2018 Ginna Post-Exam Comments and NRC Resolution

Index

Item 1

Facility Post-Exam Submittal Cover Letter
with Comment on a Control Room JPM
(2 pages)

Exelon Generation

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October 16, 2018

Mr. Peter Presby
U.S. NRC Region 1
2100 Renaissance Boulevard
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King of Prussia, PA 19406

R.E. Ginna Nuclear Power Plant
Renewed Facility Operating License No. DPR-18
NRC Docket No. 50-244

Subject: 2018 Ginna Post-Examination Materials

Enclosed is the required examination documentation in accordance with NUREG 1021, Section C.1.b.

Additionally, the following information is being provided as changes to the approved Operating Test and Written Examination materials:

1. **Simulator JPM C:** Step 2 should **NOT** be a critical step.
   Explanation: Step 2 requires the applicant to determine which AP-RHR procedure is applicable. The correct procedure is AP-RHR.1, Loss of RHR. However, AP-RHR.2, Loss of RHR While Operating at RCS Reduced Inventory, contains all the actions that would be required had the applicant entered AP-RHR.1. Therefore, the JPM task can be successfully completed if the applicant chooses either procedure.
2. **Technical Specification Entries in Simulator Scenarios:** The applicants were inconsistent when determining which Technical Specifications were required to be entered for the given plant events.
   Response: Scenario events have been reviewed and the Technical Specification determinations agreed upon with Operations and Licensing. Grading standards for Scenario #1, Event #3; and Scenario #3, Events #3 and #4 will be changed. Technical Specification explanations are included in the enclosed 2018 Ginna NRC Scenario Technical Specification Requirements document.
3. **Written Examination:** Enclosure 4.b.

Should you have any questions, please contact David Eckert, ILT Exam Author, at (315)791-5523.

Respectfully,

Paul Swift

Enclosed are the 2018 Ginna NRC Written Examination documents:
(mail to Peter Presby, Chief Examiner, NRC Region I)

1. Graded written examinations:
   a. Applicants' original answer sheets (graded)
   b. Applicants' Exam cover sheets
   c. Clean copy of applicants' answer sheets
2. Master Written Exam Answer Key annotated with changes
3. Questions asked by applicants during the Exam and answers given
4. Post-Exam review comments:
   a. Applicant Post Exam Comments (TQ-AA-151-F11)
   b. Facility Comments
5. Written Examination seating chart
6. Completed Form ES-403-1, Written Examination Grading Quality Checklist
7. Written Examination performance analysis
8. Completed Form ES-201-3, Examination Security Agreement

cc: (without enclosures)
Training Director
Operations Director
Manager – Site Regulatory Assurance
NRC Senior Resident Inspector – Ginna Station

Item 2

Facility Post-Exam Comments on Written Exam

(12 pages)

2018 Ginna ILT NRC Post-Examination Challenges

Question # 78

Applicant Comments:

No EAL reference provided and the question asked if an EAL entry required.

Discussion:

The second part of the question has the Applicant determine if an Emergency Action Level declaration is required for the given plant conditions. This declaration has a high focus on timeliness and places the Applicant in an operational type scenario, vice a fundamental one. When determining time to reach the Pressurizer level limit to trip the reactor, the Operators are trained to utilize either MCB or PPCS trends of Pressurizer level. Ginna operators are not trained to calculate Reactor Coolant System leak rate nor expected to density compensate this formula during an event. Applicants typically are not expected to combine Generic Fundamentals, that are computational in nature, into Operational-style questions. With a short and limited time period for Operators to recognize and declare an event, no complex or unnecessary density compensations should be added to this determination. This declaration has a high focus on timeliness. EAL Wall Chart Note 4 states, "The ED should **not** wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time."

Facility Recommendation:

The station recommends either removing the question from the Exam or accepting both answers 'B' and 'D'. Accepting 'B" and "D" as correct answers would address that it is not the expectation that Operators would density compensate in this situation.

References:

EPJA-0, Ginna Station Event Evaluation and Classification (EAL Wall Chart)

2018 Ginna ILT NRC Post-Examination Challenges

Exam Outline Cross Reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	APE 22 AA2.04	
	Importance		3.8

K/A Statement: Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Makeup: How long PZR level can be maintained within limits

Question # 78

Given the following plant conditions:

- The plant is operating at 100% with all parameters at programmed or design values.
- A loss of all Charging occurs.
- The operator isolates letdown.
- Total combined RCP Seal Leakoff is 6 gpm.

All plant parameters are initially at programmed or design values.

(1) Assuming no operator actions are taken, approximately how many hours will elapse before the AOP directed reactor trip setpoint will be reached,

AND

(2) If AP-CVCS.3, "Loss of All Charging" is performed and charging is **NOT** restored, will an EAL declaration be required? (Disregard any EAL based solely on the 'judgment' category, stated in the EAL tables as "*other conditions exist which in the judgment of the Emergency Director … which indicate a potential degradation of plant safety*")

Note: Steam tables are provided.

A. 5 hours; YES

B. 5 hours; NO

C. 7 hours; YES

D. 7 hours: NO

Answer: B

Explanation/Justification:

100% Program Level: 56%
Trip required at 5% PZR level by AP-CVCS.3
58.82 gals/% (3600 gal/61.2% from PPT Slide 35)
6 gpm RCP seal leakoff (cold) = 10 gpm (hot) out of PZR
58.82 gals/% / 10 gals/min = 5.882 min/% level decrease
51% total level decrease * 5.882 min/% level decrease = 300 minutes to reach 5%

A. Incorrect. Part 1 is correct. Part 2 is incorrect. EAL declaration is not required.

B. Correct. Part 1 is correct. See calculation above. 5 hours to lower level from 56% to 5% due to seal leakoff inventory loss. Requires knowledge of the normal level, the procedurally directed trip setpoint, and ability to perform pressurizer level/volume/rate calculation. Part 2 is correct. No EAL declaration threshold is or will be met. This question tests at the SRO-only knowledge level because it tests an SRO-only job function, that of determining EAL declarations, and relates to assessment of plant conditions (normal, abnormal, or emergency) and then selection of a procedure or section of a procedure to mitigate or recover, or with which to proceed.

C. Incorrect. Part 1 is incorrect. If applicant does not correct for temp, and thinks trip at 20%, low end of control band (36% * 9.8 min/% = 352.8 min, ~6 hours). Part 2 is incorrect. Notification is not required for the pre-planned sequence of operations in AP-CVCS.3.

D. Incorrect. Part 1 is incorrect. If applicant does not correct for temp, calc based on 6 gpm = 9.8 min/% to 5% (51% *9.8 min/% = 499.8 min, ~8.25 hours).). Part 2 is correct. 10CFR50.72 notification is not required.

Technical References:	AP-CVCS.3, Rev 14 R1401C, PZR & PRT PPT, Rev 25
Proposed References to be provided:	Steam Tables
Learning Objective:	R1401C 1.09 RAP31C 2.01
Question Source:	New
Question History:	Last NRC Exam NA
Question Cognitive Level:	Comprehension
10 CFR Part 55 Content:	55.43 (b) 5
Comments:	

2018 Ginna ILT NRC Post-Examination Challenges

Question # 80

Applicant Comments:

Discussion:

This question gives a set of plant conditions that doesn't clearly identify what step operators are performing in ECA-2.1. Given the conditions and assuming Operators executed the procedure steps correctly, the Operators would have secured the RHR Pumps in Step 7 if RCS pressure was > 300 psig AND stable or rising. However, if these conditions did NOT exist when the Operators were performing Step 7, the RHR Pumps would have been secured as soon as these conditions were met later in the procedure since Step 7 is a Continuous Action Step.

If an Applicant assumed the RHR Pumps were not running at Step 17 and were already secured prior to this, the correct answer would be to transition to E-2 per the guidance in the Fold Out Page.

The implication of this question is operators have begun the SI Pump reduction in Step 17. If the RHR Pumps were still running (as the question conditions state) then the Operator would secure the RHR Pumps at this time in Step 17.

Facility Recommendation:

The station recommends both 'A' and 'C' be accepted as correct answers.

References:

ECA-2.1, Uncontrolled Depressurization of Both Steam Generators

2018 Ginna ILT NRC Post-Examination Challenges

Exam Outline Cross Reference:	Level	RO	SRO
	Tier #		1
	Group #		1
	K/A #	W E12 G2.4.47	
	Importance		3.8

K/A Statement: Excessive Heat Transfer - Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.

Question # 80

The plant was in MODE 2 following a refueling outage when indications were received of a high energy line break in the Turbine Building.

The crew has transitioned to ECA-2.1, Uncontrolled Depressurization of Both Steam Generators. Operators stopped SI Pumps and shortly thereafter observe the following plant conditions:

- RCS pressure 1685 psig and steady
- Pressurizer level 36% and slowly rising
- 'A' S/G pressure 17 psig and steady
- 'A' S/G wide range level 160 inches and steady
- 'B' S/G pressure 35 psig and slowly rising
- 'B' S/G wide range level 200 inches and slowly rising
- Subcooled margin 172°F and rising
- RHR Pumps running
- SI Pumps stopped

Which of the following is the **NEXT** required crew action?

A. Transition to E-2, Faulted Steam Generator Isolation.

B. Transition to E-3, Steam Generator Tube Rupture.

C. Stop both RHR Pumps.

D. Start both SI Pumps.

Answer: C

Explanation/Justification:

A. Incorrect. E-2 foldout page transition criteria is specified as any S/G pressure rising, except while performing SI Termination Steps 17 and 18. Indications show SI termination actions of Step 17 in progress. Plausible because the transition out of ECA-2.1 would be to E-2 following S/G isolation if not performing SI termination steps.

B. Incorrect. E-3 transition criteria given as uncontrolled S/G level rise or abnormal radiation levels. Given conditions are consistent with successful secondary isolation of the 'B' SG. A tube rupture small enough to allow RCS pressure to continue to rise would not result in repressurization of a faulted SG. Plausible choice because WR level is rising.

C. Correct. Stopping both RHR pumps is the next directed action in ECA-2.1 Step 17.

D. Incorrect. SI pumps would only be restarted to address loss of primary inventory indications of lowering pressurizer level or subcooled margin. Plausible because Step 18 monitors for need to reinitiate and applicant may incorrectly a SGTR.

Technical References:	ECA-2.1, Rev 03601
Proposed References to be provided:	None
Learning Objective:	REC21C 1.04, 2.01
Question Source:	New
Question History:	Last NRC Exam NA
Question Cognitive Level:	Comprehension
10 CFR Part 55 Content:	55.43 (b) 5
Comments:	

2018 Ginna ILT NRC Post-Examination Challenges

Question # 84

Applicant Comments:

Question is unclear on what it is asking. Is it looking for which failure requires the earliest action or which failure requires the earliest taken action based on restorations?

The first item on timeline on 7/1/18 would require starting a 30-day clock, with required action to restore operability. The question did not clearly ask for action at the end of the timeline.

Discussion:

This question presents a timeline for which four different instruments are INOPERABLE at distinct times. For each time of instrument inoperability, an action is required by Operators per Technical Specification 3.3.3. These actions differ based on the number of channels of a given function, but the question does not make this distinction. The question also doesn't specify where the Applicant is on this timeline to answer this question. For instance, can the Applicant presume that no actions were taken throughout the entire timeline and he is looking back? Or is the Applicant answering as though they are at the beginning of the given time line and need to take action immediately to meet Technical Specification 3.3.3. The question appears to be attempting to test the knowledge of the Applicant on Required Actions for both instruments in one function of Technical Specification 3.3.3. With the ambiguity of what a Required Action is defined as, an Applicant could justify any answer choice as correct.

Facility Recommendation:

The station recommends this exam question be removed from the exam.

References:

Technical Specification LCO 3.3.3, Post Accident Monitoring (PAM) Instrumentation

2018 Ginna ILT NRC Post-Examination Challenges

Exam Outline Cross Reference:	Level	RO	SRO
	Tier #		1
	Group #		2
	K/A #	APE 061 AA2.06	
	Importance		4.1

K/A Statement: Ability to determine and interpret the following as they apply to the Area Radiation Monitoring (ARM) System Alarms: Required actions if alarm channel is out of service.

