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2	1	Safety J. Brehm	<i>Jo Ann R. Brehm</i>	7/15/99				
2	1	QA T. Nuxall	<i>S. Mischke</i>	7/14/99				
18. T. Nuxall <i>T. Nuxall</i> Signature of EDT Originator		19. T. Choho <i>T. Choho</i> Authorized Representative Date for Receiving Organization		20. C. Haller <i>C. Haller</i> Design Authority/ Cognizant Manager		21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments		

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SPENT NUCLEAR FUEL COLD VACUUM DRYING FACILITY COMPREHENSIVE FORMAL DESIGN REVIEW REPORT

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U.S. Department of Energy Contract DE-AC06-96RL13200

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**SPENT NUCLEAR FUEL COLD VACUUM DRYING FACILITY
COMPREHENSIVE FORMAL DESIGN REVIEW REPORT**

June 1999

SPENT NUCLEAR FUEL COLD VACUUM DRYING FACILITY
COMPREHENSIVE FORMAL DESIGN REVIEW REPORT

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George Crawford, Review Chairman/Mechanical Date

S. D. Riesenweber, Recorder/Mechanical

S.D. Riesenweber
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Jim Kriskovich, Mechanical

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Vern Severud

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T. Moleff

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7/1/99

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Lewis Muhlestein per telecon to Jim Nelson
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Walt Alaconis, Operations

Walt Alaconis

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LIST OF ACRONYMS

CM	Configuration Management
CVD	Cold Vacuum Drying
CVDF	Cold Vacuum Drying Facility
DRD	Design Requirements Document
FSAR	Final Safety Analysis Report
HVAC	heating, ventilation, and air-conditioning
MCO	Multi-Canister Overpack
QA	Quality Assurance
RAM	Reliability and Maintainability
SAR	Safety Analysis Report
SDD	System Design Descriptions
SNF	Spent Nuclear Fuel
SSC	systems, structures, and components

SPENT NUCLEAR FUEL COLD VACUUM DRYING FACILITY COMPREHENSIVE FACILITY FORMAL DESIGN REVIEW REPORT

1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

The majority of the Cold Vacuum Drying Facility (CVDF) design and construction is complete; isolated portions are still in the design and fabrication process. The project commissioned a formal design review to verify the sufficiency and accuracy of current design media to assure that: 1) the design completely and accurately reflects design criteria, 2) design documents are consistent with one another, and 3) the design media accurately reflects the current design. This review is a key element in the design validation and verification activities required by SNF-4396, *Design Verification and Validation Plan For The Cold Vacuum Drying Facility*. This report documents the results of the formal design review.

1.2 Review Team

The Review Team consisted of senior engineers, experienced in the design and analysis of systems equivalent to those contained in the CVDF. Table 1 provides a listing of the reviewers. Appendix A contains a matrix identifying systems to which each reviewer was assigned as the lead. These assignments did not preclude the investigation of unassigned subsystems or components, rather it was intended to assure that all systems receive attention. Appendix B provides summary qualification information on the reviewers.

Table 1-1. CVDF Review Team

Review Team Role	Reviewer	Company
Review Chairman/Mechanical	George Crawford	ESG, LLC
Recorder/Mechanical	Steve Riesenweber	ARES Corporation
Mechanical	Jim Kriskovich	LHMC
Electrical (I&C)	Dave Clark	PNNL
Chemical/Process	Jim Nelson	LMHC/Vista Research
Chemical/Process	Luc De Lamartinie	NUMATEC
Structural	Vern Severud	Consultant
Configuration Management/Power Electrical	Ted Moleff	ARES Corporation
Quality Assurance	Jack McGee	COGEMA
Safety	Lewis Muhlestein	ARES

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Review Team Role	Reviewer	Company
Operations	John Gregory	DESH
Operations	Walt Alaconis	DESH
Administrative Support	Lisa Inman	ARES Corporation
Department of Energy	Saleem Farooqui	RL

Not included in the scope of the review were the following:

- Review of the DRD for adequacy or completeness against higher-level functions and requirements, DOE 6430.1A, or NRC criteria,
- Fabrication of systems or equipment,
- Construction of the facility, and
- Procurement of systems or equipment.

2.2 Methodology

Appendix D provides the schedule originally prepared for the design review.

Prior to beginning the design review, the Design Review Team toured the First Article Test Equipment Building, and the CVDF that is under construction. This provided the opportunity to gain an understanding of the systems and facility, as well as to interact with the project staff.

A kick-off meeting was held in which both the CVD Project Manager and the CVD Design Review Chairman gave general introductory remarks to focus the Review Team on the objectives of the review. The project staff then gave the Review Team briefings on project evolution and processes. The Design Authorities gave general overviews of their systems for the Review Team. Appendix E contains the presentation handouts.

The Review Team then began familiarizing themselves with the CVD concept and the documentation package. A library of information was established in the review facility. The reviewers were provided cubicles near the library, and were encouraged to work cooperatively on their reviews. To facilitate this cooperation and to promote Review Team synergy, daily meetings were held for the Review Team where findings and the review process in general could be discussed. Although these meetings took time, they served to help the Review Team work together, and were a significant step toward unifying comments at the end of the review process.

Specific systems were assigned to individual reviewers to lead the drill-down reviews. Early on, agreement was reached as a team on which systems would be the subject of the drill-down reviews. This allowed the lead reviewers to look at those systems and request the calculations and supporting documents from the Project Team that would be required to do the drill-down reviews.

The review was approached from two perspectives. First, general reviews were performed which evaluated the system design for compliance with process design requirements, interfaces, and with Safety Analysis Report (SAR)/Technical Safety Requirement (TSR) requirements. Primary emphasis was placed on the ability of the system to meet the design requirements. Second, drill-down reviews were conducted where selected systems, or portions of systems, were evaluated in greater depth looking at calculations for documentation of assumptions, approach, completeness, results, and conclusions. In addition, results of the calculations and other analyses were evaluated for technical correctness, as appropriate.

The time available for review did not allow an extensive review of all systems, structures, and components (SSCs). Areas for review were selected based on the judgement of individual reviewers with respect to the importance of the system/subsystem to safety and the importance to process performance. This approach provided confidence that the most important systems were reviewed in the greatest detail. It also brought to light potential systematic problems with the design and other general areas.

Similar general and drill-down reviews were performed for CM and QA.

Comments were collected on a daily basis and entered into the comment database.

At the end of the review period, meetings were held where each reviewer highlighted their significant comments for the Review Team and similar comments were consolidated, inconsequential or duplicate comments were eliminated, and technical and editorial corrections on the comment database were made. The most important aspect of this meeting was that the entire team reached consensus on all the non-editorial comments before they were submitted to the Project Team.

The Review Team then met with the project staff to present the comments. The goal of this meeting was not to resolve or answer the comments, although the team was able to provide on the spot answers to many of the comments. The central goal was to assure that the Project Team fully understood the meaning of the Review Team's comments.

The Project Team then had the action to provide dispositions to the comments. A comment disposition meeting was held where the Project Team and the Review Team discussed the comments and their proposed dispositions. This was a very positive discussion, where the wording on both comments and dispositions was refined and recorded. It resulted in acceptance of the majority of the dispositions quickly and efficiently.

The Review Team then agreed on responses to the dispositions (Accept, Reject, or Open) as defined below:

- "Accept" means that the team believes that the position or approach made in the disposition will work or is technically/procedurally acceptable; even though it may not be considered the optimal approach. Dispositions stating that follow-on work will evaluate or correct the issues were accepted by the Review Team, with the assumption that the project will take the responsibility to assure that it is properly addressed.
- "Reject" means that the team believes that the position or approach provided in the disposition has technical or procedural/code problems that could negatively impact the project.
- "Open" are comments for which no dispositions were provided, or for which the disposition does not sufficiently address the comment.

The Project Team has some remaining comment dispositions to provide at this time. At the agreement of the Review Team, the design report has been completed with those dispositions carried, as open action items for the project. Appendix F contains a complete listing of the comments.

2.3 Documents Reviewed

The primary baseline documents provided by the Project Team for review are listed in Appendix C. Appendix G provides a listing of supplementary documents and calculations that were requested and used to assess the accuracy and consistency of the design.

3.0 RESULTS

3.1 Summary

It is the consensus of the Design Review Team that the CVDF and its subsystems should function as intended, and in doing so, meet the needs of the Spent Nuclear Fuel (SNF) Project. It should be noted, however, that the design documentation was found to be difficult to follow and in some cases, not kept current. Inconsistencies in documentation should be corrected.

3.2 Overview and General Observations

The design review resulted in 389 comments. These comments, with their dispositions, are contained in Appendix F. Each comment has an assigned priority level (Low, Medium, or High) based on the comment's potential to: 1) impact the ability for the system to perform its intended function, 2) impact to the project schedule, or 3) impact safety functions. Priority designations for comments were made based on the consensus judgement of the Review Team.

A "High Priority" designation indicates that the comment has a high probability of negatively impacting the project and is, thus, considered most important for prompt attention by the project. Approximately four percent of the comments generated were designated as High Priority. It is important to note that for many of these comments, there will likely be a reasonable explanation that will allow simple disposition and resolution. Approximately 59 percent of the comments were assigned "Medium Priority". Medium Priority comments are considered to have a significant technical impact that should be addressed by the project. The remaining 37 percent of comments were deemed to be "Low priority". These comments (primarily editorial) are considered important to reduce the likelihood of confusion or miscommunication in the future. Figure 3-1 provides a graphical representation of the comment priority distribution.

Figure 3-1. Comment Priority Distribution

Comments were also categorized into bins to provide insight into areas of greatest strength and weakness in the technical baseline. Comment bins include Technical (addressing the technical adequacy and/or basis of items identified), Code/Design Criteria, FSAR, or Administrative/

Editorial/Configuration. Figure 3-2 shows the percentage breakdown of this binning arrangement.

Figure 3-2. Comment Breakdown by Category

The review focussed on evaluation of the design with respect to five primary areas of interest: 1) adequacy of the design to meet requirements, 2) consistency between primary baseline documents, 3) FSAR technical content and consistency with design media, 4) implementation of CM, and 5) application of effective QA. These areas, along with general observations and conclusions resulting from the review, are listed below. The summary observations are not exhaustive, but are intended to provide insight into impressions held by the Design Review Team after an intensive review of the documentation.

3.2.1 Adequacy of Systems to Meet Requirements

The Review Team has a good level of confidence that the CVDF systems will meet the requirements of the DRD and function properly. This conclusion is the technical judgement of the team based on mid-level and drill-down reviews performed by individuals on many different SSCs. Reviews took into account requirements, drawings, regulations/codes, calculations, and test results.

The element of the technical basis that appears to be most lacking is the overall design calculation set. The *CVDF Supporting Data and Calculation Database*, SNF-3001, Rev. 0, contains many calculations that are unsatisfactory. Some calculations do not represent the current system configuration or design parameters. Some calculations (i.e., hydraulic calculations) oversimplify the analysis needed and sometimes leave out capacity or operating margins creating some concern as to whether the system was designed with sufficient capacity. In most cases, the First Article Testing Program sufficiently modeled the system configurations to allow correction of capacity problems and/or verify the adequacy of the existing design. The calculation set should be reviewed and corrected and outdated calculations either be revised or voided.

3.2.2 Consistency Between Primary Baseline Documents

There are a relatively large number of inconsistencies between the project baseline documents. Inconsistencies take the form of labeling errors on drawings, dated calculations, disparities between baseline documents (i.e., pressure settings), varying levels of detail in similar documents, etc. Most inconsistencies found were of a minor nature. Approximately 17 percent of the comments generated identified or contained this type of discrepancy. This value does not represent all of the inconsistencies that exist since the particular examples seen in the comments were identified from a relatively quick review of selected documentation. A thorough comparison and correction should be done completed.

