



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

August 14, 2023

Southern Nuclear Operating Co., Inc.
ATTN: Mr. Delson Erb
Joseph M. Farley Nuclear Plant
7388 North State Highway 95
Columbia, AL 36319-0470

**SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT – NRC OPERATOR LICENSE
EXAMINATION REPORT 05000348/2023301 and 05000364/2023301**

Dear Mr. Erb:

During the period May 22 – 31, 2023, the Nuclear Regulatory Commission (NRC) administered operating tests to employees of your company who had applied for licenses to operate the Joseph M. Farley Nuclear Plant. At the conclusion of the operating tests, the examiners discussed preliminary findings related to the operating tests and the written examination submittal with those members of your staff identified in the enclosed report. The written examination was administered by your staff on June 6, 2023.

Six Reactor Operator (RO) and ten Senior Reactor Operator (SRO) applicants passed both the operating test and written examination. One SRO applicant passed the operating test but failed the written examination. There were two post-administration comments concerning the written examination. These comments, and the NRC resolution of these comments, are summarized in Enclosure 2. A Simulator Fidelity Report is included in this report as Enclosure 3.

The initial examination submittal was within the range of acceptability expected for a proposed examination. NRC regional management considered the impacts of the post-examination comment resolution on the evaluation that the written examinations met the expected quality standards. All examination changes agreed upon between the NRC and your staff were made according to NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 12.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm.adams.html> (the Public Electronic Reading Room).

If you have any questions concerning this letter, please contact me at (404) 997-4703.

Sincerely,

/RA/

Thomas A. Stephen, Chief
Operations Branch 1
Division of Reactor Safety

Docket Nos.: 50-348, 50-364

License Nos.: NPF-2, NPF-8

Enclosures:

1. Report Details
2. Facility Comments and NRC Resolution
3. Simulator Fidelity Report

cc: Distribution via Listserv

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT – NRC OPERATOR LICENSE EXAMINATION REPORT 05000348/2023301 and 05000364/2023301 dated August 14, 2023

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ADAMS: Yes ACCESSION NUMBER **ML23227A051** SUNSI REVIEW COMPLETE FORM 665 ATTACHED

OFFICE	RII/ DRS/ OB	RII/ DRS/ OB	RII/ DRS/ OB		
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DATE	8/11/2023	8/11/2023	8/14/2023		

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Examination Report

Docket No.: 05000348, 05000364

License No.: NPF-2, NPF-8

Report No.: 05000348/2023301 and 05000364/2023301

Enterprise Identifier: L-2023-OLL-0027

Licensee: Southern Nuclear Company (SNC)

Facility: Joseph M. Farley Nuclear Plant

Location: Columbia, AL

Dates: Operating Test – May 22 – 31, 2023
Written Examination – June 6, 2023

Examiners: M. Meeks, Chief Examiner, Senior Operations Engineer
D. Lanyi, Senior Operations Engineer
A. Goldau, Operations Engineer
S. Battenfield, Operations Engineer
P. Meier, Senior Resident Inspector (examiner in training)

Approved by: Thomas A. Stephen, Chief
Operations Branch 1
Division of Reactor Safety

SUMMARY

ER 05000348/2023301, 05000364/2023301; May 22 – 31, 2023 & June 6, 2023; Joseph M. Farley Nuclear Plant; Operator License Examinations.

Nuclear Regulatory Commission (NRC) examiners conducted an initial examination in accordance with the guidelines in Revision 12, of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors." This examination implemented the operator licensing requirements identified in 10 CFR §55.41, §55.43, and §55.45, as applicable.

Members of the Joseph M. Farley Nuclear Plant staff developed both the operating tests and the written examination. The initial operating test, written RO examination, and written SRO examination submittals met the quality guidelines contained in NUREG-1021. NRC regional management considered the impacts of the post-examination comment resolution on the evaluation that the written examinations met the expected quality standards.

The NRC administered the operating tests during the period May 22 – 31, 2023. Members of the Joseph M. Farley training staff administered the written examination on June 6, 2023. Six Reactor Operator (RO) and ten Senior Reactor Operator (SRO) applicants passed both the operating test and written examination. One SRO applicant passed the operating test, but failed the written examination. Sixteen applicants were issued licenses commensurate with the level of examination administered.

