

PRIVACY ACT INFORMATION — FOR OFFICIAL USE ONLY

U.S. Nuclear Regulatory Commission Individual Examination Report					
Applicant's Name: [REDACTED]			Docket Number: [REDACTED]		
I	R	Examination Type (Initial or Retake)	Facility Name: Crystal River		
		Reactor Operator	Facility Description	X	Hot
X		Senior Reactor Operator (SRO) Instant			Cold
		SRO Upgrade			BWR
		SRO Limited to Fuel Handling		X	PWR

5x16

Written Examination Summary	
Author/Reviewer: Facility	RO/SRO /Total Exam Points 75 / 25 / 100
NRC Grader/Reviewer: Steven D. Rose	Applicant Points 68 / 20 / 88
Date Administered: September 19, 2005	Applicant Grade (%) 90.67 / 80.00 / 88.00

Operating Test Summary	
Administered by: Gerard W. Laska	Date Administered: September 12-15, 2005
Walk-Through (Overall)	S
Administrative Topics	S
Simulator Operating Test	U

Examiner Recommendations					
Check Blocks	Pass	Fail	Waive	Signature	Date
Written Examination	X			<i>Steven D. Rose</i>	10/5/05
Operating Test		X		<i>Gerard W. Laska</i>	10/5/05
Final Recommendation		X		<i>Steven D. Rose</i>	10/5/05

License Recommendation			
	Issue License	Signature - Supervisor	Date
X	Deny License	James H. Moorman	10/9/05

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Applicant Docket Number: [REDACTED]		2 of 18
Walk-Through Grading Details	Evaluation (S or U)	Comment Page Number
Administrative Topics		
a. Admin (CO1) – Determine overtime availability.	S	
b. Admin (CO2) – Calculate SDM with a dropped control rod.	S	
c. Admin (EC1) – Perform a QPTR calculation	S	
d. Admin (RC1) – Calculate the maximum permissible stay time with an Emergency Event in progress.	S	
e. Admin (EP2) - Determine Emergency Action Level and Protective Action Recommendations.	S	
Systems - Control Room		
a. N/A		
b. CVCS – Respond to OTSG tube rupture at power K/A – 004A4.06 RO 3.6 SRO 3.1(EOP-6)	S	
c. RCS – Respond to a stuck open PZR spray valve K/A – 002A4.01 RO 4.2 SRO 4.4 (AP-520)	S*	4
d. RHR – Respond to an ES A/B actuation K/A – 025AA1.10 RO 3.1 SRO 2.9 (EOP-3)	S*	5
e. MSS – Perform actions for a stuck open MSSV K/A – 039A2.04 RO 3.4 SRO 3.7 (EOP-2)	S	
f. EDG – Synchronize off-site power and unload/shutdown EDG K/A – 064A4.09 RO 3.2 SRO 3.3 (AP-770)	S	
g. RPS – Restore RPS channel power K/A – 012A2.02 RO 3.6 SRO 3.9 (OP-507)	S	
h. WG – Respond to a Waste Gas header leak K/A – 060AA2.05 RO 3.7 SRO 4.2 (AP-250)	S*	6
Systems - In-Plant		
i. CRDS – Manual Reactor trip from outside control room K/A – E02EA1.1 RO 4.0 SRO 3.6 (AP-990)	S	
j. EFW – Reset EFP-2 trip valve (ASV-50) K/A – 061A2.04 RO 3.4 SRO 3.8 (OP-450)	S	
k. CCW – Appendix R Chiller lineup K/A – 008A2.01 RO 3.3 SRO 3.6 (AP-330)	S	

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Applicant Docket Number: [REDACTED]