3.2.3 FSAR Technical Content

The FSAR (Revision E) was reviewed in detail. The methodology used to generate it was found to be consistent with DOE requirements and sound from a SAR development perspective. The FSAR and the TSRs track well with one another.

3.2.4 Configuration Management Practices

Participants ranging from CVDF management to Design Authorities to Design Agents and construction have an understanding of CM principles and practices. The SNF Project has an encompassing CM Plan, *SNF Project Configuration Management Plan*, HNF-SD-SNF-CM-001. This plan, however, may not define CM requirements to a sufficient level of detail to ensure that consistent CM requirements are applied at all phases of the project. The most significant issue associated with CM is the documentation inconsistencies discussed in Section 3.1.1 and 3.1.2 above.

3.2.5 Quality Assurance

The quality requirements specified in the DRD were well identified and passed down through the CVDF chain of participants. Design media specified technical requirements for product, fabrication, and construction quality activities while contract requirements identified quality programmatic elements. Suppliers were approved and listed on the Fluor Daniel Hanford Evaluated Suppliers' List.

3.3 Positive Observations

The Project Team including management, engineering, Design Authorities, etc., were helpful, cooperative, and positive during the review process. Questions addressed to the Project Team were answered promptly and in a manner exhibiting good technical competency. Design authorities seemed to be well aware of their systems' design and construction status (including issues and questions yet to be resolved).

Preparation for the review by the Project Team was done very well. With the exception of a few items (i.e. lack of full sized drawings and a complete set of calculations), the documentation library was well supplied and organized.

The application of quality requirements specified in the DRD were well identified and passed down through the CVDF Project chain of participants. The design media specifies appropriate levels of technical requirements for product fabrication and construction quality activities. Contract requirements were found to identify appropriate quality programmatic elements.

Civil/structural calculations and design media appear, in general, to be of good quality. A number still need to be updated. The structural/seismic requirements are well defined. As a result, the structural/seismic design is technically sound and well documented.

The construction specifications provide a reasonable level of detail and, with few exceptions, appear to reflect the flowdown of requirements from the technical baseline documents.

3.4 Recommendations

As a result of the design review, the Review Team compiled the following recommendations:

- Complete the dispositions on all comments.
- Understand the greater meaning of each comment and assure that other project documents are reviewed for similar potential issues. The Review Team had sufficient time to only make spot checks and did not perform drill-down reviews on each system. It is important that the project take a look at all their systems for similar problems.
- Quickly resolve HVAC comments that may force a significant impact to the project.
- Because portions of the design were not complete at the time of the review, these portions of the design should be formally reviewed prior to construction and or fabrication of those systems and equipment.
- Select a time prior to the ORR to update and consolidate the technical basis of the design, especially calculations and analysis supporting the design. Once that update effort is complete, these calculations should be reviewed against the DRD and the design to assure they are complete, updated, and sufficient to document the design basis.
- Because some of the design analysis and information was found to be out of date, the design information must be thoroughly as-built and walked down at the end of construction to assure that an accurate technical basis is turned over to Operations.
- Three-over-one seismic walkdowns should be performed. Many of the systems due to the rather congested nature of portions of the facility may be subject to three-over-1 criteria. These are very difficult to identify from drawings, but an experienced team could quickly identify and help resolve any potential issues by doing these kind of walkdown reviews in the field.

- The updating of the calculations and analysis must be coupled with the as-built walk downs to assure that the design basis accurately matches the facility configuration.
- Because the documentation system is difficult for outsiders to understand quickly, the Review Team recommends the project provide roadmap documents to guide users unfamiliar with the CVD documentation system. This effort will produce dividends in readiness reviews and operational phases.
- The Review Team recommends that the project launch a specific effort to do an exhaustive scrubbing of all project documentation to identify and eliminate all inconsistencies. This review, because of the amount of information and time constraints, was forced to do spot checks and identified repeated inconsistencies.
- The Review Team recommends this effort be accomplished by a team of individuals not already familiar with the documentation. This will help to avoid the “forest for the trees” syndrome which often effects even the best individuals who have worked with the documents over time. The team also believes that a team of technical writers, and not engineers, may be the best for this effort, as simple consistency and not technical content should be the focus of this effort. Once the document inconsistencies are identified, the project Design Authorities can determine the correct statements. After the inconsistencies have been corrected, the package should then be reviewed for technical content.
- Project should perform an evaluation after ongoing calculations are complete to assure that components that may come in contact with a hydrogen atmosphere are adequately addressed per NEC Sections 500-504.
- Systems should be reviewed and corrected, as necessary, to assure proper OSHA and Lock and Tag capabilities.
- Leak detection in the process bay sumps is recommended to comply with DOE 6430.1A and good engineering practices.
- The First Article Test Report should evaluate and explain the apparent mass balance disparity between the mass of water in the Multi-Canister Overpack (MCO) prior to the test and the mass of water collected by the condenser.
- A Reliability and Maintainability (RAM) analysis should be performed.

4.0 DOCUMENTATION

The comments resulting from the review were compiled, categorized, and prioritized in a database. Appendix F contains these comments sorted by system, along with the comment dispositions. The reviewer responses to dispositions (i.e., Accept, Reject, and Open) are included. All open items will be tracked to completion by the project. After closure of all open items, a Design Review Completion Report will be issued as a Supplement to this Design Review Report as required by the *Design Verification and Validation Plan for the Cold Vacuum Drying Facility. SNF-4396, Rev. 0.*

Appendix A. System Review Assignment Matrix

A-2

	Steve Riesenweber	Jim Kriskovich	Dave Clark	Chem.	Jim Nelson	Chem.	Struct	Power	QA	Safety	Ops	Ops	Walt Alaconis	Brian Sullivan	DOE	DOE	Mech.
FSAR										X							
Operating Manual, Rev. 1 (SNF-2356)												X	X				
Process Flow Diagrams (PFDs)					X							X	X				
SNF-3060, Radiation Monitoring (RM) and Room Air Quality (AQ)										X							
SNF-3061, Civil/Structural Systems (CIV)							X										
SNF-3062, Vacuum Purge System (VPS)	X																
SNF-3063, Residual Gas Monitoring System (RGM)		X															
SNF-3064, Helium MSLD and Auxiliary Vacuum (MSLD)		X															
SNF-3065, Communication Systems (COMM)		X															
SNF-3066, Compressed Air System (CA/CI)	X																
SNF-3067, General Service Helium (He)	X																
SNF-3068, Safety Class Helium (SCHe)	X																
SNF-3072, Cranes and Hoists (HOI)																	X
SNF-3073, Effluent Drains System (EFS)	X																
SNF-3074, Condensate Collection System (CCS)					X												
SNF-3075, Electrical Systems (ES)								X									
SNF-3076, Specialty Equipment and Tools																	X
SNF-3077, Service Water System (SWS) and Fire Protection System (FP)										X							
SNF-3078, De-ionized Water System (DI)	O				X												
SNF-3079, Potable Water System (PW)							X										
SNF-3080, Sewage Collection System (SANS)							X										
SNC-3081, HVAC Systems (HVAC)		X															
SNF-3082, Process Water Conditioning System (PWC)							X										
SNF-3083, Conditioned Water Shipping System (SWS)							X										
SNF-3084, Contaminated Water Sampling and Analysis System (SMP)					X												
SNF-3085, Tempered Water/Tempered Water Cooling (TW/TWC)					X												

Appendix B. Reviewers' Biographical Summaries

Walter Alaconis
DE&S Hanford, Inc.

Mr. Alaconis has a BS in General Science from the University of the State of New York in Albany. He has nearly 29 years of diversified nuclear safety/operations experience in the military, commercial, and DOE environments. Mr. Alaconis obtained registration with the National Registry of Radiation Protection Technologists (NRRPT) in 1982. He has spent 19 years at Hanford supporting major facility modifications and new facility design projects, and co-author of the Process Facility Modification Project Preliminary Safety Analysis Report. He has been manager over the development of the Hanford Site Quality Training and Resource Center Root Cause Analysis Training Program and the Accident/Event Trending Program. He managed the Nuclear Engineering/Safety Data Management Unit for four years, and was technical advisor to the Liquid Effluent Services Program at Hanford and the Environmental Restoration Programs at Hanford and DOE-HQ. Facilities supported by Mr. Alaconis at Hanford include K Basins, Tank Farms (200 East Area), PUREX, B Plant, Plutonium Finishing Plant, T Plant, Treated Effluent Disposal Facility, and Effluent Treatment Facility. He is currently Manager of Project Operations for the K Basins SNF Project.

Dave Clark
Pacific Northwest National Laboratory

Mr. Clark has 20 years experience at Hanford. At the Fast Flux Test Facility, Mr. Clark served as a Cognizant Engineer for reactor plant control system instrumentation (control rod, sodium coolant flow, and air dump heat exchanger control), seismic monitoring instrumentation, and in-reactor experiment instrumentation. His duties included design and implementation of plant modifications, craft supervision, and operating/maintenance procedure writing.

At the Radioisotope Power Systems Facility, Mr. Clark completed instrumentation design, installation and testing for fuel receiving and Radioisotope Thermionic Generator (RTG) storage systems. He developed data acquisition system and associated software for monitoring RTG storage areas.

Mr. Clark was the Design Authority/Cognizant Engineer for instrumentation and electrical power distribution systems supporting field deployment of advanced robotic manipulator for the Hanford tank interior inspection Light-Duty Utility Arm. He directed design, fabrication, and installation of project electrical power distribution system and all manipulator support instrumentation. He also served as Project Coordinator for National Electric Code and Life Safety Code issues.

Other miscellaneous projects in which Mr. Clark has been involved included software development for Environmental Molecular Sciences Laboratory (EMSL), radio-frequency tagging, and circuit design for Radioisotope Stirling Generator (RSG) shipping container.

Mr. Clark holds a B.S.E.E. from the University of Idaho, with an emphasis on electronic circuit design and power systems engineering

**George L. Crawford, PE
ESG, LLC**

Mr. Crawford has 20 years of experience in engineering design, testing, and direct plant support engineering, 17 years of which have been at Hanford, at the Plutonium Finishing Plant, PUREX, and Tank Farms. Nine years of that experience has been in management of design engineering, projects, and programs.

Mr. Crawford is currently the Division Manager for ESG, LLC , a Louisiana-based company that designs, fabricates, tests, and operates specialty robotic based environmental cleanup systems for DOE, petro-chemical, and paper industries.

Mr. Crawford holds Bachelor's degrees in Agricultural Engineering and Business Administration, and a Masters in Engineering Management. Mr. Crawford is a Registered Professional Mechanical Engineer in Washington State University.

Luc De Lamartinie
Numatec Hanford Corporation

Mr. De Lamartinie has 15 years of experience for major international nuclear construction projects located at La Hague (France), Rokkasho Mura (Japan), Hanford (USA), Sellafield (UK), etc, successively as Chemical Process Engineer, Chemical Process Manager, Plant Design Manager and Engineering Manager within the COGEMA group (SGN, formerly Numatec). His duties include direct responsibility for chemical process and/or plant design of the following types of facilities:

- Storage, retrieval, conditioning of low, medium, and high level liquid waste,
- Storage, handling, shearing, dissolution, conditioning of nuclear fuel elements, and
- Vittrification of high level waste.

Mr. De Lamartinie's is familiar with engineering methodologies and documentation during construction phases, from pre-conceptual to operation turnover. He is experienced in engineering management of multi-disciplined and multi-national teams (up to 40 engineers) on nuclear waste projects, including technical supervision, program planning, critical path scheduling, and work load control.

Mr. De Lamartinie's education includes Graduate Engineer (MS+1) Chemical Engineering, Ecole nationale; Supérieure des Ingenieurs du Genie Chimique, 1984; and Graduate Degree (MS), Physical Chemistry, Bordeaux University, 1982.

