

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9908100236 DOC. DATE: 99/08/05 NOTARIZED: NO DOCKET #
 FACIL: 50-261 H.B. Robinson Plant, Unit 2, Carolina Power & Light Co 05000261
 AUTH. NAME AUTHOR AFFILIATION
 WARDEN, R.L. Carolina Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION
 REYES, L.A. Region 2 (Post 820201)

SUBJECT: Forwards comments on initial NRC license exam administered from 990723-29 at HBRSEP Unit 2.

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Carolina Power & Light Company
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3581 West Entrance Road
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Serial: RNP-RA/99-0150

AUG 5 1999

Mr. Luis A. Reyes
Regional Administrator
U. S. Nuclear Regulatory Commission - Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, S. W., Suite 23T85
Atlanta, Georgia 30303-8931

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

POST EXAMINATION COMMENTS FOR INITIAL OPERATOR
LICENSE EXAMINATIONS ADMINISTERED DURING JULY 1999

Dear Mr. Reyes:

The Attachment to this letter provides comments on the initial NRC license examination administered from July 23 - 29, 1999 at H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. The enclosed comments are submitted in accordance with NUREG-1021, Revision 8, "Operator Licensing Examiner Standards," ES, Section 402, "Administering Written Examinations at Power Reactors," which requires a restatement of the question, answer, reference, comment and a recommendation for resolution of the comment, and supporting references for that resolution.

If you have any questions concerning this matter please contact Mr. H. K. Chernoff.

Sincerely,

R. L. Warden
Manager - Regulatory Affairs

9908100236 990805
PDR ADOCK 05000261
G PDR

PMY/pmy
Attachment

c: Document Control Desk
NRC Resident Inspector
R. Subbaratnam, NRC, NRR
M. Ernestes, NRR, HOHB

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
POST EXAMINATION COMMENTS FOR INITIAL OPERATOR
LICENSE EXAMINATIONS ADMINISTERED DURING JULY 1999

JPM - 009a ; Response to Power Range N-44 Failure and Remove from Service

SRO question # 3, RO Question # 1

SRO question # 75, RO Question # 73

SRO Question # 88, RO Question # 92

SRO Question #94, RO Question # 96

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
POST EXAMINATION COMMENTS FOR INITIAL OPERATOR
LICENSE EXAMINATIONS ADMINISTERED DURING JULY 1999

- A. Copy of pages from JPM CR-009.a including Step 24.
- B. Recommendation for Step 24
- C. References used in recommendation

**REGION II
LICENSE EXAMINATION
JOB PERFORMANCE MEASURE**

JPM CR-009.a

**Respond to Power Range N-44 Failure
and Remove From Service**

CANDIDATE _____

EXAMINER _____

Approved By: _____

Date: _____

<p>STEP 22: ROD STOP BYPASS Switch: BYPASS PR 44 (9th Step)</p> <p>STANDARD: On the Miscellaneous Control & Indication Panel , the operator places the ROD STOP BYPASS Switch to the BYPASS PR 44 position.</p> <p>COMMENTS:</p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>STEP 23: COMPARATOR CHANNEL DEFEAT Switch: SELECT PR 44 (10th Step)</p> <p>STANDARD: On the Miscellaneous Control & Indication Panel, the operator places the COMPARATOR CHANNEL DEFEAT Switch to the SELECT PR 44 position</p> <p>COMMENTS:</p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>STEP 24: DETECTOR CURRENT COMPARATOR DRAWER: UPPER and LOWER SECTION Switch: SELECT PR 44*** (11th Step)</p> <p>STANDARD: On the DETECTOR CURRENT COMPARATOR DRAWER, the operator selects PR 44 with the Upper and Lower Section switches.</p> <p>COMMENTS:</p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>STEP 25: NI-44 INSTRUMENT POWER FUSES**: REMOVED (12th Step)</p> <p>STANDARD: Operator determines this step is not required.</p> <p>EXAMINER'S NOTE: This action is N/A if power is > P-10 or the reactor is in MODES 3 through 6 (ITS Table 3.3.1-1)</p> <p>COMMENTS:</p>	<p>___ SAT</p> <p>___ UNSAT</p>

Recommendation for Step 24

JPM - 009.a ; Respond to Power Range N-44 Failure and Remove From Service

Administered to the RO and SRO Instant Candidates

Step 24 of the JPM is a critical step that requires the operator to place the Upper and Lower Section switches on the Detector Current Comparator Drawer to the N44 position.

