

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-220, 410

Report No: 50-220/98-17

Licensee: Niagara Mohawk Power Corporation

Facility: Nine Mile Point Nuclear Station, Unit 1
Syracuse, New York 13212

Dates: July 20-22, 1998

Inspector/Examiner: C. Sisco, Operations Engineer
F. Collins, Operator Examiner, NRR

Approved By: Richard J. Conte, Chief
Operator Licensing and
Human Performance Branch
Division of Reactor Safety

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EXECUTIVE SUMMARY

The Unit 1 simulator configuration and management controls, including the computer upgrade, were implemented properly. The simulation facility was maintained and operated as certified in accordance with the requirements of 10 CFR 55.45 and ANSI/ANS 3.5-1985, as endorsed by Regulatory Guide 1.149, Rev. 1. Training department personnel routinely briefed trainees on simulator deficiencies that may affect planned training evolutions.

Overall, there was no evidence of negative training as a result of simulator deficiency problems and of untimely or uncorrected simulator deficiencies.



Report Details

I. Operations

05 Plant Referenced Simulator Configuration Control

Background

A simulator certification is to ensure that the simulator possesses a sufficient degree of accuracy and completeness to examine and license operators. 10 CFR 55.45(b) requires that candidates be examined, in part, on a certified simulator. Regulatory Guide 1.149, Revision 1, endorses ANSI/ANS-3.5-1985 and was the means that NIMO used to certify the Unit 1 simulator in the simulator certification submittal of 1995. A simulator certification test report is required to be made every four years.

a. Scope

The scope of this inspection was to review the administrative controls of the plant referenced simulator for Nine Mile Point Unit 1. In addition, Inspector Follow Item (IFI) concerning the full core display in the Unit 1 simulator was reviewed and closed.

b. Findings

The inspectors reviewed areas of administrative control of the Unit 1 plant referenced simulator. The areas inspected were configuration management, load control (software), deficiency reporting and corrective actions, quadrennial testing and modifications.

Configuration Management (CM)

The inspectors reviewed Nuclear Training Procedure NTP-TQS-506, Rev. 10, "Simulator Maintenance and Certification," and interviewed facility simulator support personnel with regard to simulator configuration management and control practices. CM procedures were found to be in active use and well understood by the simulator support staff. CM procedures were noted to include adequate levels of internal checks and balances and are subject to internal audit and oversight by a Simulator Configuration Control Board. The CM procedures were also noted to include adequate provision for tracking and incorporation of reference unit modifications and plant changes to ensure continued simulator fidelity. The inspectors determined the simulator support staff were familiar with the procedural requirements concerning simulator configuration control. Also, the procedures adequately described the configuration controls of the simulator.



Load Control

The inspectors reviewed Nuclear Training Procedures NTP-TQS-506, Rev. 10, "Simulator Maintenance and Certification," and NTP-TQS-504, "Simulator Training and Evaluation," and interviewed facility simulator support personnel with regard to simulator load control (software). Disk turnover/training load update practices include separate training, backup, and support (development) disk packs, consistent with the governing procedures. Procedural requirements regarding simulator training load control are posted and were well understood by both the simulator support staff and training staff personnel. Load control procedures were noted to include adequate levels of internal checks and balances and are subject to internal audit and oversight by the Simulator Configuration Control Board. The simulator training load control procedures were adequate to control the simulator software. In addition, based on discussions with simulator support personnel, the inspectors determined the personnel were knowledgeable of the load control (software) procedural requirements.

Corrective Actions/Discrepancy Report (DR) Management

The simulator discrepancy reporting (DR) process was adequately described in procedure NTP-TQS-506, Rev. 10, "Simulator Maintenance and Certification" section 3.9. The inspectors interviewed facility simulator support personnel concerning corrective actions using the simulator discrepancy reporting and plant changes procedures. The inspectors noted that the corrective action process was well documented, includes appropriate checks and balances, and provides an adequate tracking and audit trail for integration with the configuration management process. The inspectors reviewed samples of both currently active (open) and archived (closed) DRS. The inspectors determined that a consistent application of the established documentation, retest, and acceptance requirements of the governing procedures had been implemented.

The inspectors noted that training personnel are made aware of existing and recently corrected DRs. Procedure NTP-TQS-504 requires the training instructor to pre-brief the trainees to acquaint them with the current simulator deficiencies which may affect planned training evolutions. Based on discussions with training department personnel, the inspectors determined that trainees were routinely briefed on simulator deficiencies that may adversely affect planned training evolutions.