John R. Gregory
Duke Engineering & Services, Inc.

Mr. Gregory's 15 years of experience has encompassed many areas in the Operations field, including developing and revising procedure documents to troubleshooting and resolution of plant systems problems to a position as Operations Manager for the SNF Project. His current responsibilities as SNF Project Operations Manager includes management of 80 personnel with an annual budget of 14 million dollar annual budget, and requires daily interface with the DOE for resolution of technical issues and concerns associated with preparing for processing of fuel from wet to dry storage. Mr. Gregory's previous positions included Shift Work Manager at Catawba Nuclear Station, and earlier at Catawba coordinated the operations and maintenance effort to ensure plant equipment would operate at peak efficiency and reliability as required by plant specifications.

Mr. Gregory holds a BS in Mechanical Engineering, from Clemson University.

James R. Kriskovich
Lockheed Martin Hanford Corporation

Mr. Kriskovich has over 8 1/2 years experience in the area of nuclear ventilation systems. His experience includes serving as the Lockheed Martin Hanford TWRS HVAC Design Authority, which includes being uniquely responsible for final acceptability of SSCs, or component, and its technical baseline pertaining to HVAC.

In addition, Mr. Kriskovich serves on the ASME Committee on Nuclear Air and Gas Treatment (CONAGT), where he is the Chairman of the Offgas Processing and Treatment Technology Committee. He also serves on the ASME Board of Nuclear Codes and Standards (BNCS) and is currently the Secretary for the International Society of Nuclear Air Treatment Technologies (ISNATT). In addition, Mr. Kriskovich has published three technical papers at the DOE/NRC Nuclear Air Cleaning Conferences.

Mr. Kriskovich has expertise in design, operation, and testing of nuclear HVAC systems. Professional credentials include a BS Degree in Mechanical Engineering Technology from Montana State University, and successful completion of the Fundamentals of Engineering (FE) examination.

Jack R. McGee
COGEMA Engineering Corp.

Mr. McGee has 30 years experience in application of quality standards requirements. His activities include QA engineering, first-line inspection, Title III field engineering, design support, surveillance/audit, welding engineering, construction/fabrication oversight surveillance, vendor survey/inspection, NDE supervision and management. Mr. McGee's work history includes commercial buildings, nuclear facilities, petrochemical, radioactive waste management projects, environmental cleanup projects, and semi conductor fab facilities.

James L. Nelson, P.E.
Vista Research

Mr. Nelson has 20 years of engineering experience in waste management, mixed low-level waste disposal, high-level radioactive waste disposal, and materials engineering. He is formerly the Team Leader in charge of corrosion control and monitoring of 28 1.1 million-gallon double shell underground storage tanks for high-level radioactive waste. Recent experience in applying Best Demonstrated Available Technology to the functional design requirements for a mixed low-level waste treatment plant (Waste Receiving and Processing Module 2A). Mr. Nelson is the former chairman of the DOE Office of Nuclear Waste Management Technical Review Group chartered to apply disposal requirements to vitrified high-level defense wastes in a commercial radioactive waste repository. He possesses hands-on experience in high-pressure, high-temperature autoclave testing of metals in caustic and irradiated environments.

His areas of expertise include:

- Interdisciplinary coordination and problem solving
- Project Management
- Negotiation with regulatory and enforcement agencies
- Materials selection and applications
- Statistical analyses of data
- Statistical quality control
- Operations research assessments
- Experiment design.

Mr. Nelson has received numerous written commendations from customer and employer. He was the author of the DOE Waste Acceptance Process for the disposal of defense high-level nuclear wastes. He has been the primary author of 13 publicly cleared technical reports and 3 journal articles on corrosion control and nuclear waste disposal. Mr. Nelson has been asked to give numerous presentations to DOE senior executive service management in Washington, D.C.

Mr. Nelson's education includes a Master of Engineering Management, Washington State University; Master of Science in Chemical Engineering, University of Washington; and a BS in Chemical Engineering, Washington State University. He is a Registered Professional Engineer in the State of Washington (Chemical), and a member of the National Association of Corrosion Engineers.

Stephen D. Riesenweber
ARES Corporation

Mr. Riesenweber has 20 plus years of experience working with mechanical systems. His work experience varies from operation, maintenance, and construction to troubleshooting, analysis and design of many types of commercial and industrial systems. Special emphasis has been placed on pumping and fluid handling systems.

Mr. Riesenweber received his bachelor's degree in mechanical engineering from Washington State University. His early engineering focus was on the design of compressed air systems, water distribution systems, and liquid radioactive waste handling piping and control systems. He was the Tank Farms Support Systems (Utilities) Cognizant Engineer responsible for the design and procurement of components for all fluid systems at the Tank Farms. In his last years at Tank Farms, he was a Program/Project Manager where he managed several projects including, but not limited to:

- Project W-058, a \$50 million project to install a seven-mile long radioactive waste transfer system.
- The Long-Length Contaminated Equipment Disposal System, a \$10 million project to develop a cradle-to-grave process and equipment for the retrieval, packaging, transport, and disposal of radioactive mixed waste equipment removed from tanks.
- The development of a new-generation submersible radioactive waste transfer pump in conjunction with Westinghouse Electromechanical Division.

At ARES Corporation, Mr. Riesenweber is the Manager of Design Services. In this position, he has managed several large design projects including a radioactive waste treatment system for tritiated waste water, a 30 megawatt cooling tower system, and high purity de-ionized cooling water systems used to cool critical components of the Los Alamos Neutron Science center linear accelerator.

**L. K. "Vern" Severud, PE
Consultant**

Mr. Severud has BSCE and MSCE degrees and is a Fellow of ASME. He has over 40 years of engineering experience. He is currently a private consultant in Elevated Temperature Design, seismic design, and engineering practices and standards. Prior work included roles as the Westinghouse Hanford Company Site Engineer, TWRS Engineering Acting Director, Westinghouse Central Engineering Manager, and many other varying engineering management positions.

Mr. Severud is a member of the ASME Subgroup on Elevated Temperature Design and the author of many code rules and methods. He has authored and co-authored approximately 40 technical professional society publications. He was the technical leader and manager of plant analysis and design, construction, and operation of the DOE Fast-Flux Test Facility. He has traveled extensively to Europe and Japan representing his company and DOE on international technology transfer working groups and contracts.

Appendix C. Primary Baseline Documents Reviewed

SNF-4506
Revision 0

The following documents were reviewed and/or referenced during the review process.

Design Documents Reviewed
Design Requirements Document, Rev. 4 (DRD), HNF-SD-SNF-DRD-002
System Design Descriptions
SNF-3060, Radiation Monitoring (RM) and Room Air Quality (AQ)
SNF-3061, Civil/Structural Systems (CIV)
SNF-3062, Vacuum Purge System (VPS)
SNF-3063, Residual Gas Monitoring System (RGM)
SNF-3064, Helium MSLD and Auxiliary Vacuum (MSLD)
SNF-3065, Communication Systems (COMM)
SNF-3066, Compressed Air System (CA/CI)
SNF-3067, General Service Helium System (He)
SNF-3068, Safety Class Helium (SCHe)
SNF-3072, Cranes and Hoists (HOI)
SNF-3073, Effluent Drains System (EFS)
SNF-3074, Condensate Collection System (CCS)
SNF-3075, Electrical Systems (ES)
SNF-3076, Specialty Equipment and Tools
SNF-3077, Service Water System (SWS) and Fire Protection System (FP)
SNF-3078, De-ionized Water System (DI)
SNF-3079, Potable Water System (PW)
SNF-3080, Sewage Collection System (SANS)
SNF-3081, HVAC Systems (HVAC)
SNF-3082, Process Water Conditioning System (PWC)
SNF-3083, Conditioned Water Shipping System (SWS)
SNF-3084, Contaminated Water Sampling and Analysis System (SMP)
SNF-3085, Tempered Water/Tempered Water Cooling (TW/TWC)
SNF-3086, Chilled Water System (CW)
SNF-3087, Vacuum and Purge System Chilled Water (VPSCHW)
SNF-3088, Stack Monitoring System (SM)
SNF-3089, Security System (SEC)
SNF-3090, Monitoring and Control System (MCS)
SNF-3091, Safety Class Instrumentation and Control (SCIC)
CVD Facility Engineering Drawings

Design Documents Reviewed
Drawing Tree
Engineering Flow Diagrams
Facility Drawings
Equipment Drawings
Installation Drawings
Final Safety Analysis Report (FSAR), DRAFT
Equipment Procurement Specifications
W-441-P1, Process Equipment Skid Procurement Specification
W-441-P2, Process Water Conditioning Skid Procurement Specification
W-441-P3, Monitoring and Control System Procurement Specification
W-441-P4, Process Hood/Seal Ring Procurement Specification
W-441-P5, Safety Class Helium Equipment Procurement Specification
Safety Class Instrumentation and Control Performance Specification
CVD Facility Construction Specification W-441-C1
Safety Equipment List (HNF-SD-SNF-SEL-002)
Master Equipment List (SNF-4148)

Appendix D. Design Review Schedule

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Appendix E. Design Review Kick-off Briefing Handouts

COLD VACUUM DRYING FACILITY PROJECT

DESIGN PROCESS

KIRK BOES
CVDF DESIGN/ENGINEERING MANAGER

APRIL 12, 1999

CURRENT CVDF DESIGN STATUS

- CVD Facility design – complete
 - 166 H-1 drawings
 - 1 construction specification
- Process Equipment design – complete
 - 4 procurement specifications
- Monitoring and Control System design -- hardware complete; software validation in process
 - 23 H-1 drawings
 - 1 procurement specification
- Safety Class I & C System design – in process

CVDF DESIGN AGENT RESPONSIBILITY BREAKDOWN

- **CVD Facility – Mactec-Meier Associates, L.L.C.**
 - Architectural
 - Civil/Structural
 - Mechanical (HVAC, Utilities, Fire Protection)
 - Electrical
 - Instrumentation
 - Security Systems
- **Process Equipment – Merrick & Company**
 - Process Equipment Skid (PES)
 - Process Water Conditioning (PWC) Skid
 - Process Hood and Piping Assembly
 - Safety Class Helium (SCHe) System
- **Monitor and Control System (MCS) – CVDF Project/CH2M Hill, Inc.**
- **Safety Class I&C (SCIC) System – Framatome Technologies**

CVDF DESIGN PROCESS

CVDF DESIGN CHANGE PROCESS

- Proposed design change may be identified as a result of:
 - Project-direct design changes
 - Criteria change
 - Discovery of design error/omission
 - RFIs
 - Changes to facilitate construction
 - NCRs
- A/E prepares Document Change Notice (DCN) and transmits to Design/Engineering Manager (DEM)
- DEM reviews/approves DCN and forwards to Design Authority (DA)
- DA reviews/approves DCN
- DA determines appropriate Approval Designator, coordinates review/approval, and returns approved DCN to the DEM
- DEM transmits formal approval of DCN to A/E
- A/E releases DCN to Controlled Distribution
- Construction Manager (CM)/Buyer submits cost estimate for implementing DCN to PM/DPM for approval
- Upon receipt of authorization to implement the DCN, CM/Buyer issues formal Notice to Proceed (NTP) to the Construction Contractor or Fabrication Contractor, as applicable

PENDING SIGNIFICANT DESIGN CHANGES

- Standby Power System (DCN #W-441-196)
- Hydrogen Mitigation Modification to Vent Systems (DCN #W-441-197)
- Seismic Modifications to Process Hood Stand (DCN #W-441-202)
- Seismic Interlock for PWC pumps (DCN #W-441-210)
- Safety Significant changes to Local Exhaust Fans (DCN #182)
- Process Hood Seal Ring (DCN #TBD)
- SCIC conduit routing (DCN #TBD)
- Tempered Water lower cask connection (DCN #TBD)