Based on the note annotated by the three asterisks (***) for this step, and feedback from Reactor Engineering it is acceptable to not reposition these switches as directed by OWP-11 if the operator first conducts a verification that the QPTR input from the affected Power Range detector is operable. It is requested, that if the student performed a verification that the input to QPTR was still operable that it be acceptable to not place the Upper and Lower Section switches to the N44 position.

Based on Operations Management expectations it is also acceptable based on the conditions of this failure to position the switches to the N44 position as directed by OWP-11.

CAROLINA POWER & LIGHT COMPANY
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 3
PART 10

OPERATIONS WORK PROCEDURE

OWP-011

NUCLEAR INSTRUMENTATION
(NI)

REVISION 12

CONTINUOUS USE

OWP Title: NI-4
Page 4 of 4

VALVE, BREAKER, SWITCH LINEUP

COMPONENT DESCRIPTION	POSITION FOR MAINTENANCE	RESTORED POSITION
<u>POWER RANGE CHANNEL NI-44</u>		
	<u>INIT</u> <u>VERI</u>	<u>INIT</u>
ROD STOP BYPASS Switch	BYPASS PR 44	OPERATE
COMPARATOR CHANNEL DEFEAT Switch	SELECT PR 44	NORMAL
DETECTOR CURRENT COMPARATOR Drawer:		
UPPER SECTION Switch	SELECT PR 44	NORMAL
LOWER SECTION Switch	SELECT PR 44	NORMAL
NI-44 INSTRUMENT POWER FUSES **	REMOVED	INSTALLED
Bistable Light LOW POW RANGE HI FLUX NC44P **	ILLUM	EXTNG

- * IF Bistable Light is illuminated PRIOR to tripping Bistable Switch, THEN perform an independent verification of Bistable Switch position.
- ** This action is N/A if Power is greater than P-10 OR the reactor is in MODES 3 through 6 (ITS Table 3.3.1-1).
- *** Only required to be performed if the Power Range Neutron Flux input to QPTR is inoperable.

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
POST EXAMINATION COMMENTS FOR INITIAL OPERATOR
LICENSE EXAMINATIONS ADMINISTERED DURING JULY 1999

SRO question #3, RO question #1

- A. Copy of RO question #1, answer and references.
- B. Recommendation for questions
- C. References for recommendations

1. Given the following plant conditions:

- Control Rod H-8 from Control Bank "D" (CBD) has dropped into the core
- A runback has occurred and the operators have stabilized the plant at 67% RTP
- CBD @188 steps
- The operators are preparing to recover rod H-8

Which ONE (1) of the following describes the operability of Control Rod H-8 at this time?

The rod is considered:

- A. operable because it can be moved by it's mechanism.
- B. operable because it is providing the assumed reactivity that would be available upon a reactor trip.
- ☒ C. inoperable because it is not trippable.
- D. inoperable because it is more than 7.5 inches out of alignment with it's bank.

Recommendation for questions.

Question #1 - RO

Question #3 - SRO

Choice "B" should be the correct answer.

Choice "A" - the control rod is operable because it is trippable, but based on the question stem, the rod has not been moved. The operability of the control rod is not determined by the ability of its mechanism to move the rod. Therefore, Choice "A" is incorrect.

Choice "B" - the control rod is operable because it is trippable. The control rod is providing the negative reactivity that would be available following a reactor trip. In this situation, the dropped control rod inserted negative reactivity into the core that was balanced by the positive reactivity insertion from the power reduction. The reduction in power has created a state point where the Power Defect is less. So, during a trip of the reactor, the rods need to overcome less of the Power Defect to provide for an adequate shutdown margin.

Choice "C" - For a control rod to be inoperable, per Technical Specifications this means that the control rod is not trippable. The control rod in this case is obviously trippable since it is fully inserted into the core. Therefore, Choice "C" is incorrect.

Choice "D" - a control rod is not inoperable if out of alignment with the rest of the control bank. The rod is misaligned, and as long as the rod is trippable then it is operable. Therefore, Choice "D" is incorrect

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Rod Group Alignment Limits

LCO 3.1.4 All shutdown and control rods shall be OPERABLE.

