Entergy

Entergy Operations, Inc.
P.O. Box 756
Port Gibson, MS 39150

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Steve Garchow, Chief Examiner
U.S. Nuclear Regulatory Commission, Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-4005

Subject: GGNS NRC Written Examination (05000416/2007-301)

Dear Mr. Garchow:

The purpose of this letter is to provide the results (with recommendations for changes) of the Written Examination at Grand Gulf Nuclear Station administered on May 21, 2007. This submittal is per NUREG 1021 Revision 9, ES-501 Section C.1.a.

If you have any question concerning these comments you may contact Michael Rasch at 601-437-6362 or David Cooper at 601-437-2736.

Sincerely,

Tom Tankersley
Manager, Training and Development
Grand Gulf Nuclear Station

Question # 44

Following station and fleet reviews, answers C & D should be accepted.

Question #44 addresses the response of the Main Turbine Control Valves (TCVs) following a Safety Relief Valve (SRV) failing open while the plant is at 100% power.

GGNS Final Safety Analysis Report, Section 7.7.1.5, Pressure Control and Turbine-Generator System – Instrumentation and Controls, states "In this system, the turbine is slaved to the reactor in that all steam generated by the reactor is normally accepted by the turbine. The operation of the reactor demands that a pressure control concept be employed to maintain a constant (within the range of the controller proportional band settings) turbine inlet pressure with load following ability accomplished by variation of the reactor recirculation flow."

Additionally, GGNS Final Safety Analysis Report, Section 15.1.4, Inadvertent Safety/Relief Valve Opening, subsection 3.3, Qualitative Results, describes the plant response to an inadvertent SRV opening by the pressure regulator sensing the nuclear system pressure decrease and within a few seconds closes the turbine control valve far enough to stabilize reactor vessel pressure and reactor power settles at nearly the initial power level.

While answer D is true in that the actual pressure signal for the Initial Pressure Control logic is sensed downstream of the equalizing header, it is also true in that the pressure sensed downstream of the equalizing header is based on actual reactor vessel pressure. From a psychometric perspective, there is inadequate information in the question stem to distinguish between the system design bases and instrumentation configuration. By attempting to maintain pressure downstream of the equalizing header constant, the system is, by default, attempting to maintain reactor pressure constant, which is what answer C stated.

The design basis for the Initial Pressure Control System, per the GGNS Final Safety Analysis Report, is to maintain reactor vessel pressure as constant as possible. Since the question stem did not ask where the pressure signal was sensed, the candidate could assume that the question was asking for the design basis for the system.

RO 44

The plant is at 100% power when Safety Relief Valve B21-F051A fails to the open position.

Which of the following describes the response of the Main Turbine Control Valves (TCVs) for this condition?

a. TCVs would throttle open to attempt to maintain high pressure turbine first stage pressure constant.

b. TCVs would throttle open to attempt to maintain generator load and speed constant.

c. TCVs would throttle closed to attempt to maintain reactor pressure constant.

d. TCVs would throttle closed to attempt to maintain pressure downstream of the equalizing header constant.

Ans: d

Integrated Pressure Control (IPC) receives pressure feedback from between the main steam equalizing header and the HP Turbine Stop and Control Valves. The variance between the pressure control demand setting and this steam line pressure is summed into the position control circuit for the TCVs. The position control circuit for the TCVs is pressure dominant at 100% power. If an SRV, upstream of the equalizing header, were to open, sensed pressure would decrease, and the TCVs would throttle closed to stabilize pressure as specified in answer d. Answers a and b are plausible if one assumes TCV attempt to maintain turbine first stage pressure or generator load constant, since turbine inlet pressure and generator load would decrease due to the reduction in steam flow. Answer c is plausible if one assumes IPC receives pressure feedback from reactor pressure.

KA 239002 K3.01
Knowledge of the effect that a loss or malfunction of the RELIEF/SAFETY VALVES will have on the following: **reactor pressure control**

10CFR55.41(b)(7)

GLP-OPS-N3202 Obj. 4.1, 7.1, 16

Difficulty 2

SYSTEM OVERVIEW

The Main Turbine EHC Control system consists of six subsystems:

- Initial Pressure Control (IPC)
- Speed Control
- Load Control
- Valve Lift Control
- Manual Hydraulic Control (MHC)
- Bypass Control Unit (BCU)

The Turbine Stress Evaluator (TSE) system works with the Main Turbine EHC Control System to restrict turbine loading and unloading rates under certain conditions to prevent overstressing the turbine.