PROJECT OVERVIEW

- SNF Project overview
 - Objective
 - Flow diagram
 - SNF subprojects
- CVDF project overview
 - Objective
 - Facility overview
 - Process overview
- Design Validation
 - Proof of concept
 - First Article Testing
 - Use of simulation models

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Hanford SNF Program Objectives

- Clean, Re-rack, and Move 2100 metric tons of Spent Nuclear Fuel (SNF) Located in KE and KW Fuel Storage Basins

K-Basin Layout

3DC-KBAS001
Rev D 09/18/96

Spent Nuclear Fuel Project Process

E-12

SN-4506
Revision 0

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Canister Overpacks

Multi-Canister Overpack (MCO)

- 440 MCOs
- Must fit in CSB storage tubes
 - 2 ft. in diameter
 - 13 ft. tall
- Hold maximum amount of SNF ~5 metric tons
- Provide shielding during processing

NO-MCO-COMP
Rev A 2/21/90

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Cask

Purpose

- Provides Shielding
7 in. thick stainless steel
19 ton (tare weight)
32 ton (loaded weight)
~16 ft. tall
- Provides Water Bath for
MCO/SNF Processing

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CVD Drying System

Process Equipment Skid (PES)

- Heats/Cools
MCO and SNF
- Dries SNF
 - Vacuum
 - Helium purge

Storage Solution

Canister Storage Building (CSB)

- Store SNF Overpacks in Previously Designed Facility for Vitrified Waste

SNF-4506
Revision 0

Hanford SNF Program Objectives

- Store SNF in Canister Storage Building (CSB) for 40 years

E-22

SNF Program Technological Challenges

Transportation Challenge

MCO Handling Machine (MHM)

- MCO movement in CSB
 - Provides shielding during MCO movement
 - Removes/installs MCO from/into cask below grade
 - Places MCO in CSB storage tubes
 - Operates on rails in CSB floor

SNF-4506
Revision 0

Hanford SNF Program Objectives

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- Dry the SNF at Cold Vacuum Drying (CVD)

SNF-4506
Revision 0

CVD Bulk Water Removal System

Process Water Conditioning System (PWC)

- Capable of removing 150 gallons of water

Components

- Ejector (venturi jet pump)
- Ion Exchange Modules (IXM)
- Storage tanks
- Samplers

CVD Vacuum System

- Capable of removing 32 liters of water
- Components
 - 4-stage vacuum pump
 - Pressure Range:
 - > atmospheric to
 - < 0.1 torr
 - roots
 - dry
 - Chilled water condenser

CVD Helium Supply

- Purpose
 - Provide Helium purge to prevent Hydrogen build-up in MCO
 - Heat transfer from SNF to tempered water
- Supply
 - Helium tube trailers
 - $\sim 180,000 \text{ ft}^3$
 - Duration: ~ 30 days

SNF-4506
Revision 0

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CVD System Gas Stream Analysis and Leak Detection

- System Pressures
- Residual Gas Analyzer
 - 0-200 amu
 - ppm accuracy
 - on-line analysis from 10^{-7} to 1000 torr

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Cask Leak Checking

- Leak Tested to 1×10^{-7} annually during SNF program

- Single O-Ring

- Procedure Compliance Assures Leak Tightness

- Torque Pattern and Bolt Torquing to 300 ft. lbs.

- Lid removed 3 times during process cycle

- Basins

- CVD

- CSB

SNF Program Technological Challenges

Transportation Challenge

Transportation Cask and Transporter

- Provides D.O.T. Shipping Containment Leak tight to 1×10^{-7} std cc/sec He
- Transports MCO from Basins to CSB

Final Storage

- Welded Cap atop MCO shield plug
- Conducted at Weld Station in CSB
- Dye Penetrant Inspected
- Leak tightness 1×10^{-7} std cc/sec He
- Placed back in storage tubes for up to 200 years

SNF-4306
Revision 0

CVD Design V&V Timeline

Design improvements resulting from Proof of concept testing

- **Background**

- From April 96 to June 97
- Single basket MCO, heated water bath around, condenser, chiller system driving the condenser

- **Design Improvements**

- Tried different types of vacuum pumps
- Put condenser in front of vacuum pump
- Tested several internal MCO HEPA filters
- Designed 1" chamber around MCO HEPA filter to protect it from water
- Improved basic operations sequence

First Article Testing Component Configuration

Component	Production Version	Prototype	Functionally Similar
PES (VPS + TWS) skid	X		
Transport Cask	X		
MCO		X	
Process Hood Piping			X
PWC System (Ejector/Receiver)			X
Ventilation Hood/Seal Ring			X
MCS	X		
SCHe		X	

Design Improvements Resulting From First Article Testing

- Vacuum pump cooling addition
- Flex line routing and supports related to icing
- Heat tracing requirements on hood piping
- SCHe injection points related to icing
- MCS automated sequence diagnostics
- Helium control system modification
- Flange gasket specification
- Equipment specification verification
- TW pump impeller sizing
- MCS purging of SCHe lines
- Process connector home position cross tie for system integrity checks
- Removal of flow meters in VPS and PWC
- Operator input for MCS screen development
- Process connector leak testing and seal development

Use Of Simulation Models

Conclusions

- MCO and CVD system can be made leak tight
- All CVD process equipment adequately perform their intended function
- Drying times are acceptable for expected fuel conditions
- Drying behavior in terms of system parameters is as expected based on tests and model simulations
- 1st article results provide standard performance for a properly performing production system
- Good comparison between tests and model simulations
- CVD equipment design modifications will improve its performance
- Refinements in the model will improve confidence that the model can extrapolate drying performance of actual fuel

CVD Design Report Package Contents

Sherri Brisbin

April 12, 1999

Page 1 of 5

CVD Design Report Package Contents

- Comprehensive Design Report for the Cold Vacuum Drying Facility (All)
 - Design Report
 - Design Requirements Document
 - Document Hierarchy
- System Design Descriptions – 3 Volumes (Share)
- Pending Design Issues (Library) – 3 Volumes
 - Facility DCNs
 - Process Equipment DCNs
 - 6430.1A Compliance Matrix
 - NRC Compliance Matrix
 - Open Items Listing

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SNF-4506
Revision 0

CVD Design Report Package Contents

- Drawings (Share) – 2 Volumes
 - Drawing Tree
 - Engineering Flow Diagrams
 - Facility Drawings
 - Installation Drawings
 - Process Equipment Drawings
- DRAFT Final Safety Analysis Report (Share)
- Equipment Procurement Specifications – 2 Volumes (Share)
- Construction Specification (Share)

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2/27/99
Revision 0

CVD Design Report Package Contents

- Reference Documents (Share)
 - Operating Manual
 - Calculation Index
 - Process Flow Diagrams
- Master Equipment List and Safety Equipment List (Share)
- Supporting Baseline and Compliance Documents (Library)
 - Product Specification
 - Technical Databook
 - Technical Manual
 - Witness Model

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SNF-4208
Revision 0

CVD Design Report Package Contents

- Supporting Safety Documents (Library)
 - Human Factors Evaluation
 - ALARA Report
- Test Reports (Library)
 - Initial Findings Report
 - Performance Test Report

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SNF-4506
Revision 0

April 12, 1999

Page 5 of 5

Hanford Spent Nuclear Fuel Project

CVD Facility Review Kickoff Meeting Agenda

Introduction	Mike Wiemers
Review Process	George Crawford
Project Overview	Tarik Choho
Break	
Design Report	Sherri Brisbin
Facility Overview	Carol Pitkoff
Lunch	
Process Overview	John Irwin
Safety Basis	Ron Omberg

CVD Facility Safety Mission Goals

- Maintaining water in the Cask-MCO annulus space (maintaining annulus water is passive) The SCIC provides local water level indication.
- The SCIC will prevent the TW temperatures from exceeding 50 °C by stopping the TW heater and circulation pump on high temperature detection.
- MCO Pressure venting via a 30 psig rupture disc (the 30 psig vent path is passive).
- Automatic actuation of the Safety Class Instrument and Control (SCIC) system.
- SCHe provides helium inerting of the MCO upon a SCIC actuation.

CVD Facility Processing Mission Goals

- The total number of MCOs to be processed shall be 430—225 from the K East Basin and 205 from the K West Basin.
- The CVDF project design basis startup schedule shall be 6 months for the K West Basin, with a 12-month lag before a 6-month startup of K East Basin. Both basins shall achieve peak shipment operations 12 months after startup.
- The peak shipment design basis capacity shall be 0.70 transport casks per day
- The facility shall be available for processing 7 days a week, 3 shifts per day, for 340 working days per year (with the facility on safe standby for the remainder of the year).
- The CVDF shall be designed to achieve processing of all 430 MCOs in a 3-year time period including startup.

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COLD VACUUM DRYING PROCESS FLOW DIAGRAM

SNF-4506
Revision 0

Figure 4-2. Vacuum Purge System Chilled Water

FIGURE 4-2
VACUUM AND PURGE
SYSTEM CHILLED
WATER

WV: C-W_SVT-3287_F4-2 ACAD FILE: ZBACCC56

Figure 4-2. SMP Sampler System

FIGURE 4-2
SMP
SAMPLER SYSTEM

WV: SV=SNF-3054_F4-2 ACAD FILE: ZBAC0082

Figure 2-1. SMP General Layout

Figure 4-1. CWS System

FIGURE 4-1
CWS SYSTEM

Figure 2-1. General CWS System Layout

FIGURE 2-1
GENERAL CWS
SYSTEM LAYOUT

WVF, CAS_SVF-3083_F2-1 ACAD FILE: ZBAC0079

Figure 4-4. Storage Tank 4001

WVF: PAC_S\F-3082_F4-4 ACAC FILE: ZBAC0069

Figure 4-2. Receiver Tanks and Pumps

FIGURE 4-2
RECEIVER TANKS
AND PUMPS

WV: PWC-SNF-3052-F4-2 ACAD FILE: ZBAC0057

Figure 2-1. General Layout of Process Water Conditioning System

FIGURE 2-1
GENERAL LAYOUT OF
PROCESS WATER
CONDITIONING SYSTEM

WFF: PWC_SVF-108272-1 A000 1.0 ZBAC0063

Figure 4-1. Purge A Train

FIGURE 4-1
PURGE
A TRAIN

WVF: SCHE-SNF-308B-F4-1 ACO FILE: ZBAC0034

Figure 2-1. System Flow Diagram

WVP: SC-e_SN-358E_F2-1 ACAD PLOT ZBAC038

Figure 1-2. Tempered Water Cooling System

FIGURE 1-2
TEMPERED WATER
COOLING SYSTEM

WMF: TW-TWC_SNF-3085_F1-2 ACAD FILE: ZBAC0023

Figure 1-1. Tempered Water System

FIGURE 1-1
TEMPERED WATER
SYSTEM

WMF: TW-TWS-SNF-3085-F1-1 ACD FILE: ZLIC0022

Figure 2-1. Simplified System Diagram for the Helium MSLD/Auxiliary Vacuum System

Figure 2-1. Simplified System Diagram for Residual Gas Monitoring System

Figure 2-1. Simplified System Diagram for Vacuum Purge System

FIGURE 2-1

SIMPLIFIED SYSTEM DIAGRAM FOR VACUUM PURGE SYSTEM

NOTES:

- 1) SEE SECTION 1.5 FOR ACRONYMS AND ABBREVIATIONS
- 2) LINES IN BOLD INDICATE FLOW THE VACUUM PURGE SYSTEM

WMF: VPS_SNF-3062_F2-1 ACAD FILE: ZBAC0011

Figure 4-1. Seal Ring Assembly

FIGURE 4-1
SEAL RING ASSEMBLY

WV: SEUSF-3076-PA-1 ACAD P-11 2800099

Figure 4-2. Valve Operators

FIGURE 4-2
VALVE OPERATORS

WVF: SE_SNF-3076_F4-2 ACAD FILE: ZBACC00

Figure 4-3. Process Hood

Figure 4-4. Piping Stand and Assembly

Figure 0-1

Figure 2-2.