Question # 84

Given the plant has been operating at 100% power.

Consider the timeline below related to instruments, all of which are required by TS 3.3.3, Post Accident Monitoring (PAM) Instrumentation.

Timeline

07/01/18:	• CST Level Instrument LT-2022B is declared INOPERABLE
07/02/18:	• Hot Leg Temperature Instrument TE-409A-1 is declared INOPERABLE
07/05/18:	• High Range Containment Area Monitor R-29 is declared INOPERABLE
07/07/18:	• CST Level Instrument LT-2022B is restored to OPERABLE • Hot Leg Temperature Instrument TE-409A-1 is restored to OPERABLE
07/10/18:	• High Range Containment Area Monitor R-30 is declared INOPERABLE
07/12/18:	• High Range Containment Area Monitor R-29 is restored to OPERABLE

Assuming no further changes in conditions, which date starts the clock for the earliest action that will be required by TS 3.3.3?

Note: Reference(s) attached.

A. 07/10/18

B. 07/05/18

C. 07/02/18

D. 07/01/18

Answer: B

Explanation/Justification:

A. Incorrect. The AOT clock begins when R-29 becomes inoperable, not when R-30 becomes inoperable. Plausible because R-29 has been restored. Applicant may incorrectly think the separate condition entry note may allow for separate entry for each of the two containment monitors.

B. Correct. R-29 and R-30 are the two PAM Function10 Containment high range area monitor channels. The AOT clock would begin when R-29 becomes inop and would continue even after R-29 is restored because R-30, another monitor for the same function becomes inop before R-29 becomes operable. If either monitor is not restored to OPERABLE within 30 days then an entry into Condition B would be required, with a required action of initiating a special report immediately.

C. Incorrect. TE-409A-1 is a Function 3 channel. Condition A does not apply to Functions 3 and 4. Condition C would be entered for TE-409A-1 and exited when it was restored to operable status. Plausible because applicant could be confused about application of the TS LCO 3.3.3 Condition D applies. Function 10 has two required channels and they are both INOPERABLE, which requires one of the channels restored to OPERABLE within 7 days. Both channels do not need to be restored within 7 days.

D. Incorrect. Tech Spec 3.3.3 allows separate condition entry for each function. TS LCO 3.3.3 Condition A would be separately entered; once when LT-2022B (a Function 11 channel) became inoperable and a second time when R-29 (a Function 10 channel) became inoperable, tracking separate 30 day completion times. Condition A is exited for the LT-2022B entry when LT-2022B, leaving the AOT for R-29 still counting down based on initial inoperability of R-29, not LT-2022B.

Technical References:	TS table 3.3-1 function 10
Proposed References to be provided:	TS 3.3.3 (pages 3.3.3-1 thru 3.3.3-4)
Learning Objective:	R3901C 1.13
Question Source:	New
Question History:	Last NRC Exam NA
Question Cognitive Level:	Comprehension
10 CFR Part 55 Content:	55.41 (b) 11

Comments:

2018 Ginna ILT NRC Post-Examination Challenges

Question # 95

Applicant Comments:

Discussion:

The given conditions place the plant in a rare, unlikely, contingent condition with irradiated fuel being stored in the new fuel elevator. For these conditions, the question requires the Applicant to know from memory whether fuel handling may continue and what restrictions may be in place. This is not required carry-around knowledge.

Additionally, the requirements for a Fuel Handling Deviation are contained in RE-100, Preparation, Review, and Approval of Fuel Movement Sequence Sheets and Document Closeout. Changes to the approved fuel movements are made by the Reactor Engineer and approved by the Fuel Handling Supervisor. The Shift Manager is notified of fuel movement changes. This is not a document that the Operators would use or review. This would be Refueling SRO knowledge.

If this rare condition was encountered during an actual refueling evolution, Operators would be expected, and required, to reference the applicable refueling procedures prior to taking any additional action. No Applicant would be expected to know this from memory and without the use of a procedure to reference.

Facility Recommendation:

The station recommends this exam question be removed from the exam.

References:

RE-100, Preparation, Review, and Approval of Fuel Movement Sequence Sheets and Document Closeout

2018 Ginna ILT NRC Post-Examination Challenges

Exam Outline Cross Reference:	Level	RO	SRO
	Tier #		3
	Group #		
	K/A #	G2.1.42	
	Importance		3.4

K/A Statement: G2.1.42, Knowledge of new and spent fuel movement procedures.

Question # 95

Given the following plant conditions:

- The plant is in MODE 6.
- Core off-load is in progress.
- The New Fuel Elevator is being used for temporary storage of an irradiated fuel assembly.

Which ONE of the following describes the restrictions placed on refueling activities in this condition?

A. Concurrent fuel movement in the SFP must be pre-approved by a Fuel Handling Deviation. Fuel movement in Containment may continue with the exception of placing irradiated assemblies in the Fuel Transfer Cart.

B. All fuel handling activities must be discontinued in the SFP AND Containment.

C. All movement of irradiated fuel within the SFP AND Containment must be pre-approved by a Fuel Handling Deviation.

D. Concurrent fuel movement in the SFP is NOT allowed. Refueling activities in Containment may continue.

Answer: D

Explanation/Justification:

A. Incorrect. Plausible because having an assembly is an abnormal condition and the applicant may believe that the transfer cart may not be sent to the SFP.

B. Incorrect. Plausible because activities may not proceed in SFP, and it is logical to assume that all fuel movement would be stopped.

C. Incorrect. Plausible because this is an abnormal condition, and abnormal movements would normally be approved with a deviation.

D. Correct. Per RF-301, P&L 4.14 Fuel movement within the SFP is NOT allowed when an irradiated fuel assembly is located in the new fuel elevator.

Technical References:	RF-301
Proposed References to be provided:	None
Learning Objective:	R3701C 1.09
Question Source:	Bank
Question History:	2011 SRO Retake Examination
Question Cognitive Level:	Fundamental
10 CFR Part 55 Content:	55.41 (b) 8 55.43 (b) 8

Comments:

Item 3

Facility Post-Exam Comments and References on
#1 Simulator Scenario Technical Specification LCOs
(13 pages)

2018 Ginna NRC Scenario Technical Specification Requirements

Referenced Technical Specification LCOs and Technical Requirement Manual TRs are attached.

Scenario #1

Event 2 – Containment Recirc Fan Cooler 'A' Trip

Upon a trip of the 'A' Containment Recirc Fan Cooler (CRFC), only 3 CRFCs remain OPERABLE. The Operator would enter Technical Specification LCO 3.6.6, Containment Spray (CS), Containment Recirculation Fan Cooler (CRFC), and NaOH Systems, Condition D:

This is as scripted in NRC Exam Scenario #1 Guide.

Event 3 – Fault / Loss of Emergency Bus: 480V Bus 16

The fault on Bus 16 results in the Bus 16 Normal Feeder Breaker tripping open on overcurrent. This also results in MCB Annunciator L-5, Safeguard Bus Main Breaker Overcurrent Trip, to alarm. This fault prevents the 'B' EDG from being able to energize Bus 16 until the overcurrent trip relay is reset inside the MCB. In accordance with Technical Specification Basis (TSB) LCO 3.8.1 (page B.3.8.1-6) "Any 480 V bus fault which opens and/or prevents closure of the breakers from offsite power or the DGs requires declaring the offsite power source or DG inoperable, as applicable." Therefore, the Operator would enter Technical Specification LCO 3.8.1, AC Sources – MODEs 1, 2, 3, and 4, Conditions A, B, and C.

This is as scripted in NRC Exam Scenario #1 Guide.

Additionally, Technical Specification LCO 3.8.1, Condition C NOTE "Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems – MODES 1, 2, 3, and 4", when Condition C is entered with no AC power source to one distribution train." This requires the Operator to enter Technical Specification LCO 3.8.9, Distribution Systems – MODEs 1, 2, 3, and 4, Condition A.

This is as scripted in NRC Exam Scenario #1 Guide.

Technical Specification LCO 3.0.6 states "When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with the Supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, additional evaluations and limitations may be required in accordance with Specification 5.5.14, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered. When a support system's Required Action directs a supported system to be declared inoperable or directs entry

into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2."

Entry into Technical Specification LCO 3.8.4, DC Sources – MODES 1, 2, 3, and 4, is not required because:

- LCO 3.0.6 allows for not declaring the Supported System (DC Sources) INOPERABLE solely due to the Support System (Bus 16) being INOPERABLE; **AND**
- No loss of Safety Function exists.

This was originally scripted in NRC Exam Scenario #1 Guide; however, entry into LCO 3.8.4 is NOT required.

This is a change to the grading standard.

Additionally, the loss of Bus 16 resulted in the loss of electrical power for 2 of the remaining 3 CRFCs. LCO 3.8.1, Required Action states " A.1 states "Declare required feature(s) inoperable when its redundant required feature(s) is inoperable" with a Completion Time of "12 hours from discovery of Condition A concurrent with inoperability of redundant feature(s)"; and Required Action B.2 "Declare required feature(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable" with a Completion Time of "4 hours from discovery of Condition B concurrent with inoperability of redundant feature(s)".
Therefore, entry into Technical Specification LCO 3.0.3 due to loss of 3 CRFCs (LCO 3.6.6, Condition F) would **NOT** be required to be entered for 4 hours.

This was NOT scripted in NRC Exam Scenario #1 Guide; however, came up as a question following the applicants' scenario completion.

3.6 CONTAINMENT SYSTEMS

3.6.6 Containment Spray (CS), Containment Recirculation Fan Cooler (CRFC), and NaOH Systems

LCO 3.6.6 Two CS trains, four CRFC units, and the NaOH system shall be OPERABLE.

- -

- NOTE -

In MODE 4, both CS pumps may be in pull-stop for up to 2 hours for the performance of interlock and valve testing of motor operated valves (MOVs) 857A, 857B, and 857C. Power may also be restored to MOVs 896A and 896B, and the valves placed in the closed position, for up to 2 hours for the purpose of each test.

- -

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One CS train inoperable.	A.1	Restore CS train to OPERABLE status.	72 hours
B.	NaOH system inoperable.	B.1	Restore NaOH System to OPERABLE status.	72 hours
C.	Required Action and associated Completion Time of Condition A or B not met.	C.1 AND C.2	Be in MODE 3. Be in MODE 5.	6 hours 84 hours
D.	One or two CRFC units inoperable.	D.1	Restore CRFC unit(s) to OPERABLE status.	7 days
E.	Required Action and associated Completion Time of Condition D not met.	E.1 AND E.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two CS trains inoperable. OR Three or more CRFC units inoperable.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.6.1	Perform SR 3.5.2.1 and SR 3.5.2.3 for valves 896A and 896B.	In accordance with applicable SRs.
SR 3.6.6.2	----------NOTE---------- Not required to be met for system vent flow paths opened under administrative control. ---------- Verify each CS manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.3	Verify each NaOH System manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.4	Operate each CRFC unit for ≥ 15 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.5	Verify cooling water flow through each CRFC unit.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.6	Verify each CS pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.6.6.7	Verify NaOH System solution volume is ≥ 3000 gal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.8	Verify NaOH System tank NaOH solution concentration is ≥ 30% and ≤ 35% by weight.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE		FREQUENCY
SR 3.6.6.9	Perform required CRFC unit testing in accordance with the VFTP.	In accordance with the VFTP
SR 3.6.6.10	Verify each automatic CS valve in the flow path that is not locked, sealed, or otherwise secured in position actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.11	Verify each CS pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.12	Verify each CRFC unit starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.13	Verify each automatic NaOH System valve in the flow path that is not locked, sealed, or otherwise secured in position actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.14	Verify spray additive flow through each eductor path.	In accordance with the Surveillance Frequency Control Program
SR 3.6.6.15	Verify each spray nozzle is unobstructed.	Following maintenance which could result in nozzle blockage
SR 3.6.6.16	Verify CS locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - MODES 1, 2, 3, and 4

