

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-293/88-29
Docket No. 50-293
License No. DPR-35 Priority Category C
Licensee: Boston Edison Company M/C Nuclear
800 Boylston Street
Boston, Massachusetts 02199
Facility Name: Pilgrim Nuclear Power Station
Inspection At: Plymouth, Massachusetts
Inspection Conducted: August 18-20, 1988

Inspectors: J. J. Kottan 8-31-88
J. J. Kottan, Laboratory Specialist date
W. J. Pasciak 8/31/88
W. J. Pasciak, Chief, Effluents date
Radiation Protection Section, FRSSB
Approved by: Ronald R. Bellamy Sept 7, 1988
R. R. Bellamy, Chief, Facilities date
Radiation Safety & Safeguards Branch

Inspection Summary: Inspection on August 18-20, 1988 (Report No. 50-293/88-29)

Areas Inspected: Special announced inspection of contaminated soil stored onsite and of offsite laydown area. Areas reviewed included use of NRC mobile radioanalytical laboratory to perform independent measurements of soil to determine existence and level of contamination.

Results: No violations or deviations were identified.

DETAILS

1.0 Persons Contacted

1.1 Boston Edison Company

K. Highfill, Station Director
P. Hamilton, Compliance Division Manager
E. S. Kraft, Jr., Plant Support Dept. Manager
*J. P. Jens, Radiation Section Manager
W. P. Mullins, Radiological Operations Division Manager
T. L. Sowdon, Chief, Radiological Scientist
*R. Anderson, Plant Manager
*R. Grazio, Regulatory Affairs Section Manager
C. Bowman, Environmental Section Manager
B. Dionne, Senior Environmental Scientist

1.2 Nuclear Regulatory Commission

C. Warren, Senior Resident Inspector

*denotes those individuals attending the exit meeting on August 20, 1988.

2.0 Purpose and Scope

The purpose of this inspection was to sample and analyze dirt samples onsite and offsite. The onsite samples analyzed were collected from piles in the new contaminated dirt storage area and from locations where this dirt was previously stored. The offsite samples analyzed were from the offsite laydown area off the station access road. All samples were collected by use of a coring tool. Core depths of samples varied from one to two feet. Gamma spectrometry analyses of the samples were performed utilizing the NRC:1 Mobile Radiological Measurements Laboratory. Each sample of approximately 600 grams of soil was counted for 1000 seconds. A background soil sample was taken and analyzed, with the background results subtracted from each soil sample results.

3.0 Analytical Results

Samples were taken from two on-site locations. They were taken from the existing dirt storage pile which was located in the east end of the lower contractor parking lot, and from the soil below the surface where the soil was previously stored in the upper contractor parking lot. The soil was moved in early August, 1988, to locate it further away from wetland areas. Thirty samples were collected from the dirt piles in the new storage location and four samples were collected from just below the surface in the old dirt storage area.

The approximate amount of dirt stored in this area is 65,000 cubic feet. This was determined when it was moved to the new location by multiplying the number of truck loads by the volume of each load. Licensee representatives stated that six samples were collected from each load for future analysis but no analysis had been made at the time of the inspection. The contaminated soil was accumulated over a few years (1985-1986) as a result of various construction projects. Four projects contributed the majority of the soil and were (1) installation of the third diesel generator; (2) Appendix R fire protection modifications; (3) excavation of the foundation for the hydrogen water chemistry injection building; and (4) security modifications. The soil was placed in this pile during the time period of January 1985 through December 1986. The soil stored in the pile does not represent all the excavated soil from a particular activity, but only that amount that was known or thought to be contaminated with radioactivity.

In its present location, the soil is on top of a layer of polyethylene film. The area is enclosed by an eight foot high fence and attached to the fence is a double layer of polyethylene film forming a wind barrier. Polyethylene film was also placed on top of the pile of soil but was noted to be only about 50% effective as much of it had fallen off the piles. The licensee stated that they were considering getting a heavier material to cover it to more effectively prevent wind and rain erosion. In its present state, it is likely that erosion of the pile could take place which could result in the spread of contamination. Protection of the pile from wind and rain erosion will be reviewed during a followup inspection (88-29-01).

Attachment 1 provides the results of NRC measurements. Attachment 2 provides the licensee's numbering scheme for each truck load of dirt and is used in identifying sample locations in Attachment 1. Of the 30 samples analyzed, the average concentration of Co-60 was 350 pCi/kg and the maximum concentration was 3200 pCi/kg. The four surface samples taken from the upper contractor parking lot had concentrations of Co-60 of 70, 70, 80 pCi/kg, and the last was less than MDA. Co-60 was the only nuclide found in the soil that was directly attributable to station operation.

Attachment 3 provides locations from which samples were collected in the offsite laydown area. All analysis results in this locations were below MDA.

4.0 Exit Interview

The inspector met with the licensee representatives noted in Paragraph 1 at the conclusion of the inspection on August 20, 1988. The inspector summarized the purpose and scope of the inspection and the inspection findings.

At no time was written material provided to the licensee.