Cold Vacuum Drying Facility Comprehensive Design Review

Kickoff Meeting

April 12, 1999

CVD Design Review Objectives

- Alignment of:
 - Requirements
 - FSAR
 - Design Media
 - Drawings and Specs
 - SDD's
- Re-establish configuration benchmark

Achievement of
Mission Objectives:

- Facility
- Equipment
- Personnel
- Operations

Current and Planned V&V Activities

- Past and Current Activities
 - Proof of concept testing
 - CVD Formal Design Review
 - First Article Testing (*completed in March*)
 - SCIC Design Review
 - Informal Reviews (*in support of design review*)
 - Independent reviews and Alternate Calculations and Simulations
- Planned “As-Built” Test and Inspection
 - Factory Acceptance and Installation
 - Construction Acceptance Testing
 - Pre-Operational Acceptance Testing
 - Process Validation Testing (first campaigns)

Focus Areas for Review

- Overall design reviewed in moderate depth
- Less focus on design elements previously validated by tests
- Specific areas reviewed in detail, prioritized by:
 - Safety class systems and equipment
 - Systems affecting critical design parameters
 - Systems selected by team in first week
- Specific issues examined
 - Design meets requirements in DRD?
 - SDD's consistent with FSAR?
 - Design media consistent with FSAR?
 - SDD's consistent with design media?

SNR-4206
Revision 0

Hanford Spent Nuclear Fuel Project

CVD Design V&V Timeline

U.S. DEPARTMENT OF ENERGY	
CVDF ENGINEERING	
FLOW DIAGRAM	
H-1-83964	
DATE	6/25/81
BY	142K
CHKD	7004
APP'D	NONE
REV	0

REVISIONS	
NO.	DESCRIPTION
1	INITIAL DESIGN
2	REVISED FOR COMMENTS
3	REVISED FOR COMMENTS
4	REVISED FOR COMMENTS
5	REVISED FOR COMMENTS
6	REVISED FOR COMMENTS
7	REVISED FOR COMMENTS
8	REVISED FOR COMMENTS
9	REVISED FOR COMMENTS
10	REVISED FOR COMMENTS

NEXT USED ON	
REF. NO.	TITLE
H-1-82161	WCO/CASK/HOOD PAID
H-1-82162	VACUUM PUMPING PAID
H-1-82165	SCH# SYSTEM PAID
H-1-82222	INST AIR SUPPLY PAID

Revision 0
DATE 1000

~~PROCESS WATER CONDITIONING (PWC) SYSTEM - BAY 1~~

NOTE:

1. FOR SPECIFIC DESIGN REQUIREMENTS SEE HNF-SD-SNF-PBD-002 COLD VACUUM DRYING FACILITY DESIGN REQUIREMENTS DOCUMENT.

DRAWING TRACEABILITY LIST		DATE		NAME	
DWG NO	TITLE	REV	DATE	BY	CHKD
H-1-83224	MECH CHILLED WATER P&ID				
REF NUMBER	TITLE	REV	DATE	BY	CHKD
H-1-83965-1	MECH CHILLED WATER P&ID				
REVISIONS	DATE	BY	CHKD	DATE	BY
H-1-83965-1	05/11/83	JM IRWIN			
CAD FILE	REVISION	DATE	BY	CHKD	DATE
H-1-83965-1	05/11/83	JM IRWIN			
<p>U.S. DEPARTMENT OF ENERGY Nuclear Operations Office CYD ENGINEERING FLOW DIAGRAM VPS CHILLED WATER SYSTEM</p>					
<p>REV 1482 7004 H-1-83965 0</p>					
<p>DATE 05/11/83 BY JM IRWIN</p>					

CHW & TWC SYSTEM

- NOTES:
1. FOR SPECIFIC DESIGN REQUIREMENTS SEE HNF-50-SNF-PRO-002
 2. ITEMS MARKED WITH "*" ARE TO BE FURNISHED BY CHILLER SUPPLIER AS PART OF THE CHILLER CONTROL SYSTEM.
 3. SEE DRAWING H-1-82967 FOR HVAC COMPONENT INTERFACE.

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Hanford Spent Nuclear Fuel Project

CVDF Final Safety Analysis Report

Presentation to:

CVD Design Review

**R. P. Omberg
Mgr, Nuclear Safety Analysis**

April 12, 1999

Overview

- Status of FSAR
- Hazard Analysis and Accident Analysis
- Design Basis Accidents
- Major Safety Systems

Status of FSAR

- **Draft in Functional Review**
- **Functional Review is internal CVDF Project review**
- **FDH review is next step**
- **FSAR submittal to RL May 26, 1999**

Safety Analysis Process

Hazard Analysis

- ***Hazards are systematically identified***
 - identified by location (process bay, process water room)
 - developed by general physical form (electrical, thermal, mechanical)
 - subdivided into equipment type (pumps, pressure vessels)
 - evaluated for frequency and consequences

Hanford Spent Nuclear Fuel Project

Hazardous Material/Energy Source Checklist: Example.

NOTE: _____

Y N A. Electrical

- ☐ 1. Battery banks
- ☐ 2. Cable runs
- ☐ 3. Diesel generators
- ☐ 4. Electrical equipment
- ☐ 5. HVAC heaters
- ☐ 6. High voltage
- ☐ 7. Motors
- ☐ 8. Pumps
- ☐ 9. Power tools
- ☐ 10. Switchgear
- ☐ 11. Service outlets, fittings
- ☐ 12. Transformers
- ☐ 13. Transmission lines
- ☐ 14. Underground wires
- ☐ 15. Wiring
- ☐ 16. Other _____

Y N B. Thermal

- ☐ 1. Bunsen burner/hot plates
- ☐ 2. Electrical equipment
- ☐ 3. Furnaces/boilers/heater
- ☐ 4. Steam lines
- ☐ 5. Welding torch/arc
- ☐ 6. Diesel units/fire box/exhaust line
- ☐ 7. Radioactive decay heat
- ☐ 8. Exposed components
- ☐ 9. Power tools
- ☐ 10. Convector
- ☐ 11. Solar
- ☐ 12. Cryogenic
- ☐ 13. Other _____

Y N C. Friction

- ☐ 1. Belts
- ☐ 2. Bearings
- ☐ 3. Fans
- ☐ 4. Gears
- ☐ 5. Motors
- ☐ 6. Power tools
- ☐ 7. Other _____

Y N D. Corrosives

- ☐ 1. Acids
- ☐ 2. Caustics
- ☐ 3. Natural chemicals
- ☐ 4. Decontamination solution
- ☐ 5. High temperature waste
- ☐ 6. Other _____

Y N E. Kinetic - Rotational

- ☐ 1. Centrifuges
- ☐ 2. Motors
- ☐ 3. Pumps
- ☐ 4. Fans
- ☐ 5. Laundry equipment
- ☐ 6. Shop equipment
- ☐ 7. Other _____

Y N F. Kinetic - Linear

- ☐ 1. Cars, trucks, buses
- ☐ 2. Forklifts, dollies, carts
- ☐ 3. Railroad
- ☐ 4. Obstructions
- ☐ 5. Crane loads
- ☐ 6. Pressure vessel blowdown
- ☐ 7. Other _____

Y N G. Mass, Gravity, Height

- ☐ 1. Human effort
- ☐ 2. Stairs
- ☐ 3. Lifts and cranes
- ☐ 4. Bucket and ladder
- ☐ 5. Trucks
- ☐ 6. Slings
- ☐ 7. Hoists
- ☐ 8. Elevators
- ☐ 9. Jacks
- ☐ 10. Scaffold and ladders
- ☐ 11. Pits and excavations
- ☐ 12. Elevated doors
- ☐ 13. Vessels
- ☐ 14. Other _____

Y N H. Pressure - Volume

- ☐ 1. Boilers
- ☐ 2. Surge tanks
- ☐ 3. Autoclave
- ☐ 4. Test loops
- ☐ 5. Gas bottles
- ☐ 6. Pressure vessels
- ☐ 7. Stressed members
- ☐ 8. Gas receivers
- ☐ 9. Vacuum
- ☐ 10. Steam headers and lines
- ☐ 11. Other _____

Y N J. Explosives/Pyrophorics

- ☐ 1. Caps
- ☐ 2. Primer cord
- ☐ 3. Dynamite
- ☐ 4. Scrub chemicals
- ☐ 5. Dusts
- ☐ 6. Hydrogen
- ☐ 7. Gases, others
- ☐ 8. Nitrates
- ☐ 9. Peroxides
- ☐ 10. Pu and U metal
- ☐ 11. Sodium
- ☐ 13. Other _____

Y N K. Nuclear Criticality

- ☐ 1. Vaults
- ☐ 2. Temporary storage areas
- ☐ 3. Shipping and receiving area
- ☐ 4. Filters
- ☐ 5. Casks
- ☐ 6. Burial ground
- ☐ 7. Storage racks
- ☐ 8. Canals and basins
- ☐ 9. Decontamination solution
- ☐ 10. Trucks, forklifts, dollies
- ☐ 11. Hand carry
- ☐ 12. Cranes/lifts
- ☐ 13. Hot cells, assembly, inspection
- ☐ 14. Laboratories
- ☐ 15. Other _____

Y N L. Flammable Materials

- ☐ 1. Packing materials
- ☐ 2. Rags
- ☐ 3. Gasoline
- ☐ 4. Lube oil
- ☐ 5. Coolant oil
- ☐ 6. Paint solvent
- ☐ 7. Diesel fuel
- ☐ 8. Buildings & contents
- ☐ 9. Trailers and contents
- ☐ 10. Grease
- ☐ 11. Hydrogen
- ☐ 12. Nitric acid
- ☐ 13. Organics
- ☐ 14. Gases - others
- ☐ 15. Liquids - others
- ☐ 16. Other _____

Y N M. Hazardous Materials

- ☐ 1. Alkali metals
- ☐ 2. Asphyxiants
- ☐ 3. Biologicals
- ☐ 4. Carcinogens
- ☐ 5. Corrosives
- ☐ 6. Oxidizers
- ☐ 7. Toxics
- ☐ 8. Heavy metals
- ☐ 9. Other _____

Y N N. Ionizing Radiation Sources

- ☐ 1. Fissile material
- ☐ 2. Radiography equipment
- ☐ 3. Radioactive material
- ☐ 4. Radioactive sources
- ☐ 5. Other _____

Y N P. External Events

- ☐ 1. Explosion
- ☐ 2. Fire
- ☐ 3. Other sites

Y N Q. Vehicles in Motion (external to facility)

- ☐ 1. Airplane
- ☐ 2. Helicopter
- ☐ 3. Train
- ☐ 4. Truck/bus/car
- ☐ 5. Other _____

Y N R. Natural Phenomena

- ☐ 1. Earthquake
- ☐ 2. Flood
- ☐ 3. Lightning
- ☐ 4. Rain
- ☐ 5. Snow, freezing weather
- ☐ 6. Straight wind
- ☐ 7. Dust devil
- ☐ 8. Tornado
- ☐ 9. Ashfall
- ☐ 10. Range fire

Design Basis Accident Selection

- **Identify conditions with dose consequences**
 - offsite
 - collocated worker
- **Group similar accident scenarios into bins**
- **Order accidents within each bin using a graded approach**
- **Bounding accident in bin is DBA**

Hanford Spent Nuclear Fuel Project

DOE-STD-3009-94

Combinations of conclusions from risk analysis that identify situations of major concern

Combinations that identify situations of concern

(taken from EPA Technical Guidance for Hazards Analysis) 102-101-072-00

Figure 3-3. A three-by-three likelihood and consequence ranking matrix for hazard evaluation.

