

APPENDIX A
NOTICE OF VIOLATION

Connecticut Yankee Atomic Power Company
Hartford, Connecticut 06101

Docket No. 50-213
License No. DPR-61

This refers to the inspection conducted by representatives of the NRC Region I (Philadelphia) office at the Haddam Neck Plant, Haddam, Connecticut, of activities authorized by NRC License No. DPR-61.

During this inspection conducted on February 14-16, February 26-28, and March 5-9, 1979 (Inspection No. 50-213/79-06), the following items of noncompliance were identified.

- A. Technical Specification 6.13, "High Radiation Area", states in the first paragraph, "In lieu of the 'control device' or 'alarm signal' required by Paragraph 20.203(c)(2), each high radiation area in which the intensity of radiation is 1000 mrem/hr or less shall be barricaded and conspicuously posted as a high radiation area and entrance thereto shall be controlled by requiring issuance of a Radiation Exposure Authorization (Radiation Work Permit (RWP)). An individual or group of individuals permitted to enter such areas shall be provided with one or more of the following:
- a. A radiation monitoring device which continuously indicates the radiation dose rate in the area.
 - b. A radiation monitoring device which continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas with this monitoring device may be made after the dose rate level in the area has been established and personnel have been made knowledgeable of them.
 - c. A health physics qualified individual (i.e. qualified in radiation protection procedures) with a radiation dose rate monitoring device who is responsible for providing positive control over the activities within the area and who will perform periodic radiation surveillance at the frequency specified in the REA (RWP). The surveillance frequency will be established by the Health Physics Supervisor."

Contrary to the above, on February 15, 1979, two individuals performing hydro-lancing work on No. 2 Steam Generator in accordance with Radiation Work Permit (RWP) No. 791307 were working in a high radiation area having dose rates between 100 and 3000 mrem/hr, but were not provided with any of the specified controls. RWP 791307 required the use of a continuous dose rate indicating instrument.

This is an infraction (Civil Penalty \$4,000)

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- B. Technical Specification 6.13, "High Radiation Area", states in the second paragraph, in part, that a high radiation area in excess of 1000 mrem/hr shall be provided with locked doors to prevent unauthorized entry into such areas, and the keys shall be maintained under the administrative control of the shift supervisor on duty.

Contrary to the above:

1. On February 14 and 15, 1979, from 11:00 p.m. to 3:00 a.m., the following areas in the Primary Auxiliary Building were found by the NRC inspector to be as follows:

| <u>Area</u> | <u>Accessible Dose Rate</u> | <u>Status</u> |
|--|-----------------------------|---|
| Residual Heat Removal (RHR) Pit Access | 200-1500 mrem/hr | Not Locked |
| Pipe Trench Access In Blowdown Room | >1000 mrem/hr | Not Locked |
| Pipe Trench Access in Valve Operating Room | >1000 mrem/hr | Not Posted as High Radiation Area; Not Locked |
| Pipe Trench Access in PAB Passageway | >1000 mrem/hr | Not Locked |

2. On February 15, 1979, at approximately 2:30 a.m. the following areas in the Reactor Containment were found by the NRC inspector to be as follows:

| <u>Area</u> | <u>Accessible Dose Rate</u> | <u>Status</u> |
|---|-----------------------------|---|
| Inner Annulus from 3 Access Points in Lower Level Containment | 100 to 35000 mrem/hr | Not Locked |
| Inner Annulus from 4 Circular Stairway Access Points on the Charging Floor of Containment | 100 to 35000 mrem/hr | Not Locked; Not Posted As High Radiation Area |

These instances of failure to lock and post high radiation areas constitute an infraction. (Civil Penalty \$3,000)

- C. 10 CFR 20.201, "Surveys" states in section (a) "As used in the regulations in this part, "survey" means an evaluation of the radiation hazards

incident to the production, use, release, disposal, or presence of radioactive materials or other sources of radiation under a specific set of conditions. When appropriate, such evaluation includes a physical survey of the location of materials and equipment, and measurements of levels of radiation or concentrations of radioactive material present," and in section (b) "Each licensee shall make or cause to be made such surveys as may be necessary for him to comply with the regulations in this part."

Technical Specification 6.8, Procedures, states, in part, "Written procedures and administrative policies shall be established, implemented and maintained that meet or exceed the requirements and recommendations of Sections 5.1 and 5.3 of ANSI N18.7-1972 and Appendix A of USAEC Regulatory Guide 1.33... USAEC Regulatory Guide 1.33, Quality Assurance Program Requirements Appendix "A", Section G.5.c specifies that the licensee have procedures for "Surveys and Monitoring".