There were two post-examination comments.

No findings were identified.

REPORT DETAILS

4. OTHER ACTIVITIES

40A5 Operator Licensing Examinations

a. Inspection Scope

The NRC evaluated the submitted operating test by combining the scenario events and JPMs in order to determine the percentage of submitted test items that required replacement or significant modification. The NRC also evaluated the submitted written examination questions (RO and SRO questions considered separately) in order to determine the percentage of submitted questions that required replacement or significant modification, or that clearly did not conform with the intent of the approved knowledge and ability (K/A) statement. Any questions that were deleted during the grading process, or for which the answer key had to be changed, were also included in the count of unacceptable questions. The percentage of submitted test items that were unacceptable was compared to the acceptance criteria of NUREG-1021, "Operator Licensing Standards for Power Reactors."

The NRC reviewed the licensee's examination security measures while preparing and administering the examinations in order to ensure compliance with 10 CFR §55.49, "Integrity of examinations and tests."

The NRC performed an audit of license applications during the preparatory site visit in order to confirm that they accurately reflected the subject applicants' qualifications in accordance with NUREG-1021.

The NRC administered the operating tests during the period May 22 – 31, 2023. The NRC examiners evaluated six Reactor Operator (RO) and eleven Senior Reactor Operator (SRO) applicants using the guidelines contained in NUREG-1021. Members of the Farley Nuclear Plant training staff administered the written examination on June 6, 2023. Evaluations of applicants and reviews of associated documentation were performed to determine if the applicants, who applied for licenses to operate the Joseph M. Farley Nuclear Plant, met the requirements specified in 10 CFR Part 55, "Operators' Licenses."

The NRC evaluated the performance or fidelity of the simulation facility during the preparation and conduct of the operating tests.

b. Findings

No findings were identified.

The NRC developed the written examination sample plan outline. Members of the Joseph M. Farley training staff developed both the operating tests and the written examination. All examination material was developed in accordance with the guidelines contained in Revision 12, of NUREG-1021. The NRC examination team reviewed the proposed examination. Examination changes agreed upon between the NRC and the licensee were made per NUREG-1021 and incorporated into the final version of the examination materials.

The NRC determined, using NUREG-1021, that the licensee's initial examination submittal was within the range of acceptability expected for a proposed examination. NRC regional management considered the impacts of the post-examination comment resolution on the evaluation that the written examinations met the expected quality standards.

As a result of the post-examination comment resolution detailed in Enclosure 2 of this report, two SRO-only questions were deleted in accordance with the guidance of NUREG-1021, section ES-4.4, paragraph C.3.e. NUREG-1021 section ES-4.4, paragraph D.2 contained the following additional requirement for NRC regional management review:

If seven or more of the questions on an RO examination and/or two or more on a [sic] SRO only examination are deleted during the grading process, evaluate the remainder of the examination to ensure that it still satisfies the test outline sampling requirements in ES-4.1, "Developing Written Examination Outlines." The NRC regional office must consult with the NRR operator licensing program office if the validity of the examination is in question.

In accordance with this requirement, the NRC examiners and regional management reviewed the post-examination changes against the test outline sampling requirements in ES-4.1. The review concluded that the amended SRO-only written examination and sample plan outline remained valid, and that consultation with the NRR operator licensing program office was not required.

Copies of all individual examination reports were sent to the facility Training Manager for evaluation of weaknesses and determination of appropriate remedial training.

The licensee submitted two post-examination comments concerning the written examination. A copy of the final written examination and answer key, with all changes incorporated, may be accessed not earlier than December 9, 2025, in the ADAMS system (ADAMS Accession Number(s) ML23221A322 and ML23221A326).

