January 29, 1998

Mr. Don K. Davis, Chairman, Chief
Executive Officer and President
c/o R. A. Mellor, Vice President
Operations and Decommissioning
Connecticut Yankee Atomic Power Company
362 Injun Hollow Road
East Hampton, CT 06424-3099

Dear Mr. Davis:

SUBJECT: NRC INSPECTION REPORT NO. 50-213/97-08 AND NOTICE OF VIOLATION

This refers to your December 5, 1997, correspondence in response to our letter, dated October 29, 1997, regarding violations that were identified during an inspection of licensed activities at Haddam Neck. This correspondence dealt with an NRC Inspection conducted at the station and the associated violations identified. The violations involved failure to follow radiation protection procedures and failure to perform adequate surveys.

We have reviewed this matter in accordance with NRC Inspection Manual Procedure 92904, "Plant Support". We concur with your assessment of the root cause and consider the actions you have taken to be acceptable. We will further review the effectiveness of these actions in a future inspection.

We appreciate your cooperation.

Sincerely,

ORIGINAL SIGNED BY:

John R. White, Chief
Radiation Safety Branch
Division of Reactor Safety

Docket No. 50-213

License No. DPR-61

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cc w/cy of licensee ltr:
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State of Connecticut SLO

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CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT
362 INJUN HOLLOW ROAD • EAST HAMPTON, CT 06424-3099

December 5, 1997

Docket No. 50-213
CY-97-120

Re: 10 CFR 2.201

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Haddam Neck Plant
Reply to a Notice of Violation (NOV)
NRC Integrated Inspection Report No. 50-213/97-08

In a letter dated October 29, 1997,(1) the NRC staff transmitted a report documenting the results of an NRC inspection which was conducted during the period July 3, 1997 and August 11 through September 19, 1997 at the Connecticut Yankee Atomic Power Company's (CYAPCO) Haddam Neck Plant (HNP). Areas reviewed by the NRC during this time period included the applied radiological controls program, including external and internal exposure controls, the contamination control program, training of personnel relative to 49 CFR 19.12 Subpart H, plans and activities associated with radiological characterization of the site for decommissioning planning purposes, and HNP action on commitments to the NRC relative to NRC Confirmatory Action Letter (CAL) No. 1-97-007, dated March 4, 1997.(2)

The inspection identified two violations. The first violation involved three examples of failure to follow radiation protection procedures, and was identified by the NRC. The second violation involved failure to perform adequate radiological surveys of material deposited in the HNP site landfill, and was identified by HNP personnel.

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(1) J. R. White (NRC) to T. C. Feigenbaum (CYAPCO), "NRC Inspection Report 50-213/97-08," dated October 29, 1997.

(2) H. L. Miller (NRC) to T. C. Feigenbaum (CYAPCO), "Confirmatory Action Letter No. 1-97-007," dated March 4, 1997.

Pursuant to the requirements of 10 CFR 2.201, Attachment 1 provides the CYAPCO response to the Notice of Violation (NOV) and presents the current implementation status of the corrective actions.

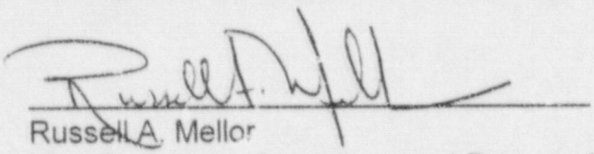
CYAPCO considers these violations very serious and is committed to implement and complete the corrective actions to improve HNP performance. We will continue to keep the NRC Staff informed of our progress in these areas.

Attachment 2 presents CYAPCO's commitments made within this letter and the attachments. Other statements within this letter are provided for information only.

If there are any questions regarding this submittal, please contact Mr. G. P. van Noordennen at (860) 267-3938.