AND

Individual indicated rod positions shall be as follows:

- a. For bank demand positions ≥ 200 steps, each rod shall be within 15 inches of its bank demand position, and
- b. For bank demand positions < 200 steps, each rod shall be within 7.5 inches of the average of the individual rod positions in the bank.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more rod(s) inoperable.	A.1.1 Verify SDM is within the limits provided in the COLR.	1 hour
	<u>OR</u>	
	A.1.2 Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	A.2 Be in MODE 3.	6 hours

(continued)

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.4 Rod Group Alignment Limits

BASES

BACKGROUND

The OPERABILITY (e.g., trippability) of the shutdown and control rods is an initial assumption in all safety analyses that assume rod insertion upon reactor trip. Maximum rod misalignment is an initial assumption in the safety analysis that directly affects core power distributions and assumptions of available SDM.

The applicable criteria for these reactivity and power distribution design requirements are described in the UFSAR (Ref. 1) and 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Plants" (Ref. 2).

Mechanical or electrical failures may cause a control rod to become inoperable or to become misaligned from its group. Control rod inoperability or misalignment may cause increased power peaking, due to the asymmetric reactivity distribution and a reduction in the total available rod worth for reactor shutdown. Therefore, control rod alignment and OPERABILITY are related to core operation in design power peaking limits and the core design requirement of a minimum SDM.

Limits on control rod alignment have been established, and all rod positions are monitored and controlled during power operation to ensure that the power distribution and reactivity limits defined by the design power peaking and SDM limits are preserved.

Rod cluster control assemblies (RCCAs), or rods, are moved by their control rod drive mechanisms (CRDMs). Each CRDM moves its RCCA one step (approximately 5/8 inch) at a time, but at varying rates (steps per minute) depending on the signal output from the Rod Control System.

The RCCAs are divided among control banks and shutdown banks. Each bank may be further subdivided into two groups to provide for precise reactivity control. A group consists of two or more RCCAs that are electrically paralleled to step simultaneously. A bank of RCCAs consists of two groups

(continued)

BASES

BACKGROUND (continued)

that are moved in a staggered fashion, but always within one step of each other. HBRSEP has four control banks and two shutdown banks.

The shutdown banks are maintained either in the fully inserted or fully withdrawn position. The control banks are moved in an overlap pattern, using the following withdrawal sequence: When control bank A reaches a predetermined height in the core, control bank B begins to move out with control bank A. Control bank A stops at the position of maximum withdrawal, and control bank B continues to move out. When control bank B reaches a predetermined height, control bank C begins to move out with control bank B. This sequence continues for the remaining control banks. The insertion sequence is the opposite of the withdrawal sequence. The control rods are arranged in a radially symmetric pattern, so that control bank motion does not introduce radial asymmetries in the core power distributions.

The axial position of shutdown rods and control rods is indicated by two separate and independent systems, which are the Bank Demand Position Indication System (commonly called group step counters) and the Analog Rod Position Indication (ARPI) System.

The Bank Demand Position Indication System counts the pulses from the rod control system that moves the rods. There is one step counter for each group of rods. Individual rods in a group all receive the same signal to move and should, therefore, all be at the same position indicated by the group step counter for that group. The Bank Demand Position Indication System is considered highly precise (± 1 step or $\pm 5/8$ inch). If a rod does not move one step for each demand pulse, the step counter will still count the pulse and incorrectly reflect the position of the rod.

The ARPI System provides a highly accurate indication of actual control rod position, but at a lower precision than the step counters. This system is based on inductive analog signals from a series of coils spaced along a hollow tube with a center to center distance of 3.75 inches, which is six steps.

(continued)

BASES

BACKGROUND
(continued)

The maximum uncertainty of the ARPI System is ± 12 steps (± 7.5 inches). With an indicated deviation of 12 steps between the group step counter and ARPI, the maximum deviation between actual rod position and the demand position could be 24 steps, or 15 inches (Ref. 4 and 6).

APPLICABLE
SAFETY ANALYSES

Control rod misalignment accidents are analyzed in the safety analysis (Ref. 3). The acceptance criteria for addressing control rod inoperability or misalignment are that:

There be no violations of:

- a. specified acceptable fuel design limits, or
- b. Reactor Coolant System (RCS) pressure boundary integrity.