Hanford Spent Nuclear Fuel Project

Binned Listing of Candidate Accidents Sorted by Risk Ranking. (Example)

Candidate accident	Consequence / frequency categories	Risk ranking	Checklist designators
MCO external hydrogen explosions			
Hydrogen deflagration outside an MCO due to hydrogen generation within cask ^a	S2/F3	7	PB-B-13f PB-L-11a ² PB-H-06i
Hydrogen deflagration in PWC room receiver tanks due to inadequate ventilation or extended communication with a drained MCO	S2/F3	7	PW-J-06 PW-L-11
Hydrogen deflagration outside an MCO due to instrumentation failure	S2/F3	7	PB-B-02 PB-H-11b
Hydrogen deflagration outside an MCO due to excessive water in MCO	S2/F3	7	PB-B-13d
Hydrogen deflagration outside an MCO due to internal process upsets of key parameters (MCO pressure, helium flow, tempered water temperature, tempered water liquid level)	S2/F3	7	PB-B-03a PB-B-13c PB-L-11d PB-B-13a PB-H-06f PB-L-11e PB-B-13b PB-L-11c PB-P-01
Hydrogen deflagration outside an MCO due to hydrogen accumulation during draining	S2/F3	7	PB-H-06d PB-H-06e
Hydrogen deflagration outside an MCO due to loss of support utilities	S2/F3	7	PB-F-02b SB-F-01b SB-F-02b PB-F-05b
Hydrogen deflagration outside an MCO due to facility fire	S2/F2	5	PB-L-01 PB-L-06 PB-L-13 PB-L-02 PB-L-07 PB-L-14 PB-L-03 PB-L-08 PB-L-15 PB-L-04 PB-L-09 PB-L-16 PB-L-05 PB-L-10 PB-P-02
Hydrogen deflagration outside an MCO due to contamination of helium supply	S2/F2	5	PB-H-06k
Hydrogen deflagration outside an MCO due to seismic events	S2/F2	5	TC-R-01 PB-R-01e PB-R-01h PB-R-01b PB-R-01f

^aChosen as a representative and bounding accident for further accident analysis development.

MCO = multicartridge overpack.

PWC = process water conditioning.

E-90

SNF-4506
Revision 0

Accident Analysis

- **Mechanistic progression of events is developed**
- **Event sequence is analyzed**
- **Dose consequences are calculated**
- **Safety equipment is classified**

SSC Classification

<i>Ensures that site boundary exposure is less than 0.5 rem</i>	SC
<i>Protects another SC component</i>	
<i>Ensures that 100 meter exposure is less than 1 rem</i>	SS

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Revision 0

DBAs and Effect of SSCs in FSAR

ACCIDENT	EFFECTS OF SSCs	MAJOR SYSTEM
Gaseous Release	Mitigate	HVAC
Liquid Release	Mitigate	HVAC
Internal Hydrogen Explosion	Prevent	SCHe
External Hydrogen Explosion	Mitigate	HVAC
Thermal Excursion Pressurized Blowdown	Prevent	SC vent path & TWS & SCHe
High Temperature Thermal Excursion	Prevent	TWS & SCHe

E-93

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Revision 0

Key Safety Aspects

- **Maintain access to the Heat Sink**
 - **GS and SC Helium gas purge**
 - **SC Tempered Water System**
- **Manage Pressure Relief**
 - **SC 30 psi vent path**
 - **SC 150 psi rupture disk**
- **Control Hydrogen Concentration**
 - **GS and SC Helium gas purge**
 - **SS Local Exhaust**

Appendix F. Comments by System

(3) Comment Resolution Report (by Commentor)

Commentor Clark, D

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
General		General						
001	00			Administrative	Med. Priority		5/13/99	Accept
F-2	General	There is no system for tracking open design issues other than those appearing in 6430.1A and the NRC compliance matrix. Examples of non-tracked items include future actions from the Human Factors Review (SNF-4213) and the recommendations contained in the First Article Test Report (HNF-3342).			<p>An issue tracking system does exist (see tracking system on next page of this report). There are several issues tracking lists that are handled by different persons and statused following different processes. In October 1998, it was decided that it was not effective to put all the issues in the same database, thus, the number of lists. A strategy for statusing, closing, and transferring issues from one list to the other was defined as shown in the attached table. However, the fact that two reviewers had the same comment shows that we have not communicated very well within the project (especially to the newly hired employees) the path we're following on tracking issues.</p> <p>The comment is, therefore, accepted and a Corrective Action Plan will be put together which will include:</p> <ul style="list-style-type: none"> - Update the "CVDF Tracking System" table to include all existing lists, including the database generated by the Independent Design Review. - Discuss the tracking system during project meetings to remind project staff the importance of tracking issues. - Update the issues list and bring the number of open issues down. - Make a decision at the project level on when it will be appropriate to have an unique database for all CVDF open issues. 			
	General	A single-failure analysis is required for all safety-class systems per the FSAR and DRD. FSAR Pg. B4-42 references SNF-4290 for this analysis, but the document cannot be located and is not in the calculation database.			<p>Comment accepted. SNF 4290 is being reviewed and approved. It will be released on May 26, 1999 and added to the project documentation. It will certainly be reviewed by the SAR Review Team.</p>			
002	00			Design Criteria	Med. Priority		5/13/99	Accept

SNF-4206
Revision 0

CVD TRACKING SYSTEM

ID	Lists	Origin	Type	Actions required	Responsible Person	Reporting	Transfers
A	Test findings	306 testing findings Report	Recommendations for design improvements	Mainly direct Merrick to implement changes to design to support procurement	Boes	group them by DCN to packages and report issues with closing items on a weekly basis	To list F : issues that become very urgent and require several project staff member attention To list G : issue that are not urgen and need to be transferred to close th list
B	Installation	Value Engineering sessions on the installation package	Preliminary actions and directions to the A/E	Mainly direct Merrick & Mactec to implement decisions through DCNs	Boes		
C	Off Normals	Off Normals sessions	Analysis, reviews, information gathering to support FSAR, minor design improvements	Preliminary engineering evaluations and directions to A/Es when applicable	Whitehurst		
D	HAZOP	HAZOP analysis sessions	Analysis, reviews, information gathering to support FSAR, minor design improvements	Preliminary engineering evaluations and directions to A/Es when applicable	Brehm		
E	SFRs	startup Group	Questions, recommendations related to construction in support of testing	Directions to the construction manager	Boes		
F	Project meetings	Weekly project meetings	Urgent issues/action items that impact near term project cost and schedule	Diverse actions	Choho	Weekly basis	No transfer until it's closed
G	Not urgent	meetings, e-mails etc...	back burner, issues not impacting schedule directly, but must be done prior to ORR	Diverse actions	Choho	None required	To list F : issues that become very urgent and require several project salff members attention

F-3

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(3) Comment Resolution Report (by Commentor)

Commentor Clark, D

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
013	00			Design Criteria	High Priority		6/4/99	Accept
F-4	General	Electrical components that may come in contact with hydrogen atmosphere are not designed per NEC Sections 500-504 requirements. Design needs to incorporate NEC requirements or justification for not applying NEC needs to be provided.			The design approach to ensure adequate margin in prevention of flammable conditions inside the MCO is preclusion of oxygen from the MCO internals (maintaining normal oxygen concentration inside the MCO less than 1.6% in compliance with NFPA-69). Flammable conditions within the MCO are also precluded during credible off normal conditions (accidental air ingress) in compliance with DOE Order 6430.1A criteria. When accidental air ingress is credible (when the MCO is under vacuum) hydrogen concentrations inside the MCO are maintained low enough to preclude combustion inside the MCO were an air ingress to occur. As documented in the CVD technical manual at pressures below 12 Torr the hydrogen pressure is by definition less than 12 Torr and the hydrogen inventory is low enough to preclude ignition should air ingress occur. When the MCO is under vacuum but at pressures above 12 Torr helium injection is use in conjunction with vacuum pump operation to maintain low hydrogen concentrations.			
		Provide the analysis and/or justification that demonstrates that the CVD process designs will limit the hydrogen concentration to less than 1/4 of the hydrogen lower flammability limit, and why electrical components and mechanical systems (e.g., sparking) are not designed to meet NEC Sections 500 - 504 requirements.			The design approach chosen to provide adequate margin from flammable conditions outside the MCO as gases from the MCO are transferred to other systems is a combination of inerting and dilution. Pre transfer and post transfer inerting is used prior to and after transferring gas containing hydrogen to the PWC vessels to preclude flammable concentrations (maintaining oxygen concentration less than 1.6%). Other process streams that could contain hydrogen, such as the cask lid vent, the vacuum pump discharge, the 30 PSI pressure relief path, and the SCHe vent path are provided with double check valve isolation from air sources up to the point where the lines the enter the local exhaust system. Upon entering the local exhaust system these streams are diluted to well below 1/4 of the lower flammability limit by the local exhaust flow.			
					After calculations are complete, an evaluation will be performed to assure adequacy of individual components.			
017	00			Design Criteria	Med. Priority		5/18/99	Accept
	General	There are no requirements in the design documentation for labeling of safety-class equipment per IEEE-STD-603-1991, Section 5.11.			Accept. Requirements will be added to installation package. All SC conduit will be marked.			
003	00	General		Design Criteria	Med. Priority		6/4/99	Accept
	General	Specifications and design documents do not address purchase of valve operators and electrical equipment that can be locked in position (for Hanford Lock and Tag System compliance).			OSHA evaluation and lock & tag evaluation will be performed and corrective actions taken as necessary.			

H-1-82160

P&ID Legend

(3) Comment Resolution Report (by Commentor)

Commentor **Clark, D**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
Comment								
001	00			Editorial	Low Priority		5/19/99	Accept
	General	Abbreviation "LO" as used on PV-*080, H-1-82165, Zone A-3 is not shown in abbreviation definitions.			LO = Lock Open. This will be added to the drawings by DCN.			
HNF-SD-SNF-DRD-002 Design Requirements Document, Rev. 4								
066	00			Design Criteria	Low Priority		5/18/99	Accept
	General	Alarm/Setpoint list required by DRD section 6.13.4.CC does not exist as a released document.			Project will determine the appropriate location for said data and issue.			
067	00			Design Criteria	Low Priority		5/18/99	Accept
	General	The review of need for emergency off buttons per DRD section 5.1.1.3 has not been documented as required.			Accepted. Will document decision.			
SNF-3001 Calculation Index								
003	00			Editorial	Low Priority		5/24/99	Accept
	General	SNF-2825 (Human Factors Engineering Analysis) has been supplemented by SNF-4213 (Human Factors Engineering Report for the CVDF).			Accept. Calculation index is being revised. This item will be corrected.			
SNF-4148 Master Equipment List								
006	00			Configuration	Med. Priority		5/24/99	Accept
	General	Component numbering between documents is sometimes inconsistent. For example: one of the VPS isolation valves is designated GOV-2*22 on H-1-82162. However, in the MEL, the same valve is listed as VPS-GOV-2*22.			Accept. A complete check of the numbering will be performed.			

