



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I**
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

June 7, 2012

Mr. Michael J. Pacilio
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer, Exelon Nuclear
4300 Winfield Rd.
Warrenville, IL 60555

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 – NRC INITIAL
OPERATOR LICENSING EXAMINATION REPORT 05000289/2012301

Dear Mr. Pacilio:

On April 26, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an examination at Three Mile Island Nuclear Station, Unit 1. The enclosed report documents the examination findings, which were discussed on May 16, 2012, with Mr. Thomas Haaf, Operations Director and Mr. Thomas Van Wyen, Training Director, and other members of your staff.

The examination included the evaluation of three applicants for reactor operator licenses, and four applicants for instant senior operator licenses. The written and operating examinations were developed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1. The license examiners determined that all seven of the applicants satisfied the requirements of 10 CFR Part 55, and six licenses were issued on May 16, 2012. In addition, one applicant for an instant senior operator license passed his exam but his license is being held as explained in NUREG-1021, section ES-501, paragraph D.3.c, until the facility has certified in writing that the applicant has completed all of his experience requirements.

No findings were identified during this examination.

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

Sincerely,

Donald E. Jackson, Chief
Operations Branch
Division of Reactor Safety

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President and Chief Nuclear Officer, Exelon Nuclear
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Sincerely,

/RA/

Donald E. Jackson, Chief
Operations Branch
Division of Reactor Safety

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M. Pacilio

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Enclosure:

NRC Initial Operator Licensing Examination

Report 05000289/2012301

w/Attachment: Supplemental Information

cc w/enclosure: Distribution via ListServ

Docket No. 50-289

License No. DPR-50

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DRS File

EXAMINATION REPORT

**U.S. NUCLEAR REGULATORY COMMISSION
REGION I**

Docket No.: 50-289

License No.: DPR-50

Report No.: 05000289/2012301

Licensee: Exelon Generation Company LLC

Facility: Three Mile Island Nuclear Station, Unit 1

Location: P O Box 480
Middletown, PA 17057-0480

Dates: April 16-19, 2012 (Operating Test Administration)
April 26, 2012 (Written Examination Administration)
May 4, 2012 (Licensee Submitted Post Exam Package)
April 20 - May 16, 2012 (NRC Examination Grading)
May 16, 2012 (Licenses Issued)

Examiners: John Caruso, Chief Examiner, Operations Branch
Peter Presby, Senior Operations Engineer
Thomas Hedigan, Operations Engineer

Approved by: Donald E. Jackson, Chief
Operations Branch
Division of Reactor Safety

SUMMARY OF FINDINGS

ER 05000289/2012301; April 16 – May 16, 2012; Three Mile Island Nuclear Station, Unit 1; Initial Operator Licensing Examination Report.

NRC examiners evaluated the competency of three applicants for reactor operator licenses, and four applicants for instant senior operator license at Three Mile Island Nuclear Station, Unit 1. The facility licensee developed the examinations using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1. The written examination was administered by the facility on April 26, 2012. NRC examiners administered the operating tests on April 16-19, 2012. The license examiners determined that all seven of the applicants satisfied the requirements of 10 CFR Part 55, and six licenses were issued on May 16, 2012. In addition, one applicant for an instant senior operator license passed his exam but his license is being held as explained in NUREG-1021, section ES-501, paragraph D.3.c, until the facility has certified in writing that the applicant has completed all of his experience requirements.

A. NRC-Identified and Self-Revealing Findings

No findings were identified.

B. Licensee-Identified Violations

None.

REPORT DETAILS

4. OTHER ACTIVITIES (OA)

4OA5 Other Activities (Initial Operator License Examination)

.1 License Applications

a. Scope

The examiners reviewed all seven license applications submitted by the licensee to ensure the applications reflected that each applicant satisfied relevant license eligibility requirements. The applications were submitted on NRC Form 398, "Personal Qualification Statement," and NRC Form 396, "Certification of Medical Examination by Facility Licensee." The examiners also audited four of the license applications in detail to confirm that they accurately reflected the subject applicants' qualifications. This audit focused on the applicant's experience and on-the-job training, including control manipulations that provided significant reactivity changes.

b. Findings

No findings were identified.

.2 Operator Knowledge and Performance

a. Examination Scope

On April 26, 2012, the licensee proctored the administration of the written examinations to all seven applicants. The licensee staff graded the written examinations, analyzed the results, and presented their analysis to the U.S. Nuclear Regulatory Commission (NRC) on May 4, 2012.

The NRC examination team administered the various portions of the operating examination to all seven applicants on April 16-19, 2012. The three applicants for reactor operator licenses participated in three dynamic simulator scenarios, in a control room and facilities walkthrough test consisting of 11 system tasks, and an administrative test consisting of four administrative tasks. The four applicants seeking instant senior operator licenses participated in three dynamic simulator scenarios, and a control room and facilities walkthrough test consisting of ten system tasks, and an administrative test consisting of five administrative tasks.

b. Findings

All seven of the applicants passed all parts of the operating test. For the written examinations, the reactor operator applicants' average score was 88.88 percent and ranged from 86.66 to 90.66 percent, the senior operator applicants average score was

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90.75 percent and ranged from 86.00 to 93.00 percent. The overall written examination average was 89.95 percent. The text of the examination questions, and the licensee's examination analysis, may be accessed in the Agencywide Documents and Management System (ADAMS) under the accession numbers noted in Attachment 1.

