ENCLOSURE 3

MAINE YANKEE
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
OFF-SITE DOSE CALCULATION MANUAL, CHANGE NO. 36

Maine Yankee

INDEPENDENT SPENT FUEL INSTALLATION (ISFSI) OFF-SITE DOSE CALCULATION MANUAL

CHANGE NO. 36

Approved: J. S. Brown

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ABSTRACT

The Maine Yankee ISFSI Off-Site Dose Calculation Manual (MY ODCM) contains the approved methods to estimate the doses occurring beyond the boundaries of the Independent Spent Fuel Storage Installation (ISFSI) caused by normal operation. (The licensed area boundary is shown in Appendix B, LICENSED AREA BOUNDARY.) With initial approval by the U.S. Nuclear Regulatory Commission and the Maine Yankee ISFSI Management and approval of subsequent revisions by the ISFSI Management (as per the Quality Assurance Program (QAP), Appendix C), this ODCM is suitable to demonstrate compliance as referenced by the QAP.

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1.0 INTRODUCTION

The purpose of this document is to provide a method for demonstrating compliance with the dose limits for members of the public and contains the guidance for submittal of the annual reports required by 10 CFR 50. In addition, the document provides the sample locations and type of samples collected for the Radiological Environmental Monitoring Program (REMP).

In accordance with the requirements of 40 CFR 190.10(a) and 10 CFR 72.104(a), the dose to a member of the public for radioactive material in effluents and direct radiation from an Independent Spent Fuel Storage Installation (ISFSI) is limited to 25 mrem/yr to the whole body, 75 mrem/yr to the thyroid and 25 mrem/yr to any other critical organ as a result of exposure to planned discharges of radioactive materials (radon and its decay products excepted) to the environment, direct radiation from the ISFSI and any other radiation from uranium fuel cycle operations within the region.

Under normal operations, experience has shown that the ISFSI will be operated at a small fraction of the above dose limits. This is primarily due to the NAC-UMS design of the transportable storage container, which prevents the release of radioactive materials in liquid and particulate form and there are no other uranium fuel cycle operations in the region. Therefore, the dose equations from regulatory guide 1.109, Calculation of Annual Doses to Man From Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR 50, Appendix I are not necessary for inclusion to the ODCM. The remaining dose component to be considered is from direct radiation. 40 CFR 190.10(a) and 72.104(a) establish this dose limit as 25 mrem/yr for members of the public.

2.0 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

A program shall be provided to monitor the radiation and radionuclides (if applicable) in the environs of the ISFSI. The program shall provide (1) representative measurements of the radioactivity in the highest potential exposure pathways, and (2) verification of the accuracy of the effluent monitoring program (if applicable) and modeling of environmental exposure pathways. The program shall (1) be contained in the ODCM, (2) conform to the guidance of Appendix I to 10 CFR 50 (as applicable), and (3) include monitoring, sampling, analysis, and reporting of radiation and radionuclides in the environment in accordance with the methodology and parameters in the ODCM (as applicable).

2.1 Applicability

This section applies at all times to radiological environmental surveillance.

2.2 Objective

To verify that ISFSI operations have no significant radiological effect on the environment and that continued operation will not result in radiological effects detrimental to the environment.

2.3 Radiological Environmental Monitoring

1. The Radiological Environmental Monitoring Program shall be conducted as specified in Table 3.1.

2. With the Radiological Environmental Monitoring Program not being conducted as specified in Table 3.1, prepare and submit to the Commission, in the Annual Radiological Environmental Operating Report, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

Basis: The radiological environmental monitoring required by this specification provides measurements of radiation in exposure pathways which lead to the highest potential radiation exposures of individuals resulting from the ISFSI operation.

A two-zone sample collection network has been established for environmental surveillance. Samples are collected in Zone 1 at locations in the vicinity of the ISFSI.

These samples are compared to a sample which has been collected simultaneously at a location in Zone 2where exposure is expected to be negligible. The Zone 2 sample provides a running background which will make it possible to distinguish significant radiation exposure introduced into the environment by the operation of the ISFSI.

