

JAN 13 1983

See Exhibit 1
for end

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Dr. Donald G. Schweitzer
Associate Chairman and Head
Nuclear Waste Management Division
Brookhaven National Laboratory
Associated Universities, Inc.
Upton, NY 11973

Dear Dr. Schweitzer:

This letter transmits NRC's comments on BNL's draft report, "Draft Staff Technical Position on Waste Package Reliability" (Draft 8).

As agreed in the December 20, 1982 meeting in Silver Spring, a marked-up copy of the report is enclosed. The approved minutes of that meeting are also enclosed.

Our main comment is that the document is missing the most important part of the Draft Staff Technical Position (DSTP), which is the REVIEW PROCEDURE. This part should identify codes and models that will be used to make the reliability assessment. Other general comments are:

1. The sample problem will be in an appendix, but the report should define the whole technical methodology. For example, there should be an explanation of how component reliability and overall reliability are related.
2. There is an important technical error on the middle of page 4, which says that risks from a repository should be comparable to the rest of the fuel cycle. Risks should be related to the EPA standard.
3. The Introduction of the report should be revised. It starts with an abstract discussion on reliability. The Introduction should:
 - a. define a waste package and its function
 - b. define waste package failure
 - c. explain why containment and controlled release are important
 - d. then discuss how reliability of the waste package can be used to assess its performance

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- 4. The report should be based on the final version of Part 60 rather than the proposed version so that definitions and performance objectives are current.

A number of additional comments are presented in Enclosure 2. Those comments and numerous other detailed comments, both editorial and technical, are presented in the enclosed marked-up copy of the report.

Because of the numerous comments on this draft report, BNL is requested to submit a revised draft for NRC review by February 15, 1983. This second draft should contain the sample calculation of reliability of a waste package and a description of the supporting model.

The actions resulting from this letter are considered to be within the scope of FIN A-3168, Subtask 1.3. Please advise me immediately if you feel that this letter would result in changes in costs or delivery of contracted products.

Sincerely,

Everett A. Wick
 High-Level Waste Licensing
 Management Branch
 Division of Waste Management

Enclosures: 3, as stated

cc w/encl:

Dr. H. J. C. Kouts, Chairman
 Nuclear Energy Department

Dr. W. Y. Kato, Deputy Chairman
 Nuclear Energy Department

Dr. P. Soo, Associate Division Head
 Nuclear Waste Management Division

Dr. M. S. Davis, Deputy Division Head
 Nuclear Waste Management Division

Mr. C. Sastre, Head
 HTGR Safety Division

*See previous concurrence.

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- 7. The report should contain a glossary. There are several terms that should be defined, e.g., PRA, stochastic, deterministic, axis of symmetry, the term "X", reliability, de novo.
- 8. Some of the sections are either repetitive, contain extraneous material or material that should be referenced rather than repeated in the report. For example, the eighteen quality assurance items in Section 2.1.4 should be referenced.
- 9. The report refers to PSAR and an FSAR, a safety evaluation report and a standard review plan (SRP). Although these are standard terms in reactor licensing, the current draft of 10 CFR 60 does not refer to them; therefore, only the term "SAR" should be used. The term "Standard Review Plan" (SRP) should not be used, although much of the information contained in Section 2.3 would be useful to the applicant and should be retained.
- 10. Retrievability is mentioned only in passing (page 53, paragraph 2). Safe retrieval of canisters should be addressed in terms of design evaluation or performance confirmation.

These comments and numerous other detailed comments, both editorial and technical, are presented in the enclosed marked-up copy of the report.

The actions resulting from this letter are considered to be within the scope of FIN A-3168, Subtask 1.3. Please advise me immediately if you feel that this letter would result in changes in costs or delivery of contracted products.

Sincerely,

Everett A. Wick
High-Level Waste Licensing
Management Branch
Division of Waste Management

Enclosure: 2, as stated

cc w/encl:
Mr. Kouts, BNL
Dr. Kato, BNL
Mr. Sastre, BNL
Dr. Soo, BNL
M. S. Davis, BNL

OFC	: WMHL <i>EAW</i>	: WMHL <i>JCC</i>	: WMHL	: WM	:	:	:
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ADDITIONAL NRC COMMENTS ON BNL DRAFT REPORT,
"DRAFT STAFF TECHNICAL POSITION ON
WASTE PACKAGE RELIABILITY" (DRAFT 8)

1. The draft requires extensive editing. For example, a key part of the report (i.e., the approach to be used for predicting or demonstrating the reliability of the waste package) is contained in pages 2-4 of the introduction. This should be highlighted with an appropriate heading. Also, certain sentences are very long and difficult to understand (see specific comments in marked-up copy). These should be rewritten for clarity. Titles were omitted from some of the sections.
2. Table 1 (p. 11) lists waste package components, anticipated degradation modes for each component and the important acceleration parameters for each degradation mode. BNL should make reference to the best analytical models that are available for analysis of each degradation mode (this should reflect BNL's previous evaluations). BNL should also identify for each model listed the numerical ranges of parameters that apply for each failure mode considered. This will serve to define the role of acceleration parameters in the performance of the waste package as suggested by the table.
3. The report should be revised to reflect the latin hypercube sampling techniques (specified in NUREG/CR-2350, SAND 81-1978, Sensitivity Analysis Techniques: Self-Teaching Curriculum) for combining input parameters for performance analyses to achieve the prediction of reliability.
4. The objective of the DSTP should be to include distribution functions for parameters as far as possible within the time available and specifically those used in the sample problem.
5. The DSTP shall include guidance for development of distribution functions for use in the latin hypercube sampling technique.
6. Although the sample problem will not include an estimate of the reliability of the method itself, the DSTP should require that the applicant state the reliability of his methodology and individual processes modeled within that methodology.

7. The report should contain a glossary. There are several terms that should be defined, e.g., PRA, stochastic, deterministic, axis of symmetry, the term "X", reliability, de novo.
8. Some of the sections are either repetitive, contain extraneous material or material that should be referenced rather than repeated in the report. For example, the eighteen quality assurance items in Section 2.1.4 should be referenced.
9. The report refers to PSAR and an FSAR, a safety evaluation report and a standard review plan (SRP). Although these are standard terms in reactor licensing, the current draft of 10 CFR 60 does not refer to them; therefore, only the term "SAR" should be used. The term "Standard Review Plan" (SRP) should not be used, although much of the information contained in Section 2.3 would be useful to the applicant and should be retained.
10. Retrievability is mentioned only in passing (page 53, paragraph 2). Safe retrieval of canisters should be addressed in terms of design evaluation or performance confirmation.