ESTIMATED DOSE REPORT FOR 2006

MAINE YANKEE INDEPENDENT SPENT FUEL STORAGE INSTALLATION

License No. DPR-36
Maine Yankee Atomic Power Company

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MAINE YANKEE ATOMIC
POWER STATION
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1.0 INTRODUCTION

The Maine Yankee ISFSI is designed with the NAC-UMS Transportable Storage Containers that are stored in Vertical Concrete Cask. Per the NAC-UMS Safety Analysis Report, and the 10 CFR 72.212 Evaluation, this type of design meets the definition of a leak tight canister as defined by as defined by ANSI N 14.5. As such, there are no liquid, particulate, or gaseous effluents resulting from ISFSI operations. The only dose to be considered from facility operations is from direct radiation.

For the purposes of demonstrating compliance with 40CFR190, "Environmental Radiation Protection Standards for Nuclear Power Operations," radiation dose estimates must include direct radiation contributions from significant plant sources. Data from thermoluminescent dosimeters (TLDs) in the area of the western ISFSI controlled area boundary indicated a plant-related direct radiation component at the stream running from Bailey Cove (nearest off-site area to the plant) during 2006. Since members of the public use the mud flats in the cove during periods of low tide, an assessment was performed to determine compliance with the 40CFR190 dose limits. Table 2 lists the exposure results from ISFSI related sources to any member of the public at Bailey's Cove.

The total dose to the most limiting member of the public due to ISFSI related direct radiation was well below the dose standards of 40CFR190.

2.0 DOSE ASSESSMENT

The annual (calendar year) total dose to any member of the public due to direct radiation from fixed sources are limited to EPA's radiation protection standards for the uranium fuel cycle (40CFR190). The dose limits are set to less than or equal to 25 mrem per year to the total body or any organ, except the thyroid, which is limited to less than or equal to 75 mrem per year.

Direct external dose from fixed sources of radioactive materials within the ISFSI controlled area was estimated from Maine Yankee's 2006 TLD data. The data from TLDs posted in the west and east sectors of the ISFSI controlled area boundary indicate above-background radiation in 2006. However, it is not reasonable to consider that someone would spend long periods of time living in a houseboat on the Back River by the banks of the river east or southeast of the ISFSI. Therefore the dose estimate is performed to a member of the public along the west boundary where clam diggers and worm diggers occupy the area throughout the year. The maximum annual dose from fixed radiation sources to members of the public in the mudflats, as derived from TLD measurements, was estimated to be 0.43 mrem. This estimate of dose incorporates an occupancy time of 325 hours per year for worm diggers, as determined in the occupancy study around the Maine Yankee site for demonstrating compliance with 40CFR190. The receptor location used (containing TL-I-15) in the dose assessment was the center of the nearest portion of the pathway leading to the mud flats exposed at low tide, approximately 340 meters from the Center of the ISFSI. The Maine Yankee Dry Cask Storage Array Skyshine Analysis, NAC International Calculation No. 12412-4104, Rev. 2 defines the center of the ISFSI as the point in the center of the second southernmost column of storage pads. It is noted that most of the mud flat region in Bailey Cove that is used by the public is situated further away from this selected reference point. As a result, actual exposures from direct radiation would be less than the value applied in the estimate of direct dose (0.43 mrem) to the clam and worm diggers as they move across the flats. Additionally, the dose estimate is conservative since the dose calculation makes no attempt to apply a correction factor to the onsite TLD measurement for the purpose of obtaining the exposure rate to the mudflat location. The dose rate at the mudflat location would be much less as a function of distance.

Table 1 provides the quarterly and annual dose to the maximally exposed member of the public from direct radiation associated with ISFSI operations.

Table 2 identifies the receptor locations, nearest resident, garden and milk locations. Although milk and garden locations are associated with gaseous effluent releases, they were left in this report as they could provide useful information to the site.

3.0 REFERENCES

1. "Off-Site Dose Calculation Manual," Maine Yankee Atomic Power Company, Change No. 31, Approved 8/31/2005.
2. 40CFR190, Environmental Radiation Protection For Nuclear Power Operations
5. NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, October 1978.
6. Maine Yankee Dry Cask Storage Array Skyshine Analysis, NAC International Calculation No. 12412-4104, Rev. 2, May 31, 2001.

TABLE 1

Maine Yankee Atomic Power Station
Maximum Annual Dose from Direct External Radiation
for 2006[a]
(40CFR190)

Pathway	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Year
Direct External Exposure Rate (Micro-R/hr)	1.13[c]	1.48[c]	1.32[c]	1.38[c]	1.327 avg.
Occupancy Hours/interval	32.5[a]	130[a]	130[a]	32.5[a]	325[a]
mrem/interval	3.67E-2	1.92E-1	1.71E-1	4.48E-2	4.31E-1[b]

(a) The location of maximum individual doses from direct radiation corresponds to exposed mud flats at low tide in Bailey's Cove, south west of the ISFSI site. The hours per interval were proportioned to a reasonable time of clamming or worm digging for each interval due to changes in the season. The annual occupancy (325 hours per year) is a result of a detailed evaluation for the Maine Yankee site for demonstrating compliance with 40CFR190.

(b) For any member of the public, EPA radiation protection standards (40CFR190) established annual dose limits of 25 mrem to the total body and any organ (except the thyroid, which has a dose limit of 75 mrem).

(c) Exposure rate above the average background of the Maine Yankee offsite TLD locations (Wiscasset Fire Station). For this dose estimate, the TLD location with the highest annual average was used (TL-I-15).

TABLE 2

Receptor Locations for Maine Yankee

Sector	Nearest Receptor[a] (Meters)	Nearest Resident (Meters)	Nearest Garden (Meters)	Nearest Milk Animal (Meters)
N	340	1260	--	--
NNE	340	2230	2400	2650 (cows)
NE	340	1270	1470	--
ENE	340	920	1250	--
E	730	900	900	--
ESE	670	700	--	--
SE	670	700	900	--
SSE	820	900	900	--
S	350	1700	1700	--
SSW	340	3000	5000	--
SW	340	1500	4000	--
WSW	340	960	1940	1880 (cows)
W	340	810	2710	--
WNW	340	1900	--	--
NW	340	1930	1930	--
NNW	340	1060	1180	--

(a) The nearest receptor location is taken to be the site boundary for all sectors except the E through S sectors. The actual site boundary for each of these sectors is located next to Back River (water boundary). The receptor locations noted represent the closest dry land points beyond the site boundary where a 100% occupancy time is assumed. Other site boundaries bordered by water, and mud flats exposed at low tides, which may be worked by worm diggers, have occupancy factors applied equal to 325 hours/year (MY ODCM).