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

a. One qualified independent offsite power circuit connected between the offsite transmission network and each of the onsite 480 V safeguards buses required by LCO 3.8.9, "Distribution Subsystems - MODES 1, 2, 3, and 4"; and

b. Two emergency diesel generators (DGs) capable of supplying their respective onsite 480 V safeguards buses required by LCO 3.8.9.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

- NOTE -

LCO 3.0.4.b is not applicable to DGs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Offsite power to one or more 480 V safeguards bus(es) inoperable.	A.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition A concurrent with inoperability of redundant required feature(s)
	AND	
	A.2 Restore offsite circuit to OPERABLE status.	72 hours
B. One DG inoperable.	B.1 Perform SR 3.8.1.1 for the offsite circuit.	1 hour AND Once per 8 hours thereafter
	AND	

CONDITION	REQUIRED ACTION	COMPLETION TIME
	B.2 Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable. AND	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	B.3.1 Determine OPERABLE DG is not inoperable due to common cause failure. OR	24 hours
	B.3.2 Perform SR 3.8.1.2 for OPERABLE DG. AND	24 hours
	B.4 Restore DG to OPERABLE status.	7 days
C. Offsite power to one or more 480 V safeguards bus(es) inoperable. AND One DG inoperable.	- - - - - - - - - - - - - - - - - - - NOTE - Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - MODES 1, 2, 3, and 4," when Condition C is entered with no AC power source to one distribution train. - - - - - - - - - - - - - - - - - - C.1 Restore required offsite circuit to OPERABLE status. OR	12 hours
	C.2 Restore DG to OPERABLE status.	12 hours

CONDITION		REQUIRED ACTION		COMPLETION TIME
D.	Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 AND D.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours
E.	Two DGs inoperable.	E.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for the offsite circuit to each of the 480 V safeguards buses.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.2	- NOTE - 1. Performance of SR 3.8.1.9 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. Verify each DG starts from standby conditions and achieves rated voltage and frequency.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE		FREQUENCY
SR 3.8.1.3	- NOTE - 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.9. Verify each DG is synchronized and loaded and operates for ≥ 60 minutes and < 120 minutes at a load ≥ 2025 kW and < 2250 kW.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.4	Verify the fuel oil level in each day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Verify the DG fuel oil transfer system operates to transfer fuel oil from each storage tank to the associated day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.6	Verify transfer of AC power sources from the 50/50 mode to the 100/0 mode and 0/100 mode.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.7	- NOTE - 1. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. 2. Credit may be taken for unplanned events that satisfy this SR. Verify each DG does not trip during and following a load rejection of ≥ 295 kW.	In accordance with the Surveillance Frequency Control Program

	SURVEILLANCE	FREQUENCY
SR 3.8.1.8	- NOTE - 1. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. 2. Credit may be taken for unplanned events that satisfy this SR. Verify each DG automatic trips are bypassed on an actual or simulated safety injection (SI) signal except: a. Engine overspeed; b. Low lube oil pressure; and c. Start failure (overcrank) relay.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.9	- NOTE - 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. 3. Credit may be taken for unplanned events that satisfy this SR. Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated SI actuation signal: a. De-energization of 480 V safeguards buses; b. Load shedding from 480 V safeguards buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads, 2. energizes auto-connected emergency loads through the load sequencer, and 3. supplies permanently and auto-connected emergency loads for $\geq$ 5 minutes.	In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - MODES 1, 2, 3, and 4

LCO 3.8.9 Train A and Train B of the following electrical power distribution subsystems shall be OPERABLE:

a. AC power;

b. AC instrument bus power; and

c. DC power.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One AC electrical power distribution train inoperable.	A.1	Restore AC electrical power distribution train to OPERABLE status.	8 hours
B.	One AC instrument bus electrical power distribution train inoperable.	B.1	Restore AC instrument bus electrical power distribution train to OPERABLE status.	2 hours
C.	One DC electrical power distribution train inoperable.	C.1	Restore DC electrical power distribution train to OPERABLE status.	2 hours
D.	Required Action and associated Completion Time of Conditions A, B, or C not met.	D.1 AND D.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours
E.	Two trains with inoperable electrical power distribution subsystems that result in a loss of safety function.	E.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.9.1	Verify correct breaker alignments and voltage to required electrical power trains.	In accordance with the Surveillance Frequency Control Program

LCO 3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;

b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate (exceptions to this Specification are stated in the individual Specifications); or

c. When an allowance is stated in the individual value, parameter, or other Specification.

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

LCO 3.0.5 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to determine OPERABILITY.

LCO 3.0.6 When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, additional evaluations and limitations may be required in accordance with Specification 5.5.14, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

Item 4

Facility Post-Exam Comments and References on
#3 Simulator Scenario Technical Specification LCOs
(29 pages)

2018 Ginna NRC Scenario Technical Specification Requirements

Scenario #3

Event 2 – S/G Pressure Channel Failure: PT-469 (II) - fails low to zero

Upon diagnosis that S/G Pressure Channel 469 has failed, the Operator would enter ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure, Section 6.8, S/G Pressure Channel Failure. Step 6.8.2 states "**REFER TO** the following ITS Sections for LCO's: Section 3.3.2, Table 3.3.2-1, Function 1e; Section 3.3.2, Table 3.3.2-1, Functions 4d and 4e (due to inability to satisfy requirements of SR 3.3.2.1; and Section 3.3.3, Table 3.3.3-1, Functions 24 and 25".

In accordance with Technical Specification Basis (TSB) LCO 3.3.2 (page 3.3.2-17) "The high steam flow bistables are OPERABLE if they are placed in the tripped condition since the specified LSSS are met. However, all applicable surveillances related to the tripped channel must continue to be performed and met." In this event, the loss of compensating pressure channel PT-469 causes FI-465, S/G A Steam Flow, to indicate failed low. This precludes the ability to perform and meet SR 3.3.2.1, Perform CHANNEL CHECK, which then renders Functions 4.d and 4.e INOPERABLE.

The Operator would enter Technical Specification LCO 3.3.2, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, Condition A, and reference Table 3.3.2-1 for the applicable Conditions associated with the applicable Functions. The Operator would then enter Conditions F and L.

Additionally, the Operator would reference Technical Specification LCO 3.3.3, Post Accident Monitoring (PAM) Instrumentation. In accordance with Technical Specification Basis (TSB) LCO 3.3.3 (page 3.3.3-13) for Functions 24 and 25 "Any of the following combinations of pressure transmitters comprise the two required channels for SG A: PT-468 and PT-482; or PT-469 and PT-482." Since pressure channels PT-468 and PT-482 remained operable, Functions 24 and 25 remained OPERABLE. Therefore, the Operator would recognize that entry into Condition A is **NOT** required.

This is as scripted in NRC Exam Scenario #3 Guide.

Event 3 – S/G 'B' Tube Leak

In accordance with Technical Specification LCO 3.4.13, RCS Operational Leakage, "RCS operational LEAKAGE shall be limited to: 150 gallons per day primary to secondary LEAKAGE through any one steam generator (SG)".

Upon determination of the S/G tube leak rate (approximately 10 gpm), the Operator would recognize that the allowed primary to secondary leak rate has been exceeded and enter Technical Specification LCO 3.4.13, Condition B.

This is as scripted in NRC Exam Scenario #3 Guide.

It would be expected that Secondary Specific Activity would be greater than the limits of Technical Specification LCO 3.7.14, Secondary Specific Activity, which states "The specific activity of the secondary coolant shall be ≤ 0.10 µCi/gm DOSE EQUIVALENT I-131." The

Operator has to rely upon a report from the Shift Chemistry Technician for this data. Since the Simulator scenario guide provided no such report for the Booth Operator to make to the Control Room, this Technical Specification determination can **NOT** be made by the US.

This was originally scripted in NRC Exam Scenario #3 Guide; however, entry into LCO 3.7.14 is NOT required by the applicant.

This is a change to the grading standard.

Event 4 – Loss of Offsite Circuit 7T / 'A' EDG fails to automatically start

Upon the loss of Offsite Power Circuit 7T, offsite power is lost to Buses 14 and 18 until the Operator takes action to restore the electric plant to a 100/0 lineup in accordance with ER-ELEC.1, Restoration of Offsite Power. In accordance with Technical Specification Basis (TSB) LCO 3.8.1 (page 3.8.1-5) "One qualified independent offsite power circuit connected between the offsite transmission network and the onsite 480V safeguards buses and separate and independent DGs for each train ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. An OPERABLE qualified independent offsite power circuit is one that is capable of maintaining rated voltage, and accepting required loads during an accident, while connected to the 480V safeguards buses required by LCO 3.8.9, "Distribution Systems – MODES 1, 2, 3, and 4." Power from either offsite power circuit 7T or 767 satisfies this requirement."
In accordance with Technical Specification Basis (TSB) LCO 3.3.4 (page 3.3.4-1) "The DGs provide a source of emergency power when offsite power is either unavailable or is insufficiently stable to allow safe plant operation. The LOP DG start instrumentation consists of two channels on each of safeguards Buses 14, 16, 17, and 18. Each channel contains one loss of voltage relay and one degraded voltage relay (see Figure B 3.3.4-1). A one-out-of-two logic in both channels will cause the following actions on the associated safeguards bus: a. trip of the normal feed breaker from offsite power; b. trip of the bus-tie breaker to the opposite electrical train (if closed); c. shed of all bus loads except the CS pump, component cooling water pump (if no safety injection signal is present), and safety related motor control centers; and d. start the associated DG." Since the 'A' EDG failed to automatically start when offsite power was lost to safeguards buses 14 and 18, the Operator would enter Technical Specification LCO 3.3.4, Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation, Condition B, with a Required Action "Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation" and a Completion Time of "Immediately".

This is as scripted in NRC Exam Scenario #3 Guide.

Therefore, the Operator would also enter Technical Specification LCO 3.8.1, AC Sources – MODEs 1, 2, 3, and 4, Conditions A, B, and C.

2018 Ginna NRC Scenario Technical Specification Requirements

Only LCO 3.8.1, Condition B was originally scripted in NRC Exam Scenario #3 Guide; however, entry into LCO 3.8.1, Conditions A and C are also required by the applicant.

This is a change to the grading standard.

Additionally, Technical Specification LCO 3.8.1, Condition C NOTE "Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems – MODES 1, 2, 3, and 4", when Condition C is entered with no AC power source to one distribution train." This would have been the condition for the short period of time until the Operators took action to manually start 'A' EDG and the EDG automatically energized Buses 14 and 18. This requires the Operator to enter Technical Specification LCO 3.8.9, Distribution Systems – MODEs 1, 2, 3, and 4, Conditions A and B, for the short time that it took for the Operators to restore Buses 14 and 18 via 'A' EDG.

This is as scripted in NRC Exam Scenario #3 Guide.

In accordance with Technical Requirements Manual Basis TR 3.8.1 (page TRB 3.8.1-3) "Two qualified independent offsite power circuits shall be operable. This TR supplements Technical Specifications 3.8.1 and 3.8.9 providing Required Actions for inoperability of any offsite power source to ensure that the reliability of the remaining offsite power source is hardened, licensing basis assumptions for a backfeed are verified, and that the status of the inoperable source is tracked."
The Operator would enter Technical Requirements Manual TR 3.8.1, Offsite Power Sources, Condition A.

This is as scripted in NRC Exam Scenario #3 Guide.

3.3 INSTRUMENTATION

3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

LCO 3.3.2 The ESFAS instrumentation for each Function in Table 3.3.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.2-1.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each Function.