The above six subsystems and TSE work together to accomplish the following:

- Maintain reactor pressure as stable as possible during turbine load transients to minimize reactivity excursions and protect the reactor and its fuel from the effects of rapid overpressurization and depressurization.
- Control turbine speed and electric load during normal operating and transient conditions to maximize plant efficiency while protecting the turbine from damage.

Control and supervisory equipment for the turbine-generator is arranged for remote operation from the control room. Normally, the pressure converter adjusts the main turbine control valve position to maintain operating reactor pressure.

The ability of the plant to follow system load demands is accomplished by adjusting reactor power level, either by changing flow in the reactor recirculating system or moving control rods.

The turbine speed control system will override the pressure control, and will close the turbine control valves when an increase in system frequency or a loss of generator load causes the speed of the turbine to increase.

- In the event that the reactor is delivering more steam than the control valves will pass, the excess steam will be bypassed directly to the main condenser by the bypass valves.

Question #44

7.7.1.4.5.3 Set Points

The subject system has no safety set points.

7.7.1.5 Pressure Control and Turbine-Generator System - Instrumentation and Controls

7.7.1.5.1 System Identification

7.7.1.5.1.1 General

One of the features of direct cycle boiling water reactors is the direct passage of the nuclear boiler generated steam through the turbine and regenerative system. In this system the turbine is slaved to the reactor in that all steam generated by the reactor is normally accepted by the turbine. The operation of the reactor demands that a pressure control concept be employed to maintain a constant (within the range of the controller proportional band setting) turbine inlet pressure with load following ability accomplished by variation of the reactor recirculation flow.

The turbine pressure controller normally controls the turbine control valves to maintain constant (within the range of the controller proportional band setting) turbine inlet pressure. In addition, the pressure controller also operates the steam bypass valves such that a portion of nuclear boiler rated flow can be bypassed when operating at steam flow loads above that which can be accepted by the turbine as well as during the startup and shutdown phase.

The overall turbine-generator and pressure control system accomplishes the following:

a. Control turbine speed and turbine acceleration

b. Operate the steam bypass system to keep reactor pressure within limits, and avoid large power transients

c. Control main turbine inlet pressure within the proportional band setting of the pressure controller

3

Question #44

15.1.4.3.2 Input Parameters and Initial Conditions

It is assumed that the reactor is operating at an initial power level corresponding to 105 percent of initial licensed rated steamflow conditions when a safety/relief valve is inadvertently opened. Manual recirculation flow control is assumed. Flow through the valve at normal plant operating conditions stated above is approximately 775,000 lb/hr.

15.1.4.3.3 Qualitative Results

The opening of a safety/relief valve allows steam to be discharged into the suppression pool. The sudden increase in the rate of steam flow leaving the reactor vessel causes a mild depressurization transient.

The pressure regulator senses the nuclear system pressure decrease and within a few seconds closes the turbine control valve far enough to stabilize reactor vessel pressure at a slightly lower value and reactor power settles at nearly the initial power level. Thermal margins decrease only slightly through the transient, and no fuel damage results from the transient. MCPR is essentially unchanged and therefore the safety limit margin is unaffected.

15.1.4.4 Barrier Performance

As discussed above, the transient resulting from a stuck open relief valve is a mild depressurization which is within the range of normal load following and therefore has no significant effect on RCPB and containment design pressure limits.

15.1.4.5 Radiological Consequences

While the consequences of this event do not result in any fuel failures; radioactivity is nevertheless discharged to the suppression pool as a result of SRV actuation. However, the mass input, and hence activity input, for this event is much less than those consequences identified in subsection 15.2.4.5. Therefore, the radiological exposures noted in subsection 15.2.4.5 cover the consequences of this event.

15.1.5 Spectrum of Steam System Piping Failures Inside and Outside of Containment in a PWR

This event is not applicable to BWR plants.

Question # 65

Following station and fleet reviews, answers A & C should be accepted.

Question #65 asks which one of the given conditions could cause unacceptable cyclic stresses on RPV internals. The question stem states that the reactor is in Mode 1 with Reactor Recirculation Pump A ready to be started. Given that the plant is in Mode 1, it is a valid assumption by the candidate that Reactor Recirculation Pump B is currently running with the reactor is at a low power level, as Technical Specifications require a reactor scram with no recirc pumps running in Mode 1.

Surveillance 06-OP-1B33-V-0005, Idle Recirculation Loop Startup requires the differential temperature between the operating Reactor Recirculation Loop and the idle Recirculation Loop to be less than 50°F. Answer A states that the idle loop temperature is 55° lower than the bottom head coolant temperature. The bottom head coolant temperature can never be greater than reactor coolant temperature circulating through the running recirculation loop. Therefore the 50°F loop-to-loop interlock can never be satisfied under the conditions specified in Answer A. Given the above assumptions, answer A would also be a correct answer to this question.

