

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-220/88-27
50-410/88-27

Docket No. 50-220
50-410

License No. DPR-63 Priority - Category C
NPF-54

Licensee: Niagara Mohawk Power Corporation
300 Erie Boulevard West
Syracuse, New York 13202

Facility Name: Nine Mile Point Units 1 and 2

Inspection At: Oswego, New York

Inspection Conducted: August 1-5, 1988

Inspectors: *Robert M. Loesch* 8/15/88
R. Loesch, Radiation Specialist date

Anthony Weadock 8/16/88
A. Weadock, Radiation Specialist date

Approved by: *M. M. Shanbaky* 8/16/88
M.M. Shanbaky, Chief, Facilities Radiation Protection Section date

Inspection Summary: Inspection conducted on August 1-5, 1988 (Combined Inspection Report Nos. 50-220/88-27; 50-410/88-27).

Areas Inspected: Reactive, unannounced Radiological Controls Inspection at Units 1 and 2. Areas reviewed were the internal contamination of a worker, Unit 2 steam tunnel incident and status of Unit 1 outage.

Results: No violations were identified.



DETAILS

1.0 Individuals Contacted

1.1 Niagara Mohawk

J. Willis, General Superintendent
R. Abbott, Station Superintendent, Unit 2
O. Henderson, Superintendent, Radwaste
P. Volza, Radiation Protection Manager
D. Barcomb, Radiation Protection Supervisor, Unit 2
T. Roman, Nuclear Engineering and Licensing
T. Egan, Site Licensing Engineer

1.2 NRC

W. Schmidt, Resident Inspector
R. Temps, Resident Inspector

1.3 Others

P. Eddy, Site Representative, New York State Public Service Commission

The above individuals attended the exit meeting on August 5, 1988.

The inspector also contacted other licensee personnel during the course of this inspection.

2.0 Purpose and Scope of Inspection

This inspection was a reactive, unannounced Radiological Controls Inspection. The following areas were reviewed:

- Unit 2 Main Steam Line Tunnel access; and
- Internal contamination of a worker.

In addition, the inspectors reviewed the status of the Unit 1 outage.

3.0 Previously Identified Items

(Closed) Violation (50-220/86-04-01): Licensee did not adhere to high radiation area surveillance requirements specified in Technical Specifications.

Inspector review indicated the licensee implemented corrective actions described in their May 9, 1988, letter (NMP34064) to NRC, Region I. In addition, review of high radiation area key control and tours of the facility indicated that licensee controls on access to locked high radiation areas were effective. This item is closed.



4.0 Main Steam Line Tunnel Access

The inspector reviewed events relative to an incident which occurred on September 14, 1987, in which several workers were inadvertently locked inside the Main Steam Line Tunnel (MSLT). The work party subsequently had to contact the control room by the plant Gaitronics (page/intercom) system to be let out of the area. Access to the MSLT is routinely through a door on the 240 foot elevation of the Reactor Building (RB). The MSLT is posted and controlled as a locked High Radiation Area (HRA) during plant operations.

The MSLT door also represents a vital area boundary as it allows access from a non-vital area (Turbine Building via MSLT) to a vital area (Reactor Building). At the time of the above incident, passage into the MSLT from the RB was controlled by a HRA key. Passage out of the area back into the RB required a security key.

10 CFR 20.203(c) requires that controls implemented by the licensee to control access to a HRA be established such that personnel egress from the area will not be prevented. The inspector reviewed the licensee's access controls over the MSLT area in light of the above requirement by the following methods:

- discussions with cognizant personnel;
- tour of the Unit 2 MSLT; and
- review of the following documentation:
 - licensee memo NMP28582, titled "Main Steam Tunnel Door";
 - licensee memo titled "RB214 Main Steam Tunnel Investigation";
 - licensee response letter to the Assistant Attorney General, State of New York, dated July 20, 1988; and
 - radiological surveys of the MSLT.