Quadrennial Test Program (QTP)

The QTP is the scheduled testing of the simulator to be conducted over a four year period. This schedule is submitted to the NRC as a part of the simulator certification process. The detailed testing consists of simulator stability, steady state and normal plant evolution testing. In addition, accident, transient and malfunction testing is conducted. The inspectors reviewed the QTP with respect to the most recent Simulation Facility Certification, dated November 30, 1995. The inspectors also reviewed samples of QTP test procedures and data packages for completeness, adherence to the governing procedure, and for consistency with



respect to ANSI/ANS 3.5-1985, and Regulatory Guide 1.149 which are the standards to which the simulation facility was certified. The inspectors also reviewed Nuclear Training Procedure NTP-TQS-506, Rev. 10, "Simulator Maintenance and Certification," and interviewed facility simulator support personnel with regard to the quadrennial test program. The QTP test procedures and test results were determined to be consistent with the guidance of ANSI/ANS 3.5 and Regulatory Guide 1.149 and were consistent with the testing schedule. The procedures and test results were also determined to be well documented. The inspectors noted that deficiencies identified during the QTP are entered into the corrective action/discrepancy reporting program.

On a sampling basis, the inspectors compared the current QTP test results with historical QTP test results. This comparison was conducted using computer generated graphs of simulator parameters during identical QTP tests. In all cases reviewed by the inspectors, the test results were consistent with each of the QTPs. The inspectors concluded that based on the consistent QTP test results, the configuration management controls of the simulator software was adequate.

Major Modifications

The inspectors reviewed the planning and testing documentation associated with the simulation computer upgrade project in 1995. The inspectors noted that the final documented acceptance testing of this upgrade was consistent in both scope and complexity with ANSI/ANS-3.5-1985.

Reactor Vessel Overfill Event of November 11, 1996

On November 11, 1996 following a reactor scram, the reactor water level increased to an abnormally high level of 123 inches. The facility conducted investigations into this event to determine the causes and corrective actions. The inspectors reviewed the corrective actions taken in response to this event as pertained to the Unit 1 simulator. The inspectors reviewed simulator discrepancies reports and noted minor changes to the modeled feedwater flow was necessary. The simulator modeled a reactor water level increase at a faster rate than the actual event due to leakage of feedwater control valves. The response of reactor water level indications as well as the feedwater pumps to this event were accurately modeled by the simulator and required no adjustments in response to this event.

Inspector Follow Item (IFI) 50-220/97-04-01

NRC Inspection Report 97-04 identified that the full core display of the Unit 1 simulator had degraded and some indications of control rod positions were not easily identified. The inspectors determined a modification was made to the Unit 1 simulator and various electrical connections had been replaced with a new design. The inspectors conducted an inspection of the full core display in the Unit 1 simulator and concluded all control rod positions were easily identified.
CLOSED IFI 50-220/97-04-01



c. Conclusion

The Unit 1 simulator configuration and management controls, including the computer upgrade, were implemented properly. The simulation facility was maintained and operated as certified in accordance with the requirements of 10 CFR 55.45 and ANSI/ANS 3.5-1985, as endorsed by Regulatory Guide 1.149, Rev. 1. Training department personnel routinely briefed trainees on simulator deficiencies that may affect planned training evolutions.

Overall, there was no evidence of negative training as a result of simulator deficiency problems and of untimely or uncorrected simulator deficiencies.

II. Management MeetingsX1 Exit Meeting Summary

The inspectors met with licensee representatives periodically throughout the inspection and following the conclusion of the inspection on July 22, 1998. At that time, the purpose and scope of the inspection were reviewed, and the preliminary findings were presented. The licensee acknowledged the preliminary inspection findings.

PARTIAL LIST OF PERSONS CONTACTED

C. Terry, Vice President, NSAS
 J. Mueller, Chief Nuclear Officer
 J. Burton, Manager - Nuclear Training

INSPECTION PROCEDURES USED

92901 Plant Operations - Followup

ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

<u>Item No.</u>	<u>Type</u>	<u>Title</u>
50-220/97-04-01	IFI	Simulator Full Core Display



LIST OF ACRONYMS USED

ANS	American Nuclear Society
ANSI	American National Standards Institute
DR	Deficiency Report
CFR	Code of Federal Regulations
CM	Configuration Management
IFI	Inspector Follow Item
QTP	Quadrennial Test Program
RG	Regulatory Guide
Rev.	Revision