RO 65

Which of the following could cause unacceptable cyclic stress to Reactor Pressure Vessel internals in Mode 1 when starting Reactor Recirc Pump A?

a. Bottom head coolant temperature minus Recirc Loop A coolant temperature equals 55°F

b. RPV saturation temperature minus bottom head coolant temperature equals 55°F

c. RPV saturation temperature minus Recirc Loop A coolant temperature equals 55°F

d. Recirc Loop A coolant temperature minus RPV saturation temperature equals -8°F

Ans: c

This question asks for the answer that would equate to unacceptable operation. SOI 04-1-01-B33-1 and surveillance 06-OP-1B33-V-0005 specify pressure and temperature limits for RCS components for all modes to ensure cyclic stresses on RCS components remain within design assumptions. 04-1-01-B33-1 step 3.3.1 requires the difference between RPV coolant temperature and bottom head coolant temperature to be ≤100°F. 04-1-01-B33-1 step 3.3.2 requires the difference between RPV coolant temperature and the temperature of the coolant in the idle recirc loop to be started to be ≤50°F. Answer c exceeds this limit. Since it represents unacceptable operation, it is the correct answer. Answer a is plausible because it involves two of the three parameters addressed in 04-1-01-B33-1. However, no limitation is established in TS or plant procedures based on the relationship of bottom head coolant temperature and idle recirc loop temperature. This answer cannot be limiting and is, therefore, incorrect. Answer b is plausible since it addresses the requirement specified in 04-1-01-B33-1 step 3.3.1, but it meets the 100°F limit. Since it represents acceptable operation, it is incorrect. Answer d is plausible because it is a familiar limitation associated with starting recirc pump. However, it pertains to recirc pump cavitation, not thermal shock on RCS components and is, therefore, incorrect.

KA290002 - Reactor Vessel Internals
Generic 2.2.22 - Knowledge of limiting conditions for operations and safety limits

10CFR55.41(b)(2),(5)
10CFR55.43(b)(2)

GLP-OPS-B3300 Obj 38.1, 44

04-1-01-B33-1 step 3.3.1, 3.3.2
06-OP-1B33-V-0005

Difficulty 1

2.0 ATTACHMENTS

2.1 Attachment I - Manual Valve Lineup Checksheet

2.2 Attachment II - Remote Operated Valve Lineup Checksheet

2.3 Attachment III - Electrical Lineup Checksheet

2.4 Attachment IV - System Alarm Index

2.5 Attachment V - Handswitch Alignment Checksheet

2.6 Attachment VII - Alteration Record Sheet

2.7 Attachment VIII - Notification Record Sheet

2.8 Attachment IX - Thermal Shock Interlock Alteration Sheet

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Avoid long-term operation with loop FCV at MIN ED position to reduce valve wear and vibration. The loop FCV should be at MAXIMUM position when Reactor Recirc pumps are operating on LFMG, except when transferring to fast speed. Both FCVs must be at MAXIMUM position if one pump is shut down and the other is on LFMG, except when transferring to fast speed, or when reactor is in Mode 4 or 5.

3.2 Limit successive starts on Reactor Recirc pump to:

3.2.1 A Reactor Recirc pump "start" is defined as accelerating pump to rated speed.

3.2.2 Motor Cold, defined as at ambient temperature or standing idle for 45 minutes, two consecutive starting attempts are allowed. Additional attempts are allowed, provided motor stands idle for 45 minutes between attempts.

3.2.3 Motor Hot, defined as running for greater than 15 minutes, one attempted restart is allowed. Additional starts are allowed, provided motor runs 15 minutes between starts.

3.3 To prevent excessive thermal gradients and possible false pump starts in Modes 1, 2, 3 and 4, within 15 minutes before attempted start of an idle Recirculation loop, perform surveillance procedure 06-OP-1B33-V-0005 to ensure the following temperature differentials and core flows are within limits.

3.3.1 Reactor Pressure Vessel coolant (Steam Dome)/Reactor Vessel Drain differential temperature must be $\leq$ 100°F. "RECIRC PMP A(B) TEMP INTLK ACTUATED" annunciator, Clears. Not required when Reactor steam dome pressure is < 25 psig.

3.3.2 Difference between Reactor coolant temperature in the Recirc Loop to be started and RPV coolant temperature must be $\leq$50°F. "RECIRC PMP A(B) TEMP INTLK ACTUATED" annunciator, Clears. Operating loop temperature may be used as Reactor coolant temperature.

