# U. S. NUCLEAR REGULATORY COMMISSION REGION I

- Report No. 50-286/89-13
- Docket No. 50-286
- License No. DPR-64
- Licensee: New York Power Authority P. O. Box 215 Buchanan, New York 10511
- Facility Name: Indian Point 3

Inspection Conducted: May 23-26, 1989

Inspector: S. Sherbini, Senior Radiation Specialist Facilities Radiation Protection Section

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Approved by: W. Pasciak, Chief, Facilities Radiation Protection Section, FRSSB, DRSS

<u>6/16/89</u> date

Inspection Summary: Inspection conducted on May 23-26, 1989 (NRC Inspection Report No. 50-286/89-13)

<u>Areas Inspected</u>: Routine, unannounced inspection to update previous inspections of the steam generator replacement project and other outage activities.

<u>Results</u>: No violations were identified.

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### DETAILS

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#### 1.0 Personnel Contacted

#### 1.1 Licensee Personnel

- \* D. Bell, Assistant to RES Superintendent
  \* R. Deschamps, Health Physics General Supervisor D. Mayer, Radiological Engineer, ALARA
  \* M. Peckham, Assistant to the Resident Manager
  \* J. Perrotta, RES Superintendent

- \* D. Quinn, Supervisory Radiological Engineer
  \* J. Russell, Superintendent of Power
  \* R. LaVera, Health Physics Supervisor

# 1.2 NRC Personnel

- \* P. Koltay, Senior Resident Inspector G. Hunegs, Resident Inspector
- \* Denotes attendance at the exit meeting.

# 2.0 Status of Outage Work

Outage work at the time of this inspection was nearing completion. The expected startup date is approximately between June 20-23, 1989. The main remaining work is:

- . Complete installation of insulation on steam generators and other components. Most of this work has already been completed.
- . Remove whip restraints that were installed during the steam generator replacement project.
- . Complete installation of the upper lateral supports for the steam generators (SG).
- . Complete attaching instrumentation lines to the SGs.
- . Finish refueling.
- . Cleanup of various work areas.

Observation of ongoing work activities during this inspection showed the same effective control over access, exposures, and contamination that was noted in a previous inspection of this outage (NRC Inspection Report 50-286/89-04).

The steam generators were all installed using the two-cut method on their primary piping with the exception of the #32 hot leg, which required a three-cut installation. The two-cut method involves cutting the hot and cold legs at the channel head nozzles and welding the new SG directly to the existing coolant pipes. The three-cut method involves an additional cut on the primary coolant pipe to replace a section of the pipe with another of slightly different curvature to match the new SG nozzle.

The #31 and #34 boiler feedwater lines did not match the feedwater nozzles on the new steam generators. Sections of these pipes had to be cut out, machined, and welded back in place to achieve a match.

The weld on the new #34 SG hot leg was found upon inspection to be defective. It was ground out manually and the new weld was also layered manually. This job was done in place at the installed SG nozzle and therefore involved work in relatively higher than average radiation fields.

The licensee stated that installation of the upper lateral supports for the steam generators was more time intensive than had been expected. The work is conducted in relatively high radiation fields. The supports are a series of plates that attach the upper parts of the SGs to the containment structure.

During plasma arc cutting on the #32 SG cold leg, a leak past the protective plate covering the air bag in the coolant pipe caused the air bag to deflate and partially burn. The air bag was placed in the pipe before cutting to act as a debris dam to keep debris and other metal material from getting into the primary system. Part of the rubber bag was also baked onto the inside surface of the pipe as a result of the burn. A worker was lowered into the pipe by way of the channel head, using a rope ladder, to scrape off the burnt rubber from the inside of the pipe. He also vacuumed the debris that had fallen in as a result of the loss of the debris dam. The licensee stated that the jump lasted approximately 3-4 minutes and that the radiation field inside the pipe was 6-7 R/hr. A remote camera and remote debris removal were also used to complete the cleanup and inspection of this part of the system. The work cost approximately 4 man-rem.