Ex U

**Senior Reactor Operator
Simulator Operating Test Grading Details**

Competencies/ Rating Factors (RFs)	RF Weights	RF Scores	RF Grades	Comp. Grades	Comment Page No.
1. Interpretation/Diagnosis					
a. Recognize & Attend	0.20	1	0.20	1.80	7,8,9
b. Ensure Accuracy	0.20	2	0.40		10,11
c. Understanding	0.30	1	0.30		12,13,14
d. Diagnose	0.30	3	0.90		
2. Procedures					
a. Reference	0.30	3	0.90	3.00	
b. EOP Entry	0.30	3	0.90		
c. Correct Use	0.40	3	1.20		
3. Control Board Operations					
a. Locate & Manipulate	0.34	3	1.02	2.67	15
b. Understanding	0.33	3	0.99		
c. Manual Control	0.33	2	0.66		
4. Communications					
a. Clarity	0.40	2	0.80	2.60	16
b. Crew & Others Informed	0.40	3	1.20		
c. Receive Information	0.20	3	0.60		
5. Directing Operations					
a. Timely & Decisive Action	0.30	3	0.90	2.50	17
b. Oversight	0.30	2	0.60		
c. Solicit Crew Feedback	0.20	3	0.60		18
d. Monitor Crew Activities	0.20	2	0.40		
6. Technical Specifications					
a. Recognize and Locate	0.40	3	1.20	3.00	
b. Compliance	0.60	3	1.80		

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ES 303-1 CROSS REFERENCE:

System Control Room: JPM "c".

JPM TASK:

Respond to A Stuck Open PZR Spray Valve.

EXPECTED ACTION/RESPONSE:

The applicant was directed to perform a boron equalization per Section 4.9 of OP-305 "Operation of the Pressurizer." The applicant was to energize all pressurizer heaters, take manual control of RCV-14, Pressurizer Spray, and open the valve to control pressurizer heater demand between 50 to 90%. RCS 14, when opened was to fail full open. The applicant was to attempt to close the block valve, and when that is not successful to trip the 1B RCP.

APPLICANTS ACTION/RESPONSE:

The applicant performed the actions as expected, upon securing the 1B RCP the applicant remarked that controlling RCS pressure would more difficult. The examiner asked a follow up question regarding equipment or strategies that could be used to control RCS pressure. The applicant replied that the only way to control RCS pressure was to turn 'off' or 'on' the pressurizer heaters, and allow ambient losses to lower pressure or to increase letdown to lower pressurizer level and reduce pressure. The applicant failed to identify that the plant was equipped with an auxiliary spray valve fed from the high pressure injection pumps.

ES 303-1 CROSS REFERENCE:

System Control Room: JPM "d".

JPM TASK:

Respond to an ES A/B Actuation.

EXPECTED ACTION/RESPONSE:

The CRS directed the applicant to ensure that High Pressure Injection(HPI), Reactor Building Isolation (RBIC), Low Pressure Injection (LPI) and Reactor Building Spray (BS) equipment is properly aligned following an actuation signal on a large Break Loss of Coolant Accident. The applicant was expected to observe that DHV (Decay Heat Valve) 34 and 35 (A and B train suction supplies for the LPI and BS pumps) did not open and attempt to open the valves. DHV-34 was to manually opened to supply 'A' train flow. DHV-35 was mechanically stuck closed, and the applicant was to secure the 'B' LPI pump and 'B' BS pump within 6 minutes to prevent pump damage, in order to maintain pumps available for long term core cooling.

APPLICANTS ACTION/RESPONSE:

The applicant ensured that the HPI, and RBIC lineups were correct. The applicant observed RCS pressure continue to decrease and observed the LPI actuation signal and Reactor Building Spray actuations occur. The applicant observed that low pressure injection flow, and Reactor building spray flow was not in progress after the actuations. The applicant began to place BSV-3 (Building spray flow control valve) in manual but then observed that the valve indicated full open. The applicant then discovered that DHV-34 and DHV-35 (A and B train suction supplies for the LPI and BS pumps) did not open. The applicant correctly attempted to open DHV-34 and DHV-35. DHV-34 opened and provided flow to the A train of LPI and BS. DHV-35 failed to open. The applicant attempted several times to open DHV-35 from the control board, but did not send anyone out to investigate. The applicant secured 1B LPI pump to protect it, but allowed the 1B BS pump to continue to run until it tripped. After the 1B BS pump tripped the applicant attempted to start the 1B BS pump again. (The applicant stated that one restart was allowed on pumps that had tripped.) The spray pump breaker closed and immediately tripped open again. The examiner asked a follow-up question to the applicant as to why the BS pump tripped and the applicant replied probably over current. The applicant was then asked what was the suction source to the 1B spray Pump? The applicant looked at the control board and followed the mimic back to the BWST via the closed DHV-35 and observed that DHV-35 was the suction source for the 1B spray pump.