3.3.3 Flow through operating loop 50% or less when in single loop.

3.3.4 TECH SPEC TRIGGER (TS SR 3.4.11.3 and SR 3.4.11.4, TRM SR TR3.4.11.1) Performance of Surveillance Procedure 06-OP-1B33-V-0005 is keyed to Sections 4.1.2b and 6.2 of this instruction.

DATA SHEET I
IDLE RECIRCULATION LOOP STARTUP
IDLE LOOP STARTUP WITH ONE RECIRC LOOP IN OPERATION
SAFETY RELATED

Step		Instructions	Performer	Verifier
	5.3.4	(Cont'd)		

NOTE

Computer points for recirc loop suction temperature are only available above 400 °F.

☐ d. Recirculation Loop Suction Temperatures of operating and idle recirc loops:

Loop A: Computer point B33NA033 or B33NA034
Alternate 1B33-TR-R643 Point 5, 1H13-P614

Loop B: Computer point B33NA035 or B33NA036
Alternate 1B33-TR-R643 Point 6, 1H13-P614

☐ e. Operating Loop Flow Rate from 1C51-FR-R614 (A loop BLUE pen, B loop RED pen)

☐ 5.3.5 IF steam dome pressure ≥ 25 psig, THEN **CALCULATE** Dome Temperature minus Bottom Head Drain Line Temperature and RECORD on Data Sheet II.
OTHERWISE, **RECORD** N/A.

☐ 5.3.6 **CALCULATE** Recirc Loop A Suction Temperature minus Recirc Loop B Suction Temperature.

5.3.7 **VERIFY** that the differential temperatures and operating recirc loop flow are WITHIN the following Acceptance Criteria and **INITIAL** on Data Sheet II:

$ ☐ a. Steam Dome to Bottom Head, step 5.3.5: ≤100 °F

$ ☐ b. Operating Recirc Loop to Idle Recirc Loop, step 5.3.6: ≤50 °F

$ ☐ c. Operating Recirc Loop Flow, step 5.3.4e ≤22,300 gpm

Question # 90

Following station and fleet reviews, answers C & D should be accepted.

Question # 90 addresses the roles and responsibilities of Operations Shift Management personnel concerning Temporary Alterations. Specifically, the questions asks who, by title, is **required** to place the original Temporary Alteration Request Form in the Temporary Alteration Log Book and send out a copy of the form to the responsible maintenance discipline for installation.

Currently two procedures are in effect concerning temporary alterations. Procedure 01-S-06-3, Control of Temporary Alterations, controls previously installed temporary alterations. Nuclear Management Manual procedure EN-DC-136, Temporary Modifications, controls all new temporary alterations.

Procedure 01-S-06-3, Control of Temporary Alterations step 6.1.14.b states the Control Room Supervisor will place the original of the Temporary Alteration Request Form in the Temporary Alteration Log Book and send a copy to the responsible maintenance discipline for installation.

The Shift Manager is qualified to perform all administrative duties of the Control Room Supervisor. Section 2.5.2 of the stated procedure defines the responsibilities of the Shift Manager, which includes maintaining the Temporary Alteration Log Book of installed Temporary Alteration Packages. By practice the Shift Manager normally places the original of the Temporary Alteration Request Form in the Temporary Alteration Log Book since the Temporary Alteration Log Book resides at the Shift Manager desk.

Nuclear Management Manual procedure EN-DC-136, Temporary Modifications, states that the Shift Manager is responsible for notifying the installing organization when the temporary alteration is approved for installation. It also states that the Shift Manager is responsible for verifying that the Temporary Modification Log is revised with the newly installed Temporary Modification.

Given the above information, both C and D are correct answers.

SRO 15 (90)

A Temporary Alteration is being installed to supply temporary power to Unit 1 Instrument Air Compressor from bus 14AE during a refueling outage.

The associated Temporary Alteration Request Form has been approved for installation.

In accordance with 01-S-06-3, Control of Temporary Alterations, who by title is required to place the original Temporary Alteration Request Form in the Temporary Alteration Log Book and send a copy of the Temporary Alteration Request Form to the responsible maintenance discipline for installation?

a. Operations Representative

b. Installation Engineer

c. Shift Manager

d. Control Room Supervisor

Ans: d

Per 01-S06-3, step 6.1.14, this is an SRO responsibility of the Control Room Supervisor as stated in answer d. Answers a and b are plausible since the Operations Representative and the Installation Engineer both have extensive involvement in Temporary Alteration Request Form package preparation and review. Answer c is plausible since the Shift Manager must approve Temporary Alteration installation and maintains the Temporary Alteration Log Book in the book case at his desk.