ATTACHMENT 1

NRC ANALYTICAL RESULTS - Co-60
ONSITE SAMPLES

DIRT STORAGE PILE

<u>SAMPLE NO.</u>	<u>LICENSE PILE NO.</u>	<u>CONCENTRATION (pCi/kg)*</u>
32	1	3200±400
1	3	430±90
18	3	1100±200
19	3	300±60
31	4	80±20
33	5	110±30
30	6	340±90
34	7	200±50
2	27	<MDA*
4	32	120±40
8	35	180±40
9	38	270±70
3	49	1100±200
20	49	420±80
21	49	1100±200
5	55	120±40
22	64	300±70
29	68	<MDA
6	70	30±13
7	76	20±7
23	79	200±50
27	83	<MDA
10	94	110±30
11	106	150±40
12	112	110±30
28	119	<MDA
26	120	270±70
24	124	130±40
13	128	120±40
25	B-24	<MDA

UPPER CONTRACTOR PARKING AREA

<u>Sample No.</u>	<u>Location</u>	
14	Near Entrance	70±20
15	Midway Back Near South Fence	70±20
16	Way Back Near North Fence	80±20
17	Wetland Sample (South)	<MDA

*MDA = 138 pCi/kg, concentration values reported are after background (200 pCi/kg) was subtracted out.

NOTE: The reported uncertainty is the counting uncertainty at one standard deviation (1σ).

Estimated systematic uncertainty is ±25%.

PILGRIM NUCLEAR POWER STATION Radiation Survey Form

Map No. _____

Survey by: _____ Date: _____ Time: _____ RWP No. _____

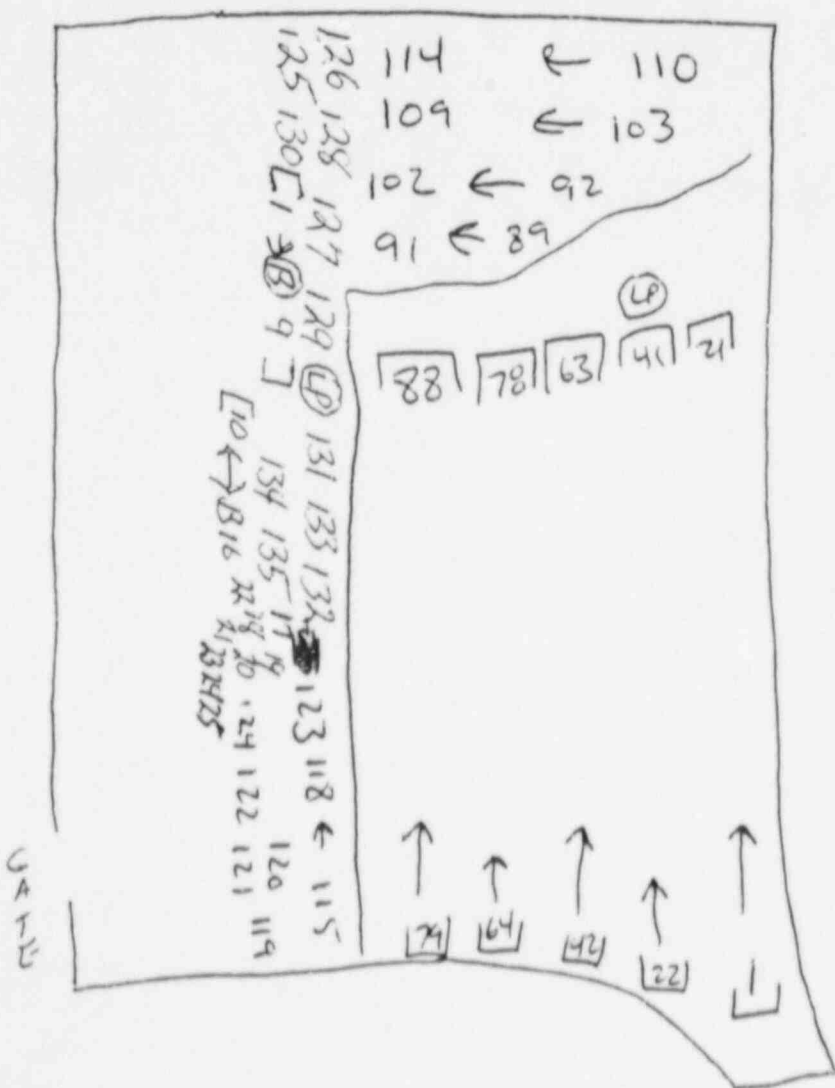
Dose Rate Instr.: _____ Ser. No. _____ Beta Dose Rate: Yes N/A

Contamination Instr.: _____ Ser. No. _____ MDA Beta: _____ MDA Alpha: _____

AS Data: _____ MPC's (No PF) _____ Reactor Power: _____ %
Activity uCi/cc



Smear No.	dpm/100 cm ²	
	Beta	Alpha



Ⓛ = Light Pole
Ⓟ = Leader Bucket

NOTES

- Circled numbers indicate smear locations.
- Underlined numbers are gamma dose rates in mR/hr at waist level unless otherwise noted.

ATTACHMENT 3

NRC ANALYTICAL RESULTS - Co-60
OFFSITE LAYDOWN AREA SAMPLES
pCi/kg

<u>SAMPLE NO.</u>	<u>CONCENTRATION</u>
35	<MDA
36	<MDA
37	<MDA
38	<MDA
39	<MDA
40	<MDA
41	<MDA