4OA6 Meetings, Including Exit

Exit Meeting Summary

On May 31, 2023, the NRC examination team discussed generic issues associated with the operating test with D. Cottea, Site Projects Senior Manager, and other members of the Joseph M. Farley staff. The examiners asked the licensee if any of the examination material was proprietary. The information that the licensee identified as proprietary was handled in a manner consistent with NRC and licensee guidelines for this type of information. On July 28, 2023, the NRC examination team conducted a final exit meeting with A. Renaud, Site Training Director, and other members of the Joseph M. Farley staff to discuss the examination results and provide the licensing details

KEY POINTS OF CONTACT

Licensee personnel

J. Angel, Maintenance Director
D. Cottea, Site Projects Senior Manager
T. Driggers, Operations Training Manager
A. Gray, Engineering Director
A. Renaud, Site Training Director
W. Sorrell, Operations Support Manager
M. Stanley, Operations Director
D. Stiles, Training Corporate Functional Area Manager
G. Surber, Licensing Manager
D. Williams, Regulatory Affairs Manager

NRC personnel

P. Meier, Senior Resident Inspector

FACILITY POST-EXAMINATION COMMENTS AND NRC RESOLUTIONS

A complete text of the licensee's post-examination comments can be found in ADAMS under Accession Number ML23221A329.

Item

Question 89, K/A 062A2.20 (SRO only)

Applicant Comment

[N.B. The applicant began by listing the text of Question 89 and the initial keyed answer of 'C']

Comment:

Since there was no information given to identify the reason for the failure of 2B DG to start and the output breaker close to automatically, an assumption must be made on the failed component to determine whether the breaker would automatically close.

1. Per drawing D207032 (LOGIC DIAGRAM DIESEL 2B AUTO START & LOADING) if UV relays do not sense the undervoltage condition on the 2G Bus, the 2B DG will neither automatically start nor will the output breaker automatically close. Once the DG is started from the EPB, the output breaker would have to be closed manually per ECP-0.0.
2. Per drawing D207654 (ELEMENTARY DIAGRAM SEQUENCER B2G LOAD SHEDDING CIRCUIT) and D202778 (ELEMENTARY DIAGRAM – DIESEL GEN 2B START, STOP & SHUTDOWN) if relay 27XG failed, the start signal would not be sent to the 2B DG, but would not affect the manual start from the EPB. Once started from the EPB per ECP-0.0, as shown on D207032, the LOSP sequencer would then close the 2B DG output breaker automatically.
3. Per FNP-2-ECP-0.0 Step 5.12 checks DG08 closed for unit two and if not, you go to the RNO column of the procedure and close the breaker. The procedure is written for situations where the breaker may not automatically close and gives guidance for the operator to manually close the output breaker to restore power to the bus.

References:

- D207032 (LOGIC DIAGRAM DIESEL 2B AUTO START & LOADING)
- D207654 (ELEMENTARY DIAGRAM SEQUENCER B2G LOAD SHEDDING CIRCUIT)
- D202778 (ELEMENTARY DIAGRAM – DIESEL GEN 2B START, STOP & SHUTDOWN)
- FNP-2-ECP-0.0 LOSS OF ALL AC POWER

Recommendation: Remove question 89 from the SRO Written Exam.

Facility Licensee Position

FNPP agrees with the comment and recommends that this question be removed from the exam based on ES-4.4 C.3.e. The question does not provide the plant conditions necessary to determine the failure mechanism that caused the diesel to not automatically start and re-energize the B train class 1E AC bus.

NUREG-1021, ES-4.4, C.3.c, supports a post exam change when a question does not provide all necessary information.

Post exam change in accordance with ES-4.4 is clearly justified given the fact that the stem did not provide the necessary information to determine the failure mode of the diesel generator and associated output breaker.

NRC Resolution

The licensee's recommendation was accepted.

During written exam administration on June 6, 2023, there was one applicant question on Question 89 that was only related to the second part of the question (procedural selection), and a change was made to the second-part question stem which was communicated to all SRO applicants. This change to Question 89 during exam administration had no impact on the post-examination comment under review, and no other questions were asked related to Question 89 during exam administration.

1. Technical Assessment:

The NRC agreed that the proposed/as-given question stem did not provide enough necessary information to determine or elicit the correct answer without having to make unwarranted assumptions that were not supported by any other information provided for the question.