KA 300000 - Instrument Air System
Generic 2.2.14 - Knowledge of the process for making configuration changes

10CFR55.43(b)(3)

01-S-06-3 step 6.1.14 b, c

GLP-OPS-PROC Obj. 9.9

Difficulty 1

2.5.2 Shift Manager - Personally, or through designated individuals, is responsible for:

a. Authorizing the installation and removal of Temporary Alterations.

b. Maintaining the Temporary Alteration Log Book of installed Temporary Alteration Packages and ensuring shift personnel are aware of the installed Temporary Alterations.

c. Performing a quarterly review of the Temporary Alterations Log Book and a representative sample of the Temporary Alterations in the field.

d. Ensuring that copies of Temporary Alteration Packages are prepared and forwarded as required by this procedure after installation or removal.

e. Ensuring that periodic reviews of installed Temporary Alterations are performed.

f. Reviewing all Temporary Alterations to ensure that they are in accordance with this procedure.

g. Notifying the Control Room Supervisor of the approval of Temporary Alterations.

h. Notifying the Operator at the Controls (per Reference 3.2.1) of all Temporary Alterations which are approved for use.

2.5.3 Control Room Supervisor - Is responsible for reviewing all Temporary Alterations, and for performing those duties related to management or processing of Temporary Alterations as assigned by the Shift Manager.

2.6 Manager, Training & Emergency Preparedness - Is responsible for providing training on specific Temporary Alterations to plant personnel as requested by specific Managers.

2.7 Independent Verifiers - Are responsible for ensuring the proper placement and removal of the Temporary Alteration they approve.

2.8 Section Supervisors/Superintendents - Are responsible for:

2.8.1 Ensuring that personnel under their supervision comply with the requirements of this procedure.

2.8.2 Updating their procedures before installation of Temporary Alterations.

2.8.3 Notifying the Requester or the Requester's supervisor when, during implementation of a plant modification, a Temporary Alteration is encountered or affected.

2.8.4 Obtaining Operations Control Room Supervisor approval signature before removing the Temporary Alteration or removing Temporary Alteration tags.

6.1.11 (Continued)

d. Route the completed Temporary Alteration Request Installation Package to the appropriate Operations Representative for package review.

> NOTE
>
> The original procedure changes and drawing markups are retained by the appropriate Operations Representative until Step 6.1.15, below.

6.1.12 The appropriate Operations Representative will:

a. Verify the Installation Package complete and Sign in Block 20b.

b. Notify the Operations Shift Manager that the Temporary Alteration Request Installation Package is complete.

6.1.13 The Operations Shift Manager will review the Temporary Alteration Request Installation Package and shall:

a. Sign approval in Block 21 of the Temporary Alteration Request Form.

b. Inform Control Room Operators of the nature of Temporary Alteration and its affect on plant operations.

6.1.14 The Control Room Supervisor will:

a. Review the Temporary Alteration Request Form and sign approval in Block 22 of the Temporary Alteration Request Form.

b. Place original of the Temporary Alteration Request Form in the Temporary Alteration Log Book.

c. Send copy of approved Temporary Alteration Request Form to the responsible maintenance discipline for installation and verification in the field. Verification of Temporary Alteration tags shall be in accordance with Step 5.12. This copy should be attached to the implementing WO.

d. Notify Operations representative when the Temporary Alteration is installed.

e. Complete the Temporary Alteration Log Book Index with the date and time that the Temporary Alteration was installed.

6.1.15 The Operations representative will:

a. Send a copy of the Temporary Alteration Request Form (Attachment I), Design Review Form (Attachment VII), and original procedure changes, drawing mark-ups and notification letter to Document Control. Refer to Reference 3.2.3 for details regarding proper processing and handling of drawings.

4.6 PLANNING ORGANIZATION:
[8.3[3](b)] [8.3[3](d)] [8.3[3](f)]

[1] Identifies potential Temporary Modifications during the job planning stages

[2] Provides planning support for the Temporary Modification process.

4.7 RESPONSIBLE ENGINEER:

[1] Ensures Temporary Modifications are designed properly.

[2] Ensures plant safety and reliability are not degraded by Temporary Modifications.

[3] Specifies/ensures proper testing of Temporary Modifications per site-specific test specification procedures (post-installation & removal).

4.8 TECHNICAL REVIEWER / DESIGN VERIFIER:

[1] Ensures Temporary Modifications are designed properly.

[2] Ensures plant safety and reliability are unaffected by Temporary Modifications.

[3] Ensures proper testing specifications per site-specific test specification procedures (post-installation & removal).

[4] Ensures completeness of the package.

