



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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February 2, 2023

MEMORANDUM TO: Patrick G. Boyle, Project Manager  
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Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

THRU: Travis L. Tate, Chief  
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FROM: John T. Nguyen, Chief Examiner  
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Office of Nuclear Reactor Regulation

*John Nguyen*

Signed by Nguyen, John  
on 02/02/23

SUBJECT: REVIEW OF THE REVISED REACTOR OPERATOR  
REQUALIFICATION PLAN FOR THE NATIONAL INSTITUTE OF  
STANDARDS AND TECHNOLOGY, CENTER FOR  
NEUTRON RESEARCH

By letters dated June 2, 2021, (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML21153A396, ML21153A397, and ML21153A398, respectively) as supplemented by letter dated August 11, 2022, (ML22223A146) the National Institute of Standards and Technology, Center for Neutron Research submitted for the changes proposed to the Reactor Operator Requalification Plan (hereinafter "plan").

The U.S. Nuclear Regulatory Commission (NRC) staff is responsible for evaluating the plan against the requirements of the regulations contained in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 55.59, "Requalification," and guidance contained in industry standard American National Standards Institute/American Nuclear Society, ANSI/ANS-3.4-2013, "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants", and ANSI/ANS-15.4-2016, "Selection and Training of Personnel for Research Reactors."

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Enclosed is the NRC staff's evaluation to include the table of the acceptance criteria used for a review the plan (Enclosure 1), along with the findings and proposed request for additional information items (Enclosure 2).

Docket No.: 50-184

Enclosures:

1. Operation Requalification Plan
2. Request for Additional Information Items

SUBJECT: REVIEW OF THE REVISED REACTOR OPERATOR REQUALIFICATION PLAN FOR THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, CENTER FOR NEUTRON RESEARCH DATED FEBRUARY 2, 2023

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| DATE   | 1/26/2023        | 2/1/2023         | 2/1/2023         | 2/2/2023         |

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| <b>Operator Requalification Plan</b> |  |                 |
|--------------------------------------|--|-----------------|
| Criteria for Requalification Plans   |  |                 |
| 55.4                                 | The plan should provide basic definitions for the requalification plan.  | RAI-1           |
| 55.59(a)(1)                          | Program duration should not exceed 24 months.  | √               |
| 55.59(c)(2)                          | Lectures should be pre-planned and given on a regular and continuing basis.  | RAI-2           |
| 55.59(c)(2)                          | Topics should follow those listed in 55.59(c)(2) at a minimum  | √<br>See Note 1 |
| 55.59(c)(3)(i)                       | On-the job training should ensure each operator:<br>performs a minimum of facility manipulations   | RAI-3           |
| 55.59(c)(3)(ii)                      | understands the operation of apparatus and mechanisms associated with control manipulations and knows the operating procedures   | RAI-3           |
| 55.59(c)(3)(iii)                     | is cognizant of changes in facility design, procedures and license   | RAI-3           |
| 55.59(c)(3)(iv)                      | reviews the contents of all abnormal and emergency procedures on a regularly scheduled basis.  | RAI-3           |
| 55.59(c)(4)                          | The plan should include provision for evaluating the operators, including written examinations, observation and evaluation of operator performance, and simulation of emergency or abnormal conditions.  | RAI-5           |
| 55.59.a.2(i):<br>55.41/55.43         | Written examinations should determine the operators' knowledge of subjects covered in the plan. They should determine where additional training is needed. The examination should contain a sample of items specified in 10CFR55.41 for ROs and 10CFR55.43 for SROs. | √               |
| 55.59.a.2(ii):<br>55.45(2)(2-13)     | Operating tests should require the operator to demonstrate an understanding of and the ability to perform actions necessary for a sample of the items specified in 10CFR55.45(2)(2-13) as appropriate to the facility and the license level.                         | √               |
| 55.59(c)(4)(iv)                      | Plan should include systematic observation and evaluation by supervisors of the performance and competency of operators as specified in 10CFR55.59(c)(4)(iv)   | √               |
| ANSI 15.4<br>Section 6.2             | The plan should discuss acceptable performance on examinations and tests. Operator must score a minimum of 70% to pass written examinations. Minimum acceptable performance on operating tests should be determined and documented before testing begins.            | √               |

| <b>Operator Requalification Plan</b> |   |       |
|--------------------------------------|---|-------|
| 55.59(c)(4)(v)                       | The plan should discuss provisions for accelerated requalification if performance evaluations indicate the need. This includes the status of the operator during retraining, the form retraining will take, and the acceptance criteria to complete training. | √     |
| 55.59(c)(5)                          | The plan should discuss maintenance of records according to requirements of 10CFR 55.59(c)(5).  | √     |
| 55.53(e)                             | The plan should discuss requirements for operators to maintain active status. At a minimum, operators should actively perform the functions of a reactor operator or senior operator for 4 hours per calendar quarter.  | RAI-6 |
| 55.53(f)                             | The plan should discuss requirements for inactive operators to return to active status. At a minimum, the requirements should meet those discussed in 10CFR 55.53(f).   | RAI-7 |
| 55.21, ANSI 15.4, and ANSI 3.4       | The plan should discuss medical examination requirements for each operator and evaluation as part of the requalification program.   | √     |

