

Waste Isolation Pilot Plant  
Compliance Certification Application  
**Reference 279**

Hansen, F.D. 1996.

Review Plan: Shaft Seal System Design for the Waste Isolation Pilot Plant (WIPP).  
Sandia National Laboratories, Albuquerque, NM.

**Sandia National Laboratories**

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**Sandia Corporation**

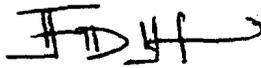
LOCKHEED MARTIN 

Albuquerque, New Mexico 87185-XXXX

*date:* January 8, 1996

*to:* Joe R. Tillerson, MS 1322

*from:* Frank D. Hansen, MS 1395



*subject:* Initiation of Seal System Design Review

This is a reminder of our conversation of January 5, 1996, regarding review of the seal system design report. Enclosed with this memo is the original review plan for your signature and Bob Stinebaugh's signature. Bob should send out the design report with a letter of general instructions to initiate the preliminary design review. The review package should include the review and comment forms and qualification sheets.

Copy to: (w/enc.)  
DOE/CAO D. Galbraith, MS 560  
MS 1322 A. W. Dennis  
SWCF-C:1.4.01.3.2: Pub/Rev:QA:Design Review

INFORMATION ONLY

**REVIEW PLAN**  
**SHAFT SEAL SYSTEM DESIGN**  
**FOR THE**  
**WASTE ISOLATION PILOT PLANT (WIPP)**

Principal Investigator:  Date: 12/21/95  
E. D. Hansen, Dept. 6121

Review Chairman: \_\_\_\_\_ Date: \_\_\_\_\_  
R. E. Stinebaugh, Dept. 5165

Approved By: \_\_\_\_\_ Date: \_\_\_\_\_  
J. R. Tillerson, Dept. 6121

Approved By:  Date: 12-21-95  
S. Y. Pickering, Acting QA Chief

## Introduction

Sandia National Laboratories is responsible for production of a credible shaft seal design as part of the Compliance Certification Application (CCA) being prepared by the Department of Energy (DOE) for the Environmental Protection Agency (EPA). The CCA will demonstrate compliance with the requirements outlined in Title 40, Part 191 (or 194, if promulgated) of the Code of Federal Regulations for the permanent disposal of transuranic wastes. Much of the technical content of the shaft seal system design will be included in the CCA. Ultimately, the shaft seal system will be published as a comprehensive, stand-alone document including design considerations beyond the scope of the CCA.

Design activities have been conducted by Sandia and subcontractors under the auspices of an approved quality assurance program. This design review will adhere to requirements of SNL Quality Assurance Procedure (QAP) 3-2, entitled Verification of Design Adequacy, Revision 1, approved 7/31/95.

## Scope

This review plan governs preliminary and final review of the WIPP shaft seal system. Preliminary design is embodied in a single published report. Final design will include considerable additional detail developed on the basis of the preliminary design. Final design documents include but are not limited to: 1) an enhanced annotated outline of the compliance design report, 2) design drawings, 3) framework of material specifications, 4) fluid flow analyses, and 5) structural analyses.

Preliminary Design Review will consider the adequacy of design concepts summarized in the report entitled Waste Isolation Pilot Plant Sealing System Design Report (SSDR) (DOE/WIPP-95-3117, Printed October 1995). The report includes descriptions of the WIPP setting, design guidance derived from the regulations, a description of the design, materials comprising the seal components, and preliminary evaluations of the shaft seal system. The report itself is the only document that will be reviewed in the preliminary design review. Based on the information included in the SSDR, the review panel will be asked for their evaluations of the following general questions:

- Will this shaft seal system satisfy design guidance?
- Are there elements of the design which will prevent the sealing system from meeting design requirements?
- Can the design be successfully implemented?

The panel is not expected to optimize the design summarized in the SDR, though comments will be resolved in keeping with QAP 3-2. Resolution of comments may include details of analyses, drawings or specifications that will be addressed and included in the package presented for the final design review.

Final design review will consider several products:

- An enhanced annotated outline for the compliance shaft seal design report
- Detailed drawings
- Material specifications framework
- Structural calculations in topical summaries
- Fluid flow calculation in topical summaries

The final design report for compliance is scheduled to be published in August 1996. The enhanced annotated outline used in the review process will be developed into the compliance design report and incorporate the final design review comments. The compliance design SAND report will be subjected to peer review in keeping with established Quality Assurance procedures for publications. The products identified for examination during final design review will address comments generated during preliminary design review.