3.0 ENVIRONMENTAL MONITORING

The Radiological Environmental Monitoring Stations are listed in Table 3.1. The locations of these stations with respect to the Maine Yankee ISFSI are shown on the map in Figures 3.1 and 3.2.

TABLE 3.1

RADIOLOGICAL ENVIRONMENTAL MONITORING LOCATIONS

Exposure Pathway and/or Sample	**Number of Locations**	**Frequency**	**Type and Frequency of Analysis**
1. Gamma Dose - Environmental TLD	10	Semi-Annual	Gamma Dose - Semi-Annual

Exposure Pathway and/or Sample	Sample Location and Designated Code	Direction From the ISFSI
1. DIRECT RADIATION Indicator Stations (Zone 1)	TL-I-02	N
	TL-I-04	NE
	TL-I-06	E
	TL-I-08	SE
	TL-I-10	S
	TL-I-12	SW
	TL-I-14	W
	TL-I-15	WNW
	TL-I-16	NW
DIRECT RADIATION (Zone 2)	TL-36 Wiscasset Fire Station	

FIGURE 3.1
DIRECT RADIATION MONITORING LOCATIONS
WITHIN 300 METERS OF THE ISFSI

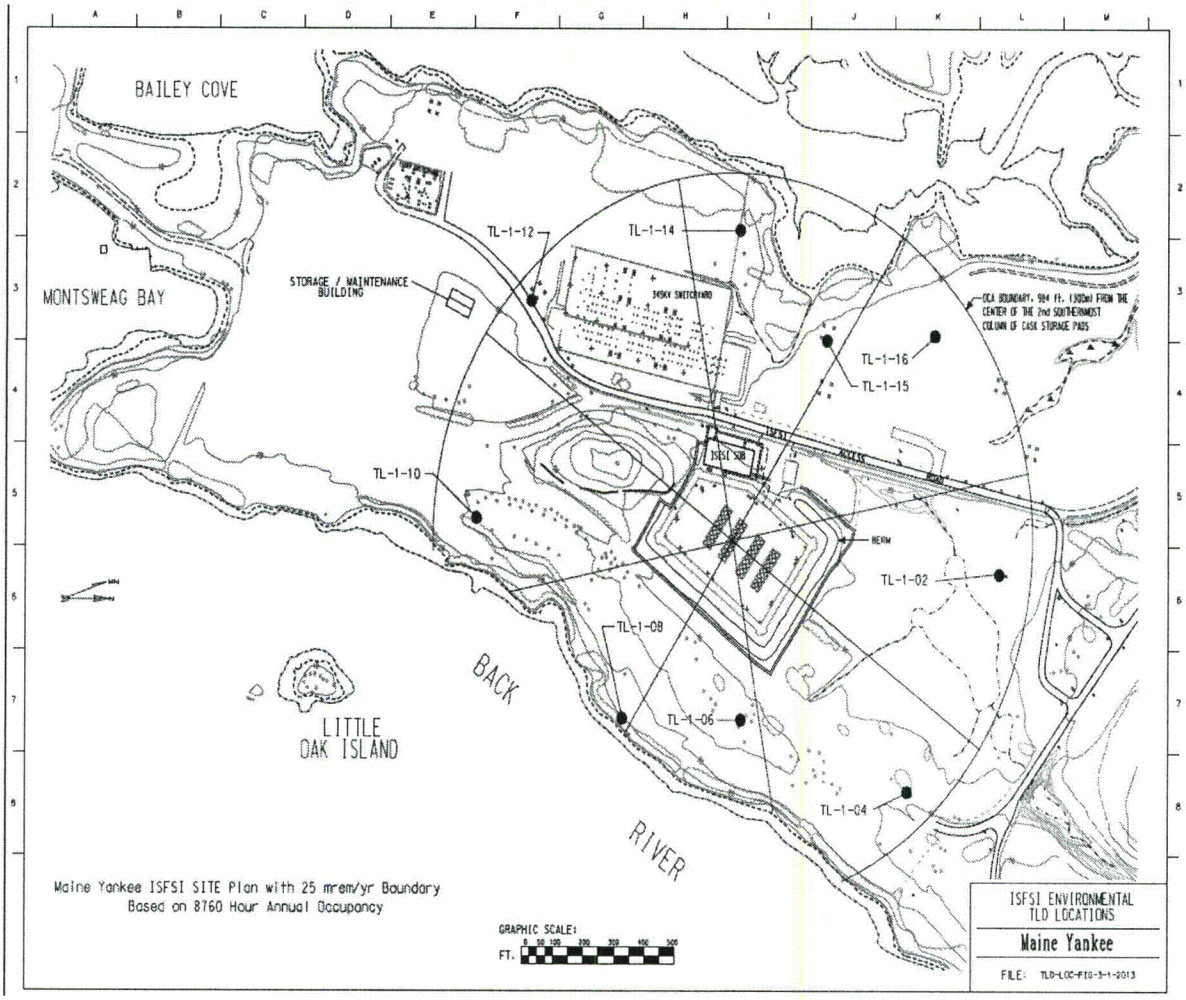

FIGURE 3.2
DIRECT RADIATION MONITORING LOCATIONS
GREATER THAN 1 KM FROM THE ISFSI
(BACKGROUND LOCATIONS)

APPENDIX A

ROUTINE REPORTS

1. ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

The Annual Radiological Environmental Operating Reports covering the operation of the site during the previous calendar year shall be submitted by May 15 of each year. The report shall include summaries, interpretations, and an analysis of trends of the results of the Radiological Environmental Monitoring Program for the reporting period, and an assessment of the environmental impact of ISFSI operation, if any. The material provided shall be consistent with the objectives outlined in (1) the ODCM and (2) Sections IV.B.2, IV.B.3, and IV.C of Appendix I to 10 CFR 50 (if applicable).

The Annual Radiological Environmental Operating Reports shall include summarized and tabulated results of radiological environmental samples taken during the report period pursuant to the tables and figures in the ODCM. In the event that some results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. If available, the missing data shall be submitted in the next annual report.