#### 3.0 ALARA

The licensee tracks exposures accumulated during the outage by Radiation Exposure Authorizations (REA). Each REA is written to cover a specific job or area of activity, and each has a man-rem estimate attached to it. The REAs are classified as PAB (Primary Auxiliary Building) work REAs, VC (Vapor Containment) non-SGRP (Steam Generator Replacement Project) work, and SGRP work.

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At the time of this inspection, the estimates and actual exposures for all REAs, both current and closed, for the outage were as follows:

REA class	Estimated man-rem	Actual man-rem
PAB work VC work (non-SGRF VC work (SGRP)	59.6 2) 372.4 544.4	37.4 270.8 478.7
total	976.4	786.9

The goal for the outage is 870 man-rem, and the accumulated exposure to date is therefore within 90.45% of that goal. The SGRP exposure is within about 84% of the goal, which is 575 man-rem.

The REAs that have been terminated because of completion of the jobs they covered were reviewed by the inspector to compare the estimated and actual exposures for each. At the time of this inspection there were about 52 terminated REAs out of a total of about 137 REAs generated. Of the terminated REAs about 22% had actual exposures that exceeded the estimates. Most were below the estimates, and most of these were substantially below the estimates. About 63% of these resulted in actual exposures that were more than a factor of two below the estimates, and some were more than an order of magnitude below the estimate. The licensee stated that in some of these situations, the work proceeded more efficiently than had been expected. The licensee also stated that in some of the REAs where the actual doses were substantially below the estimate, it appears that the man-hour estimates were not very good and that such estimates need to be improved in the future.

About eight REAs showed significantly higher accumulated doses than estimated, and all but one of these REAs is still active, that is, work is still being performed in these areas. The most significant of these was the REA covering SGRP supervision and engineering in the VC. The estimate for this REA was 40 man-rem and the actual exposure to date was 60 man-rems. The totals for the REAs that showed lower and higher estimates than actual doses are:

	Estimated	Actual	Difference
	man-rem	man-rem	man-rem
REAs showing high estimates	327.5	256.0	71.5
REAs showing low estimates	98.8	136.4	37.6

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The accumulated dose in the areas of health physics coverage, radwaste processing, and decontamination was 183.8 man-rem, or about 23% of the total outage exposure to date. These activities are all still ongoing. The outage jobs that resulted in, or that have accumulated to date, a dose of over 10 man-rems are:

Job Description

Accumulated Exposure man-rem المواجعة ر

HP in VC	84.6
Decon in VC Densin/Densek valves in VC	04.0
TET in VC	10.9
151 HI VU Casffalding in VC	13.3
Scarrolding in vi	41.9
Insulation on primary system	12.3
Mirror insulation	13.2
Main Steam/Feedwater lines (SG)	18.8
SGRP supervision/engineering in VC	60.1
RCS pipe debris dam/shielding	15.0
Rigging of SGs (old and new)	17.1
RCS pipe decontamination	14.4
RCS pipe welding	72.8
SG upper lateral supports/restraints	39.3
RTD modification	37.1
Regenerative Heat Exchanger shielding	11.9

These jobs account to date for about 70% of the accumulated dose for the outage. About two thirds are still active, although many are in the final stages and are not expected to accumulate substantially more dose than indicated in the table above.

#### 4.0 Storage of the Old Steam Generators

The inspector toured the mausoleum in which the old SGs are being stored. The mausoleum was posted as a locked high radiation area and the access door was locked. An alarm system has been installed to activate if the locked access door to the mausoleum is opened without disabling the alarm system. This is not a radiological alarm but an intrusion alarm.

The inspector noted that there was some evidence of water leakage on the floor of the mausoleum. The licensee stated that there were leaks prior to completion of the ceiling, but that there are no longer any leaks into the mausoleum. The SGs were covered with waterproof material. The licensee stated that should any leaks be detected in the future, a sampling program will be initiated to ensure that no radioactive material leaks out of the building undetected.

A fence has been erected around the perimeter of the mausoleum with a space of about 15' between the fence and the outer wall of the building. The fence is not required for radiation protection purposes since the dose rates at contact with the outer walls are ambient. The licensee stated that the fence is an added security measure.

# 5.0 Exit Meeting

The inspector met with the licensee at the end of the inspection on May 26, 1989. The inspector summarized the purpose, scope and findings of the inspection.