4.9 SHIFT MANAGER:
[8.3[2](i)]

[1] Ensures that an Operations Department review is performed of each Temporary Modification package prior to installation.

[2] Authorizes installation and removal of Temporary Modifications.

[3] Maintains the Temporary Modification Log of installed Temporary Modifications.
[8.3[2](c)]

[4] Verifies that Control Room Drawings are annotated and the Temporary Modification Integrated Drawing List is properly maintained, if used.

[5] Ensures that shift personnel are aware of the installed Temporary Modifications.

[6] Ensures narrative log is updated to track Temporary Modifications installed or removed during their shift.

[7] Maintains overall administrative control of installed Temporary Modifications.

5.10 INSTALLATION

[8.3[1](a)] [8.3[1](d)] [8.3[1](f)] [8.3[1](h)]

NOTES

1. Partial installation or staged installation of a Temporary Modification is not permitted, unless specifically evaluated in the Temporary Modification. When this is required multiple Attachment 9.4, page 4 of 4 may be required for configuration control.
2. Once installation is initiated, the Temporary Modification should be installed to completion as expeditiously as possible.

[1] **IF** the Temporary Modification Package is cancelled prior to installation, **THEN** the Temporary Modification Owner should ensure the appropriate Departments are notified. [8.3[4](g)] [8.4[2](b)]

[2] The Shift Manager should: [8.3[4](a)] [8.3[4](f)]

(a) Ensure all precautions and limitations listed on the Temporary Modification Control Form are met prior to initiation of installation activities.

NOTE:
An electronic database/spreadsheet (e.g. eSOMS) may be utilized in lieu of Attachment 9.6 if it contains the same information and is readily retrievable in the control room.

(b) Verify Temporary Modification Tags are listed on the Temporary Modification Tag Record Sheet (Attachment 9.6), completed, and attached to the Temporary Modification Package. Attachment 9.4 provides suggested Temporary Modification Tag locations.

IF multiple tags are required for individual items,
THEN verify they are noted on the Temporary Modification Tag Record Sheet.

(c) Verify Training has been notified, if appropriate.

(d) Verify required temporary procedure changes are coordinated.

(e) Brief Operations personnel on shift and include the new Temporary Modification on the operator's turnover checklist if appropriate.

(f) If applicable, obtain the concurrence of the other Unit's Shift Manager if the Temporary Modification affects multiple units.

(g) Authorize installation of the Temporary Modification Package via the associated Work Order(s) (WOs).

(h) Notify the Installing Organization when Temporary Modification is authorized to be installed.

5.10 cont

[5] The Installer should complete any post installation testing specified in the Temporary Modification package or notify the appropriate organization responsible for the Temporary Modification testing. [8.3[8](g)]

[6] The individual that completes the testing should print name, sign and date the associated WO when installation testing is complete.

[7] The Installer should notify the Temporary Modification Owner and the Control Room that installation is complete and return the Temporary Modification Package to the Shift Manager.

[8] After installation is complete, the Shift Manager should verify the following: [8.3[8](g)] [8.4[2](a)]

(a) Post installation testing specified in Attachment 9.4 is completed satisfactorily.

(b) Any special actions or technical specification requirements noted (i.e., testing required to prove operability of the SSC or associated SSC) have been implemented.

(c) Operation of the affected systems is acceptable for current and expected operating modes.

(d) An entry is made into operations narrative log noting time of Temporary Modification installation and Temporary Modification Number.

(e) Temporary Modification Log, Attachment 9.9 (or electronic equivalent) is revised with newly installed Temporary Modification including installation date.

(f) Required procedure(s) have been updated or annotated to reflect the Temporary Modification installation

(g) Control Room drawings impacted by the Temporary Modification are annotated (e.g., attach a Temporary Modification Tag to the drawings) and changes are posted against Control Room Drawings in IAS in accordance with EN-DC-132. [8.3[8](h)]

(h) If desired, Control Room Drawings have been added to Attachment 9.12, Temporary Modification Integrated Drawing List, and updated copies have been distributed to the locations listed.

(1) An entry is made on the Temporary Alteration Integrated Drawing List for each drawing for the installed TM affecting the unit.

(2) The master copy of the Temporary Alteration Integrated Drawing List shall be retained in the Temporary Alteration file, and may be recopied for legibility.

(3) Distribution of the Temporary Modification Integrated Drawing List is shown on the form.

Question #99

Following station and fleet reviews, answer A should be accepted as the correct answer instead of C.

Question #99 addresses notification of offsite agencies, specifically which condition has the shortest time limit for notification.

The condition referenced in answer A is a safety limit violation.