Very truly yours,

CONNECTICUT YANKEE ATOMIC POWER COMPANY



Russell A. Mellor
Vice President - Operations and Decommissioning

Attachments

cc: H. J. Miller, NRC Region I Administrator
J. R. White, Chief, Radiation Safety Branch
M. B. Fairtile, NRC Senior Project Manager, Haddam Neck Plant
W. J. Raymond, NRC Senior Resident Inspector, Haddam Neck Plant
D. Galloway, Acting Director, CT DEP Monitoring and Radiation Division

Docket Number 50-213
CY-97-120

Attachment 1

Haddam Neck Plant

Reply to a Notice of Violation

NRC Inspection Report No. 50-213/97-08

December 1997

Restatement of Violation

During NRC inspections conducted during the period July 3 through September 19,1997, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," (60 FR 34381; June 30, 1995) the violations are listed below.

A. Technical Specification 6.11, Radiation Protection Program, requires that procedures for personnel radiation protection be prepared consistent with the requirements of 10 CFR Part 20 and be adhered to for all operations involving personnel radiation exposure.

1. Radiation protection procedure RPM 2.7-3 "Contaminated Personnel Survey and Decontamination," Revision 9, requires that a person with facial contamination be sent to be whole-body-counted.

   Contrary to the above on February 22, 1995, an individual, working on radiation work permit (RWP) 1950603, "Primary Steam Generator Nozzle Cover Installation and Removal," from 4:34 p.m. to 6:56 p.m., received a facial contamination and was not sent to be whole-body-counted.

2. Radiation Protection procedure NUC RPM 5.1.2, "Posting of Radiological Controlled Areas," Revision 1, specifies in Attachment 2 that contaminated areas (i.e., any area where the removable contamination is greater than or equal to 1,000 dpm/100 cm^2) be posted with signs bearing the radiation caution symbol and the words "Caution Radioactive Material".

Contrary to the above:

a. On September 11, 1997, an area at the base of the Bus 10 concrete pad exhibited removable contamination of about 4,000 dpm/100 cm^2 and was not posted as required.

b. On September 19, 1997, an area known as the Culvert Area exhibited removable contamination of about [4,000 dpm/100 cm^2] 11,000 dpm/100cm^2 and was not posted as required.

This is a Severity Level IV violation (Supplement IV).

B. 10 CFR 20.1501 requires that the licensee make, or cause to be made surveys that may be necessary to comply with the regulations in this part and are reasonable under the circumstances to evaluate concentrations or quantities of radioactive material.

Contrary to the above, surveys of material placed in the licensee's landfill area, located approximately [0.25] 0.75 miles southeast of the Haddam Neck station were inadequate

to detect and evaluate radioactive materials deposited at some unknown time at the location. Such surveys were necessary and reasonable to comply with the requirements of 10 CFR 20.1801, 10 CFR 20.1802, 10 CFR 20.1902, and 10 CFR 20.1302. Specifically, Co-60 activity in isolated spots of soil at the landfill ranged from about 0.31 pCi/g to 4.3 pCi/g at the location, Cs-137 ranged from 0.17 pCi/g to 34.8 pCi/g at the location, and material (e.g., fabric, brick) at the location exhibited radioactive contamination that ranged from 400-600 corrected counts per minute (ccpm) (i.e., approximately 4,000 - 6,000 dpm assuming a 10 % detector efficiency).

This is a Severity Level IV violation (Supplement IV).

A. RADIATION PROTECTION PROCEDURES

Reasons For The Violation

Three examples pertaining to radiation protection procedure violations are identified in the subject Notice of Violation (NOV) as documented in Reference 1. Reasons for these violations are identified below.

Example 1-Contaminated Personnel Survey and Decontamination

This radiation protection procedure violation pertains to a worker contamination event which occurred on February 22, 1995 where, during the course of work on the primary steam generator nozzle cover installation and removal, an individual was contaminated. The contamination was initially detected by a Personnel Contamination Monitor (PCM) and confirmed using a frisker. The frisker reading, as documented on the personnel contamination report, was 200 corrected counts per minute (ccpm). The subject individual was decontaminated and frisked again by the HP Technician. The results indicated that the level was less than 100 ccpm. The individual was allowed by a Health Physics technician to leave the site, bypassing the PCM at the Radiological Control Area (RCA) exit.