In accordance with the intent of this question, the applicant was presented with a failure of the '2B' DG to automatically start and load as designed. This plant condition was implied by the fact that the question stem stated that a "loss of all AC power has occurred on Unit 2;" that is, a station blackout condition and entry into procedure ECP-0.0, "Loss of All AC Power." The applicant is then given the information that at a time of 1000 hours (10:00 AM), operators were able to start the 2B DG from the EPB and restore power to the '2G,' '2L,' and '2J' electrical buses. Given this sequence of events, the first part of the question, which was the only part of this question involved in the post-examination comment, then asked the applicant to determine if the '2B' DG output breaker would have closed automatically at time 1000, or if the '2B' DG output breaker would have to be manually closed. Because the question stated that power was restored to the electrical buses, it was a logical 'true' condition for this question that the '2B' DG output breaker was closed.

During question development and validation, the examination team assumed that the failure of the '2B' DG to automatically start and load as designed was caused by an (admittedly unstated/unspecified) failure of the '2B' DG automatic start logic or component therein. For example, as stated by the applicant contention, "... if relay 27XG failed, the start signal would not be sent to the 2B DG, but would not affect the manual start from the EPB. Once started

from the EPB per ECP-0.0, as shown on D207032, the LOSP sequencer would then close the 2B DG output breaker automatically.” The NRC agreed with the applicant’s statement; if this relay had been the cause of the 2B DG failure, it would be technically correct that the 2B DG output breaker would have automatically closed given the plant conditions listed in the Question 89 stem. Other hypothetical failure modes where this condition (breaker automatically closed) was technically correct could be postulated as well.

However, it is also technically accurate to state that if there was a different cause of the 2B DG failure to automatically start, the breaker would have to be closed by manual operator actions. For example, as stated by the applicant contention, “...if UV relays do not sense the undervoltage condition on the 2G Bus, the 2B DG will neither automatically start nor will the output breaker automatically close. Once the DG is started from the EPB, the output breaker would have to be closed manually per ECP-0.0.” The NRC also agreed with this applicant statement; specifically, there are other causes or modes of failure that would prevent the 2B DG output breaker from automatically closing, once the 2B DG had been manually started, and therefore manual action would be required to close the output breaker. Other hypothetical failure modes where this condition (breaker manually closed) was technically correct could be postulated as well.

The NRC agreed that the question could have been improved by providing the specific failure mechanism in the question stem during examination development and reviews.

Therefore, the NRC assessment concluded that there were technically correct and valid reasons for the output breaker to have automatically closed, and there were also technically correct and valid reasons for the output breaker to have to be closed via manual operator action.

2. Regulatory Assessment:

NUREG-1021, revision 12, section ES-4.4, paragraph C.3.c, stated the following requirements for the types of errors that may result in changes to the examinations:

c. Despite the extensive reviews performed by both the NRC and the facility licensee before examination administration, it is possible that errors may be discovered only after an examination has been administered. The NRC will consider examination changes for the following types of errors, if identified and adequately justified by the facility licensee or an applicant:

-a question with an unclear stem that confused the applicants or did not provide all the necessary information (to assist in determining whether an unclear stem confused the applicants, closely evaluate any applicant questions asked during the examination; also evaluate the question stem to determine whether the information provided could reasonably result in the applicant misunderstanding the intent of the question or the validity of the answer choices)

-unintended typographical errors in a question or on the answer key

-newly discovered technical information that supports a change in the answer key -testing the wrong license level (RO versus SRO) or not linked to job requirements.

Based on the above requirements, the NRC determined that SRO Question 89 provided applicants "... with an unclear stem that ... did not provide all the necessary information ..." to determine one and only one correct answer. Therefore, the regulatory guidance supported a further assessment as to how to correct the identified errors in Question 89.

NUREG-1021 revision 12, section ES-4.4, paragraph C.3.e provided additional guidance on how to evaluate question errors that were identified post-examination administration as follows:

If a question is determined to have two correct answers, the NRC will accept both answer options as correct. However, there cannot be two correct answers if both answer options contain conflicting information. Conflicting information is present when two answer options contain plant information that cannot be true or exist at the same time. For example, if a part of an answer option states that operators are required to insert a manual reactor scram and a part of another answer states that a manual scram is not required, then the NRC will not accept both answers as correct because a facility cannot have a manual scram be both required and not required at the same time. The question will be deleted.