Two types of misalignment are distinguished. During movement of a control rod group, one rod may stop moving, while the other rods in the group continue. This condition may cause excessive power peaking. The second type of misalignment occurs if one rod fails to insert upon a reactor trip and remains stuck fully withdrawn. This condition requires an evaluation to determine that sufficient reactivity worth is held in the control rods to meet the SDM requirement, with the maximum worth rod stuck fully withdrawn.

Two types of analysis are performed in regard to static rod misalignment (Ref. 3). With control banks at their insertion limits, one type of analysis considers the case when any one rod is completely inserted into the core. The second type of analysis considers the case of a completely withdrawn single rod from a bank inserted in excess of its insertion limit. Satisfying limits on departure from nucleate boiling ratio in both of these cases bounds the situation when a rod is misaligned from its group by 12 steps.

Another type of misalignment occurs if one RCCA fails to insert upon a reactor trip and remains stuck fully withdrawn. This condition is assumed in the evaluation to determine that the required SDM is met with the maximum worth RCCA also fully withdrawn (Ref. 5).

(continued)

BASES

APPLICABLE
SAFETY ANALYSES
(continued)

The Required Actions in this LCO ensure that either deviations from the alignment limits will be corrected or that THERMAL POWER will be adjusted so that excessive local linear heat generation rates (LHGRs) will not occur, and that the requirements on SDM and ejected rod worth are preserved.

Continued operation of the reactor with a misaligned control rod is allowed if the heat flux hot channel factor ($F_0(Z)$) and the nuclear enthalpy hot channel factor ($F_{\Delta H}^N$) are verified to be within their limits in the COLR and the safety analysis is verified to remain valid. When a control rod is misaligned, the assumptions that are used to determine the rod insertion limits, AFD limits, and quadrant power tilt limits are not preserved. Therefore, the limits may not preserve the design peaking factors, and $F_0(Z)$ and $F_{\Delta H}^N$ must be verified directly by incore mapping. Bases Section 3.2 (Power Distribution Limits) contains more complete discussions of the relation of $F_0(Z)$ and $F_{\Delta H}^N$ to the operating limits.

Shutdown and control rod OPERABILITY and alignment are directly related to power distributions and SDM, which are initial conditions assumed in safety analyses. Therefore they satisfy Criterion 2 of the NRC Policy Statement.

LCO

CHOICE
"B" →

The limits on shutdown or control rod alignments ensure that the assumptions in the safety analysis will remain valid. The requirements on OPERABILITY ensure that upon reactor trip, the assumed reactivity will be available and will be inserted. The OPERABILITY requirements (i.e., trippability to meet SDM) are separate from the alignment requirements, which ensure that the RCCAs and banks maintain the correct power distribution and rod alignment. The rod OPERABILITY requirement is satisfied provided the rod will fully insert in the required time on a valid signal. CRDM malfunctions that result in inability to move a rod (e.g., rod urgent failures), which do not impact trippability, do not necessarily result in rod inoperability.

CHOICE "C"
CAN NOT BE
CORRECT
BECAUSE ROD
FULLY INSERTED ⇒

The requirement to maintain the rod alignment to within the specified limits is conservative. The minimum misalignment assumed in safety analysis is 24 steps (15 inches), and in

(continued)

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
POST EXAMINATION COMMENTS FOR INITIAL OPERATOR
LICENSE EXAMINATIONS ADMINISTERED DURING JULY 1999

SRO question #75, RO question #73

- A. Copy of RO question # 73, answer and references.
- B. Recommendation for questions
- C. References for recommendations

73. Given the following plant conditions:

- Mode 1 at 100% RTP
- Vacuum pump "A" is running
- Vacuum pump "B" is selected to AUTO

Which ONE (1) of the following describes the correct operation of the vacuum pumps?

- ☒ A. At 25.5 inches Hg decreasing, "B" automatically starts and at 27.0 inches Hg increasing, "B" automatically stops.
- B. At 25.5 inches Hg decreasing, "B" automatically starts and "B" must be manually stopped and returned to AUTO.
- C. All running pumps will shift to "hogging" mode at 25 inches Hg decreasing.
- D. All running pumps will shift to "jetting" mode at 27 inches Hg increasing.

Recommendation for questions.