Revision 0

SNF-4500
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor	De Larmartinie, L	Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Reviewer	Disp	Disposition Response
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General	General	021	00	Administrative	Med. Priority	5/19/99	Accept	It appears that the SDD for the PWC and other documents will have to be upgraded to resolve these concerns.			
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General	General	021	00	General	00	021	00	Administrative	Med. Priority	5/19/99	Accept	In addition to the comment on the absence of design requirements for this system, it is very difficult to find design information. For example: - The volume of PWC-TK-4001 (biggest tank of the facility) is not indicated on the PFD, on the EFD, in the System Description, or in the Equipment List. It is just mentioned at the middle of the 2000 page "Construction Specification for Project W-441-C1 Rev 0". (Note that there is no indication anywhere that this tank is part of this package). - What is the rationale for a 5000 gal tank TK-4001? - What is the basis to require TK-4032 and 4033 as critically safe? - There is no detail about the IX modules. How is the piping arranged within the module? What is the thickness of the shielding? - Where are the detailed drawings of the sampling bottles to understand how they work? - What is the purpose, performance objective, and characteristics of the filter PWC-F-4042? - How is the accountability on TRU material to decide about IXM replacement done? How this sampling system which seems pretty complex work?			
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H-1-82101/H-1-82102, Rev. Architectural Drawing

001	00	Editorial	Low Priority	6/4/99	Accept	There are no equipment labels on these drawings. It makes it very difficult to figure out where the equipment is located.					
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HNF-SD-SNF-DRD-002 Design Requirements Document, Rev. 4

029	00	1-4.1	1-7	Design Criteria	Med. Priority	5/24/99	Accept	The document states that the CVD/F Project shall be based on the versions (of Codes and Standards and DOE Directives) that were in effect on January 1, 1996. This is not acceptable. A process must be put in place to evaluate changes in the requirements which have been added since January 1, 1996. Those that are judged important must be incorporated and considered by the project.			
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(3) Comment Resolution Report (by Commentor)

Commentor **De Lamartinie, L**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
Comment								
030	00	2,2,2b8.c	2-6	Design Criteria	Med. Priority		6/4/99	Accept
	General	"A method shall be provided to survey and decontaminate the top of the cask/the top of the MCO to safe, allowable levels." What is the specification of possible contamination of the cask/MCO at the inlet of the facility? What is the requirement as for decontamination?			The DRD will be revised to address decontamination more clearly. Engineered decontamination is not a DRD requirement. MCO requirements make surfaces accessible for manual decontamination.			
036	00	2.3		Design Criteria	Med. Priority		6/4/99	Accept
F-7	General	MCO Interfaces - At the arrival in CVDF, the MCO and the transport cask are full of water coming from the basin. There is no specification about this water: Two cases may occur: 1) The water has the same specification basin. If so, why treat it before returning it to the basin? 2) A degradation of the fuel may occur during the transfer. Dissolution may occur and/or fuel particles may migrate into water. Consequently, water composition would change compared to basin specification. If so, water specification should be given in the DRD of the CVD in order to design it. Presently, there is no specification of these inlets. The water specifications which have been used for designing the CVD, for instance contamination level or range of particulate size, will be identified and described in the DRD.			The contamination level (fuel inventory) of the water in the MCO is specified in the DRD in table 2-2. The water removed from the MCO/Cask annular space will be essentially de-ionized water with a potential for low levels of contamination. To minimize unnecessary duplication of systems this clean/potentially contaminated water source will be treated and processed in the same equipment that processes the more contaminated water that is removed from the MCO (the PWC system).			
SNF-2356		Operating Manual, Rev. 1						
005	00	3-4	3-33	Editorial	Low Priority		5/19/99	Accept
	General	This time diagram should be provided with different level of details in order to better appreciate the duration of basic tasks and detailed subtasks. Suggest inclusion of summary level detail.			Good suggestion. We will do it.			

F-7

SNH-4506
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor De Lamartinie, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
006	00	3-4	3-33	Editorial	Low Priority		6/4/99	Accept
	General	This time diagram provides the same level of detail as SNF 4207 "Design features of the CVDF to keep worker doses ALARA". Nevertheless, even if close, these two documents are inconsistent.			While it is true that it would be ideal for all CVD documents to at all times contain consistent information this is not practical when some documents are of a more historical type such as ALARA documentation for the design, and others are updated frequently to reflect the best available information. It is critical for example that the operating manual contains the most up to date information with respect to the operating sequence. However for the ALARA documentation what is critical is that the time in the field is appropriate. In the course of improving the operating manual it has been revised and includes some additional refinement which will not change the conclusions or evaluations in the ALARA documentation. Because the refinements made in the operating manual do not invalidate the conclusions of the ALARA documentation revision of the ALARA documentation is not warranted at this time. A page change ECN to the ALARA report may be issued.			
007	00	3-4	3-33	Technical	Med. Priority		5/19/99	Accept
F-8	General	The time diagram should be the subject of a more general study, including analysis of the overall facility throughput. Also, including a nominal case and if necessary of one or several different cases. Analysis of margins should also be done. Suggest preparing a report based on the "Witness" model.			Witness model updating is planned.			

SNF-3001

Calculation Index

SNF-4206
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor De Lamartinie, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
004	00			Editorial	Med. Priority		5/24/99	Accept
F-9	General	The titles of the documents are not very comprehensive and make it difficult to find information.			Accept. A roadmap of which document does what will be prepared prior to turnover.			
		Example 1: Draft : Goth, "SNF Simulation of the Hanford Spent Nuclear Fuel Cold Vacuum Drying First Article Test Predictions," JMI-98030102-1 – "Hanford SNFP Cold Vacuum Drying Process Pre-Test" Goth, "SNF Model Simulation of future Proof of performance/First Article Tests," JMI-98030105-1 – "Hanford SNFP Cold Vacuum Drying Process" Goth "SNF Model Simulation of normal operations," Example 2 : WHC-SD-SNF-RPT-013 – "A Probabilistic Assessment of Fuel Particulate Contents of an MCO" WHC-SD-SNF-TI-023 – "Bounding Particulate Contents of a MCO" Calculation Note for probabilistic evaluation of MCO particulate water content. HNF-SD-SNF-CN-008 – "Particulate Inventory of an MCO" HNF-1527 – "Estimates of Particulate Mass in MCO" HNF-1523 – "K-Basins Particulate Water Content Behavior and Impact" HNF-SD-SNF-CN-010 – "Uncertainty Analysis of Available Water in Fuel Particulate Loaded in an MCO Scrap Basket" Example 3: HNF-SD-SNF-TI-015, "SNFP Technical Data Book" HNF-SD-SNF-TM-001, "CVD Process Technical Manual" Suggest design qualification checklist.						
SNF-4248, Rev. 0		Cold Vacuum Drying Facility Document Hierarchy Definition Document						
001	00			Editorial	Low Priority		5/24/99	Accept
	General	Although several lists of documents have been developed for the project, all documents are not listed. Other (important) documents have been discovered. Example: - P&ID H-1-83766 - HNF-3904, "Procurement Specification for Ion Exchange Module" - Drawing H-1-83203 - Etc. This lack of Configuration Management makes it very difficult to find information. In the absence of information, one can also wonder if the systems have been correctly designed.			Accept. Will add documents to the list.			

SNF-4506
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor **Riesenweber, S**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
H-1-82162		Process Equipment Skid P & I D Vacuum Purge System						
001	00	Zone C-7/8		Editorial	Low Priority		5/24/99	Accept
	General	Zone C-7/8 drawing should show the valves in the MCO lid that are operated by VPS-V-*019 and VPS-V-*010. Without these valves, it is unclear how MCO isolation is achieved, and the processes described in SNF-3067, Section 3.1.1 are confusing.			Accept. Document will be revised.			
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
023	00			Technical	Med. Priority		6/4/99	Accept
F-10	General	Radiation dose levels are not specified for the PCW system. This could have an impact on material selection (especially Elastomers) and the location of pipe runs from an ALARA perspective.			A design calculation was performed by our AE, CVD-13 "Gamma Radiation Effects on Materials of Construction for the Cold Vacuum Drying Facility". This calculation indicates that special considerations are not required for selection of materials of construction (including elastomers) due to the low radiation exposure environment. The dose rate in the facility was calculated based on actual equipment locations and potential fissile accumulations in HNF-2850 "Shielding Analysis for the Cold Vacuum Drying Project". The results of these evaluations lead to recommendations to provide shielding at specific locations (including provisions for adding shielding at process check valve locations in the PWC transfer line). The results of this does rate evaluation was combined with a time in field estimates to determine if the worker dose would be ALARA.			
					Revise DRD to reflect requirement for assuring radiation does to materials subject to degradation from radiation.			
074	00			Editorial	Low Priority		5/24/99	Accept
	General	The DRD content appears to be more appropriate for a Facility Design Description. It contains considerably more information (i.e., how the requirements are met) than is normal for a DRD.			DRD scope will be evaluated.			
004	00	2.2.1.d		Design Criteria	High Priority		5/24/99	Accept
	General	Section 2.2.1.d requires 3 shift operation, 340 days per year. Has a RAM analysis been done to verify this availability?			No. The RAM analysis will be completed prior to acceptance by Operations.			

SNF 42200
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Severud, V

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
044	00		A-13	Administrative	Low Priority		5/18/99	Accept
	General	Hanford Site documents WHC-CM-6-1, Standard Engineering Practices. Why is this document included in the DRD if it is only "strongly recommended."?			This document was in place when the project started. Standard engineering practices have been used throughout the project due to minimal changes to engineers and Design Authorities on the project. DRD will be revised to say that CM-6-1 has been superceded by the HNF-PROS & IPs.			
		Are portions of this document actually required?						
HNF-SD-SNF-SEL-002		Safety Equipment List						
002	00		12, 14, 19, 23	Editorial	Med. Priority		5/24/99	Accept
	General	SEL Table notes all refer to condition 3/1 certification to WHC-SD-GN-DGS-30006. However, there are a number of revisions of this document and the section 4.0 REFERENCES of the HNF-SC-SNF-SEL-002, Rev. 6 does not list the 30006 document and no revision or issue date. Since the different revisions of 30006 have different requirements, the revision and date of 30006 required in the SEL should be given.			Accept. Version numbers will be added as appropriate.			

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Revision C

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SNF-4506
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor **Crawford, G**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
H-1-82132		Crane Plan, Sections, Details						
001	06	Zone P-6		Editorial	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	Zone P-6 runway beam shown in Calculation MEI-2288-ST-06-B selects W18x60. Drawing calls for heavier W18x76. This is not a problem as it is heavier. However, this heavier beam increases load on columns. This increase will probably not change column sizing. Issue in one of documentation consistency, and accuracy of calculations. Suggest revision of calculation.				Comment forwarded to A-E. Calculations will be revised.		