For Question 89, it was a logical "true" condition that the 2B output breaker was closed; this was implied by the statement in the stem that "... [electrical] power has been restored to the 2G, 2L, and 2J Busses." The output breaker could only have been closed automatically, or closed manually. Therefore, the question distractors could have been re-written to state "closed automatically" and "NOT closed automatically;" and the logical psychometrics of the question would not have been affected; conversely, the question distractors could have been re-written to state "was manually closed" and "was NOT manually closed," also without affecting the logical psychometrics of the question. Therefore, the NRC concluded that the distractor choices contained conflicting information; that is, using the above language from NUREG-1021, it was not technically possible that the 2B DG output breaker was both closed automatically and was manually closed at the same time.

Therefore, in accordance with the NUREG-1021 revision 12 guidance cited herein, the final NRC assessment was that Question 89 was required to be deleted from the SRO only written examination because there were two potentially correct answer options that contain[ed] plant information that cannot be true or exist at the same time.

All SRO applicants were therefore graded on the SRO only portion of the written examination with Questions 89 and 91 deleted.

Item

Question 91, K/A 076AA2.09 (SRO Only)

Applicant Comment

[N.B. The applicant began by listing the text of Question 91 and the initial keyed answer of 'C']

The EAL Basis states that SU3 is applicable in Mode 3 which is the mode you are in for the question above per NMP-EP-141-001, Farley Emergency Action Level and Basis.

Per NMP-EP-141-001, it defines “applicable” as when the EAL applies for a given mode, which is represented in the “MODE APPLICABILITY MATRIX” on page 8 of NMP-EP-141-001

The dictionary definition of **applicable** per (“Webster New Collegiate Dictionary Copyright 1977 by G. & C. Merriam Co.”) **IS** “capable of or suitable for being applied”. “Capable of or suitable for being applied” also supports the challenge that SU3 is applicable, and Choice B is correct vice Choice D.

NMP-EP-141-001 Section 4.2 states:

“If an EAL has been met or exceeded, the IC is met and the associated ECL (Emergency Classification level) is declared in accordance with plant procedures.”

Based on the question asking if SU3 is “applicable” versus asking if you “met or exceeded” the EAL threshold for classification, answer B is the correct answer since it is applicable in Modes 1-4. Answer choice D is not correct since SU3 is applicable in the current mode of operation. If the question was intended to ask if a EAL threshold is met it should have stated:

“Per NMP-EP-141-001-F01, Farley – Hot Initiating Condition Matrix, SU3 threshold criteria __ (has)(has not) __ been exceeded.”

Recommendation: Change the key for the SRO written exam for question 91. The key should be changed to reflect that **B** is correct based on the question asking if SU3 is applicable versus asking if you met or exceeded the EAL threshold for classification. If the question was intended to ask if a EAL threshold is met it should have stated:

“Per NMP-EP-141-001-F01, Farley – Hot Initiating Condition Matrix, SU3 threshold criteria **(has) or (has not)** been exceeded.”

Facility Licensee Position

Based on the question asking “Per NMP-EP-141-001-F01, Farley – Hot Initiating Condition Matrix, SU3 (is) or (is not) applicable”, the correct answer should be **B**. The word applicable as outlined in NMP-EP-141-001 pertains to when a specific EAL applies for a given plant mode. From the stem of the question, on May 2 at 22:00 the plant is in Mode 3 and EAL SU3 is applicable in modes 1-4; therefore, the correct answer should be **B** instead of **D**.

NUREG-1021, ES-4.4, C.3.c, supports a post exam change when a question’s answer is incorrect based on the stem of the question.

A post exam change in accordance with ES-4.4 is clearly justified given the question asked in the stem whether a specific EAL was applicable instead of whether a specific EAL was met or exceeded. It is clear that based on the stem of the question, answer **B** is correct.

NRC Resolution

The licensee's recommendation was partially accepted.