Question #73 - RO

Question #75 - SRO

Choice "B" should be the correct answer.

Choice "A" - the vacuum pumps will automatically start at 25.5" but will not automatically stop at 27". This is the reset point which allows the pumps to be manually secured. Therefore, Choice "A" is incorrect.

Choice "B" - the vacuum pumps will automatically start at 25.5" . Once the reset point of 27" is reached, this will allow the pumps to be manually secured. Details from the system engineer support that the vacuum pumps must be manually secured after the reset point of 27" is reached.

Choice "C" - All pumps will shift to the hogging mode at 23.5" vice 25". Therefore, Choice "C" is incorrect.

Choice "D" - All pumps will shift to the jetting mode at 25" vice 27". Therefore, Choice "D" is incorrect.

4.7 Seal Water Booster Pumps

The seal water booster pumps are normally under automatic control of differential pressure switch (DPS-1447), there is a local panel located at the pumps. This panel provides for selecting the pump (A or B) to the RUN position and places the other pump in a standby or backup mode. Also located on this panel are individual start switches for the pumps. If a pump is selected to run, but fails to start automatically, the local start button can be pushed to start the pump. If the start button is pushed and differential pressure switch (DPS-1477) does not call for them to be running, the pump will stop after the button is released. The pump will continue to run as long as the start button is depressed.

DPS-1447 measures DP between booster pump discharge and MFW pump suction. At 30 psid decreasing the lead pump will auto start after a 30 second delay, the lag pump will auto start after 40 second delay. At 100 psid increasing the pump will stop.

Each pump has a local indication of discharge pressure and also a low suction pressure switch (PSL-1475-1 for pump A and PSL-1475-2 for pump B) which prevents the pump from starting if there is not sufficient suction pressure for them.

4.8 Polisher Secondary Bypass AOV, QCV-10426

- Key lock switch on Polisher Panel with three positions:

CLOSE - will close valve if no open signals present and RTGB switch is in
LOCAL

AUTO - auto signals for opening valve will function

- interlocked with HCV-1459, LP Heater Bypass valve, to open if HCV-1459 opens

OPENS - opens valve

- RTGB switch has LOCAL position to provide local control at the Polisher Panel and OPEN position to open valve

4.9 Vacuum Pumps

During initial phase of drawing a vacuum both pumps are running in the "hogging" mode. At approximately 25" Hg Vac both pumps, via automatic valve operation, will swap over to the "jetting" mode. At normal operating vacuum one pump may be stopped and placed in standby. If vacuum decreases the standby pump would auto start at ~ 25.5" Hg Vac and reset at 27" Hg Vac increasing vacuum. At 23.5" decreasing the running pumps would automatically swap to "hogging" mode.

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
POST EXAMINATION COMMENTS FOR INITIAL OPERATOR
LICENSE EXAMINATIONS ADMINISTERED DURING JULY 1999

SRO question #88, RO question #92

- A. A. Copy of RO question #92, answer and references.
- B. Recommendation for questions
- C. References for recommendations

92. Given the following plant conditions:

- Mode 3, after a trip that occurred 5 hours ago
- Pre-startup preparations are in progress, criticality scheduled for 8 hours from now
- Reactor trip breakers are open
- An Estimated Critical Condition has been prepared for the startup
- ECC RCS boron is 670 ppm
- Mode 3 SDM is 720 ppm
- Present RCS boron concentration is 680 ppm

Which ONE (1) of the following describes the required action to take to adjust RCS boron concentration?

- A. Borate to 720 ppm, then withdraw SD Bank "A"
- ☒ B. Withdraw SD Bank "A", then borate to 720 ppm
- C. Dilute to 670 ppm, then withdraw SD Bank "A"
- D. Withdraw SD Bank "A" then dilute to 670 ppm

Recommendation for questions

Question #92 - RO

Question #88 - SRO

Choices "A" should be the correct answer.

Choice "A" - based on the plant conditions given in the stem, the operators would transition from EPP-4, Reactor Trip Response, to GP-004, Post Trip Stabilization. At this time, all control rods are fully inserted. Step 8.36 of GP-004 is the first procedure guidance provided with respect to boration or rod motion. This step requires boration to Mode 3 if the reactor startup will be greater than 12 hours after trip (question stem provides information indicating greater than 12 hours). Therefore, the correct sequence of events would be to borate then withdraw Shutdown Bank "A".

