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MEMORANDUM FOR: John J. Surmeier, Section Leader
Policy Section
Licensing Process and Integration Branch

THRU: Joseph O. Bunting, Jr., Chief
Licensing Process and Integration Branch

Michael S. Kearney, Section Leader
Integration and Control Section
Licensing Process and Integration Branch

FROM: Janet Gorn-Braun, Program Analyst
Integration and Control Section
Licensing Process and Integration Branch

SUBJECT: TRANSMITTAL OF FEDERAL/STATE REPORT:
AN ANALYSIS OF LOW-LEVEL RADIOACTIVE WASTE BURIAL
SITE CAPACITY PROJECTIONS

PURPOSE

To transmit the completed Report, tasked in response to a June 1980 identified need to better understand available studies regarding low-level radioactive waste generation projections for shallow-land burial.

BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC) is engaged in activities designed to carry out its low-level radioactive waste management licensing and regulatory procedures, responsibilities, and authority. In this regard it is incumbent upon the WM staff to seek out, identify, study, and employ those techniques that lend themselves to supporting a more effective environment for these activities. In recognition of this interest, an inhouse effort was initiated to identify, analyze, and evaluate quantitative characterization forecast studies, projecting expected quantities of commercial low-level radioactive wastes to be generated and disposed of, at commercial shallow-land burial sites through the year 2000. The detailed purpose of the effort was threefold: 1) to analyze the trends used in comprehensive forecasting of commercial wastes, 2) to evaluate the reliability of conclusions drawn by

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forecasters, and 3) to access the Commission's need to take a more active role.

DISCUSSION

The scope of the staff effort included a thorough search of technical literature in the public domain to identify and investigate all radioactive waste forecast projections that combine data from both fuel cycle and non-fuel cycle sources. Studies specifically addressing selective forecasts were examined, but not included within the scope of the analysis. The decision was based on the number, subject approach, methodology, and applicability to site capacity forecasting.

The final analysis within the Report addresses the:

- a) Status of current disposal sites;
- b) Status of new disposal sites;
- c) Data sources;
- d) Data limitations;
- e) Data bank innovation;
- f) Forecast modeling and statistical limitations;
- g) Forecast model application;

and impacts to the:

- 1) State role; and
- 2) Commission role.

EVALUATION

A tacit finding of the study was that sufficient quantitative data are not currently available to support valid conclusions about the quantities or activities of low-level radioactive waste now generated or that may be generated in the future. Modeling efforts to construct a statistical basis for an examination of scientific relationships, cross-section trend questions, or ultimately site capacity impacts, are highly subjective, therefore, open to serious question and difficult to use for practical application or decision making.

The study also identified a frequent lack of sophistication with regard to understanding the modeling process limitations, and the ability to discern whether the underlying theory faithfully captured the essence of the problem or if the figures/calculations are realistic. Failure to understand the modeling process, or at least, some of the underlying limitations to application, can and does result, in unknowing acceptance of "legitimized" assumptions in the technological guise of a model

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forecast. The phenomenon is further compounded by the nature of the technology itself, differing technical opinions by "experts," and the emotionalism surrounding the science. In addition, there is a propensity for information to be distorted, disregarded, or lost either through human error, the belief that it is unimportant, misunderstanding of scientific text, or use of secondary source references.

RECOMMENDATION

Given the adverse long-term impacts of the available data and studies to regulatory and licensing activities; the handicapped data conditions states and compacts are working under; the immediate need to know current data limitations; the future need for accurate low-level waste generation data; and the national data base trend by ORNL; I recommend that the NRC actively pursue a course of action that will lead to refinement of the proposed authoritative national data bank for generated waste data (IDB System) at Oak Ridge National Laboratory, and data that accurately reflects the experience environment.

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Janet Gorn-Braun, Program Analyst
Integration & Control Section
Licensing Process & Integration Branch

cc: R. Dale Smith

Enclosure:

An Analysis of Low-Level Radioactive
Waste Burial Site Capacity Projections

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