Within the scope of the above review, the following were identified:

- Including the September, 1987, incident, licensee personnel have been unintentionally locked into the MSLT on at least four separate occasions.
- During each occasion when personnel were locked in the MSLT the reactor was not at power and area dose rates were such that the MSLT was neither a radiation nor a high radiation area, and dose rates in the area were minimal.
- Review of a survey of the MSLT taken at 100% power identified that although the inner area inside the MSLT qualified as a HRA (i.e., contained area dose rates greater than 100 mR/hr) the airlock area contained area dose rates ranging from 2-50 mR/hr were well below 10 CFR 20 definition for a HRA. Consequently, even if locked in the MSLT at power an individual could position themselves inside the airlock portion of the MSLT and would therefore not be in a HRA.



In light of the above observations, the inspector concluded that no violations of the 10 CFR 20.203(c) HRA egress requirements had occurred. Control over this area appeared adequate. The inspector noted, however, that certain OSHA regulations require free and unobstructed egress from all parts of buildings or structures. The licensee's Safety group completed an investigation of the MSLT area in response to the September 14, 1987, event and was continuing to follow up on OSHA concerns in this area.

Currently, the licensee has re-cored the MSLT door inner lock so that only one key is required for access and egress. A dedicated person is now stationed with the key either inside the airlock or just outside the MSLT door when personnel are inside the area. The licensee is also evaluating a proposed plant modification to add grating around the steam line penetrations to prevent potential unauthorized access from the TB to the MSLT. This would obviate the need for an inside lock on the MSLT door. Future licensee actions in this area will be reviewed during subsequent inspections.

5.0 Internal Contamination of a Worker

The inspector reviewed events relative to an incident which occurred on July 21, 1988, in which an individual apparently ingested radioactive material. Several workers had entered the drywell for the purpose of hands-on inspection and photographing of Local Power Range Monitor (LPRM) electrical connections. The LPRM electrical connectors are located underneath the reactor vessel.

The Time and Exposure Log (TEL), part of the Radiation Work Permit (RWP), did not require respiratory protection but did specify faceshields for those individuals needing to look up at the LPRMs. The work group, consisted of three engineers and one I&C technician, received a pre-job briefing and entered the drywell at approximately 10:30 a.m. on July 21, 1988. The I&C technician entered the area under the vessel first and connected a LPRM to its associated junction box. At that time, the engineers entered the area under the vessel for inspection purposes. One engineer, working on his knees and wearing a faceshield, took several photographs of the LPRM and its associated cabling. The three engineers left the drywell at approximately 11:40 a.m.

Within the scope of this review, the following were identified:

- Only one individual (the photographer) appeared to be contaminated. No facial or nasal contamination was found. Repeated attempts at decontamination failed. This included topical foam and showers.
- Initial whole body counts indicated approximately 600-700 nCi of Co-60. Followup whole body counts on 7/22 and 7/23 showed no change in the indicated Co-60 levels.



- Based upon the results of the whole body counts, the licensee made the determination that an internal deposition had occurred.
- The individual was counselled and allowed to leave the facility with instructions to collect all feces and urine for analysis. Fecal samples were obtained the morning of 7/24. Preliminary evaluations by the licensee indicated that the feces contained approximately 1.4 uCi of Co-60.
- A whole body count performed 7/24, post fecal collection, showed no internal contamination.
- The licensee has requested an outside vendor to perform a more detailed analysis. This will include attempts to isolate the activity to determine if a discrete particle was involved.

Since the activity was located in the abdominal area immediately upon exiting the drywell, this indicates that the contamination most probably entered the individual through the mouth either as a direct ingestion or an inhalation (mouth breathing) followed by subsequent swallowing. Radioactive material that is inhaled through the nose and trapped in the upper respiratory tract can translocate to the gastrointestinal tract via ciliary action, but the timeframe necessary is several hours to upwards of 24 hours.