Choice "B" - this is the reverse order of Choice "A" and is not allowed by the procedures based on plant conditions provided in the question. Therefore, Choice "B" is incorrect.

Choice "C" - this is the reverse order of Choice "D" and is not allowed by the procedure to dilute prior to withdrawal of Shutdown Bank "A". Therefore, Choice "C" is incorrect.

Choice "D" - would be correct if you were in GP-003, Normal Plant Startup from Hot Shutdown to Critical, and actually preparing to take the reactor critical. In this situation you would then ensure Shutdown Bank "A" withdrawn and then dilute to ECC boron concentration. Therefore, Choice "D" is incorrect.

INIT

- 8.34 Perform Attachment 10.1 to reset the SR HI FLUX AT SHUTDOWN Alarm. _____
- 8.35 Monitor the neutron flux level **AND** count rate as the Xenon transient progresses to verify that core flux multiplication does not result in criticality. _____

NOTE: If the count rate on either Source Range channel increases by a factor of two or more during any step involving a Boron concentration change, the operation shall be stopped immediately and suspended until a satisfactory evaluation of the situation has been made.

The COLR identifies the required Shutdown Margin (SDM) based on plant conditions. The required Boron Concentration can be determined using Powertrax or the Plant Curve Book using the SDM identified in the COLR.

The following step is performed to ensure the plant remains in MODE 3 after Xenon decay.

- 8.36 **IF** the time to return to critical is in excess of 12 hours **AND** a plant cooldown is **NOT** required, **THEN** borate the RCS to achieve a Boron Concentration which is greater than or equal to the Boron Concentration needed to provide the required SDM for MODE 3 with Shutdown Bank "A" fully withdrawn. CHOICE
"A"

NOTE: The slide switches for enabling/disabling the print function of points on NR-53, EXCORE NIS RECORDER, are located on the rear of the recorder chassis.

- 8.37 Enable the print function of the following points on NR-53, EXCORE NIS RECORDER, by removing the related slide switches from the BYPASS position. (ACR 93-329)
- PT. 1 CH I SR CPS (slide switch #1) _____
 - PT. 3 CH II SR CPS (slide switch #3) _____
- 8.38 Initiate makeup to the CST, as required, to maintain level greater than 50%. _____
- 8.39 Place the desired number of Condensate Polisher Beds in service using OP-501. _____
- 8.40 Verify the MSC DRAIN COLLECTING TANK level is normal. _____
- 8.41 Verify the Bowser Filter Unit is operating correctly. _____

3.0 RESPONSIBILITIES

N/A

4.0 PREREQUISITES

- 4.1 The EOP Network has been exited

5.0 PRECAUTIONS AND LIMITATIONS

- 5.1 The shutdown margin existing at the time the Reactor is shutdown shall not be reduced during the subsequent Xenon transient. This margin is determined by the Boron concentration and withdrawn rods which can be tripped. Positive reactivity addition due to Xenon decay occurs approximately 12 hours after shutdown.
- 5.2 Shutdown Bank "A" shall be at the fully withdrawn position whenever reactivity is being changed by Boron or Xenon changes, RCS temperature changes, or Control Rods, other than Shutdown Bank "A". The following exceptions to this rule may be applied:

CHOICE
"B" →

NOTE: The COLR identifies the required Shutdown Margin (SDM) based on plant conditions. The required Boron Concentration can be determined using Powertrax or the Plant Curve Book using the SDM identified in the COLR.

- 5.2.1 The RCS has been borated and confirmed by sampling, to be at least at the Boron Concentration needed to provide the required SDM for MODE 3 and is being maintained at MODE 3. Approval of the Manager - Operations, or his designated alternate, shall be given for Shutdown Bank "A" to be inserted.
- 5.2.2 The RCS has been borated and confirmed by sampling, to be at least at the Boron Concentration needed to provide the required SDM for MODE 5. Approval of the Manager - Operations, or his designated alternate, shall be given for Shutdown Bank "A" to be inserted.
- 5.2.3 If Shutdown Bank "A" cannot be withdrawn, the RCS shall be borated as required IAW 5.2.1 or 5.2.2.
- 5.3 Following a significant (10 ppm or more) change in RCS Boron concentration, additional PZR heaters should be energized. This will permit opening of the PZR spray valves and allow the Boron concentration between the PZR and the RCS loops to equalize.