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One or more Functions with one channel or train inoperable.	A.1	Enter the Condition referenced in Table 3.3.2-1 for the channel or train.	Immediately
B.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	B.1	Restore channel to OPERABLE status.	48 hours
C.	Required Action and associated Completion Time of Condition B not met.	C.1	Be in MODE 2.	6 hours
D.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	D.1	Restore channel to OPERABLE status.	48 hours
E.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	E.1	Restore train to OPERABLE status.	6 hours

CONDITION		REQUIRED ACTION		COMPLETION TIME
F.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	F.1	- - - - - - - - - - - - - - - - - - - NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of the other channels. - - - - - - - - - - - - - - - - - - Place channel in trip.	6 hours
G.	Required Action and associated Completion Time of Condition D, E, or F not met.	G.1 AND G.2	Be in MODE 3. Be in MODE 4.	6 hours 12 hours
H.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	H.1	Restore channel to OPERABLE status.	48 hours
I.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	I.1	Restore train to OPERABLE status.	6 hours
J.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	J.1	- - - - - - - - - - - - - - - - - - - NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of the other channels. - - - - - - - - - - - - - - - - - - Place channel in trip.	6 hours
K.	Required Action and associated Completion Time of Condition H, I, or J not met.	K.1 AND K.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours

CONDITION		REQUIRED ACTION		COMPLETION TIME
L.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	L.1	- NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of the other channels. Place channel in trip.	6 hours
M.	Required Action and associated Completion Time of Condition L not met.	M.1 AND M.2	Be in MODE 3. Reduce pressurizer pressure to < 2000 psig.	6 hours 12 hours
N.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	N.1	Declare associated Auxiliary Feedwater pump inoperable and enter applicable condition(s) of LCO 3.7.5, "Auxiliary Feedwater (AFW) System."	Immediately

SURVEILLANCE REQUIREMENTS

- NOTE -
Refer to Table 3.3.2-1 to determine which SRs apply for each ESFAS Function.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.2	Perform COT.	In accordance with the Surveillance Frequency Control Program

	SURVEILLANCE	FREQUENCY
SR 3.3.2.3	- NOTE - Verification of relay setpoints not required. Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.4	- NOTE - Verification of relay setpoints not required. Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.5	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.6	Verify the Pressurizer Pressure-Low and Steam Line Pressure-Low Functions are not bypassed when pressurizer pressure > 2000 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.7	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program

Table 3.3.2-1
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS[a]
1.	Safety Injection					
a.	Manual Initiation	1,2,3,4	2	H,K	SR 3.3.2.4	NA
b.	Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	I,K	SR 3.3.2.7	NA
c.	Containment Pressure-High	1,2,3,4	3	J,K	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 4.61 psig
d.	Pressurizer Pressure-Low	1,2,3[b]	3	L,M	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5 SR 3.3.2.6	≥ 1729.8 psig
e.	Steam Line Pressure-Low	1,2,3[b]	3 per steam line	L,M	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5 SR 3.3.2.6	≥ 393.8 psig

Table 3.3.2-1
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS[a]
2.	Containment Spray					
a.	Manual Initiation					
	Left pushbutton	1,2,3,4	1	H,K	SR 3.3.2.4	NA
	Right pushbutton	1,2,3,4	1	H,K	SR 3.3.2.4	NA
b.	Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	I,K	SR 3.3.2.7	NA
c.	Containment Pressure-High High	1,2,3,4	3 per set	J,K	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 32.11 psig (narrow range) ≤ 29.6 psig (wide range)
3.	Containment Isolation					
a.	Manual Initiation	1,2,3,4,[c]	2	H,K	SR 3.3.2.4	NA
b.	Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	I,K	SR 3.3.2.7	NA
c.	Safety Injection	Refer to Function 1 (Safety Injection) for all automatic initiation functions and requirements.				

Table 3.3.2-1
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS[a]
4.	Steam Line Isolation					
a.	Manual Initiation	1,2[d],3[d]	1 per loop	D,G	SR 3.3.2.4	NA
b.	Automatic Actuation Logic and Actuation Relays	1,2[d],3[d]	2 trains	E,G	SR 3.3.2.7	NA
c.	Containment Pressure-High High	1,2[d],3[d]	3	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 18.0 psig
d.	High Steam Flow	1,2[d],3[d]	2 per steam line	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 1.30E6 lbm/hr @ 1005 psig
	Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
	and					
	Coincident with T_{avg}-Low	1,2[d],3[d]	2 per loop	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≥ 544.0°F
e.	High-High Steam Flow	1,2[d],3[d]	2 per steam line	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 4.53E6 lbm/hr @ 785 psig
	Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				

Table 3.3.2-1
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS[a]
5.	Feedwater Isolation					
a.	Automatic Actuation Logic and Actuation Relays	1,2[e],3[e]	2 trains	E,G	SR 3.3.2.7	NA
b.	SG Water Level-High	1,2[e],3[e]	3 per SG	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 91.15%
c.	Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				

Table 3.3.2-1
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS[a]
6.	Auxiliary Feedwater (AFW)					
a.	Manual Initiation					
	AFW	1,2,3	1 per pump	N	SR 3.3.2.4	NA
	Standby AFW	1,2,3	1 per pump	N	SR 3.3.2.4	NA
b.	Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	E,G	SR 3.3.2.7	NA
c.	SG Water Level-Low Low	1,2,3	3 per SG	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≥ 13.88%
d.	Safety Injection (Motor driven pumps only)	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
e.	Undervoltage - Bus 11A and 11B (Turbine driven pump only)	1,2,3	2 per bus	D,G	SR 3.3.2.3 SR 3.3.2.5	≥ 2597 V with ≤ 3.6 sec time delay
f.	Trip of Both Main Feedwater Pumps (Motor driven pumps only)	1	2 per MFW pump	B,C	SR 3.3.2.4	NA

(a)

A channel is OPERABLE when both of the following conditions are met:

1. The absolute difference between the as-found Trip Setpoint (TSP) and the previous as-left TSP is within the COT Acceptance Criteria. The COT Acceptance Criteria is defined as:

   |as-found TSP - previous as-left TSP| ≤ COT uncertainty

   The COT uncertainty shall not include the calibration tolerance.

2. The as-left TSP is within the established calibration tolerance band about the nominal TSP. The nominal TSP is the desired setting and shall not exceed the Limiting Safety System Setting (LSSS). The LSSS and the established calibration tolerance band are defined in accordance with the Ginna Instrument Setpoint Methodology. The channel is considered operable even if the as-left TSP is non-conservative with respect to the LSSS provided that the as-left TSP is within the established calibration tolerance band.

(b) Pressurizer Pressure ≥ 2000 psig.

(c) During CORE ALTERATIONS and movement of irradiated fuel assemblies within containment.

(d) Except when both MSIVs are closed and de-activated.

(e) Except when all Main Feedwater Regulating and associated bypass valves are closed and de-activated or isolated by a closed manual valve.

22. SG A Water Level (Wide Range)

Refer to description of Function number 20 above.

23. SG B Water Level (Wide Range)

Refer to description of Function number 20 above.

24. SG A Pressure

Steam Generator (SG) Pressure is a Type A variable provided to monitor operation of decay heat removal via the SGs. The signals from the transmitters are calibrated for a range of 0 psig to 1400 psig. Redundant monitoring capability is provided by three available trains of instrumentation.

Any of the following combinations of pressure transmitters comprise the two required channels for SG A:

- PT-468 and PT-482; or
- PT-469 and PT-482.

Any of the following combinations of pressure transmitters comprise the two required channels for SG B:

- PT-479 and PT-478; or
- PT-478 and PT-483.

The loss of inverter MQ-483 requires declaring PT-479 inoperable.

25. SG B Pressure

Refer to description of Function number 24 above.

APPLICABILITY

The PAM instrumentation LCO is applicable in MODES 1, 2, and 3. These variables are related to the diagnosis and pre-planned actions required to mitigate DBAs. The applicable DBAs are assumed to occur in MODES 1, 2, and 3. In MODES 4, 5, and 6, the PAM instrumentation is not required to be OPERABLE because plant conditions are such that the likelihood of an event that would require PAM instrumentation is low.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. 1 gpm unidentified LEAKAGE;

c. 10 gpm identified LEAKAGE; and

d. 150 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	RCS operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	A.1	Reduce LEAKAGE to within limits.	4 hours
B.	Required Action and associated Completion Time not met. OR RCS pressure boundary LEAKAGE exists. OR Primary to secondary LEAKAGE not within limit.	B.1 AND B.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.13.1	- NOTE - 1. Not required to be performed until 12 hours after establishment of steady state operation. 2. Not applicable to primary to secondary LEAKAGE.	
	Verify RCS operational LEAKAGE is within limits by performance of RCS water inventory balance.	In accordance with the Surveillance Frequency Control Program
SR 3.4.13.2	- NOTE - Not required to be performed until 12 hours after establishment of steady state operation.	
	Verify primary to secondary LEAKAGE is ≤ 150 gallons per day through any one SG.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.14 Secondary Specific Activity

LCO 3.7.14 **The specific activity of the secondary coolant shall be ≤ 0.10 μCi/gm DOSE EQUIVALENT I-131.**

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Specific activity not within limit.	A.1 Be in MODE 3. AND A.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.14.1	Verify the specific activity of the secondary coolant is ≤ 0.10 μCi/gm DOSE EQUIVALENT I-131.	In accordance with the Surveillance Frequency Control Program

3.3 INSTRUMENTATION

3.3.4 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation

LCO 3.3.4 Each 480 V safeguards bus shall have two OPERABLE channels of LOP DG Start Instrumentation.

APPLICABILITY: MODES 1, 2, 3, and 4,
When associated DG is required to be OPERABLE by LCO 3.8.2, "AC Sources - MODES 5 and 6."

ACTIONS

- NOTE -
Separate Condition entry is allowed for each 480 V safeguards bus.

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One or more 480 V bus(es) with one channel inoperable.	A.1	Place channel(s) in trip.	6 hours
B.	Required Action and associated Completion Time of Condition A not met. OR One or more 480 V bus(es) with two channels inoperable.	B.1	Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

- NOTE -

When a channel is placed in an inoperable status solely for the performance of required Surveillances, entry into the associated Conditions and Required Actions may be delayed for up to 4 hours provided the second channel maintains LOP DG start capability.

	SURVEILLANCE	FREQUENCY
SR 3.3.4.1	Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.2	Perform CHANNEL CALIBRATION with Limiting Safety System Settings (LSSS)[(a)] for each 480 V bus as follows: a. Loss of voltage LSSS ≥ 372.0 V and ≤ 374.8 V with a time delay of ≥ 2.13 seconds and ≤ 2.62 seconds. b. Degraded voltage LSSS ≥ 420.0 V and ≤ 423.6 V with a time delay of ≥ 68.1 seconds and ≤ 125 seconds (@ 420 V) and ≥ 71.8 seconds and ≤ 125 seconds (@ 423.6 V).	In accordance with the Surveillance Frequency Control Program

(a) A channel is OPERABLE when both of the following conditions are met:

1. The absolute difference between the as-found Trip Setpoint (TSP) and the previous as-left TSP is within the CHANNEL CALIBRATION Acceptance Criteria. The CHANNEL CALIBRATION Acceptance Criteria is defined as:

   |as-found TSP - previous as-left TSP| ≤ CHANNEL CALIBRATION uncertainty

   The CHANNEL CALIBRATION uncertainty shall not include the calibration tolerance.

2. The as-left TSP is within the established calibration tolerance band about the nominal TSP. The nominal TSP is the desired setting and shall not exceed the LSSS. The LSSS and the established calibration tolerance band are defined in accordance with the Ginna Instrument Setpoint Methodology. The channel is considered operable even if the as-left TSP is non-conservative with respect to the LSSS provided that the as-left TSP is within the established calibration tolerance band.