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(3) Comment Resolution Report (by Commentor)

Commentor **Severud, V**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
96004.1.2		Seismic Evaluation of CVDF Secondary Enclosure & Process Water Tank Room						
006	06	General		Configuration	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	Have changes above been incorporated by a revision to Document 96004-1.2?			The seismic analysis has not been updated to reflect the as-built design of the facility. The seismic analysis has been reviewed to determine if it bounds the facility. The report is being prepared by Pactec, with a due date of May 17, 1999. Evaluation of the recommendation will be performed and documents revised as needed.			
002	06	Sheet 7-24		Configuration	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	Have footing sizes been increased and incorporated into design media (DCNs and H-1 drawings)?			Yes. Drawings H-1-82121 and H-1-82123 shows details.			
003	06	Sheet 7-30		Configuration	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	Have Notes 2,3,&4 design changes been incorporated into DCNs and drawings?			The seismic analysis was used by the A-E to complete design. All recommendations were evaluated by the A-E and incorporated into the design media.			
004	06	Sheet 7-31		Configuration	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	Have Notes 1,2&3 design changes been incorporated into design media?			The seismic analysis was used by the A-E to complete design. All recommendations were evaluated by the A-E and incorporated into the design media.			
001	06	Sheet 7-9		Configuration	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	Has recommended weld at the bottom of the angle been incorporated?			Drawing H-1-82130 modifications were made that incorporated recommendations.			
005	06	Sheet 9-1 and 2		Configuration	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	Have exceptions and special considerations notes been resolved?			Drawings H-1-82127, H-1-8213; Construction Spec. W-441-C1, Divisions 03 and 05. Per A-E, incorporation of recommendations complete.			
HNF-2179, Rev. 0		Seismic Analysis of TN-DE&SH Cask Transportation Trailer System for CVD Facility						
001	06		1, 9 & 10	Configuration	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	Have modification to design media, DCNs and H-1 drawings been done to incorporate the trailer modifications and recommendations of pages 19 and 52?			Yes. The trailer landing gear has been redesigned. This resulted in to an increase of the floor slab thickness in each processing bay.			
HNF-3553 Annex B		FSAR Annex B						

HNF-45506
 Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Severud, V

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-4291, Rev. 0 DRAFT Seismic Adequacy Review of PC012 SCE That Are Potential Seismic Instruction Hazards to PC3								
011	06		B1-6	Editorial	Low Priority		5/20/99	Accept
	Civil/Structural System/CIV	Pg. B1-6, 2nd paragraph discussed CVDF site spectra. Why is there also information on K Basin's DBE per SDC 4.1? This could confuse reader to think that the CVDF has a zpa of 0.2g horizontal and 0.13g vertical.			Comment accepted. The referenced text will be removed or revised to accurately reflect the CVDF site spectra.			
012	06		B2-20	Technical	Med. Priority		5/20/99	Accept
	Civil/Structural System/CIV	Pg. B2-20, 1st paragraph states that the Administration Building is structurally decoupled from the Process Bay structure and is designed to fall away from the Process Bay during a Category 3 event.			The administration building and process bay structures are on separate foundations and have separate walls. The weak bracing is a design feature that ensures "fall away" from the process bays. A document reference for these features will be researched and provided if available. The drawing reference suggested will be evaluated for incorporation into the SAR text.			
		Are the Administration Building and the Process Bay on a common foundation?						
		What are the design features (and where documented) that demonstrate "fall away"? Are they the weak bracing of the Administration Building as shown on H-1-82106, Sht. 1? If yes, suggest making reference to H-1 drawing.						
HNF-4291, Rev. 0 DRAFT Seismic Adequacy Review of PC012 SCE That Are Potential Seismic Instruction Hazards to PC3								
001	06	Section 3.0	3	Technical	Low Priority		5/18/99	Accept
	Civil/Structural System/CIV	Pg. 3, Section 3.0, Evaluation Criteria. This draft indicates that since the arrangement of PC3 SCE's are almost identical for each Process Bay, only one bay will be evaluated. This is reasonable but a "quicklook" also for the other process bays to confirm sameness is recommended. Fixes developed should be incorporated into all process bays.			Comment accepted. An evaluation of all bays will be completed prior to turnover.			
HNF-SD-SNF-DRD-002 Design Requirements Document, Rev. 4								
005	06		6-108	Design Criteria	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	The reference to the document WHC-SD-DGS-30006, 1993, Rev. 1 is not the latest. Rev. 1-A and Rev. 2 exist. The loads in Rev. 1-A and Rev. 2 are higher than in Rev. 1. As the revisions in requirements occurred, did the design media get upgraded and/or changed to be consistent with the new requirements?			The project has tried to keep up with the latest revisions and applied the latest revisions guidance documents to work not completed. This has caused some problems with tracking the document revision used. The project has also revised the design in some instances to reflect updated documents.			
		Note also, Rev. 1 is loads for safety class, not performance PC's as is in Rev. 1A and 2.						

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(3) Comment Resolution Report (by Commentor)

Commentor Severud, V

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
043	06	Appendix G, W-441-CI Construction Spec.	15140	Design Criteria	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	Supports and anchors DCN 008 adds Paragraph 1.2.6 WHC-SD-GN-DGS-30006, Rev. 1-A, Guidelines for Assessing the Seismic Adequacy of EXISTING Performance Equipment at Hanford. Should it be for NEW installation? New installation design loads are higher than existing--so calculations could be inadequate to validate design.				Will review with A-E and contractor to determine which revision was used for design of supports and anchors. E-mail sent 5/18/99 to Rick Routh.		
MEI-2288-ST-06, A thru								
002	06	ST-06-G	C24	Technical	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	Calculations "assume crane is idle and not loaded during earthquake." What is justification? Load combination requirements usually require DL+LL+E.				If the crane is in operation during a seismic event, the MCO is not in process mode. A drop analysis has been performed that shows the cask lid (max weight) can be dropped on the cask/MCO w/o loss of confinement. The analysis will be reviewed to assure adequacy and that the crane stays in place when loaded and unloaded.		
003	06	ST-06-G	C25	Design Criteria	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	Is use of table 2.3 and 2.4 values allowed for design? They are taken from WHC-SD-GN-DGS-30006 Rev. 1A based on experience data in walkdowns of existing facilities. Rev. 2 of 30006 permits this use provided in-structure spectra be "rigorously analyzed" and the amplification factor compared to factor of 4.0 used in the development of tables 2.3 and 2.4.				Question has been addressed to A-E via e-mail to R. Routh on 5/18/99.		
MEI-2288-ST-10-M								
001	06		F66	Technical	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	Uses load combination of 0.9D+ Wt. Where is the seismic component load considered in the process area foundation anchor bolt design?				Question has been addressed to A-E via e-mail to R. Routh on 5/18/99.		
002	06		F69	Design Criteria	Med. Priority		5/18/99	Accept
	Civil/Structural System/CIV	Anchor bolt design was based on a computer code assignment. Has this code been shown to give results acceptable (validated) to the GC-ANCR-01 or HNF-SD-GN-DGS-30006 Rev.2 requirements? Are the proper safety factors included?				Question has been addressed to A-E via e-mail to R. Routh on 5/18/99.		
MER-2288-S-02								
Process Area Two (2) Ton Bridge Crane Support Girders								

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(3) Comment Resolution Report (by Commentor)

Commentor Severud, V

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
001	06		3 of 31 and 29-30 of 31	Technical	Low Priority		5/21/99	Accept
	Civil/Structural System/CIV	Revised design/drawings, Pg. 3 of 31 and 29-30 of 31, are NOT consistent with changes of DCN-W-441-011, Pgs. 13-14 of 16 and Dwg. H-1-82132, Rev. 1. The design calculations should be updated to show that the DCN design is equal to or greater in structural strength.			Drawings are not updated with every DCN--only when the project initiates a revision. Calculations are performed on any new design or updated design - turnover at end of project.			
MER-2288-S-13, Rev. 0 Process Water Conditioning Skid Seismic Analysis								
001	06			Technical	Med. Priority		5/21/99	Accept
	Civil/Structural System/CIV	Have the design changes identified on Pg. 9 of 153 been incorporated into Drawing H-1-82172 and structural found drawings?			Question to Mactec-Meier via e-mail.			
SNF-3001 Calculation Index								
001	06		P-9	Administrative	Low Priority		5/21/99	Accept
	Civil/Structural System/CIV	Seismic Reports & Analysis - Copies of documents not available: Merrick - MER-2288-S-09C; MER-2288-S-11.			Comment accepted.			
SNF-3061 Civil/Structural Systems								
003	06		3-20	Editorial	Low Priority		6/4/99	Accept
	Civil/Structural System/CIV	Pg. 3-20 write-up implies design work is done--it is not yet complete!			Accept. SDD is being revised.			
006	06		A-2	Editorial	Med. Priority		5/21/99	Accept
	Civil/Structural System/CIV	Pg. A-2, Source Document - All references should include the revision number and date.			Accepted.			
001	06		B-9	Editorial	Low Priority		5/21/99	Accept
	Civil/Structural System/CIV	On p. B-9, the reference to the Report 1435-001, 01/01/97 by Shannon & Wilson, actually should be Report H-1435-01, dated March 1997.			Accepted.			

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SNF-4506

(3) Comment Resolution Report (by Commentor)

Commentor Severud, V							
Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Reviewer Disposition Response
007	06		B9 & B10	Editorial	Low Priority		Accept
	Civil/Structural System/CIV	Pg. B9 & B-10 Design Calculations (incomplete) - There are many more seismic calcs listed in Appendix H, SNF-3001. Why not here? Referenced on B-9 and B-10 are incomplete!			Table in SDD Will be revised and references will be updated.		
002	06	3.3.1.2.17	3-20	Design Criteria	Med. Priority		Accept
	Civil/Structural System/CIV	Pg. 3-20 3.3.1.2.17 Equipment Mounting - What revision of WHC-SD-GN-DGS-30006, 1993, "Seismic Design Criteria for Safety Class 3 and 4 Equipment at the Hanford Site" is required? There are Revisions 0, 1, 1A, and 2. The SDD gives Rev. 1. This document is intended for PCO12 SCE with 3/1 consideration/requirements. It is not for first construction design of PC3 SCE.			Questions asked of Mactec-Meier via e-mail to R. Routh 5/18/99.		
005	06	Table 3-1	3-13	Editorial	Low Priority		Accept
	Civil/Structural System/CIV	Pg. 3-13, Table 3-1 Reference A is not consistent with FSAR Pg. B2-19, Table B2-2., Reference A.			FSAR to be updated.		
004	06	Table 3-1	Pg. 3-13	Editorial	Low Priority		Accept
	Civil/Structural System/CIV	Pg. 3-13, Table 3-1 Reference D is not consistent with FSAR Pg. 82-19, Table B2-2, Reference D.			FSAR to be changed.		

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(3) Comment Resolution Report (by Commentor)

Commentor De Lamartinie, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
CVD-10, Rev. 0		Calculation for Mass Balance on Process Flow Diagram						
001	07			Administrative	Low Priority		6/4/99	Accept
	Vacuum and Purge System/VPS	This note assumes, even if it is not clearly said, that gas within the MCO is air. This is not true, as it is He. The note is out of date and should be cancelled.			The MCO contains He, hydrogen, water vapor at variable contaminations. The calculation will be reviewed for accuracy and verified as appropriate.			
HNF-4057		Cold Vacuum Drying Proof of Performance (First Article Testing) Test Results						
001	07	3.5.3/3.5.4	3.17	Technical	High Priority		6/4/99	Accept
F-18	Vacuum and Purge System/VPS	Table 3.7 shows that 1.6 liters of water in the case of pristine fuel, 1.9 liters of water in the case of Nominal fuel and 13.4 liters of water in the case of damaged fuel has disappeared from the mass balance. This amount of water is the difference between what is in the MCO after bulk removal, and what is recovered from drying equipment (condenser and vacuum pump). It is necessary to determine where this water has gone: - Does it remain in the piping between the MCO and vacuum pump? If so, is it acceptable? - Does it go to the vent? If so, is it acceptable? - Does it remain in the MCO? If so, it is NOT acceptable because the real requirement is 0.2 liter. Additional tests should be done: - to demonstrate that drying of the fuel is effective and that less than 0.2 liter is reached. - to determine where the missing water has gone? - Suggest additional tests and revision of test report to explain disparity in mass balance.			Calculations and, if necessary, additional tests will be performed to demonstrate no ice appears in the MCO after the drying sequence. Also, the equipment report will be revised to explain and document where the missing water has gone.			
	004	07	4.4.3	4-12/4-13	Technical	Med. Priority	5/19/99	Accept
	Vacuum and Purge System/VPS	Is the purpose of the test described in the introduction of this section and the purpose recalled in the conclusion not the same? I have a hard time imagining operation of the facility continuing when chilled water is lost. Consequently I don't see why we are analyzing this configuration. It would be better to provide an analysis of the risk and the consequences of loosing utilities and particular systems somewhere in the Design Report.			Upset event analysis for the CVDF are planned to be conducted by August 1999.			
	006	07	5.2	5-2	Editorial	Low Priority	6/4/99	Accept
	Vacuum and Purge System/VPS	The term "Same" listed in the column entitled "Finished Drying Time" is not clearly referenced. What does "Same" refer to?			Accept. Will be modified.			

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(3) