NRC FORM 366
(7-77)

U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

CONTROL BLOCK: ☐☐☐☐☐☐ ① (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1	M A P P S 1 ②	LICENSEE CODE	0 0 - 0 0 0 0 0 - 0 0 ③	LICENSE NUMBER	4 1 1 1 1 ④	LICENSE TYPE		CAT	⑤
CON'T 0 1	REPORT SOURCE	L ⑥	0 5 0 - 0 2 9 3 ⑦	DOCKET NUMBER	0 4 3 0 8 1 ⑧	EVENT DATE	0 5 0 8 8 1 ⑨	REPORT DATE	

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES ⑩

0 2 On April 30, 1981, Boston Edison received a report from Yankee Atomic Laboratory
0 3 indicating a concentration of Co-60 (440 ± 11pCi/kg) in an Irish Moss sample taken
0 4 from Pilgrim Station discharge canal outfall area on February 18, 1981. This con-
0 5 centration is in excess of 10 times the measured concentration at the station in
0 6 Ellisville (28.2 ± 5.3pCi/kg). Refer to attachment for details.
0 7
0 8

	SYSTEM CODE	CAUSE CODE	CAUSE SUBCODE	COMPONENT CODE	COMP. SUBCODE	VALVE SUBCODE
0 9	X X ⑪	X ⑫	Z ⑬	Z Z Z Z Z Z ⑭	Z ⑮	Z ⑯

⑰ LER/RO REPORT NUMBER	EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
	8 1	—	0 1 3	/	0 4	T	—	0

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS ㉒	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
Z ⑱	Z ⑲	Z ⑳	Z ㉑	0 0 0 0	Y ㉓	N ㉔	Z ㉕	Z 9 9 9 ㉖

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS ㉗

1 0 The analyses reports indicate that the source of activity is not due to the operation
1 1 of Pilgrim Station but is most likely due to fallout from recent atmospheric weapons
1 2 tests. However, assuming that the source was Pilgrim Station, the annual dose to an
1 3 individual would be only 0.0023 mrem to the total body (child), and 0.018 mrem to
1 4 the maximum exposed organ (GI-LLI, Adult). See Attachment for further details.

	FACILITY STATUS	% POWER	OTHER STATUS ㉚	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION ㉜
1 5	E ㉘	1 0 0 ㉙	N.A.	D ㉛	Environmental Laboratory Notification

	ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY ㉟	LOCATION OF RELEASE ㊱
1 6	Z ㉝	Z ㉞	N.A.	N.A.

PERSONNEL EXPOSURES

	NUMBER	TYPE	DESCRIPTION (39)
1 7	0 0 0 ㊲	Z ㊳	N.A.

PERSONNEL INJURIES

	NUMBER	DESCRIPTION (41)
1 8	0 0 0 ㊵	N.A.

LOSS OF OR DAMAGE TO FACILITY (43)

	TYPE	DESCRIPTION
1 9	Z (42)	N.A.

PUBLICITY

	ISSUED	DESCRIPTION (45)	NRC USE ONLY
2 0	N (44)	N.A.	

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BOSTON EDISON COMPANY
PILGRIM NUCLEAR POWER STATION
DOCKET NO. 50-293

Attachment to LER 81-013/04T-0

ANOMALOUS MEASUREMENT REPORT

On April 30, 1981, Boston Edison received the control station analyses report for Irish Moss from the Yankee Atomic Environmental Laboratory. A comparison to the other sample stations indicated that a reportable concentration of Co-60 (440 ± 11pCi/kg) existed in an Irish Moss sample taken from the Pilgrim Station discharge canal outfall area on February 18, 1981.

This concentration is in excess of 10 times the measured concentration at the control station in Ellisville (28.2 ± 5.3 pCi/kg).

However, the control station sample analysis showed that there were detectable quantities of the following nuclides:

Nuclide	Ellisville (Control) pCi/kg	Rocky Point (discharge canal) pCi/kg
Ce-144	116 ± 20	43 ± 10
Ce-141	91.8 ± 7.4	43.9±3.5
Be-7	121 ± 30	77 ± 22
Ru-103	33.8 ± 4.7	24.3 ± 3.5
Zr-95	62.4 ± 8.4	29.0 ± 5.9
AcTh -228	47 ± 14	1 ± 15
Co-60	28.2 ± 5.3	440 ± 11
K-40	7810 ± 150	5960 ± 120

As can be seen, there are several nuclides (e.g., Ce-144) with a higher concentration at the control station than was detected in the sample taken from the discharge canal outfall area. This indicates that there is an additional source of these isotopes present which significantly contributes to these concentrations and is not due to the operation of Pilgrim Station. This source is undoubtly fallout from recent atmospheric weapons tests.

Even if it were assumed that the activity was due only to Pilgrim Station, due to processing and market dilution it is extremely unlikely that any individual would consume any material with the measured concentration of Co-60. However, even if a person were to directly consume this algae at the seafood consumption rates given in Regulatory Guide 1.109, the annual dose to that individual would be only 0.0023 mrem to the total body (child) and 0.018 mrem to the maximum exposed organ (GI-LLI, Adult).

It is concluded that there is no risk to public health and safety, as the above calculated doses are extremely small when compared to the natural background dose rate in this area of about 80 mrem/yr.