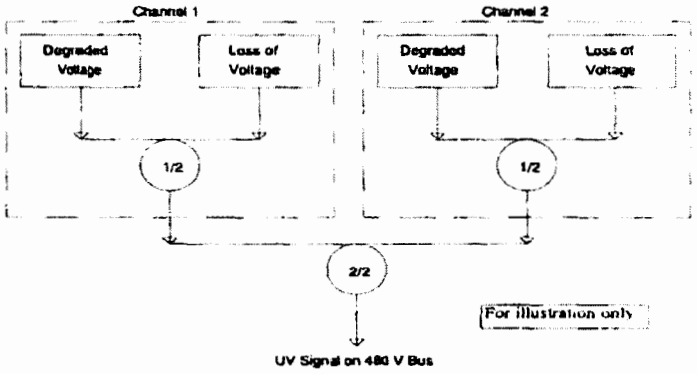

Figure B 3.3.4-1
DG LOP Instrumentation

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - MODES 1, 2, 3, and 4

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

a. One qualified independent offsite power circuit connected between the offsite transmission network and each of the onsite 480 V safeguards buses required by LCO 3.8.9, "Distribution Subsystems - MODES 1, 2, 3, and 4"; and

b. Two emergency diesel generators (DGs) capable of supplying their respective onsite 480 V safeguards buses required by LCO 3.8.9.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

- NOTE -

LCO 3.0.4.b is not applicable to DGs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Offsite power to one or more 480 V safeguards bus(es) inoperable.	A.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition A concurrent with inoperability of redundant required feature(s)
	AND	
	A.2 Restore offsite circuit to OPERABLE status.	72 hours
B. One DG inoperable.	B.1 Perform SR 3.8.1.1 for the offsite circuit.	1 hour AND Once per 8 hours thereafter
	AND	

CONDITION	REQUIRED ACTION		COMPLETION TIME
	B.2	Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	AND		
	B.3.1	Determine OPERABLE DG is not inoperable due to common cause failure.	24 hours
		OR	
	B.3.2	Perform SR 3.8.1.2 for OPERABLE DG.	24 hours
	AND		
	B.4	Restore DG to OPERABLE status.	7 days
C. Offsite power to one or more 480 V safeguards bus(es) inoperable. AND One DG inoperable.		- - - - - - - - - - - - - - - - - - - NOTE - Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - MODES 1, 2, 3, and 4," when Condition C is entered with no AC power source to one distribution train. - - - - - - - - - - - - - - - - - -	
	C.1	Restore required offsite circuit to OPERABLE status.	12 hours
	OR		
	C.2	Restore DG to OPERABLE status.	12 hours

CONDITION		REQUIRED ACTION		COMPLETION TIME
D.	Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Be in MODE 3.	6 hours
		AND		
		D.2	Be in MODE 5.	36 hours
E.	Two DGs inoperable.	E.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for the offsite circuit to each of the 480 V safeguards buses.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.2	- NOTE - 1. Performance of SR 3.8.1.9 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading.	
	Verify each DG starts from standby conditions and achieves rated voltage and frequency.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE		FREQUENCY
SR 3.8.1.3	- NOTE - 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.9.	
	Verify each DG is synchronized and loaded and operates for ≥ 60 minutes and < 120 minutes at a load ≥ 2025 kW and < 2250 kW.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.4	Verify the fuel oil level in each day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Verify the DG fuel oil transfer system operates to transfer fuel oil from each storage tank to the associated day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.6	Verify transfer of AC power sources from the 50/50 mode to the 100/0 mode and 0/100 mode.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.7	- NOTE - 1. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. 2. Credit may be taken for unplanned events that satisfy this SR.	
	Verify each DG does not trip during and following a load rejection of ≥ 295 kW.	In accordance with the Surveillance Frequency Control Program

	SURVEILLANCE	FREQUENCY
SR 3.8.1.8	- NOTE - 1. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. 2. Credit may be taken for unplanned events that satisfy this SR. Verify each DG automatic trips are bypassed on an actual or simulated safety injection (SI) signal except: a. Engine overspeed; b. Low lube oil pressure; and c. Start failure (overcrank) relay.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.9	- NOTE - 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. 3. Credit may be taken for unplanned events that satisfy this SR. Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated SI actuation signal: a. De-energization of 480 V safeguards buses; b. Load shedding from 480 V safeguards buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads, 2. energizes auto-connected emergency loads through the load sequencer, and 3. supplies permanently and auto-connected emergency loads for $\geq$ 5 minutes.	In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - MODES 1, 2, 3, and 4

LCO 3.8.9 Train A and Train B of the following electrical power distribution subsystems shall be OPERABLE:

a. AC power;

b. AC instrument bus power; and

c. DC power.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One AC electrical power distribution train inoperable.	A.1	Restore AC electrical power distribution train to OPERABLE status.	8 hours
B.	One AC instrument bus electrical power distribution train inoperable.	B.1	Restore AC instrument bus electrical power distribution train to OPERABLE status.	2 hours
C.	One DC electrical power distribution train inoperable.	C.1	Restore DC electrical power distribution train to OPERABLE status.	2 hours
D.	Required Action and associated Completion Time of Conditions A, B, or C not met.	D.1 AND D.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours
E.	Two trains with inoperable electrical power distribution subsystems that result in a loss of safety function.	E.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.9.1	Verify correct breaker alignments and voltage to required electrical power trains.	In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

TR 3.8.1 Offsite Power Sources

TR 3.8.1 Two qualified independent offsite power circuits shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One offsite power circuit inoperable.	A.1 Initiate action to verify reliability of OPERABLE offsite power circuit. AND	Immediately
	A.2.1 Establish pre-conditions necessary to complete backfeed procedure in 8 hours or less OR	72 hours
	A.2.2 Restore Offsite Power Circuit to OPERABLE status	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND	6 hours
	B.2 Be in MODE 5.	36 hours
C. Two offsite power circuits inoperable.	C.1 Enter LCO 3.8.1.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
TSR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each offsite power circuit.	7 days
TSR 3.8.1.2	Perform SR 3.8.1.6 for each offsite power circuit.	In accordance with SR 3.8.1.6

Item 5

Facility Post-Exam Comments and References on
#4 Simulator Scenario Technical Specification LCOs
(23 pages)

2018 Ginna NRC Scenario Technical Specification Requirements

Scenario #4

Event 1 – Pressurizer Level Channel 427 fails low

In accordance with Technical Specification Basis (TSB) LCO 3.3.1 (page 3.3.1-17) "The LCO requires three channels of the Pressurizer Water Level High trip Function to be OPERABLE." The Operator would enter Technical Specification LCO 3.3.1, Reactor Trip System (RTS) Instrumentation, Conditions A and D.

This is as scripted in NRC Exam Scenario #4 Guide.

In accordance with Technical Specification Basis (TSB) LCO 3.3.3 (page 3.3.3-4) "Pressurizer Level is a Type A variable used to determine whether to terminate SI, if still in progress, or to reinitiate SI if it has been stopped. Pressurizer water level is also used to verify that the plant is maintained in a safe shutdown condition. Any of the following combinations of level transmitters comprise the two channels required for this function (Function 2): LT-426 and LT-428; or LT-427 and LT-428."
Since Pressurizer level channels LT-426 and LT-428 remained operable, Function 2 remained OPERABLE. Therefore, the Operator would recognize that entry into Technical Specification LCO 3.3.3, Post Accident Monitoring (PAM) Instrumentation, Condition A is **NOT** required.

This is as scripted in NRC Exam Scenario #4 Guide.

Additionally, Pressurizer level transmitter 427 failing low results in a low-level isolation of Letdown and Pressurizer Heater cutout. This causes both the Proportional and Backup heater breakers to trip OPEN.
In accordance with Technical Specification LCO 3.4.9, Pressurizer, SR 3.4.9.2 "Verify total capacity of the pressurizer heaters is ≥ 100 Kw." Since there are no heaters available until the operating crew takes action to defeat the failed Pressurizer level channel, the Operator must enter Condition B.

This is as scripted in NRC Exam Scenario #4 Guide.

Event 2 – Turbine 1st Stage Pressure (PI-485) fails low

In accordance with Technical Requirements Manual Basis TR 3.4.3 (page TRB 3.4.3-1) "There are three functions that are required to provide Anticipated Transient Without Scram (ATWS) protection for these events: 1) Both Pressurizer PORVs shall be operable with their respective block valves open; 2) The Operator shall have manual control rod insertion capability; 3) The ATWS Mitigation System Actuation Circuitry (AMSAC) shall be operable." Additionally, "The AMSAC actuation signals are blocked (C-20 permissive) below a level of 40% reactor power, as determined by one of two turbine first stage pressure signals being below predetermined setpoints."
With Turbine 1st Stage Pressure Channel PT-485 failing low, AMSAC system will no longer be ARMED making AMSAC inoperable.

2018 Ginna NRC Scenario Technical Specification Requirements

The Operator would enter Technical Requirements Manual TR 3.4.3, Anticipated Transients Without Scram (ATWS) Mitigation, Condition A.

This is as scripted in NRC Exam Scenario #4 Guide.

3.3 INSTRUMENTATION

3.3.1 Reactor Trip System (RTS) Instrumentation

LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each Function.

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One or more Functions with one channel inoperable. OR Two source range channels inoperable.	A.1	Enter the Condition referenced in Table 3.3.1-1 for the channel(s).	Immediately
B.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	B.1	Restore channel to OPERABLE status.	48 hours
C.	Required Action and associated Completion Time of Condition B not met.	C.1 AND	Be in MODE 3.	6 hours
		C.2 AND	Initiate action to fully insert all rods.	6 hours
		C.3	Place Control Rod Drive System in a condition incapable of rod withdrawal.	7 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. As required by Required Action A.1 and referenced by Table 3.3.1-1.	D.1 - NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. Place channel in trip.	6 hours
E. As required by Required Action A.1 and referenced by Table 3.3.1-1.	E.1 Reduce THERMAL POWER to < 5E-11 amps. OR E.2 - NOTE - Required Action E.2 is not applicable when: a. Two channels are inoperable, or b. THERMAL POWER is < 5E-11 amps. Increase THERMAL POWER to ≥ 8% RTP.	2 hours 2 hours
F. As required by Required Action A.1 and referenced by Table 3.3.1-1.	F.1 Open RTBs and RTBBs upon discovery of two inoperable channels. AND	Immediately upon discovery of two inoperable channels

CONDITION	REQUIRED ACTION	COMPLETION TIME
	F.2 - NOTE - Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. Suspend operations involving positive reactivity additions. AND F.3 Restore channel to OPERABLE status.	Immediately 48 hours
G. Required Action and associated Completion Time of Condition D, E, or F is not met.	G.1 Be in MODE 3.	6 hours
H. As required by Required Action A.1 and referenced by Table 3.3.1-1.	H.1 Restore at least one channel to OPERABLE status upon discovery of two inoperable channels. AND H.2 - NOTE - Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. Suspend operations involving positive reactivity additions. AND	1 hour from discovery of two inoperable channels Immediately

CONDITION		REQUIRED ACTION		COMPLETION TIME
		H.3	Restore channel to OPERABLE status.	48 hours
I.	Required Action and associated Completion Time of Condition H not met.	I.1 AND	Initiate action to fully insert all rods.	Immediately
		I.2	Place the Control Rod Drive System in a condition incapable of rod withdrawal.	1 hour
J.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	J.1	- NOTE - Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. Suspend operations involving positive reactivity additions.	Immediately
		AND J.2	Perform SR 3.1.1.1.	12 hours AND Once per 12 hours thereafter
K.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	K.1	- NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. Place channel in trip.	6 hours

CONDITION		REQUIRED ACTION		COMPLETION TIME
L.	Required Action and associated Completion Time of Condition K not met.	L.1	Reduce THERMAL POWER to < 8.5% RTP.	6 hours
M.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	M.1	- NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. Place channel in trip.	6 hours
N.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	N.1	Restore channel to OPERABLE status.	6 hours
O.	Required Action and associated Completion Time of Condition M or N not met.	O.1	Reduce THERMAL POWER to < 30% RTP.	6 hours
P.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	P.1	- NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. Place channel in trip.	6 hours
Q.	Required Action and Associated Completion Time of Condition P not met.	Q.1 AND	Reduce THERMAL POWER to < 50% RTP.	6 hours

CONDITION		REQUIRED ACTION		COMPLETION TIME
		Q.2.1	Verify Steam Dump System is OPERABLE. OR	7 hours
		Q.2.2	Reduce THERMAL POWER to < 8% RTP.	7 hours
R.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	R.1	- - - - - - - - - - - - - - - - - - - NOTE - One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. - - - - - - - - - - - - - - - - - - Restore train to OPERABLE status.	6 hours
S.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	S.1	Verify interlock is in required state for existing plant conditions. OR	1 hour
		S.2	Declare associated RTS Function channel(s) inoperable.	1 hour

CONDITION		REQUIRED ACTION		COMPLETION TIME
T.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	T.1	- NOTE - 1. One train may be bypassed for up to 2 hours for surveillance testing, provided the other train is OPERABLE. 2. One RTB may be bypassed for up to 6 hours for maintenance on undervoltage or shunt trip mechanisms, provided the other train is OPERABLE. Restore train to OPERABLE status.	1 hour
U.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	U.1	Restore at least one trip mechanism to OPERABLE status upon discovery of two RTBs with inoperable trip mechanisms.	1 hour from discovery of two inoperable trip mechanisms
		AND		
		U.2	Restore trip mechanism to OPERABLE status.	48 hours
V.	Required Action and associated Completion Time of Condition R, S, T, or U not met.	V.1	Be in MODE 3.	6 hours
W.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	W.1	Restore at least one trip mechanism to OPERABLE status upon discovery of two RTBs with inoperable trip mechanisms.	1 hour from discovery of two inoperable trip mechanisms
		AND		

CONDITION		REQUIRED ACTION		COMPLETION TIME
		W.2	Restore trip mechanism or train to OPERABLE status.	48 hours
X.	Required Action and associated Completion Time of Condition W not met.	X.1 AND	Initiate action to fully insert all rods.	Immediately
		X.2	Place the Control Rod Drive System in a Condition incapable of rod withdrawal.	1 hour

SURVEILLANCE REQUIREMENTS

- NOTE -
Refer to Table 3.3.1-1 to determine which SRs apply for each RTS Function.