### **Review Panel Members**

Members of the design review team are selected on the basis of their respective knowledge, experience and independence from the WIPP shaft seal design effort. Independence does not mean total lack of experience with any WIPP activities, rather independence means no involvement with the seal design, analysis or materials development.

<u>Name/Organization</u>	<u>Key Review assignment</u>	<u>Phone Number</u>
Robert E. Stinebaugh/SNL	Review Team Chairman	505-844-2534
Malcomb Gray/AECL	Scientist/Programmatic	204-753-2922
John Tinucci/Itasca	Modeling/Analyses	612-371-4711
Steve Phillips/Phillips Mining	Materials/Safety	520-297-2162

### **Schedule**

The schedule presented in this plan is based on the assumptions that the panel members will be available on the dates specified and that the material to be reviewed will also be available on these dates. This schedule may be revised by the Chairman to accommodate any or all parties to this review without revision of this plan.

Approval of design review plan: On or before 12/22/95

Note: Approval of the design review plan includes assignment of the review chairman and review panel members.

Preliminary design review: 01/10/96 through 02/13/96

- 01/04/96-01/09/96: Distribute seal design report (DOE/WIPP-95-3117) to review panel.
- 01/10/96-01/23/96: Review design package per review plan instructions.
- 01/23/96: Formal comments submitted to Chairman.
- 01/30/96: Comment resolution complete. The Chairman has the discretion to hold a summary meeting to discuss resolutions.
- 02/13/96: Preliminary design report completed by Chairman and delivered to Sandia QA for review and approval. Pending QA approval, the preliminary design review package will be submitted to the Sandia WIPP Central File (SWCF). Delivery of the design report to SWCF concludes the preliminary design review.

Final design review: 03/21/96 through 04/29/96

- 03/21/96: Distribute an enhanced annotated outline of the Seal System Compliance Design Report and supporting documents to the review panel. Distribution will be accomplished in a joint meeting wherein the design and supporting calculations are presented to the review panel.
- 03/22/96-04/03/96: Review design package.
- 04/04/96: Submittal of all review comments to the Chairman.
- 04/05/96-04/18/96: Comment resolution.
- 04/19/96-04/23/96: Verify resolution acceptance by review panel.
- 04/24/96-04/26/96: Prepare design review report.
- 04/29/96: Submit design review report to SNL QA for review, approval and submittal to the SWCF.
- 04/30/96: Milestone SS002--Complete design review of Shaft Sealing System Compliance Design

The concept of "comment resolution" for purposes of design reviews means that agreement is reached on how a comment will be addressed as the design progresses. Resolution does not require the solution to the comment be completely obtained or achieved. Certification of completion of review comments rests with the Chairman.

This schedule supports two project milestones: 1) Seal design input to CCA (07/96), and 2) Publication of the Seal System Compliance Design Report (08/96).

## Review Procedure

The Chairman has the authority to make schedule changes and logistical arrangements as felt necessary to accomplish the reviews, if such arrangements do not jeopardize quality, the ability to complete the review in a technically competent fashion, or the milestone date for completion (04/30/96). If practical, design reviews will be initiated at a central location to provide an opportunity for presentation of the products by Sandia. If it is not possible for a panel member to meet at the designated location and time, the Chairman can implement alternative arrangements for initiating the design reviews.

The Chairman will provide guidance for the review process including training in accordance with QAP 3-2. Training forms and other QA documentation will be assembled early in the review process. The Chairman will instruct reviewers to stay within their areas of expertise and offer concise comments suitable for a technical response. The guidance will include methods for comments submittal and resolution (a standard form #430 from QAP 6-3 or an equivalent word processing form will be used). Unresolved comments (disputes) will be resolved by majority of the panel. If the panel cannot achieve resolution, a final decision regarding the unresolved comment will be made by the Department Manager, J. R. Tillerson in consultation with DOE. Minority opinions can be included in the Chairman's report.

The Chairman's report on the preliminary and final design will include:

- The Review Plan.
- The reviewed material.
- Reviewer's qualifications in accordance with SNL WIPP QAP 2-1.
- Guidance for the review. This may include materials such as view graphs used for technical presentations or instructions.
- Documentation of training and orientation of reviewers.
- Completed review and comment forms consistent with QAP 6-3.
- Discussion of minority opinions, if appropriate.
- Summation of the review process, if appropriate.