• the symptoms/cues that will be visible to the crew</li> <li>• the expected operator actions (by shift position)</li> <li>• the event termination point (if applicable)</li> </ul>	MC	JMB	AMS				
4.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.	MC	JMB	AMS				
5.	The events are valid with regard to physics and thermodynamics.	MC	JMB	AMS				
6.	Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.	MC	JMB	AMS				
7.	If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.	NA	NA	NA				
8.	The simulator modeling is not altered.	MC	JMB	AMS				
9.	The scenarios have been validated. Any open simulator performance deficiencies have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.	MC	JMB	AMS				
10.	Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.4 of ES-301.	MC	JMB	AMS				
11.	All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).	MC	JMB	AMS				
12.	Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).	MC	JMB	AMS				
13.	The level of difficulty is appropriate to support licensing decisions for each crew position.	MC	JMB	AMS				
TARGET QUANTITATIVE ATTRIBUTES (PER SCENARIO; SEE SECTION D.4.D)						Actual Attributes		
1.	Total malfunctions (5-8)	7	1	8	MC	JMB	AMS	
2.	Malfunctions after EOP entry (1-2)	2	1	3	MC	JMB	AMS	
3.	Abnormal events (2-4)	1	1	2	MC	JMB	AMS	
4.	Major transients (1-2)	1	1	1	MC	JMB	AMS	
5.	EOPs entered/requiring substantive actions (1-2)	2	1	2	MC	JMB	AMS	
6.	EOP contingencies requiring substantive actions (0-2)	1	1	1	MC	JMB	AMS	
7.	Critical tasks (2-3)	3	1	0	MC	JMB	AMS	