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.2	- NOTE - Required to be performed within 12 hours after THERMAL POWER is ≥ 50% RTP.	
	Compare results of calorimetric heat balance calculation to Nuclear Instrumentation System (NIS) channel output and adjust if calorimetric power is > 2% higher than indicated NIS power.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.3	- NOTE - 1. Required to be performed within 7 days after THERMAL POWER is ≥ 50% RTP but prior to exceeding 90% RTP following each refueling and if the Surveillance has not been performed within the last 31 EFPD. 2. Performance of SR 3.3.1.6 satisfies this SR.	
	Compare results of the incore detector measurements to NIS AFD and adjust if absolute difference is ≥ 3%.	In accordance with the Surveillance Frequency Control Program

	SURVEILLANCE	FREQUENCY
SR 3.3.1.4	Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.6	- NOTE - Not required to be performed until 7 days after THERMAL POWER is ≥ 50% RTP, but prior to exceeding 90% RTP following each refueling. Calibrate excore channels to agree with incore detector measurements.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.7	- NOTE - Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 4 hours after entering MODE 3. Perform COT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.8	- NOTE - 1. Not required for power range and intermediate range instrumentation until 4 hours after reducing power < 6% RTP. 2. Not required for source range instrumentation until 4 hours after reducing power < 5E-11 amps. Perform COT.	In accordance with the Surveillance Frequency Control Program

	SURVEILLANCE	FREQUENCY
SR 3.3.1.9	- NOTE - Setpoint verification is not required. Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.10	- NOTE - Neutron detectors are excluded. Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.11	Perform TADOT.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.12	- NOTE - Setpoint verification is not required. Perform TADOT.	Prior to reactor startup if not performed within previous 31 days
SR 3.3.1.13	Perform COT.	In accordance with the Surveillance Frequency Control Program

Table 3.3.1-1
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS[a]
1.	Manual Reactor Trip	1, 2, 3[b], 4[b], 5[b]	2	B,C	SR 3.3.1.11	NA
2.	Power Range Neutron Flux					
	a. High	1, 2	4	D,G	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.10	≤ 109.27% RTP
	b. Low	1[c], 2	4	D,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	≤ 29.28% RTP
3.	Intermediate Range Neutron Flux	1[c], 2	2	E,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	(d)
4.	Source Range Neutron Flux	2[e]	2	F,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	(d)
		3[b], 4[b], 5[b]	2	H,I	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	(d)
		3[f], 4[f], 5[f]	1	J	SR 3.3.1.1 SR 3.3.1.10	NA
5.	Overtemperature ΔT	1, 2	4	D,G	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.10	Refer to Note 1
6.	Overpower ΔT	1, 2	4	D,G	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	Refer to Note 2

Table 3.3.1-1
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS[a]
7.	Pressurizer Pressure					
	a. Low	1[g]	4	K,L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≥ 1791.3 psig
	b. High	1, 2	3	D,G	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≤ 2396.2 psig
8.	Pressurizer Water Level-High	1, 2	3	D,G	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≤ 96.47%
9.	Reactor Coolant Flow-Low					
	a. Single Loop	1[h]	3 per loop	M,O	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≥ 89.86%
	b. Two Loops	1[i]	3 per loop	K,L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≥ 89.86%
10.	Reactor Coolant Pump (RCP) Breaker Position					
	a. Single Loop	1[h]	1 per RCP	N,O	SR 3.3.1.11	NA
	b. Two Loops	1[j]	1 per RCP	K,L	SR 3.3.1.11	NA
11.	Undervoltage-Bus 11A and 11B	1[g]	2 per bus	K,L	SR 3.3.1.9 SR 3.3.1.10	[d]
12.	Underfrequency-Bus 11A and 11B	1[g]	2 per bus	K,L	SR 3.3.1.9 SR 3.3.1.10	≥ 57.5 HZ

Table 3.3.1-1
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS[a]
13.	Steam Generator (SG) Water Level-Low Low	1, 2	3 per SG	D,G	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≥ 13.88%
14.	Turbine Trip					
	a. Low Autostop Oil Pressure	1[k][l]	3	P,Q	SR 3.3.1.10 SR 3.3.1.12	[d]
	b. Turbine Stop Valve Closure	1[k][l]	2	P,Q	SR 3.3.1.12	NA
15.	Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1, 2	2	R,V	SR 3.3.1.11	NA

Table 3.3.1-1
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS[a]
16.	Reactor Trip System Interlocks					
	a. Intermediate Range Neutron Flux, P-6	2[e]	2	S,V	SR 3.3.1.10 SR 3.3.1.13	≥ 5E-11 amp
	b. Low Power Reactor Trips Block, P-7	1[g]	4 (power range only)	S,V	SR 3.3.1.10 SR 3.3.1.13	≤ 8.0% RTP
	c. Power Range Neutron Flux, P-8	1[h]	4	S,V	SR 3.3.1.10 SR 3.3.1.13	≤ 29.0% RTP
	d. Power Range Neutron Flux, P-9	1[i]	4	S,V	SR 3.3.1.10 SR 3.3.1.13	≤ 50.0% RTP
		1[k]	4	S,V	SR 3.3.1.10 SR 3.3.1.13	≤ 8.0% RTP
	e. Power Range Neutron Flux, P-10	1[c], 2	4	S,V	SR 3.3.1.10 SR 3.3.1.13	≥ 6.0% RTP
17.	Reactor Trip Breakers[m]	1, 2 3[b], 4[b], 5[b]	2 trains 2 trains	T,V W,X	SR 3.3.1.4 SR 3.3.1.4	NA NA
18.	Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms	1, 2 3[b], 4[b], 5[b]	1 each per RTB 1 each per RTB	U,V W,X	SR 3.3.1.4 SR 3.3.1.4	NA NA
19.	Automatic Trip Logic	1, 2 3[b], 4[b], 5[b]	2 trains 2 trains	R,V W,X	SR 3.3.1.5 SR 3.3.1.5	NA NA

(a)

A channel is OPERABLE when both of the following conditions are met:

1. The absolute difference between the as-found Trip Setpoint (TSP) and the previous as-left TSP is within the COT Acceptance Criteria. The COT Acceptance Criteria is defined as:

   |as-found TSP - previous as-left TSP| ≤ COT uncertainty

   The COT uncertainty shall not include the calibration tolerance.

2. The as-left TSP is within the established calibration tolerance band about the nominal TSP. The nominal TSP is the desired setting and shall not exceed the Limiting Safety System Setting (LSSS). The LSSS and the established calibration tolerance band are defined in accordance with the Ginna Instrument Setpoint Methodology. The channel is considered operable even if the as-left TSP is non-conservative with respect to the LSSS provided that the as-left TSP is within the established calibration tolerance band.

(b) With Control Rod Drive (CRD) System capable of rod withdrawal or all rods not fully inserted.

(c) THERMAL POWER < 6% RTP.

(d) UFSAR Table 7.2-3.

(e) Both Intermediate Range channels < 5E-11 amps.

(f) With CRD System incapable of withdrawal and all rods fully inserted. In this condition, the Source Range Neutron Flux function does not provide a reactor trip, only indication.

(g) THERMAL POWER ≥ 8.5% RTP.

(h) THERMAL POWER ≥ 30% RTP.

(i) THERMAL POWER ≥ 8.5% RTP and Reactor Coolant Flow-Low (Single Loop) trip Function blocked.

(j) THERMAL POWER ≥ 8.5% RTP and RCP Breaker Position (Single Loop) trip Function blocked.

(k) THERMAL POWER > 8% RTP, and either no circulating water pump breakers closed, or condenser vacuum ≤ 20".

(l) THERMAL POWER ≥ 50% RTP, 1 of 2 circulating water pump breakers closed, and condenser vacuum > 20".

(m) Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB.

Table 3.3.1-1 (Note 1)
Overtemperature ΔT

- - - - - - - - - - - - - - - - - - -
- NOTE -

The Overtemperature ΔT Function Limiting Safety System Setting is defined by:

$$\text{Overtemperature } \Delta T \leq \Delta T_0 \{K_1 + K_2 (P-P') - K_3 (T-T') [(1+\tau_1 s) / (1+\tau_2 s)] - f_1(\Delta I)\}$$

Where:

ΔT is measured RCS ΔT, °F.
ΔT_0 is the indicated ΔT at RTP, °F.

s is the Laplace transform operator, sec^{-1}.

T is the measured RCS average temperature, °F.
T' is the nominal T_{avg} at RTP, °F.

P is the measured pressurizer pressure, psig.
P' is the nominal RCS operating pressure, psig.

K_1 is the Overtemperature ΔT reactor trip setpoint, [*].
K_2 is the Overtemperature ΔT reactor trip depressurization setpoint penalty coefficient, [*]/psi.
K_3 is the Overtemperature ΔT reactor trip heatup setpoint penalty coefficient, [*]/°F.

τ_1 is the measured lead time constant, [*] seconds.
τ_2 is the measured lag time constant, [*] seconds.

$f(\Delta I)$ is a function of the indicated difference between the top and bottom detectors of the Power Range Neutron Flux channels where q_t and q_b are the percent power in the top and bottom halves of the core, respectively, and $q_t + q_b$ is the total THERMAL POWER in percent RTP.

$f_1(\Delta I) = [*] \{[*] - (q_t - q_b)\}$ when $q_t - q_b \leq$ [*]% RTP

$f_1(\Delta I) = 0\%$ of RTP when [*] % RTP $< q_t - q_b \leq$ [*]% RTP

$f_1(\Delta I) = [*] \{(q_t - q_b) - [*]\}$ when $q_t - q_b >$ [*]% RTP

* These values denoted with [*] are specified in the COLR.
- - - - - - - - - - - - - - - - - - -

Table 3.3.1-1 (Note 2)
Overpower ΔT

- NOTE -

The Overpower ΔT Function Limiting Safety System Setting is defined by:

$$\text{Overpower } \Delta T \leq \Delta T_0 \{K_4 - K_5 (T-T') - K_6 [(\tau_3 sT) / (\tau_3 s+1)] - f_2(\Delta I)\}$$

Where:

ΔT is measured RCS ΔT, °F.
ΔT_0 is the indicated ΔT at RTP, °F.

s is the Laplace transform operator, sec^{-1}.

T is the measured RCS average temperature, °F.
T' is the nominal T_{avg} at RTP, °F.