The NRC examiners completed the final grading of the written examination on May 16, 2012, and conducted a review of each missed question to determine the accuracy and validity of the examination questions. The text of the examination questions, and the licensee's examination analysis may be accessed in the ADAMS system under the accession numbers noted in the attachment. In accordance with current NRC policy, the release of this written examination will be delayed for two years.

Chapter ES-403 and Form ES-403-1 of NUREG 1021 require the licensee to analyze the validity of any written examination questions that were missed by half or more of the applicants. The licensee conducted this performance analysis for eight questions that met these criteria and submitted the analysis to the chief examiner. This analysis concluded that all questions on the written examination were technically accurate as written and no post exam comments were submitted by the licensee for this examination.

.3 Initial Licensing Examination Development

a. Examination Scope

The facility licensee developed the examinations in accordance with NUREG-1021, Revision 9, Supplement 1. All licensee facility training and operations staff involved in examination preparation and validation were listed on a security agreement. The facility licensee submitted both the written and operating examination outlines on January 17, 2012. The chief examiner reviewed the outlines against the requirements of NUREG-1021, and provided comments to the licensee. The facility licensee submitted the draft operating test examination package on February 13, 2012 and the draft written examination package on February 23, 2012. The chief examiner reviewed the draft examination package against the requirements of NUREG-1021, and provided comments to the licensee on the examination between February 20, 2012 and February 29, 2012. The NRC conducted an onsite validation of the operating examinations and provided further comments during the week of March 19, 2012. The licensee satisfactorily completed comment resolution on the operating test on April 4, 2012 and on the written examination on April 19, 2012.

b. Findings

The NRC approved the initial examination outline and advised the licensee to proceed with the operating examination development.

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The examiners determined that the written and operating examinations initially submitted by the licensee were within the range of acceptability expected for a proposed examination.

No findings were identified.

.4 Simulation Facility Performance

a. Examination Scope

The examiners observed simulator performance with regard to plant fidelity during the examination validation and administration.

b. Findings

No findings were identified.

.5 Examination Security

a. Examination Scope

The examiners reviewed examination security for examination development and during both the onsite preparation week and examination administration week for compliance with NUREG-1021 requirements. Plans for simulator security and applicant control were reviewed and discussed with licensee personnel.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

The chief examiner presented the examination results to Mr. Thomas Haaf, Operations Director, and Mr. Thomas Van Wyen, Training Director, and other members of the licensee's management staff on May 16, 2012.

The licensee did not identify any information or materials used during the examination as proprietary.

Attachments:

1. Supplemental Information
2. Simulator Fidelity Report
3. Procedural Issues Identified

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Haaf, Operations Director
T. Van Wyen, Training Director
J. Blair, Operations Training Manager
J. Ward, Licensed Operator Initial Training Supervisor
D. Oshall, SRO Facility Representative
G. Hoek, Training Instructor, Exam Developer
R. Megill, Nuclear Training Instructor, Exam Developer

NRC Personnel

D. Jackson, Chief Operations Branch
J. Caruso, Chief Examiner

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened/Closed/Discussed

NONE

ADAMS DOCUMENTS REFERENCED

Accession No. ML12137A348 - FINAL-Written Exam (Note: In accordance with current NRC policy, the release of this written examination in ADAMS to the public will be delayed for two years.)

Accession No. ML12137A345 - Operating Exam

ES-501**Simulator Fidelity Report****Attachment 2**Facility Licensee: Three Mile Island Nuclear
Station, Unit 1Facility Docket No.: 50-289Operating Test Administered on: April 16-19,
2012

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 IP 71111.11, are not indicative of noncompliance with 10 CFR 55.46. No licensee action is required in response to these observations.

While conducting the simulator portion of the operating tests, examiners observed the following items:

Item	Description
SWR 13518	Seal d/p alarm F-1-6 is not alarming at set-point.