ES 303-1 CROSS REFERENCE:

System Control Room: JPM "h".

JPM TASK:

Respond to a Waste Gas Header Leak.

EXPECTED ACTION/RESPONSE:

The applicant was directed by the Control Room Supervisor to perform AP-250 "Radiation Monitor Actuation" in response to a RM-A2 "Atmospheric Radiation High" alarm. In part the applicant was to ensure auto actions associated with the radiation monitor had occurred, and IF RM-A2 Gas approaches off scale high, THEN align RM-A2 LMH valve controller. Based on the reading of RM-A2 the applicant was to select the RM-A2 controller Mid/Hi Range Controller to "Auto".

APPLICANTS ACTION/RESPONSE:

The applicant performed the actions as expected, and aligned the RM-A2 LMH valve controller to Auto. This placed the RM-A2 detector in midrange. The applicant went back to the RM-A2 instrument observed that the scale had changed and reset RM-A2 (with high radiation still present) and attempted to restart AHF-9B. The fan would not restart. The Examiner asked a follow-up question as to the conditions of RM-A2. The applicant replied that the scale had changed but the condition of high radiation was still present, and that he should not have tried to start the fan.

SIMULATOR OPERATING TEST GRADING DETAILS**ES 303-1 CROSS REFERENCE:**

"1.a" Interpret/Diagnose - Recognize and Attend

SCENARIO 1, EVENT 2**EVENT DESCRIPTION:**

A 55 gpm RCS leak occurs in the reactor building. AP 520, "Loss of RCS Coolant or Pressure" will be entered and a leak rate analysis performed. TS 3.4.12, condition A will apply. An Unusual Event will be entered based on unidentified leakage greater than or equal to 10 gpm. TS and E-Plan not required to be entered at this time due to the transient in progress.

EXPECTED ACTIONS/RESPONSE:

The applicant as RO was to Verify that OTSG tube leakage had not increased, control pressurizer level, start a leak rate determination, and recognize the need for a rapid plant shutdown in accordance with AP-510 Rapid Power Reduction based on deteriorating Reactor Building conditions.

APPLICANT ACTIONS/RESPONSE:

The applicant, as RO, called chemistry to verify that a tube leak did not exist, controlled pressurizer level, and determined that RCS leakage was approximately 60 gpm. Reactor Building pressure was also increasing (RB pressure was 1.7 psig and rising). However, the team delayed beginning the plant S/D for over 30 minutes after determining that significant leakage existed and RB pressure was continuing to rise towards an ES actuation. (RBIC actuates at 4 psig)

The team failed to take prompt and prudent action to place the plant in a condition that would lessen the leak rate, and remove the challenge to the containment barrier. When the team decided to shutdown, the team also elected to use the normal shutdown procedure OP-204 ramping the unit off line at ½% per min, instead of using AP-510 "Rapid Load Reduction". The applicant, as RO, did not question the SROs decision for ramping the unit down at the lower rate even though it was apparent that this was a significant leak.

LACK OF ABILITY/KNOWLEDGE:

The applicant did not recognize the severity of the trend of RB pressure and failed to take actions to address deteriorating conditions of RB pressure which indicated a non-recoverable RCS leak.

E-6

ES 303-1 CROSS REFERENCE:

"1.a" Interpret/Diagnose - Recognize and Attend

SCENARIO 1, EVENT 2 (continued)**CONSEQUENCES:**

Failure to take prompt and prudent actions to ramp the unit down in a timely manner allowed the plant to remain in an operational condition that could have allowed the leak to get worse. (Maintaining RCS pressure and temperature at high values).

K/A: 002A2.01 (4.3/4.4)

10 CFR 55.45 (a)(13): Demonstrate the applicant's ability to function within the control room team as appropriate to the assigned position, in such a way that the facility licensee's procedures are adhered to and that the limitations in its license and amendments are not violated.

ES 303-1 CROSS REFERENCE:

"1.a" Interpret/Diagnose - Recognize and Attend

SCENARIO 1, EVENTS 3 AND 4**EVENT DESCRIPTION:**

When the power reduction is started "A" loop FW demand will fail as "is". Within a few percent power the RO will recognize this malfunction and transfer the appropriate stations to Hand. The power decrease will then continue in manual.