Upon exiting the Protected Area, the contaminated individual activated the portal monitor alarm. Health Physics responded to the alarm. Based upon the results of the post decontamination frisk, the Health Physics technician allowed the contaminated individual to pass through the portal monitor without receiving any additional frisk, or whole-body-count. Although procedural guidance contained in RPM 2.7-3 "Contaminated Personnel Survey and Decontamination" Revision 9, requires a person with facial contamination to be whole-body-counted, the Health Physics technician did not require the worker to obtain a whole-body-count due to a non-conservative interpretation of the procedural requirements to initiate a whole-body-count in cases of facial contamination.

The contaminated individual requested a whole-body-count the next morning, February 23, 1995, and was shown to have an initial uptake of 262 nCi (Co-60). The subsequent

dose assessment determined the uptake resulted in 11 mrem. The actions of the Health Physics technician and the contaminated individual as stated above, were reconstructed after the fact, based upon interviews with the contaminated individual and station personnel. The Health Physics technician involved with releasing the contaminated individual from the HNP site was terminated from employment in the early part of 1997 and as such, was not consulted with respect to the facts of this event. However, the technician's supervisor is still employed at CY and has been interviewed as part of the ongoing internal investigation of this event. This investigation will be completed by the end of December 1997. Preliminary results of the internal investigation conclude that the following shortcomings existed in the Health Physics department in February 1995:

- Programmatic inadequacies which allowed the technician to improperly assess the situation.

- Insufficient management oversight of the technician's actions.

Examples 2 and 3-Posting of Radiological Control Areas

The area where the Bus 10 concrete pad currently exists was previously used for a radioactive waste storage area. The area known as the culvert area, located behind the zone 6 control point, was used to store cement shields used for radioactive material storage (e.g., resin liners). While performing inspections of the area adjacent to the base of the Bus 10 concrete pad on September 11, 1997 and the Culvert Area on September 19, 1997 the NRC inspector requested that surveys be performed. The results of these surveys identified removable contamination which upon further inspection exhibited readings of approximately 4,000 and 11,000 dpm/100cm^2 respectively. These areas were not posted as required by Radiation Protection Procedure NUC RPM 5.1.2, "Posting of Radiological Controlled Areas", Revision 1 which consequently resulted in the subject violation.

An investigation was performed by Health Physics personnel in order to establish the reason for failure to post these areas. The results of this investigation indicated that the outdoor RCA areas, including the Bus 10 area, were routinely surveyed in accordance with the frequency specified in the Health Physics Survey Matrix. The culvert area was not routinely accessed by personnel or surveyed. Based upon the composition and layout of the RCA yard, and taking into account the activities that have taken place there throughout the life of the plant, the thoroughness of the surveys was not adequate to properly assess the potentially changing radiological status of the area.

Corrective Steps That Have Been Taken And The Results Achieved

The three examples cited above pertain to the failure to comply with radiation protection procedures and in turn failure to comply with the requirements of 10 CFR 20 "Standards for Protection Against Radiation". Immediate corrective steps that have been taken to

improve the radiation protection program relevant to personnel contamination controls include the following:

- A programmatic review of procedures and methods utilized to respond to personnel contamination events was performed.

- Applicable procedures were revised.

- Detailed training of Health Physics technicians and staff was conducted.

- Senior Station Management conducted training sessions in August of 1997 for all plant employees that stressed management's expectations regarding strict compliance and personnel accountability.

Immediate corrective steps that have been taken to ensure that HNP radiation protection procedures relevant to posting requirements are complied with include the following:

- A detailed survey of the RCA yard was performed. Contaminated material identified as a result of the survey was removed or the area was properly posted in accordance with procedures and cleaned-up shortly thereafter.