During written exam administration on June 6, 2023, for question 91 (the applicant mis-labeled it as question 90 on the provided applicant question sheet) one applicant asked, "By "applicable given current conditions" is this asking if mode 3 is one of the modes of applicability?" At the time, the Farley examination team and NRC examiners discussed this question via phone and the parties agreed that the question was clear enough as written that the applicant should have been able to determine that the question was not asking for "modes of applicability." The single applicant who asked this question was provided with a directing cue to "answer the question with the information provided;" and this particular applicant query and response was not provided to any other SRO applicant. No other SRO applicant asked any additional questions concerning SRO #91 during the exam administration. The applicant who submitted the question during the exam administration was not the same applicant who submitted this post-examination comment.

1. Technical Assessment:

The contention essentially becomes an exercise in determining the technically correct usage of the word "applicable" as it pertains to the Farley Nuclear Plant Emergency Plan/Emergency Action Level (EAL) program, as implemented for this class of applicants. The applicant and facility position cited herein essentially state that when used for an EAL declaration, the word "applicable" means "as related to the mode of applicability" defined in Farley procedure NMP-EP-141-001, "Farley Emergency Action Levels and Basis," and was ONLY used to define "mode of applicability" for the various EAL conditions listed in the Matrix. The NRC agreed that "mode of applicability" is one way that the Farley Nuclear Plant used the term "applicable" as related to EALs.

However, note that this examination question was proposed and developed by the facility licensee. During question development, the facility licensee examination team asserted that the term "applicable" as used in Question 91 could be used in the sense of "listed conditions met or exceeded such that EAL declaration was required." During the exam review process, Question 91 was validated by multiple currently-licensed Farley Nuclear Plant SROs. If the common usage at Farley for the word "applicable" for EALs was to only mean "as related to the mode of applicability," the validators would have insisted on changing the answer key and identifying the difference in usage. During exam administration, the facility representatives and the NRC examiners believed that the usage of the term "applicable" was clear enough, such that a change to the question stem during exam administration was not warranted.

Furthermore, note that the as-given question stem and provided references made any determination of whether or not the SU3 EAL was in the "mode of applicability" trivial. That is, the question stem explicitly stated that the plant was in MODE 3, and the provided SU3 EAL "box" from the EAL Matrix procedure explicitly listed MODES 1, 2, 3, and 4 as the modes of

applicability above the listed SU3 conditions. In other words, if one believed that “applicable” referred to “mode of applicability,” it would be a direct look-up/mental level-of-difficulty less than one to relate the question stem statement of MODE 3 with the MODE 3 box above the SU3 condition. Therefore, if the applicant contention was widely held, one would expect that every SRO applicant who took this question would answer that the SU3 EAL “is” applicable, or choose answer distractors “A” or “B.” However, this is not the case; in fact, five of the eleven (45%) applicants chose answer distractors “C” or “D” (asserting SU3 is NOT applicable), which shows that it was not universally held that “applicable” was only defined as “as related to the mode of applicability” with the applicants who took the examination.

All that being said, the above NRC analysis is only of secondary value; it is more important to establish how the official plant reference documents related to the Emergency Plan/EALs use the term “applicable.” The NRC assessed this question as summarized in the following discussions.

First, as stated above, the NRC agreed with the applicant and facility that Farley procedures support the definition of “applicable” as meaning “as related to mode of applicability.” However, the same procedure (NMP-EP-141-001) also supported a usage of “applicable” that has other meanings. For example, section 4.1 of NMP-EP-141-001 stated the following:

For ICs and EALs that have a stipulated time duration, the emergency director will not wait until the **applicable** time has elapsed, but will declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the **applicable** time. [emphasis added] If an ongoing radiological release is detected and the release start time is unknown, it will be assumed that the release duration specified in the IC/EAL has been exceeded, absent data to the contrary.

