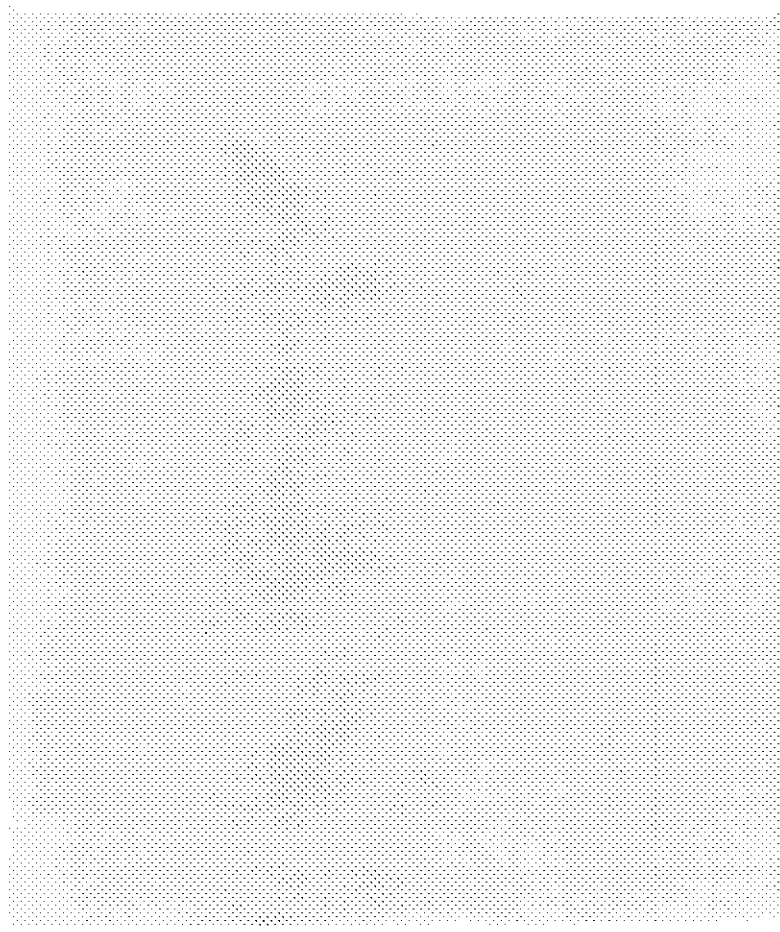
Post-examination Comments
(Green Paper)

1. Licensee Submitted Post-examination Comments

OCONEE JUNE 2004 EXAM
50-269/2004-301,
50-270/2004-301, &
50-287/2004-301
JUNE 14 - 18 & 25, 2004



May 29, 2004

Mr. Michael Ernstes, Chief, OLB
NRC REGION II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, S.W.- Suite 23T85
Atlanta, GA. 30303–8931

Re: Oconee Nuclear Station – Post Exam Comments

Dear Mr. Ernstes:

In accordance with NUREG-1021, Draft Revision 9, Oconee Nuclear Station is submitting comments on the Initial RO and SRO exam administered on 06/25/2004.

Thank you for your assistance in this matter.

Sincerely,

Neil E Constance, Jr.

Neil E. Constance, Jr.
Manager Operator Training

cc: George Hopper, Chief Examiner

Comment

This question was written based on the information in the EAP-BO lesson plan. The current revision of the lesson plan does not address the affects of cooling down on RCS inventory. The Oconee EOP Reference Document contains additional information on this topic.

The Blackout portion of the EOP Reference Document states:

> ***Cooling down below 550°F cannot be undertaken as in a normal plant cooldown due to inadequate RCS makeup flow capacity. A cooldown would contract the RCS inventory and empty the pressurizer. Additional contraction of the RCS inventory would void the hot leg U-bend and/or the reactor vessel head. Hot leg U-bend voids can then interrupt natural circulation, and cause the RCS to heat up and pressurize.***

Recommendation

Accept "B" as an additional correct answer.

OTC Tracking item 04-0022 has been created to ensure the EAP-BO lesson plan is updated to the current revision of the EOP Reference Document.

Reference

EOP Reference Document, Rev. 0, 12/30/2003

RO Exam # 13

Unit 1 plant conditions:

INITIAL CONDITIONS:
- Reactor power = 100%

CURRENT CONDITIONS:
- Station Blackout

Which ONE of the following describes the reason why RCS temperature and pressure are stabilized?

A. RCS pressure and temperature instrumentation will be unavailable to monitor RCS parameters.

B. Voiding in the hot legs could occur and subsequently block reactor coolant flow if a cooldown were initiated.

C. Station Batteries only provide 4 hours of backup power to energize controls which are required to maneuver the plant.

D. Voiding in the Reactor Vessel head area could occur and subsequently degrade RCS pressure control if a cooldown were initiated.

Answer: D

A. Incorrect. All PAM instrumentation would still be available via vital batteries.

B. Incorrect. Establishing the correct SG levels based on SCM can ensure SG cooling with voids in the hot legs.

C. Incorrect. While the statement is true, it is not the reason a cooldown is not initiated since by design, power would be restored in < 4 hours.

D. Correct. Since head vents can not be opened, voiding in the head area could occur and eventually block Natural Circ flow.

Technical Reference(s): **EAP-BO**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **EAP-BO, R5**

Question Source: **Bank # EAP230501**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge**
Comprehension or Analysis

4.0 Blackout

Overview

The Blackout EOP section has the mitigation and recovery guidance for the loss of all normal AC power sources, and the failure of the Keowee Hydro Station to provide emergency power. This event can affect only one unit or the entire station. Station batteries will provide DC power for 4 hours if unnecessary loads are shed. The SSF is started up to provide a small flowrate of borated RCP seal injection using the spent fuel pool for suction. Maintaining the RCP seals cool prevents the possibility of seal overheating evolving into a SBLOCA. With no HPI injection available a loss of RCS coolant beyond the small capacity of the SSF makeup pump can challenge core cooling. The turbine-driven EFW pump is the primary source of feedwater to the steam generators. EFW from an unaffected unit is the second source. The SSF ASW pump is the third source. The station ASW pump is the fourth source if it can be powered, however using the ASW pump will require depressurizing the SGs with the ADVs and controlling RCS temperature with ASW flowrate. This mode of SG operation is particularly difficult in natural circulation. The objective of the mitigation strategy is to stabilize plant conditions at hot shutdown (550°F) while efforts to restore an AC power source continue. The SSF can power pressurizer heaters to maintain pressure control. Cooling down below 550°F cannot be undertaken as in a normal plant cooldown due to inadequate RCS makeup flow capacity. A cooldown would contract the RCS inventory and empty the pressurizer. Additional contraction of the RCS inventory would void the hot leg U-bends and/or the reactor vessel head. Hot leg U-bend voids can then interrupt natural circulation, and cause the RCS to heat up and pressurize. This scenario can then lead to lifting the pressurizer code safety valves, which cannot be isolated if they fail to reseat. A stuck-open pressurizer safety valve without HPI would lead to core uncovery. For these reasons it is essential to maintain the RCS subcooled at 550°F.

Although not included in the current Blackout EOP section, if the subcooled margin is lost, the best method to restore natural circulation flow (i.e. to mitigate U-bend voids interrupting natural circulation) is to depressurize the steam generator secondary while maintaining primary-to-secondary heat transfer. This will cool the water in the steam generator tubes and provide a greater water column head. This increase in water column head is sufficient to push water up the hot leg and over the U-bend, thereby restoring natural circulation.

Note: No step-specific explanations were identified as necessary in this section.