Item	Procedural Issues Identified	Attachment 3
1	<p>During the NRC exam, the NRC identified the following: Potential to miss Plant Processing Computer (PPC) alarm identification. The PPC alarm screen at the console is a slave to what is seen at the STA station, therefore the Reactor Operators cannot navigate through to observe an alarm on a different screen. This is a potential safety concern in that during a transient event where the STA is either not present in the Control Room, or is otherwise engaged, or simply forgets to advance the screen then the crew may not have the benefit of seeing important PPC alarms.</p> <p>Recommend benchmarking how other stations are set up for PPC alarm review, with the intent of potentially installing a computer, independent of the STA screen that can be navigated through by the Reactor Operators (AR 01359082).</p>	
2	<p>During the NRC exam validation week it was identified that some of the inverter labeling was done with handwritten labels (AR 01359153).</p>	
3	<p>During the NRC exam several issues were noted by the NRC examiners regarding OP-TM-EOP-006 and OP-TM-244-901 and execution of the Containment Isolation Procedure: 1) step 3.2 of OP-TM-EOP-006 contained several emergency support procedures to be initiated in one step without establishing any priority. Due to the LOCA and the concern for containment isolation, recommend that the step be broken down, and the OP-TM-244-901 procedure be a perform step; 2) neither the procedure nor the laminated attachments were utilized by the crews during the simulator scenarios. The NRC examiners believe the station may have a training standards issue regarding the informality of how containment isolation is verified by the operators without a procedure in hand to verify completeness; and 3) the recommend benchmarking the use of a hard card to verify actual containment valve positions using the bench board valve indications rather than just a quick scan of the containment isolation status panel (AR 01359157).</p>	
4	<p>During the NRC exam the crew was placed in a position where RPS / DSS/ manual pushbuttons did not trip the reactor. Additionally G1-02 breaker control from control room did not work, 1L02 would not work due to a previous loss of "B" DC in scenario. The expectation was to shut-down the core using High Pressure Injection (HPI). The NRC pointed out that the B&W owners group bases document states, "The operator should take action to try to trip the rods into the core. This includes actions such as manually tripping the reactor and, if breakers are available in the control room that can interrupt power to the control rod drives tripping these breakers. If the rods have still failed to trip into the reactor, the operator should open other breakers that would remove power from the CRDM, including breakers outside the MCR if necessary."</p>	

	<p>Recommended Actions:</p> <p>Consider benchmarking other B&W sites for ATWAS actions.</p> <p>Consider action to trip breakers locally if the failed to trip from CR.</p> <p>Consider action in EOP-1, RNO to drive rods if CRD is still energized (AR 01359528).</p>
5	<p>During the NRC examination, the NRC identified the following:</p> <p>OP-TM-MAP-H0108 needs additional information based on a loss of an Integrated Control System (ICS) subfeed. Currently, if a portion of ICS power is lost, the Operators are directed to Go To the applicable Abnormal Operating Procedure. This step works as written only for a complete loss of Hand, Auto, or Hand and Auto power. If only a subfeed is lost, there is no entry criteria met to enter the listed Abnormal Operating Procedure and the crew must be in knowledge space to apply only the applicable portions of the procedures for a given subfeed. Recommend adding portions within OP-TM-H0108, ICS/NNI POWER LOST, to address the loss of each subfeed, ultimately ending up with a format similar to OP-TM-MAP-C0101 (AR 01359091).</p>
6	<p>During the NRC exam validation week it was identified that step 17 of section 3.10 of 1107-2B (rev. 31) requires a PCR. The step currently states INSERT Key 2 into IL5 on 1C Inverter. The step should read INSERT Key 2 into IL5/2 on 1C Inverter (AR 01359155).</p>
7	<p>During the NRC exam validation week with a licensed operating crew, OP-TM-EOP-020 immediate manual actions were performed as a job performance measure. Two of the licensed operators did not perform the actions within the required time. The time critical time is 75 seconds when control room evacuation is required. One individual completed the actions in 84 seconds, and the other individual completed the actions in 88 seconds. During the NRC exam the seven applicants being examined did complete the time critical actions within the required timeframe of 45 to 62 seconds.</p> <p>The NRC examiner noted that the place keeping performed by the licensed operators may have contributed to the slower validation times. Recommend that the Licensed Operator Requalification Training Program consider simulator refresher training of OP-TM-EOP-020 and time critical actions on a more routine basis. The individuals were remediated on the task (AR 01359151).</p>
8	<p>During the NRC examination, the NRC identified the following: OP-TM-211-950, Restoration of Letdown Flow, should have direct entry criteria. Currently, if Letdown is lost, a procedure must be entered that directs the restoration of Letdown flow IAW OP-TM-211-950.</p>

	Recommend benchmarking how other stations are set up for restoring Letdown flow, with the intent of potentially adding Entry Criteria to OP-TM-211-950 so the Control Room Operators can efficiently restore Letdown flow (AR 01359084).
9	<p>During the NRC examination, the NRC identified the following: Performance of OP-TM-MAP-K0201 needs enhancement to support Procedure Adherence. Currently, the alarm response is written for actions taken for vibes greater than 6 mils, for actions taken for vibes greater than 10 mils, for actions taken for vibes greater than 12 mils, and for actions taken for vibes greater than 14 mils.</p> <p>An issue exists such that if vibes are greater than 14 mils, all of the actions for 6 mils 10 mils, and 12 mils must be taken first, including contacting Electrical Maintenance for vibe level confirmation.</p> <p>Recommend changing the order of vibration severity so that greater than 14 mils comes first and 6 mils comes last. Also recommend changing the If steps to If At Any Time to make them applicable throughout the condition (AR 01359072).</p>
10	<p>During the NRC examination, the NRC identified the following: Upon a loss of B DC, the right hand Position Indication Panel loses power but is not addressed in OP-TM-AOP-018.</p> <p>Recommend adding a step to OP-TM-AOP-018 to select between the safety groups and regulating groups, as necessary, on the remaining Position Indication Panel (AR 01359078).</p>