10 CFR 20.103, footnote 4, requires ingestions to be evaluated by appropriate techniques to determine compliance with the limits of 20.103(a)(1). Initial evaluations performed by the licensee utilizing ICRP-2 methodology indicate an intake equivalent of approximately 7 MPC-hrs. This is well below the regulatory limit of 520 MPC-hrs per calendar quarter.

The licensee has initiated an investigation into the incident including the generation of a Radiological Incident Report (RIR). Further licensee actions in this area will be reviewed during subsequent inspections.

6.0 Unit 1 Outage Status

6.1 Organization and Management

The inspector reviewed the current organization against that described in the Technical Specifications and noticed that the position of Superintendent, Chemistry and Radiation Management, vacated in February, 1988, has yet to be filled. The Superintendent's safety committee responsibilities (Site Operations Review Committee (SORC), etc.) have been assumed by the Radiation Protection Manager. In the interim, both the Radiation Protection Manager and the Supervisor, Radiological Support are reporting directly to the General Superintendent. In addition, the Unit 1 Radiation Protection Supervisor has recently taken a position in the Training Department but was spending approximately 50% of his time ensuring a smooth transition to his replacement. Inspector review of the qualifications of the Acting Radiation Protection Supervisor indicated that the individual was qualified in accordance with ANSI Standard N18.1-1971. The licensee has not yet finalized other aspects of the new organizational structure. These changes will be reviewed in a future inspection.



6.2 ALARA

The inspector reviewed ongoing ALARA activities in support of the Unit 1 outage by discussions with licensee personnel and review of projected and actual exposure for various jobs. Within the scope of this review, no violations were identified. The licensee originally estimated 704 man-rem for the outage, with a projected outage completion date in April. A full-system decontamination (LOMI process) was originally planned and contracted for; however due to problems with outage scheduling arising from the unplanned forced outage the decontamination was not performed. Current outage exposure during the week of the inspection totaled approximately 565 man-rem, due in part to a significant reduction in the scope of ISI work. The outage length has been extended to support continuing ISI work.

The following exposure reduction methods were noted during this review.

- The licensee utilized a new shielding package on the reactor recirculation pump seal work during the current outage which reduced pump area dose rates more effectively than during previous outages.
- Detailed survey maps, clearly showing locations and labeling of valves, etc., are available for use by RP technicians to perform drywell surveys. The licensee indicated use of these maps helps reduce the time required for contractor RP technicians to locate valves for survey.

The inspector noted the potential for improvement in the licensee's methods of communication of current unit exposure status to the plant staff and outside reviewers. Graphs showing overall unit exposure and exposure by work group, typically produced weekly by the ALARA group, had not been updated since June 25, 1988. Additionally, job exposure summary sheets, showing actual versus estimated exposure for the significant outage jobs, had not been produced or distributed by the ALARA staff. Such summaries have been used effectively at other sites in flagging ALARA concerns to plant staff.

The licensee indicated exposure graphs had not been updated due to computer problems and the recent transfer of the individual responsible for generating the graphs. The licensee also indicated that ALARA effort had recently been concentrated on in-field job review, rather than production of summary records, etc. The licensee stated that plant staff could ascertain the exposure status of specific jobs by contacting the ALARA group.

The inspector noted the licensee had currently expended approximately 40 man-rem on three miscellaneous work RWPs and questioned the ALARA staff as to the significance of this figure and whether some of this work should have instead been performed on specific work RWPs. The licensee stated this was considered a significant percentage of overall exposure and indicated "miscellaneous" exposure would continue to accrue during the extended



outage. The licensee also stated specific steps had been taken to tighten controls over the assignment of work requests to specific or miscellaneous RWPs. These included the transfer of an ALARA staff member to the RP planner position and the generation of a memo establishing criteria for the use of miscellaneous RWPs. Licensee performance in the ALARA area will continue to be reviewed during subsequent inspections.

7.0 Exit Meeting

The inspectors met with licensee representatives (denoted in Section 1) of this report) on August 5, 1988. The inspectors summarized the purpose, scope and findings of the inspection. No written material was provided to the licensee.