- The base of the Bus 10 concrete pad, identified as the source of the removable contamination, was cleaned and then sealed with an asphalt sealant and resurveyed. The results of the survey were below regulatory requirements for posting.

- The culvert area was surveyed, loose debris was removed, the area was covered with asphalt sealer and posted as a radioactive materials area. In addition, the one open culvert was surveyed and found to be internally contaminated. The culvert was covered and subsequently posted as internally contaminated and requires Health Physics approval to access.

- Health Physics technicians were instructed to maintain a heightened awareness for removable contamination that can accumulate in cracks, crevices and other areas not routinely accessed in the outdoor RCA areas.

Corrective Steps That Will Be Taken To Avoid Further Violations

The following corrective actions will be taken to improve compliance with radiation protection procedures as they pertain to personnel contamination events.

- Phase I of the Radiation Protection Improvement Program (RPIP) identified deficiencies which have a potential of affecting health and safety or regulatory compliance. Phase I improvements were completed on August 31, 1997 and have been implemented. Phase II of the RPIP pertains to performance of procedure upgrades. This phase includes procedural upgrades for RPM 2.7-3, "Contaminated

Personnel Survey and Decontamination". The RPIP is defined in a letter from T. C. Feigenbaum (CYAPCO) to H. J. Miller (NRC), dated May 30, 1997.(3) Training of personnel with respect to new procedures or major procedure revisions resulting from the RPIP will be performed.

The following corrective steps will be taken to improve control of removable contaminated material in outdoor RCA's in an effort to ensure compliance with posting requirements are maintained.

- We will perform a thorough sealing of all outdoor RCA asphalt areas, as soon as weather allows (Spring 1998). This is expected to minimize the presence of removable material located in outdoor RCA areas.

- The Health Physics Survey Matrix will be revised to segment the RCA yard into discrete zones so that a thorough survey of all of the RCA yard is performed periodically. This will ensure that removable contaminated material is identified and properly dispositioned.

The results achieved, due to the implementation of the corrective actions taken to date, indicate an improvement in compliance with Health Physics procedures. One indicator of this is that the total number of adverse condition reports affecting the Health Physics organization, has increased due to site-wide sensitivity to adverse conditions. In addition, the improved performance of the Health Physics organization as documented in Nuclear Oversight Group audits and recognized by the NRC as noted in a letter from H. J. Miller (NRC) to T. C. Feigenbaum (CYAPCO) dated November 17, 1997(4) has allowed the HNP to move forward with decommissioning and perform artifact removal of a reactor coolant auxiliary system pipe section for testing of decontamination methods.

Date When Full Compliance Will Be Achieved

CYAPCO is presently in full compliance with 10 CFR 20.1902 "Posting" requirements.

B. SURVEYS

Reasons For The Violation

The reason for this violation is that CYAPCO failed, in the past, to perform adequate and comprehensive surveys of construction debris, such as fill and rubble, in accordance with the requirements of 10 CFR 20.1501 "Surveys and Monitoring". The purpose of these

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(3) T. C. Feigenbaum (CYAPCO) to H. J. Miller (NRC) "Response to Confirmatory Action Letter, Radiation Improvement Protection Program" dated May 30, 1997.

(4) H. J. Miller (NRC) to T. C. Feigenbaum (CYAPCO) "Confirmatory Action Letter Supplement" dated November 17, 1997.

surveys is to assess the radiation levels, concentrations or quantities of radioactive material, and potential radiological hazard associated with material to be released from the station.

As part of the ongoing site characterization program being performed in support of HNP decommissioning, CYAPCO personnel, upon surveying of the land fill area, identified low levels of plant-related contamination in construction debris which was believed to have been deposited during the late 1980's. This situation prompted a review of the procedures and methods employed at the time to preclude the release of contaminated material outside of the RCA. The results of this review indicated that inadequate survey techniques and control methods were employed in the past to assess any contamination associated with the construction debris.