The report will also include the estimated maximum potential dose to the members of the public from radioactive effluent releases (if applicable) for the previous calendar year. The assessment of the radiation doses shall be performed in accordance with the Off-Site Dose Calculation Manual (ODCM). Site historical meteorological data used in calculating the annual public doses shall be included with the report

The reports shall also include the following: a summary description of the radiological environmental monitoring program including a map of all sampling locations keyed to a table giving distances and directions from the ISFSI.

The ODCM shall be submitted to the NRC in the form of a complete, legible copy of the entire ODCM as a part of or concurrent with the Annual Radiological Environmental Operating Report for the period of the report in which any change in the ODCM was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed.

2. ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

The Annual Radioactive Effluent Release Report covering the activities of the unit during the previous year shall be submitted prior to May 1 of each year in accordance with 10 CFR 50.36(a).

The report shall include a summary of the quantities of radioactive liquid and gaseous effluents released from the unit summarized on a quarterly basis. The report shall also include a summary of the solid waste released from the unit summarized on a semiannual basis. The material provided shall be (1) consistent with the objectives outlined in the ODCM and (2) in conformance with 10 CFR 50.36(a) and Section IV.B.1 of Appendix I to 10 CFR 50.

The Radioactive Effluent Release Reports shall include a list and description of unplanned releases from the site boundary of radioactive materials in gaseous and liquid effluents made during the reporting period.