Due to the severity of a safety limit violation, a separate section in procedure 01-S-06-05, Reportable Events or Conditions, section 6.2.3, is dedicated to the notifications required for those events. While the procedure does grant a maximum time for notification of the NRC, step 6.2.3.b states that the Shift Manager must notify the NRC Operations Center as soon as possible. It is expected that there would be no delay in notifying the NRC upon an event which caused a violation of a safety limit, due to the significance and potential severity of such an event. Therefore, it is reasonable that the candidates would view Answer A as the more severe event and require notification as soon as conditions allow.

In accordance with the referenced procedure, answer A would be the correct answer.

SRO 24 (99)

(01-S-06-5 is attached)

Which of the following events has the shortest time limit for notification of an offsite agency?

a. MCPR Safety Limit violation due to a pressure transient from 100% power

b. Spurious Low Pressure Core Spray injection due to human error in Mode 2

c. Stem leakage from Recirc Pump A suction valve 60 gpm in Mode 3

d. Violation of the License Condition limit for maximum core power

Ans: c

All answers are plausible since they are events which require notification of an offsite agency. Correct answer c constitutes entry into the Emergency Plan at the Unusual Event level and requires notification of state and local officials within 15 minutes of declaration of the Unusual Event. With declaration required within 15 minutes of the stated conditions, the maximum allowable time for notification of an offsite agency is 30 minutes. Although 01-S-06-5, Reportable Events or Conditions, step 6.2.3b directs notification to the NRC as soon as possible, answer a is incorrect because a one hour limit is granted. Answer b is incorrect because 01-S-06-5 lists this condition as a 60 day report pursuant to 10CFR50.73. Answer d is incorrect because this condition is only a 24 hour report per 01-S-06-5 step 6.2.2b. References are not provided for this question since SROs should know this constitutes loss of the primary containment barrier and that this meets EAL criteria, and further, the stringent notification requirements for state and local agencies for Emergency Plan entry.

KA Generic 2.4.30
Knowledge of which events related to system operations / status should be reported to outside agencies.

10CFR55.43(b)(5)

01-S-06-5
10-S-01-1

GLP-OPS-PROC Obj. 11.6, 11.8, 11.10, 11.13
GLP-EP-EPTS6 Obj. 3

Difficulty 2

6.2.2 Operating License Violation Reports

a. The Shift Manager shall report each violation of the requirements contained in Section 2, Items C(1), and C(4) through C(38) of the GGNS Operating License.

b. The Shift Manager shall make verbal reports (i.e., notifications) of operating license violations as a 24-hour notification to the NRC Operations Center in accordance with Step 6.6.1 of this procedure.

c. The Shift Manager or designee initiates CR for each such occurrence.

d. The Licensing Manager is responsible for submitting written follow-up reports in accordance with the requirements of 10 CFR 50.73(b), (c), and (e).

e. The Licensing Manager will ensure that reports of operating license violations are generated and submitted to the Commission in accordance with GGNS Technical Specifications.

6.2.3 Safety Limit Violation Reports

> CAUTION
>
> Operation of the unit shall not be resumed until authorized by the Commission (NRC) if a safety limit violation has occurred.

a. The Shift Manager or designee must notify the GGNS Duty Manager immediately when a safety limit violation has been discovered.

b. The Shift Manager shall notify the NRC Operations Center of the safety limit violation as soon as possible and in all cases within one hour of discovery using the Emergency Notification System per Step 6.6.1.

c. The Shift Manager or designee initiates a CR for each safety limit violation.

d. The On-call Duty Manager must perform the following for CRs written on safety limit violations:

(1) Ensure that the NRC one-hour notification has been made.

(2) Notify General Manager, Plant Operations, the Vice President, Operations and SRC Chairman or Vice Chairman within 24 hours of event.

(3) Ensure that the Offsite Emergency Coordinator has been notified.

(4) Document these notifications on Attachment IV or similar form and forward it to the Licensing Manager

e. The Licensing Manager prepares Safety Limit Violation Reports as required to support the Licensee Event Report (LER). The LER shall be reviewed by the OSRC and submitted to the

U. S. NUCLEAR REGULATORY COMMISSION
MAY 2007
GRAND GULF NUCLEAR STATION
DOCKET # 50-416
LICENSE EXAMINATIONS

WRITTEN EXAMINATION

The following is the examination analysis performed on the Licensed Operator Candidate Written Examinations (Senior Reactor Operator) administered on May 21, 2007 at Grand Gulf Nuclear Station.

Candidate makeup was 4 SRO Candidates. Two or more missing a question constitutes a 50% miss rate.

The Examination was determined to be a **valid** examination.