In the above quotation, the word “applicable” does not refer to “mode of applicability,” but to a time duration that may be specified in the EAL conditions. Furthermore, the basis description of EAL RA3 in NMP-EP-141-001 included the following:

This IC addresses elevated radiation levels in certain plant rooms or areas sufficient to preclude or impede personnel from performing actions necessary to maintain normal plant operation, or to perform a normal plant cooldown and shutdown. As such, it represents an actual or potential substantial degradation of the level of plant safety. The emergency director should consider the cause of the increased radiation levels and determine if another IC may be **applicable**. [emphasis added]

For this quotation, the word “applicable” refers to increased radiation levels, a provided condition of the EAL in question, and not the mode of applicability of the particular EAL. NMP-EP-141-001 provided another example of “applicable” referring to conditions in its discussion of EAL RU2. For RU2, the initiating condition is listed as “UNPLANNED loss of water level above irradiated fuel,” and the basis description included the following:

The effects of planned evolutions will be considered. For example, a refueling bridge area radiation monitor reading may increase due to planned evolutions such as lifting of the reactor vessel head or movement of a fuel assembly. Note that this EAL is **applicable** only in cases where the elevated reading is due to an UNPLANNED loss of water level. [emphasis added]

Again, for this example EAL, the term “applicable” is being used to describe the EAL **conditions**, and was not related to “mode of applicability.” In another example, for EAL CA3, procedure NMP-EP-141-001 contained a NOTE that stated: “If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, the EAL is not applicable.” This NOTE provided another example where the term “applicable” is being used in reference to given conditions that must be evaluated in order to declare, or not declare, the individual EAL—and not in any way related to the mode of applicability of the individual EAL. To provide a final example, when discussing the basis of the RCS Barrier Thresholds, procedure NMP-EP-141-001 stated the following:

This threshold is based on an UNISOLABLE RCS leak of sufficient size to require an automatic or manual actuation of the Emergency Core Cooling System (ECCS). This condition clearly represents a loss of the RCS Barrier.

This threshold is **applicable** to unidentified and pressure boundary leakage, as well as identified leakage. It is also **applicable** to UNISOLABLE RCS leakage through an interfacing system. The mass loss may be into any location – inside containment, to the secondary-side (i.e., steam generator tube leakage) or outside of containment. [emphasis added]

As before, the discussion of the RCS barrier is a discussion of conditions as stated in the EAL description block(s), and not a discussion of the modes of applicability of the EALs. Aside from the actual procedure of record (NMP-EP-141-001), the NRC also determined that the usage of the word “applicable” was also not consistent in the training materials provided to the applicants.

Specifically, the Farley training document NMP-TR-209-F02, “Southern Nuclear Company LESSON PLAN Student Text for Emergency Declaration/Classification and Dose Assessment,” version 1.1, stated the following:

When evaluating an event for emergency declaration or upgrade in classification, NMP-EP-141 requires determination of initiating plant mode. If the initiating plant mode was 5, 6, or defueled, then go to the COLD IC/EAL Matrix Evaluation Chart directly instead of Fission Product Barrier Matrix. If the initiating plant condition was Modes 1-4, go to Fission Product Barrier Matrix to determine which, if any, Fission Product Barriers are Lost or potentially lost. Then, determine if FG1, FS1, FA1, or FU1 is the highest **applicable** fission product barrier initiating condition (IC). [...] There may be more than one IC TV [threshold value] exceeded, but classify based on the first TV met. This method ensures that the highest level of emergency classification that applies is declared, and no unnecessary time is spent evaluating ICs which are lower in priority to the highest **applicable** IC & TV. [emphasis added]

This quotation from the training handout showed that the use of “applicable” could be used as to refer to initiating conditions, not just Modes, as also shown above in the text of the actual plant procedure NMP-EP-141-001. Consider, when the above text directed the operator to “...determine if FG1, FS1, FA1, or FU1 is the highest applicable fission product barrier initiating condition (IC),” if “highest applicable” referred to the mode of applicability, then if the plant is in MODE 1-4 you would be required to always declare FG1 (a General Emergency) because it is applicable in MODEs 1-4.

Based on the above analysis, the NRC agreed with the applicant and facility licensee, and determined that it was technically correct that the use of the word “applicable” could be used to define “as related to the mode of applicability.” However, the NRC also determined that it was technically correct that the word “applicable” was used for other definitions than “mode of applicability;” including that “applicable” could be used in the sense of “listed conditions met or exceeded such that EAL declaration was required.”