Contrary to the above:

1. As of February 16, 1979, there were no written procedures established, implemented or maintained that addressed detection, monitoring, survey and evaluation of alpha and beta radioactivity in regard to internal and external personnel exposure, even though individuals were subject to exposure from sources of these types of radiation. This lack of procedures contributed to the failures to survey described in items C.2 and C.3.
2. On February 16, 1979, surveys sufficient to determine compliance with 10 CFR 20.101, "Exposure of individuals to radiation in restricted areas" were not performed when individuals in the Spent Fuel Building were performing fuel sipping operations with a contaminated fuel assembly handling tool in close proximity to the individual's face. Later measurements on this tool indicated that the gamma dose rate was 25 mrem/hr at contact, and the beta dose rate was 400 to 600 mrad/hr at contact.
3. On February 3, 1979, surveys sufficient to determine compliance with 10 CFR 20.101, "Exposure of individuals to radiation in restricted areas" were not performed prior to allowing personnel to enter the No. 1 Steam Generator (Primary Side, Channel Head), in accordance with RWP 790599, in that no surveys to determine beta dose rates were performed prior to subjecting personnel to exposure; and no evaluation was performed to estimate beta exposure to the individual. Subsequent measurements of the beta dose rate in the steam generator indicated that levels may have been as high as 370 rad/hr in the general area within the channel head.
4. On March 7, 1979, surveys sufficient to determine compliance with 10 CFR 20.101, "Exposure of individuals to radiation in restricted areas," were not made while personnel were performing work in the Reactor Containment in accordance with RWP 792396, "Clean out flux thimbles," in that the portable instrument (Teletector No. 11068)

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used to monitor that operation was found to produce inaccurate and unreliable information when used to measure various radiation intensities; the instrument significantly underestimated the actual exposure rate. In addition, two other portable radiation survey instruments (Teletector Serial 34198 and PIC-6 Serial 1499) were found to be inoperable or inaccurate.

These instances of failure to have a procedure and failure to perform surveys constitutes an infraction. (Civil Penalty \$3,500)

- D. 10 CFR 20.103, "Exposure of individuals to concentrations of radioactive materials in air in restricted areas," states in section (A)(1), "No licensee shall possess, use, or transfer licensed material in such a manner as to permit any individual in a restricted area to inhale a quantity of radioactive material in any period of one calendar quarter greater than the quantity which would result from inhalation for 40 hours per week for 13 weeks at uniform concentrations of radioactive material in air specified in Appendix B, Table I, Column 1..." In this regard Section (a)(3) stipulates, "For purposes of determining compliance with the requirements of this section the licensee shall use suitable measurements of concentrations of radioactive materials in air for detecting and evaluating airborne radioactivity in restricted areas..." Section (b)2 of 10 CFR 20.103 states "..., other precautionary procedures, such as increased surveillance, limitation of working times, or provision of respiratory protective equipment, shall be used to maintain intake of radioactive material by any individual within any period of seven consecutive days as far below that intake of radioactive material which would result from inhalation of such material for 40 hours at the uniform concentrations specified in Appendix B, Table I, Column 1 as is reasonably achievable."

Contrary to the above:

1. Between January 29 and March 1, 1979, suitable measurements of concentrations of radioactive materials in air for detecting and evaluating airborne radioactivity were not made in the Reactor Containment in that the air samples were collected in the general area of the Reactor Containment at various locations that were not directly representative of the concentrations of airborne radioactivity in the breathing zone of the workers. For example, during the work activities described by RWP 792066 which involved opening the primary system (disassembly of RHR-MOV-781), the only sample taken was at least 10 feet behind the work area.
2. On February 3, 1979, no measurements of radioactive materials in air were made in the area in which personnel were working in No. 1 Steam Generator (Primary Side, Channel Head) in accordance with RWP 790599, an area having loose surface contamination as high as 250 mrem/hr² (gamma), and 3,000 mrad/hr (non-penetrating radiation) per 100 cm².

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3. Between February 11 and March 9, 1979, precautionary procedures such as increased surveillance, limitation of working times, or provisions of respiratory protective equipment were not used in that the provided precautionary procedure developed to address limitation of working times (Procedure RAP 6.1-4, Revision 3, "Determining Airborne Radioactive Concentrations and the Allowable Stay Time") was not implemented. As a result, at least 11 persons were subject to intake of radioactive material in excess of that which would result from inhalation of such material for 40 hours at the uniform concentrations specified in Appendix B, Table 1, Column 1.