EXPECTED ACTIONS/RESPONSE:

The applicant, as RO, was to recognize the FW flow mismatch, and request permission to place the FW Loop demand to manual and continue the power reduction in manual.

APPLICANTS ACTIONS/RESPONSE:

The applicant, as RO, failed to diagnose the FW flow mismatch. This resulted in the BOP taking the turbine to manual in an attempt to control turbine header pressure. The RO monitored FW flow which indicated a divergence. However, he failed to take actions addressing the divergence in FW flows, or inform other crew members of the problem. The SRO noticed the divergence ("A" FW flow straight lining) and directed the RO to place the Reactor Demand, Bailey, and both FW controls to manual. The RO placed the Reactor Demand and Bailey to manual but failed to place the FW controls to manual until the SRO directed him a second time.

LACK OF ABILITY/KNOWLEDGE:

The applicant failed to demonstrate the ability to recognize and attend to off-normal trends.

CONSEQUENCES:

Failing to recognize off-normal trends and respond in a timely manner could have delayed the response required to mitigate events and caused the team to have several controls in manual unnecessarily. This made it more difficult to control RCS temperature, pressurizer level and RCS pressure. This compounded the excessive heat transfer event in that it caused several ES actuations resulting in three starts of the 1C HPI pump. The three starts exceeded the starting duty limitations listed in the precaution and limitations in section 3.2 of OP-402 "Make-up and Purification System".

K/A: 059A2.11 (3.0/3.3)

10 CFR 55.45 (a)(7): Safely operate the facility's heat removal systems, including primary coolant, emergency coolant, and decay heat removal systems and identify the relations of the proper operation of these systems to the operation of the facility.

The applicant was graded as a "1" in this competency due to failing to recognize the severity of the RCS leak, and the need to take the unit offline in a timely manner with RB conditions deteriorating, and failing to recognize the feedwater flow mismatch.

ES 303-1 CROSS REFERENCE:

"1.b" Interpret/Diagnose - Ensure Accuracy

SCENARIO 3, EVENT 5**EVENT DESCRIPTION:**

MUV-258 (1A RCP Seal Injection Inlet) will spuriously close. Thirty seconds after the valve is reopened RCP-1A will experience first and second stage seal failures. OP-302 "RCP Operation" will direct securing the RCP. When the RCP is secured the "A" OTSG MBV will not receive an automatic signal to close.

EXPECTED ACTIONS/RESPONSE:

The applicant, as SRO, was expected to ensure that either the RO or BOP referred to Annunciator Response H-4-5 "RCP Seal Bleed Off High". After the ARP was referenced, the applicant was expected to direct the RO/BOP to reopen MUV-258.

APPLICANTS ACTIONS/RESPONSE:

The applicant, as SRO, did not direct the RO to refer to the ARP. Instead he immediately directed the RO to secure the 1A RCP based on the limited information received from the BOP and without verifying that a seal failure actually existed. The applicant failed to ensure that the crew collected correct, accurate, and complete information that would aid the team in the initial diagnosis. The examiner asked the applicant a followup question: "What would the indications be if the seal injection valve were to spuriously close?" The applicant replied they would be the same as the indications that we received during the scenario. The examiner then asked: What other indications would help differentiate between an actual seal failure and a seal injection valve closure? The applicant replied he could have looked at seal temperatures, but that he did not. The applicant could have looked at Annunciator I-4-4 "RCP Seal Upper Stage Temp High" which was not illuminated, indicating that a seal failure did not exist. The applicant was downgraded in this competency since he directed an improper action based on an inaccurate diagnosis. The inaccurate diagnosis resulted from the applicants failure to ensure all available and necessary information was collected and assessed.

LACK OF ABILITY/KNOWLEDGE:

The applicant failed to request all of the information required from the team to make a correct diagnosis of plant conditions.

CONSEQUENCES:

Removing the 1A RCP from service when not required reduced overall core forced flow, and required the ICS system to re-ratio Feed water flow rates when not required.

K/A: 003A2.02 (3.7/3.9)