K_4 is the Overpower ΔT reactor trip setpoint, [*].
K_5 is the Overpower ΔT reactor trip heatup setpoint penalty coefficient which is:
[*]/°F for $T < T'$ and;
[*]/°F for $T \geq T'$.
K_6 is the Overpower ΔT reactor trip thermal time delay setpoint penalty which is:
[*]/°F for increasing T and;
[*]/°F for decreasing T.

τ_3 is the measured impulse/lag time constant, [*] seconds.

$f_2(\Delta I)$ = [*]

* These values denoted with [*] are specified in the COLR.

- PT-429 and PT-449;
- PT-430 and PT-449; or
- PT-431 and PT-449

The loss of Instrument Bus D requires declaring PT-449 inoperable.

2. Pressurizer Level

Pressurizer Level is a Type A variable used to determine whether to terminate SI, if still in progress, or to reinitiate SI if it has been stopped. Pressurizer water level is also used to verify that the plant is maintained in a safe shutdown condition. Any of the following combinations of level transmitters comprise the two channels required for this function:

- LT-426 and LT-428; or
- LT-427 and LT-428.

3. Reactor Coolant System (RCS) Hot Leg Temperature

RCS Hot and Cold Leg Temperatures are Category I variables (RCS Cold Leg Temperature is also a Type A variable) provided for verification of core cooling and long term surveillance of RCS integrity.

RCS hot and cold leg temperatures are used to determine RCS subcooling margin. RCS subcooling margin will allow termination of SI, if still in progress, or reinitiation of SI if it has been stopped. RCS subcooling margin is also used for plant stabilization and cooldown control.

In addition, RCS cold leg temperature is used in conjunction with RCS hot leg temperature to verify natural circulation in the RCS.

Temperature inputs are provided by two independent temperature sensor resistance elements and associated transmitters in each loop. Temperature elements TE-409B-1 and TE-410B-1 provide the required RCS cold leg temperature input for RCS Loops A and B, respectively. Temperature elements TE-409A-1 and TE-410A-1 (or TE-410A-2) provide the required RCS hot leg temperature input for RCS Loops A and B, respectively.

4. RCS Cold Leg Temperature

Refer to description of Function number 3 above.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	Pressurizer water level not within limit.	A.1	Be in MODE 3 with reactor trip breakers open.	6 hours
		AND		
		A.2	Be in MODE 4.	12 hours
B.	Pressurizer heaters capacity not within limits.	B.1	Be in MODE 3.	6 hours
		AND		
		B.2	Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is $\leq$ 87%.	In accordance with the Surveillance Frequency Control Program
SR 3.4.9.2	Verify total capacity of the pressurizer heaters is $\geq$ 100 Kw.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

TR 3.4.3 Anticipated Transients Without Scram (ATWS) Mitigation

TR 3.4.3 ATWS Mitigation shall be OPERABLE as follows:

a. Each PORV shall be capable of automatic actuation and each block valve shall be open;

b. Manual rod insertion shall be OPERABLE; and

c. ATWS Mitigation System Actuation Circuitry (AMSAC) shall be OPERABLE.

APPLICABILITY: MODE 1 > 45% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more PORV automatic flow path inoperable. OR Manual rod insertion inoperable. OR AMSAC inoperable.	A.1 Declare ATWS mitigating capability inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.3.1	Verify block valves are open.	12 hours
TSR 3.4.3.2	Perform SR 3.1.4.3.	In accordance with SR 3.1.4.3
TSR 3.4.3.3	Perform a COT on each PORV including actuation.	24 months

SURVEILLANCE		FREQUENCY
TSR 3.4.3.4	---------- -NOTE- Controller PC-431K calibration frequency may be up to 36 months. This controller is considered to be a part of the "actuation channel" for PORV 431C. ---------- Perform a CHANNEL CALIBRATION on each PORV automatic actuation logic.	24 months
TSR 3.4.3.5	Perform a CHANNEL CALIBRATION on AMSAC.	18 months
TSR 3.4.3.6	Perform an ACTUATION LOGIC TEST on AMSAC.	18 months

Item 6

NRC Resolution of Post-Exam Comments

(9 pages)

Post-Exam Comment Resolution - Summary

Written Exam Comments

Exelon submitted post-exam review comments on four written exam questions (Questions 78, 80, 84, and 95). The NRC reviewed the proposed exam changes and concluded the following:

- Q #78 – The NRC **does not agree** with the facility. The question was acceptable as administered. The exam key will not be changed.
- Q #80 – The NRC **does not agree** with the facility. The question was acceptable as administered. The exam key will not be changed.
- Q #84 – The NRC **agrees** with the facility and accepts the recommendation. The question will be removed from the exam.
- Q #95 - The NRC **does not agree** with the facility. The question was acceptable as administered. The exam key will not be changed.

Simulator Scenario Comments

Exelon submitted post-exam evaluations of the scripted Technical Specification evaluation items in each of the administered dynamic simulator scenarios and submitted their conclusions regarding the validity of the documented necessary TS action statements. Exelon submitted recommendations to change the related grading standard for Scenarios #1 and #3. Exelon determined that scripted TS calls in Scenario #4 were correct as written and require no change. Exelon determined most of the scripted TS calls in Scenarios #1 and #3 were correct as scripted but did identify issues with some of the scripted items. The NRC reviewed the identified issues and the facility proposed exam changes associated with the Tech Specs and concluded the following:

- Scenario #1, Event #3, TS 3.8.4. The NRC **agrees** entry into TS LCO 3.8.4 condition is not required.
- Scenario #1, Event #3, TS 3.6.6 Condition F. The NRC **agrees** Condition F was not identified as a required action item in the scenario guide and does not need to be entered. The NRC **agrees** entry into TS 3.0.3 would not be required to be entered for 4 hours.
- Scenario #3, Event #3, TS 3.7.14. The NRC **agrees** that entry into TS LCO 3.7.14 is not required.
- Scenario #3, Event #4 TS 3.8.1, Conditions A, B, and C. The NRC **agrees** that entry into Conditions A, B and C is required.

Control Room JPM Comment

Exelon submitted a post-exam comment on Control Room JPM c, stating that Step 2 should not be a JPM critical step. The NRC **agrees** and accepts the recommendation to have JPM Step 2 as not critical. The NRC re-evaluated the critical / not critical classification of each step in the JPM and determined that JPM Step 12 should be changed from non-critical to critical.

Post-Exam Comment Resolution – Details – Written Exam

SRO Written Exam Question #78

Facility Recommendation:

Remove Q #78 from the exam OR accept both Key Answer B and Choice D as correct answers.

NRC Comment Resolution:

No changes required. The answer key will remain as-is.

Pass-Fail Stats:

6 of 8 SRO applicants missed this question. All 6 of them chose Distractor Choice D. No applicant asked for any clarification of this question during exam administration.

Discussion:

This post-exam comment indicates the question is not valid because it tests knowledge that an operator would not be expected to apply during an ongoing event. The comment implies that since a portion of the question relates to EAL declaration, which is a time-limited action, it is therefore unreasonable for the other portion of the question to test the applicant's ability to perform a calculation of the time available before plant actions are required based on plant parameter values. This argument is loosely related to whether or not the question is related to job requirements. The comment further argues that operators would use pressurizer level trends, if necessary, to determine the time available, rather than by computing the available time using knowledge of the rate of inventory loss, pressurizer volume and water density in the pressurizer during at-power operation.

The NRC recognizes that operators can use rate of pressurizer level decrease to evaluate the time available before level reaches a specific value. However, the NRC also recognizes a need, that has been highlighted by past industry events, for licensed operators to have good fundamental knowledge of plant design, thermodynamic principles, and the ability to use steam tables to perform calculations. This question directly tested the associated K/A statement, which was the "*ability to determine and interpret the following as they apply to the loss of reactor coolant makeup: how long pressurizer level can be maintained within limits*".

The question initial conditions did not establish any operational time pressure on the applicant in which to determine the correct answer. The question provided initial stable full-power conditions, described a loss of makeup with letdown isolation and quantified the known RCS inventory loss via RCP seal leakoff. The question asked applicants to determine how many hours would elapse before the procedurally directed reactor trip setpoint would be reached. The second part of the question asked the applicants to identify whether or not an EAL declaration would be required if the loss of charging procedure was implemented and charging was not restored. While actual EAL declarations are made under imposed time limits, this written exam question did not put a time limitation on the applicant to arrive at an answer. Each applicant had as much time as needed to arrive at an answer within the constraints of the overall time limitation for completion of the written exam. The exam validations prior to administration did not identify any challenge in completing the exam within the allowed time. Per the examination standard, each SRO applicant was allowed 9 hours to complete the combined RO/SRO written exam. All applicants began the exam at the same time. All applicants completed their exams in 7 and ½ hours or less.

Knowing the temperature-density compensated Pressurizer level correlation or being able to determine that correlation by use of steam tables, is not minutiae. The concept being measured has a direct, important relationship to the ability to perform the job and is therefore suitable for testing. Licensed operators are expected to be able to evaluate plant performance and make operational judgements based on plant operating characteristics and instrument interpretation. The operator

should either know or be able to readily determine through the use of steam tables that the liquid mass in the pressurizer for a given level at rated (hot) conditions is only about 60% of the liquid mass when the pressurizer is cold. In any planned or impending operational situation that would result in an imbalance in charging and letdown flow rates, this knowledge is necessary in order to be able to predict the effect of that imbalance on pressurizer level over time. It is not sufficient for the operator to be able to identify an existing rate of level change but not be able to predict a rate of level change that would result from conditions not yet established.

SRO Written Exam Question #80

Facility Recommendation:

For Q #80, accept both Choice A and Key Answer C as correct answers.

NRC Comment Resolution:

No changes required. The answer key will remain as-is.

Pass-Fail Stats:

3 of 8 SRO applicants missed this question. All 3 of them selected Distractor Choice A. One applicant made a comment to the exam proctor that he didn't understand where he was at in the procedure as the indications in the stem were very confusing. The proctor withheld guidance and instructed the applicant to do the best he could using the information provided in the question.

Discussion:

This post-exam comment stated that given plant conditions don't clearly identify what step the operators are performing in ECA-2.1. It stated operators would have already turned off RHR pumps earlier in the procedure if appropriate conditions (RCS pressure stable or increasing at greater than 300 psig) were met. It then stated that Choice A would be correct if the applicant assumed RHR pumps had already been secured and that Choice C would be correct if RHR pumps had not been secured.

It was not necessary to identify the specific step in the procedure by step number. The location in the procedure, at the step for terminating SI, is indicated by the statement in the question stem that "*operators stopped SI pumps and shortly thereafter observe the following conditions*". Step 17 is the only step in the procedure that directs stopping SI pumps and it is not a continuous action step. The stem is clear.

The comment identified that Step 7 is a continuous action step to turn off RHR pumps when conditions of steady or rising RCS pressure of greater than 300 psig is met. However, it is not correct that RHR would necessarily be turned off prior to Step 17 because of the continuous action Step 7. RCS pressure could have been lowering during the event until such time as it was no longer lowering. And the change in RCS pressure response to pressure stable or rising could occur, as presented in the question, at the point where the operator was taking action for SI termination, at which point the operator would stop SI pumps and then stop RHR pumps per Step 17. The question is operationally valid.

The comment appears to indicate that RHR pump status was subject to applicant assumptions. However, the stem of the question clearly states that RHR pumps are running. There is no validity to

an applicant selecting Distractor Choice A on the basis of assuming the RHR pumps had already been turned off since the question states the RHR pumps are running. Per NUREG-1021 Appendix E, when answering a question, applicants are not to make assumptions regarding conditions that are not specified in the question unless they occur as a consequence of other conditions in the question.

SRO Written Exam Question #84

Facility Recommendation:
Remove Q #84 from the exam.

NRC Comment Resolution:
Remove Q #84 from the exam.