Note 1: 10CFR 55.59.c(7), "*Applicability to research and test reactor facilities*. To accommodate specialized modes of operation and differences in control, equipment, and operator skills and knowledge, the requalification program for each licensed operator and senior operator of a research reactor or test reactor facility must conform generally but need not be identical to the requalification program outlined in paragraphs (c) (1) through (6) of this section. Significant deviations from the requirements of paragraphs (c) (1) through (6) of this section will be permitted only if supported by written justification and approved by the Commission."

## Request for Additional Information

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the National Institute of Standards and Technology, Center for Neutron Research Operator Requalification Plan (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML21153A396, ML21153A397, and ML21153A398, respectively), as supplemented by letter dated August 11, 2022, (ML22223A146). The staff identified additional information needed to continue its review of the plan, as described in the enclosed request for additional information (RAI).

1. The regulation at Title 10 of the *Code of Federal Regulations* (10 CFR) Section 55.4, "Definitions", states:

*Actively performing the functions of an operator or senior operator* means that an individual has a position on the shift crew that requires the individual to be licensed as defined in the facility's technical specifications, and that the individual carries out and is responsible for the duties covered by that position.

NRC staff did not find the above definition enclosed in the plan. Add the definition to the plan or justify why no change is needed.

2. The regulation, 10 CFR 55.59(C)(2), "Lecture", states:

The requalification program must include preplanned lectures on a regular and continuing basis throughout the license period in those areas where operator and senior operator written examinations and facility operating experience indicate that emphasis in scope and depth of coverage is needed in the following subjects:

- (i) Theory and principles of operation.
- (ii) General and specific plant operating characteristics.
- (iii) Plant instrumentation and control systems.
- (iv) Plant protection systems.
- (v) Engineered safety systems.
- (vi) Normal, abnormal, and emergency operating procedures.
- (vii) Radiation control and safety.
- (viii) Technical specifications.
- (ix) Applicable portions of title 10, chapter I, Code of Federal Regulations.

NRC staff did not find the specified lectures enclosed in the plan. Add the lectures to the plan or justify why no change is needed.

3. The regulation, 10 CFR 55.59(C)(3), On-the-job training, provides detailed requirements as follows:

- 55.59(c)(3)(i), On-the job training should ensure each operator: performs a minimum of facility manipulations
- 55.59(c)(3)(ii), understands the operation of apparatus and mechanisms associated with control manipulations and knows the operating procedures
- 55.59(c)(3)(iii), is cognizant of changes in facility design, procedures, and license
- 55.59(c)(3)(iv), reviews the contents of all abnormal and emergency procedures on a regularly scheduled basis.

NRC staff did not find the specified on-the-job training enclosed in the plan. Add the on-the-job training to the plan or justify why no change is needed.

4. The regulations, 10 CFR 55.59.a.2(ii) and 10 CFR 55.45(2)(2) through (2)(13), Operating Tests, require the operator demonstrate an understanding of and the ability to perform actions necessary for a sample of the items specified in 10CFR55.45(2)(2-13) as appropriate to the facility and the license level.
5. NRC staff did not see the completed items described in the plan in accordance with 10CFR 55.45(2)(2-13). Provide additional items to the plan or justify why no change is needed.
6. The regulations, 10 CFR 55.59(c)(4)(i) through (c)(4)(iv), require the requalification program to include evaluations for licensed operators, to include: comprehensive biennial written examinations and annual operating tests to determine where retraining is necessary, written examinations for evaluating knowledge of abnormal and emergency procedures, systematic observation and evaluation by supervisors of performance and competency, and accelerated requalification if evaluations indicate the need.

NRC staff noted that the plan only provided the evaluations of written examinations but did not describe how the NCNR evaluates the operating test for licensed operators. Provide additional evaluation to the plan or justify why no change is needed.

7. The regulation, 10 CFR 55.53(e), requires the plan should discuss requirements for operators to maintain active status. At a minimum, operators should actively perform the functions of a reactor operator or senior operator for four hours per calendar quarter.

NRC staff did not see the requirement for operators to actively perform the functions for four hours per calendar quarter. Provide additional requirement to the plan or justify why no change is needed.

8. The regulation, 10 CFR 55.53(f), discusses requirements for inactive operators to return to active status. At a minimum, operators should actively perform the functions of a reactor operator or senior operator for six hours per calendar quarter.
9. NRC staff did not see the requirement for operators at a minimum to actively perform the functions of a reactor operator or senior operator for six hours per calendar quarter. Provide additional requirement to the plan or justify why no change is needed.