MAINE YANKEE ATOMIC POWER COMPANY
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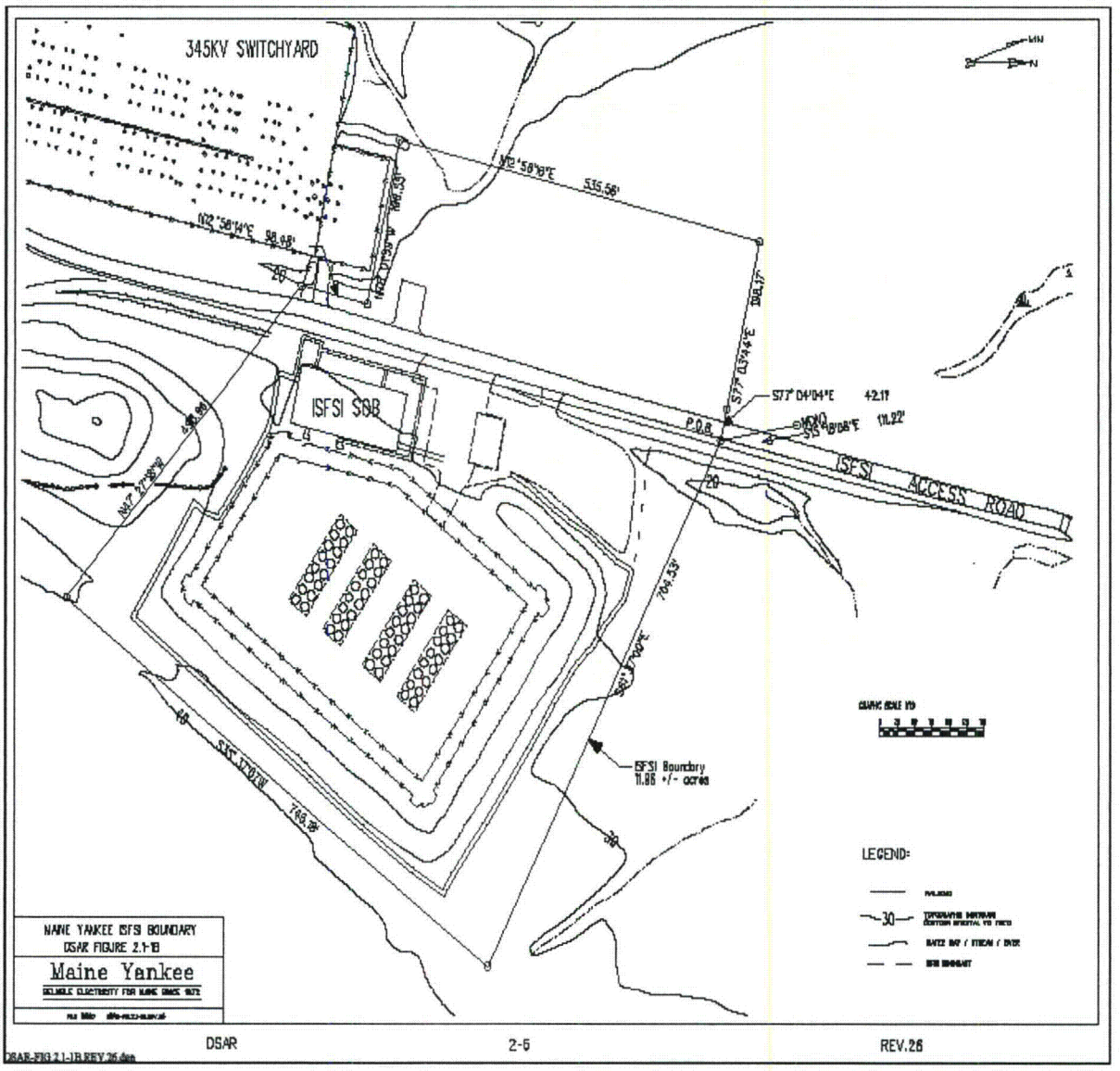
APPENDIX B

LICENSED AREA BOUNDARY



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REFERENCES

1. Title 10, Code of Federal Regulations. The Office of the Federal Register, National Archives and Records Administration

2. International Commission on Radiological Protection (ICRP) Publication 2. Oxford: Pergammon

3. Title 40, Code of Federal Regulations. The Office of the Federal Register, National Archives and Records Administration

4. Hamawi, J.N., "AEOLUS-2 - Technical Description", Entech Engineering, Inc., Document No. P100-R13-A, YAEC - Revised Software Release MOD 05, dated March 1992

5. "Supplemental Information for the Purposes of Evaluation of 10 CFR 50, Appendix I", Maine Yankee Atomic Power Company, including Amendments 1 and 2, October 1976

6. NUREG -0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants", U.S. Nuclear Regulatory Commission