These instances of failure to make suitable measurements and to implement precautionary procedures constitute an infraction. (Civil Penalty \$3,000)

- E. 10 CFR 19.12, "Instructions to workers," states, "All individuals working in or frequenting any portion of a restricted area shall be kept informed of the storage, transfer, or use of radioactive materials or of radiation in such portions of the restricted area; shall be instructed in the health protection problems associated with exposure to such radioactive materials or radiation, in precautions or procedures to minimize exposure, and in the purposes and functions of protective devices employed... The extent of these instructions shall be commensurate with potential radiological health protection problems in the restricted area."

Contrary to the above, individuals working in the restricted area between February 5 and March 1, 1979, (particularly those individuals working in the Reactor Containment to support steam generator eddy current testing, reactor cavity and inner annulus decontamination, and steam generator hydrolasing) were not adequately instructed in the health protection problems associated with exposure to radioactive materials or radiation and in precautions or procedures to minimize exposure in that the extent of these instructions were not commensurate with the radiological health protection problems that were encountered by these individuals. Workers were not adequately instructed at the job sites in the precautionary procedures that they need to take in order to prevent exposure to significantly high levels of radioactive loose surface contamination. This resulted in about 50 occurrences of skin contamination during the performance of work, some of which could have been avoided.

This is an infraction (Civil Penalty \$3,000).

- F. 10 CFR 20.101, "Exposure of individuals to radiation in restricted areas," states, "Except as provided in paragraph (b) of this section, no licensee shall possess, use, or transfer licensed material in such a manner as to cause any individual in a restricted area to receive in any period of one calendar quarter from radioactive material and other sources of radiation in the licensee's possession a dose in excess of...(the following limit):

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Whole body; head and trunk; active blood-forming organs; lens of eyes; or gonads.....1 1/4 (rems)

Paragraph (b) permits exposure in excess of this limit, not to exceed 3 rems per calendar quarter provided that the licensee has determined the individual's accumulated occupational dose to the whole body on Form NRC-4, or on a clear and legible record containing all the information required in that form; and has otherwise complied with the requirements of 10 CFR 20.102, "Determination of accumulated dose."

Contrary to the above, as of February 15, 1979, three individuals received a cumulative whole body exposure in excess of 1 1/4 rems during the first quarter of 1979, without first having their accumulated occupational dose to the whole body determined on Form NRC-4, or on a clear and legible record containing all the information required in that form or otherwise complied with the requirements of 10 CFR 20.102.

This is an infraction (Civil Penalty \$3,000).

- G. 10 CFR 20.203, "Caution signs, labels, signals and controls," states, in Paragraph (f)... "each container of licensed material shall bear a durable, clearly visible label identifying the radioactive contents... [the] label shall bear the radiation caution symbol and the words "CAUTION, RADIOACTIVE MATERIAL" or "DANGER, RADIOACTIVE MATERIAL." It shall also provide sufficient information to permit individuals handling or using the containers, or working in the vicinity thereof, to take precautions to avoid or minimize exposures... (As appropriate, the information will include radiation levels, kind of material, estimate of activity, date for which activity is estimated, mass enrichment, etc.)." Paragraph (e) of 10 CFR 20.203 states ... "Additional requirements. Each area or room in which licensed material is used or stored and which contains any radioactive material (other than natural uranium or thorium) in an amount exceeding 10 times the quantity of such material specified in Appendix C of this part shall be conspicuously posted with a sign or signs bearing the radiation symbol and the words:

CAUTION

RADIOACTIVE MATERIAL(S)"

Contrary to the above:

1. On February 15, 1979, three open 55-gallon drums containing pressurizer code safety valves from which radiation was measured to be as high as 400 mrem per hour at contact, and having loose surface contamination as high as 300,000 dpm/100cm², did not bear any label or other information sufficient to permit individuals handling or using the containers or working in the vicinity thereof, to take precautions to avoid or minimize exposures.

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2. On February 15, 1979, the Spent Fuel Building and areas or rooms within that building, in which licensed material was used or stored containing radioactive material in excess of 10 times the quantity of such material specified in Appendix C of this part was not conspicuously posted with a sign or signs bearing the radiation caution symbol and the words: CAUTION - RADIOACTIVE MATERIAL. Radioactive material stored in that location consisted of 1) three pressurizer code safety valves having radiation levels as high as 400 mrem per hour.