Pass-Fail Stats:
6 of 8 SRO applicants missed this question; 3 selected Distractor Choice A, 2 selected Distractor Choice C and 1 selected Distractor Choice D. One applicant asked the proctor during exam administration whether the "*question is asking on no further changes to conditions, which date starts the clock for earliest action, does that mean based on components that are still out of service or which would have the earliest action on ITS paperwork before the paperwork was closed out because the component was restored.*" The proctor withheld guidance and instructed the applicant to do the best he could using the information provided in the question.

Discussion:
This post-exam comment indicated that applicants were confused as to what information the question was trying to obtain. The NRC agrees that the question stem is unclear. Per ES-403, Section D.1.b, a question with an unclear stem that confused the applicants or did not provide all the necessary information is likely to result in post-examination changes. Accordingly, this question will be removed from the exam.

The question provided a timeline for instruments being taken out of service and some then being placed back in service. Applicants were expected to evaluate the timeline history and then, based on conditions existing after the last timeline event, identify the date in the timeline that established the starting point for the earliest action that will subsequently be required to be taken. However, the question did not explain in this detail. It merely asked, "*assuming no further changes in conditions, which date starts the clock for the earliest action that will be required by TS 3.3.3?*" Applicants were unreasonably challenged to interpret the expectation of the question author. As described in the post-exam comment, an applicant could justify selecting different choices under different interpretations. The applicants were provided with the associated Technical Specification as a reference allowed during exam administration.

Analysis of the possible choices leads to the following conclusions regarding confusion of the applicants:

- The 3 applicants who selected Distractor Choice A would likely have interpreted the question as intended since this is the latest date given in the timeline and would lead to the latest (not the earliest) action time requirement of the possible action times for conditions in the question. Selection of Choice A is the logical answer if an applicant understands the question but misapplies the separate condition entry note to each inoperability rather than,

as required, to each inoperable function. Selection of this choice would be the result of misunderstanding of technical specifications and would **not** be the result of confusion over the question being asked.

- The 2 applicants that selected Key Answer B would likely have interpreted the question as intended. Selection of this choice would **not** be the result of confusion over the question being asked.
- The 2 applicants that selected Distractor Choice C would likely have **mis**interpreted the question as asking the earliest action time of any action that would have been entered for any of the instruments in the timeline because this choice corresponds with the TS action condition that has the shortest allowed outage time.
- The 1 applicant that selected Distractor Choice D would likely have **mis**interpreted the question as asking the earliest action requirement that would have been entered.

The analysis above indicates it is possible to correctly interpret the intent of the question, as demonstrated by a majority (62.5%, 5 of 8) of the SRO applicants. However, the selection of Choices C or D by several (37.5%, 3 of 8) of the SRO applicants also demonstrates the question wording was sufficiently ambiguous to allow the question to be interpreted in multiple ways.

This question appears sufficiently confusing to warrant removal from the exam given

a) the confusion over this question expressed by an applicant to the proctor during the exam administration,
b) the variation in answer choices selected by the applicants, and
c) the lack of specificity in the question as to when to begin the evaluation for earliest action required by technical specification.

SRO Written Exam Question #95

Facility Recommendation:

Remove Q #95 from the exam.

NRC Comment Resolution:

No changes required. The answer key will remain as-is.

Pass-Fail Stats:

4 of 8 SRO applicants missed this question. All 4 of them selected Distractor Choice A. No applicant asked for any clarification of this question during exam administration.

Discussion:

This post-exam comment states that knowing this fuel handling restriction is not required carry-around knowledge. It states that this would be Refueling SRO knowledge.

This question was specifically testing SRO knowledge of new and spent fuel movement procedures and was appropriate for the SRO section of an SRO written exam. As explained throughout the Examiner's Standard (NUREG 1021) and as required by 10CFR55.43 (b)(7), SRO applicants must be tested on fuel handling facilities and procedures. The NRC issues SRO licenses and SRO licenses limited to fuel handling. Both of these licenses authorize the licensed SRO to supervise fuel handling activities. As such, it is customary and reasonable to test SRO initial license candidates in a closed-

book format on their knowledge of fuel handling procedures, precautions and limitations. It is recognized and expected that operators will utilize procedures during performance of their licensed duties. However, knowledge testing is a key aspect of the licensing process, justified in the introductory material to Appendix B of NUREG 1021.

Some licensees assign a small core group of SRO licensed individuals to perform all fuel handling activities and these individuals are then provided with specific training and briefings immediately prior to fuel handling. This can contribute to an incorrect mind-set that the general population of SROs is not required to acquire or maintain in-depth fuel handling knowledge since the knowledge would be obtained immediately prior to its use if needed. But regardless of how SRO work is assigned at a facility, the NRC expects all SROs to maintain fuel handling knowledge as a function of their license. Accordingly, SRO initial license exams will routinely sample detailed knowledge of fuel handling facilities and procedures.

The NRC does not agree with the comment contention that the knowledge tested in Q #95 is not required knowledge of an SRO. The question tested an essential fuel handling concept – the understanding of the restriction on concurrent fuel movement in the SFP if an irradiated fuel assembly is in the new fuel elevator. Further, this question was used successfully on the Ginna 2011 SRO retake exam without comment. Because of the necessity of SRO's understanding when and how fuel movements are restricted, this information is not minutiae.

Post-Exam Comment Resolution – Details – Simulator Scenarios

Scenario #1, Event #3, TS 3.8.4

Facility Recommendation:

Exelon re-evaluated all scenario Tech Spec applicability determinations and recommended changing the scenario to not require entry into TS LCO 3.8.4 per the guidance in TS 3.0.6.

NRC Comment Resolution:

The NRC agrees. The SRO is not expected to enter an action statement for TS 3.8.4.

Discussion:

Event #3 was a fault / loss of 480V Emergency Bus 16. During this event, the Train B DC electrical power sources became inoperable because the event removed the power for the battery charger that was supplying the DC Bus. Per TS 3.8.4 Bases, an operable DC electrical power source required the battery and at least one battery charger with a capacity greater than or equal to 150 amps to be operating and connecting to the associated DC bus. The DC Sources are a supported system with respect to Bus 16 because Bus 16 supports (provides power for) the battery charger for the DC Bus. Per TS 3.0.6, when a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Therefore, entry into TS LCO 3.8.4 is not required for Event #3.

Scenario #1, Event #3, TS 3.6.6 Condition F and TS 3.0.3

Facility Recommendation:

Exelon re-evaluated all scenario Tech Spec applicability determinations. They determined the scenario was correct as written in NOT requiring the SRO to enter TS LCO 3.6.6 Condition F or TS 3.0.3. This was addressed in a post-exam comment because the issue came up as a question by examiners during exam administration after an applicant stated he needed to enter TS 3.0.3

NRC Comment Resolution:

The NRC agrees. Entry into TS 3.6.6 Condition F is not required during this event and entry into TS 3.0.3 is not required during this event.

Discussion:

Event #3 was a fault / loss of 480V Emergency Bus 16. The prior event, Event #2, was a trip of Containment Recirculation Fan Cooler (CRFC) "A", which required the SRO to enter TS LCO 3.6.6 Condition D for one or two CRFC Units inoperable. With Event #3, two other CRFC Units lost power, leaving only one of the four CRFC Units operable. TS 3.6.6 Condition F states that TS LCO 3.0.3 is to be entered immediately if three or more CRFC units are inoperable. However, TS LCO 3.8.1 Condition A.1 states "declare required features(s) inoperable when its redundant required feature(s) is inoperable" and has a completion time of 12 hours from discovery of Condition A concurrent with inoperability of redundant feature(s). And TS LCO 3.8.1 Condition B.2 states "declare required features(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable" and has a completion time of 4 hours from discovery of Condition B concurrent with inoperability of redundant feature(s). Both Condition A.1 and B.2 apply to the event. Because of their completion times (12 hours and 4 hours respectively), entry into TS 3.0.3 is not required until 4 hours after the loss of Bus 16 with the concurrent failure of CRFC Unit "A".

Scenario #3, Event #3, TS 3.7.14

Facility Recommendation:

Exelon re-evaluated all scenario Tech Spec applicability determinations. They determined the scenario was NOT correct in requiring the SRO to enter TS LCO 3.7.14 for Secondary Specific Activity because no information was provided to the applicants during the scenario about the activity of the secondary.

NRC Comment Resolution:

The NRC agrees. Entry into TS 3.7.14 is not required during this event.

Discussion:

Event #3 was a 10 gpm Steam Generator Tube Leak. SRO applicants were expected to enter TS LCO 3.7.14 for high Secondary Specific Activity. The specification states the specific activity of the secondary coolant shall be less than or equal to 0.1 microcuries per gram dose equivalent I-131. The activity level can only be determined by Chemistry analysis. No information was provided to the applicants during this scenario relating to secondary coolant activity. Without this information the SRO applicant would not be able to identify coolant activity in excess of TS limits. Therefore, TS LCO 3.7.14 should not be entered.

Scenario #3, Event #4, TS 3.8.1

Facility Recommendation:

Exelon re-evaluated all scenario Tech Spec applicability determinations. They determined the scenario was NOT correct in requiring the SRO to only enter TS LCO 3.8.1 Condition B. It should have required entry into Conditions A, B and C.

NRC Comment Resolution:

The NRC agrees. Entry into TS 3.8.1 Conditions A, B and C are required for the event.

Discussion:

Event #4 was a Loss of Offsite Line 7T and a concurrent failure of EDG "A" to automatically start. Power from either Line 7T or Line 767 can be credited for meeting offsite power requirements for each safeguards train provided the Line is aligned to provide power to that specific safeguards train. The scenario conditions had Line 7T feeding the "A" Safeguards Train and the Line 767 feeding the "B" Safeguards Train. Upon the loss of Line 7T, the "A" train no longer had an offsite source connected between offsite power and the 480V bus. Therefore Condition A applied. Since Condition B applied (for the EDG start failure), this met requirements to enter Condition C for the concurrent inoperability of an offsite power source and an emergency diesel generator.

Post-Exam Comment Resolution – Details – Control Room JPM

Control Room JPM c

Facility Recommendation:

Exelon recommended that Step 2 of Control Room JPM c be re-categorized as not-critical.

NRC Comment Resolution:

Exelon submitted a post-exam comment on Control Room JPM c, stating that Step 2 should not be a JPM critical step. The NRC agrees and accepts the recommendation to have JPM Step 2 as not critical. The NRC re-evaluated the critical / not critical classification of each step in the JPM and determined that JPM Step 12 should be changed from non-critical to critical.

Discussion:

JPM c presented applicants with a trip of the running RHR pump while operating in lowered, but not reduced, RCS inventory condition. The applicant was expected to recognize that a loss of RHR under the given plant conditions would require response in accordance with AP-RHR.1, rather than AP-RHR.2 which applies to loss of RHR when in reduced RCS inventory condition. JPM Step 2 was listed as a critical step and required the applicant to determine AP-RHR.1 was the appropriate procedure. The NRC agrees in this specific instance that determining the correct procedure is, by itself, not a critical step. The JPM task standard stated, "the operator will re-establish RHR flow in accordance with AP-RHR.1." Given the wording, an applicant would meet the task standard if the applicant performed all the necessary actions of AP-RHR.1 in the correct sequence without referring to the procedure. In that situation, the applicant's performance would warrant a comment for failing to meet expectations regarding procedure use. But the applicant would be judged as having performed the required actions per the task standard to properly restore RHR flow and therefore would receive a grade of satisfactory for the JPM.

In assessing this post-exam comment, the NRC re-evaluated all of the JPM steps and determined that JPM Step 12 should be changed from non-critical to critical because performance of Step 12 is necessary to meet the JPM task standard. Failure to perform Step 12, which was to place RHR HX Bypass Valve HCV-626 in MANUAL and closed, would result in starting the standby RHR pump at a maximum flow condition. AP-RHR.1 correctly requires HCV-626 closed to ensure the RHR pump is started under minimum load and at minimum flow condition so as to allow for a controlled increase in RHR flow.

JPM Step 2 will be evaluated as non-critical. However, other JPM steps, listed as critical steps, which describe actions of AP-RHR.1, will be evaluated as critical. Additionally, JPM Step 12 which is listed as non-critical will be evaluated as a critical step.