The NRC agreed that the question could have been improved by using a different set of words instead of “applicable” that may have been a more precise way to specify the intent of the question writers, such as whether or not the EAL conditions or threshold criteria were met or exceeded.

However, during exam administration, the as-given question 91 stem, references, and distractors did not provide the applicants with the additional information that would be needed to determine if “applicable” should be used in the sense of “mode of applicability,” or if the word “applicable” should be applied in the sense of “listed conditions met or exceeded such that EAL declaration was required,” or some other undefined definition.

Therefore, the NRC assessment was that there were technically correct and valid reasons for an applicant to determine that EAL SU3 “IS applicable,” and there were also technically correct and valid reasons for the applicant to determine that EAL SU3 “is NOT applicable.”

2. Regulatory Assessment:

NUREG-1021, revision 12, section ES-4.4, paragraph C.3.c, stated the following requirements for the types of errors that may result in changes to the examinations:

c. Despite the extensive reviews performed by both the NRC and the facility licensee before examination administration, it is possible that errors may be discovered only after an examination has been administered. The NRC will consider examination changes for the following types of errors, if identified and adequately justified by the facility licensee or an applicant:

-a question with an unclear stem that confused the applicants or did not provide all the necessary information (to assist in determining whether an unclear stem confused the applicants, closely evaluate any applicant questions asked during the examination; also evaluate the question stem to determine whether the information provided could reasonably result in the applicant misunderstanding the intent of the question or the validity of the answer choices)

-unintended typographical errors in a question or on the answer key

-newly discovered technical information that supports a change in the answer key

-testing the wrong license level (RO versus SRO) or not linked to job requirements

Based on the above requirements, the NRC determined that SRO Question 91 provided applicants "... with an unclear stem that ... did not provide all the necessary information ..." to determine one and only one correct answer. Furthermore, at least one applicant was confused about the usage of "applicable" during exam administration and asked a question to the proctors and examination staff. Therefore, the regulatory guidance in effect supported a further assessment as to how to correct the identified errors in Question 91.

NUREG-1021 revision 12, section ES-4.4, paragraph C.3.e provided additional guidance on how to evaluate question errors that were identified post-examination administration as follows:

If a question is determined to have two correct answers, the NRC will accept both answer options as correct. However, there cannot be two correct answers if both answer options contain conflicting information. Conflicting information is present when two answer options contain plant information that cannot be true or exist at the same time. For example, if a part of an answer option states that operators are required to insert a manual reactor scram and a part of another answer states that a manual scram is not required, then the NRC will not accept both answers as correct because a facility cannot have a manual scram be both required and not required at the same time. The question will be deleted.

For Question 91, if an applicant believed that "applicable" referred to "mode of applicability," then it was technically correct that EAL SU3 was applicable (answer choices "A" and "B"). On the other hand, if an applicant believed that "applicable" referred to "listed conditions met or exceeded such that EAL declaration was required," then it was technically correct that EAL SU3 was not applicable. Therefore, the NRC concluded that the distractor choices contained conflicting information; that is, using the above language from NUREG-1021, it was not technically possible that EAL SU3 was both applicable, and not applicable, at the same time.

Therefore, in accordance with the NUREG-1021 revision 12 guidance cited herein, the final NRC assessment was that Question 91 was required to be deleted from the SRO only written examination, because there were two potentially correct answer options that contain[ed] plant information that cannot be true or exist at the same time.

All SRO applicants were therefore graded on the SRO only portion of the written examination with Questions 89 and 91 deleted.

SIMULATOR FIDELITY REPORT

Facility Licensee: Joseph M. Farley Nuclear Plant

Facility Docket No.: 05000348, 05000364

Operating Test Administered: May 22 – 31, 2023

This form is to be used only to report observations. These observations do not constitute audit or inspection findings and, without further verification and review in accordance with Inspection Procedure 71111.11 are not indicative of noncompliance with 10 CFR 55.46. No licensee action is required in response to these observations.

No simulator fidelity or configuration issues were identified.