These instances of failure to sufficiently label containers and post areas constitute an infraction. (Civil Penalty - \$3000)

- H. Technical Specification 6.11, Radiation Protection Program, states, "Procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20 and shall be approved, maintained and adhered to for all operations involving personnel radiation exposure."
1. Administrative Procedure No. ADM 1.1-37, Revision 7, approved December 4, 1978, "Radiation Work Permit Completion and Flow Control", states, in paragraph 20 of Part 1 of section 5.6.1, "Personnel listed on the RWP initials and acknowledges requirements, complies with instructions on the form."

Contrary to the above, the following RWPs were not adhered to in that the individuals did not initial the respective RWPs to indicate acknowledgement of the RWP requirements. No other method was used to assure that personnel were aware of the radiological conditions or associated protective requirements for each of the areas.

| RWP# | Title | Number of individuals failing to acknowledge the RWP |
|--------|---------------------------|--|
| 791389 | "Eddy Current" #2 S.G. | 2 individuals |
| 791385 | "Fuel Shuffle" | 1 individual |
| 791401 | "RCP Oil Switches" | 1 individual |
| 791397 | "Sludge Lance" #4 S.G. | 3 individuals |

2. Administrative Procedure No. ADM 1.1-37, Revision 7, approved December 4, 1978, "Radiation Work Permit Completion and Flow Control," states in paragraph 2.0, "This procedure applies to all personnel who are assigned to work in the CY Radiation Control Area (RCA)."

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Radiation Work Permit 792066, issued for work in the RCA to replace the bonnet gasket on RHR-MOV-781, required continuous coverage by health physics technicians.

Contrary to the above, health physics technicians were present only intermittently during the performance of the work.

3. Administrative Procedure No. ADM 1.1-40, Revision 2, approved November 13, 1978, "Radiation Exposure Control," describes the method used to control and limit personnel exposure at the licensee's facility. The procedure requires:
 - a. In section 5.3, that planned exposures in excess of 1000 mrem require the written approval of the Health Physics Supervisor and the Station Superintendent; and
 - b. In section 5.5, that personnel exposures greater than 2250 mrem per quarter will only be granted in exceptional and unusual circumstances; and
 - c. In section 5.6, that personnel exposure greater than 2750 mrem shall not be granted.

Contrary to the above, between February 21 and 23, 1979, an individual who had previously been approved for an exposure of up to 2500 mrem, and who already had received an exposure of 2705 mrem for the quarter (based on three film badges already processed plus the Pocket Ionization Chamber value for the most recent time interval) was allowed to enter a high radiation area and received an additional exposure of 160 mrem. While no regulatory limits were exceeded, this failure to follow procedure ADM 1.1-40 demonstrates a breakdown in the licensee's program for controlling personnel exposure.

These instances of failure to follow procedures constitute an infraction. (Civil Penalty \$4,000)

- I. 10 CFR 20.408, "Reports of personnel monitoring on termination of employment or work", states in Paragraph (b)"... When an individual terminates employment with a licensee... or an individual assigned to work in such a licensee's facility but not employed by the licensee, completes work assignment in the licensee's facility, the licensee shall furnish to the Director of Management and Program Analysis, U.S. Nuclear Regulatory Commission, Washington, D.C., 20555, a report of the individual's exposures to radiation and radioactive material, incurred during the period of employment or work assignment in the licensee's facility, containing information recorded by the licensee pursuant to §§ 20.401(a)... [which] requires the licensee to maintain records of exposures to radiation for whom personnel monitoring was required; and that such records will be kept on Form NRC-5 in accordance with the instructions contained

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on that form, including the recording of external exposure to (1) the whole body; (2) skin of the whole body; (3) hands and forearms; or (4) feet and ankles... Such information is also required to be submitted to the individual in accordance with 10 CFR 20.409."

Contrary to the above, as of March 8, 1979, the licensee failed to report to the Commission and to at least five individuals, all of the exposure information that had been determined for inclusion on the individuals' Form NRC-5, in that only whole body exposure was reported for these individuals when in fact the individuals were determined to have received extremity exposure to the hands.

This is a deficiency (Civil Penalty \$1,000).

This Notice of Violation is sent to Connecticut Yankee Atomic Power Company pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. Connecticut Yankee Atomic Power Company is hereby required to submit to this office within twenty (20) days of the receipt of this notice, a written statement or explanation in reply, including for each item of noncompliance: (1) admission or denial of the alleged items of noncompliance; (2) the reasons for the items of noncompliance if admitted; (3) the corrective steps which have been taken and the results achieved; (4) corrective steps which will be taken to avoid further items of noncompliance; and (5) the date when full compliance will be achieved.

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