On the RO Examination (questions 1 – 75), 15 questions had a miss rate of 50% or greater.

On the SRO Examination (questions 76 – 100), 8 questions had a miss rate of 50% or greater.

During the initial examination review, the facility determined the answer key was incorrect on question 12 and the actual answer was answer D. The Key was corrected with NRC Chief Examiner concurrence.

The Facility submitted four questions for NRC review of taking two answers.

Questions 44, 65, 90, and 99 were submitted for 2 answers. The NRC approved only question 65 as having two answers A and C.

Question 5

2 of 4 missed the question.

The subject of the question is operation of the Digital Feedwater Control System following a scram with a low power history.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 6

2 of 4 missed the question.

The question concerns isolation of control room components operated from the Remote Shutdown Panels and operation of supported equipment.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 16

2 of 4 missed the question.

The question concerns the basis for entry into Emergency Procedure 2 from Emergency Procedure 3 due to Suppression Pool Level being below 14.5 feet.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 30

2 of 4 missed the question.

The question concerns the operation of Standby Service Water following manual initiation.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 33

2 of 4 missed the question.

The question concerns the interlocks between Standby Liquid Control B initiation and Reactor Water Cleanup (RWCU) and the affects of the interlock on the RWCU System operation.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 36

3 of 4 missed the question.

The question concerns the administrative control of Temporary Directives and their limitations.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 38

2 of 4 missed the question.

The question concerns calculation of actual Reactor Power at which the reactor would scram based on Gain Adjustment Factors for Average Power Range Monitors (APRMs).

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 56

2 of 4 missed the question.

The question concerns the entry of substitute data for the Leading Edge Flow Monitor (LEFM) System and where it is to be performed. Precautions and Limitations of the Feedwater SOI indicate the data must be inputted to the Plant Data System (PDS) computer and is further clarified in a NOTE that it must be done on H13-P680 PDS consoles.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 59

2 of 4 missed the question.

The question concerns precautions and limitations concerning the use of Standby Service Water for the Fuel Pool Cooling and Cleanup (FPCCU) heat exchangers.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 61

2 of 4 missed the question.

The question concerns Technical Specification readings for Drywell Identified Leakage that is taken on the Operator Tech Spec Rounds.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 62

3 of 4 missed the question.

The question concerns the affects of defeating the CO2 Fire Suppression System when manning the Remote Shutdown Panels.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 64

2 of 4 missed the question.

The question concerns the trips on the Control Room Air Conditioner System on a loss of Standby Service Water.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 70

2 of 4 missed the question.

The question concerns the Technical Specification actions for a violation of the MCPR Safety Limits.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 71

3 of 4 missed the question.

The question concerns allowed fuel movement during refueling operations.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 74

2 of 4 missed the question.

The question concerns symptoms and validation of Period Based Detection System operation for Thermal Hydraulic Instability.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 76

2 of 4 missed the question.

The question concerns the operation of Reactor Core Isolation Cooling (RCIC) system during a Station Blackout with a RCIC steam leak.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 78

4 of 4 missed the question.

The question concerns the motherhood actions during mode 4 operations with a loss of Shutdown Cooling.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 81

2 of 4 missed the question.

The question concerns the actions to be taken per Emergency Procedure 3 on a Containment High Temperature during Mode 1 operations.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 86

2 of 4 missed the question.

The question concerns the basis for the Group 3 Shutdown Cooling Isolation.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 90

2 of 4 missed the question.

The question concerns the procedurally required position to make entries into the Temporary Alterations Log book per the site procedure identified in the stem of the question.

The NRC was asked to accept two answers based on other duties of the Shift Manager and Corporate Procedures. The NRC position was the stem of the question specified a procedural position responsibility and denied the appeal.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 91

2 of 4 missed the question.

The question concerns the consequences of a loss of sensors on the refueling equipment.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 97

3 of 4 missed the question.

The question concerns the actions to be taken for containment operability during surveillance testing of an ECCS Containment isolation valve. These actions are per Tech Specs.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.

Question 99

4 of 4 missed the question.

The question concerns the shortest time limit for making required notifications of offsite agencies.

The NRC was asked to change the correct answer to A based on the words as soon as possible for a safety limit violation in the reportability procedure. The NRC position was the stem of the question specified the shortest time limit. The time limit on Safety Limit violation is 1 hour where EAL notifications are within 15 minutes of declaration to state and local agencies. Based on this information the NRC denied the appeal.

The question and answer are valid per plant operation per the original submittal reasons. The distracters are invalid per the information given in the submittal.

Facility training material supports the question.

STANCE

Question stands as is.