Considering the above, the apparent cause of the violation, was the failure of HNP personnel to perform adequate and comprehensive surveys of construction debris in order to fully assess contamination levels prior to transportation to the land fill area. Although the exact cause is uncertain, it is believed this event was caused by a combination of factors, including instrument sensitivity, poorly defined survey criteria and techniques, and poorly defined standards for surveying volumetric material.

Corrective Steps That Have Been Taken And The Results Achieved

The contamination detected in the site land fill area was discovered during site characterization conducted in July of 1997 and performed in support of HNP decommissioning. Corrective steps that have been taken to prevent unauthorized access to the material include enclosing the area with a fence in order to restrict access and posting the area. As such, a Radiation Work Permit (RWP) is required to access the area, a radiation protection technician will oversee access to the area, and frisking will be required to egress the area. In addition, pre-job briefs are provided to review conditions and controls. Controls are commensurate with the planned activity. Keys to the gate for the area are controlled by the Radiation Protection Supervisor.

Corrective actions taken and the results achieved to preclude the release of contaminated material offsite or to an unrestricted area include the following:

- Training of Radiation Protection personnel involved in assessing material for release was performed. This training included use of radiation measuring devices, obtaining representative samples for survey and interpreting data from surveys.

- A review was conducted, as part of the historical site assessment, of other events which may have led to the release of radioactive material, in order to assess the likelihood of additional similar occurrences.

- Detectors were employed at the control point with greater sensitivity than those previously utilized, to perform surveys of potentially contaminated materials for release.
- Procedures pertaining to release of potentially contaminated materials (including bulk materials) were revised in order to provide clarity and consistency between procedures.

- A confirmatory survey program was performed in order to assess the extent to which plant equipment and tools may have been inappropriately released from the RCA. The results of this survey, as documented in letter from T. C. Feigenbaum (CYAPCO) to H. J. Miller (NRC) dated September 30, 1997,[5] indicate that there is a low probability for significant contaminated material to have been inappropriately released from HNP.

Corrective Steps That Will Be Taken To Avoid Further Violations

Corrective steps that will be taken to avoid further violations include additional RPIP upgrades and enhancements to procedures, and programs. As part of the RPIP, (Reference 3) a rigorous review and upgrade of Health Physics and Radiation Protection programs and procedures was performed. Phase I of the RPIP identified deficiencies which have a potential of affecting health and safety or regulatory compliance. Phase I improvements were completed on August 31, 1997 and have been implemented. Phase II of the RPIP includes actions deemed necessary to complete procedure upgrades and implementation of standard industry radiation protection good practices. This effort is ongoing.

The RPIP identified the need to upgrade the Radiological Protection Manual (RPM) through the development of a radiation protection plan and implementing procedures. Procedures and other controls set forth comprehensive instructions to ensure potentially radioactive material is evaluated and dispositioned and meet or exceed NRC requirements and industry standards for contamination control. This effort will result in improved consistency between procedures, improved procedure clarity, and well validated procedure steps.

Date When Full Compliance Will Be Achieved

CYAPCO is presently in full compliance with the requirements of 10 CFR 20.1501 with respect to performing surveys to evaluate the concentrations or quantities of radioactive materials to be released from the site.

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(5) T. C. Feigenbaum (CYAPCO) to H. J. Miller (NRC) "Supplemental Response to Confirmatory Action Letter" dated September 30, 1997.

Docket Number 50-213
CY-97-120

Attachment 2

Haddam Neck Plant

CYAPCO Commitments

NRC Inspection Report No. 50-213/97-08

December 1997

The following are new CYAPCO's commitments made within this letter and attachments. Other statements within this letter are provided for information only.

CY-97-120-01	Internal investigation of the contamination event will be completed by the end of December 1997.
CY-97-120-02	Outdoor RCA asphalt areas will be covered with an asphalt sealer, as soon as weather will allow (Spring 1998).
CY-97-120-03	The Health Physics Survey Matrix will be revised to segment the RCA yard into discrete zones so that a thorough survey of all of the RCA yard is performed periodically. This effort will be complete by the end of 1997.