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
POST EXAMINATION COMMENTS FOR INITIAL OPERATOR
LICENSE EXAMINATIONS ADMINISTERED DURING JULY 1999

SRO question # 94, RO question # 96

- A. Copy of RO question #96, answer and references.
- B. Recommendation for questions
- C. References for recommendations

96. Given the following plant conditions:

- Mode 6
- A CV purge is being established per OP-921, CONTAINMENT AIR HANDLING
- The Containment Personnel Airlock Doors will not remain open throughout the purge

Which ONE (1) of the following describes the effect this will have on the Auxiliary Building?

The Auxiliary building will:

- A. pressurize unless HVS-1, Auxiliary Building Supply Fan, is running.
- ☒ B. pressurize unless HVS-1, Auxiliary Building Supply Fan, is secured.
- C. depressurize unless HVS-1, Auxiliary Building Supply Fan, is running.
- D. depressurize unless HVS-1, Auxiliary Building Supply Fan, is secured.

Recommendation for questions.

Question #96 - RO

Question #94 - SRO

Choices "B" and "C" are correct answers

Choice "A" - If HVS-1 is running, this would increase the pressure in the Auxiliary Building. This is the reverse order of Choice "C". Therefore, Choice "A" is incorrect.

Choice "B" - this choice is supported by the caution prior to step 8.2.2.1 in OP-921, Containment Air Handling. This is a correct choice.

Choice "C" - this choice is essentially the same answer and choice "B". In general, if HVS-1, Auxiliary Building Supply fan is not running the Auxiliary Building pressure will be more negative. This supports choice "C" in that the Auxiliary Building will depressurize (pressure will become more negative) unless the fan is running.

Choice "D" - If HVS-1 is secured, this would decrease the pressure in the Auxiliary Building. This is the reverse order of Choice "B". Therefore, Choice "D" is incorrect.

CHOICE "B"

8.2.2 Instructions

INIT

CAUTION

- If the Containment Personnel Airlock doors will not remain open during the duration of the Purge, the Auxiliary Building will pressurize unless HVS-1 not operating.
- During Refueling operations, at least one of the Containment Personnel Airlock doors is required to be closed. (ITS LCO 3.9.3)

1. IF the Containment Personnel Airlock doors will not remain open during the duration of the Purge, THEN perform the following:
 - a. Stop HVS-1, AUXILIARY BUILDING SUPPLY FAN, IAW OP-906, Section 8.1.
 - b. Commence monitoring E1 and E2 Room temperature as directed by APP-010-A5, HVS-1 TROUBLE Alarm.
2. Place the Purge or Refuel Valves Control Switch to the REFUEL Position.
3. IF BOTH HVE-15 AND HVE-15A are secured, THEN verify D-5, HVE-15 and 15A discharge damper, is CLOSED.

CONTINUOUS USE

Section 8.1
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INIT

8.0 INFREQUENT OPERATION

8.1 Stopping HVS-1 (ACR 93-130)

NOTE: This Section has been screened in accordance with PLP-037 criteria and determined Not Applicable to PLP-037.

This section may be used anytime it is desirable to stop HVS-1 to establish a negative pressure in the Auxiliary Building OR when stopping HVS-1 is deemed necessary to ensure proper ventilation conditions exist.

8.1.1 This revision has been verified to be the latest revision available.

_____	_____	_____	_____
Name (Print)	Initial	Signature	Date

8.1.2 Verify AUX BLDG EXH FAN, HVE-2A OR HVE-2B is OPERATING.

CAUTION

The maximum allowable E1/E2 Emergency Bus Room temperature is 122 °F.

NOTE: Stopping HVS-1 may cause E1/E2 Emergency Bus Room temperature to increase. APP-010-A5, HVS-1 TROUBLE, provides guidance for monitoring and maintaining E1/E2 Emergency Bus Room temperature less than 122 °F.

8.1.3 Open AUX BUILDING SUPPLY FAN, HVS-1, ...
breaker on MCC-5, CMPT 7J.

8.1.4 Install a CAUTION tag on HVS-1 breaker
identifying the reason for opening the
breaker.

CAUTION tag # _____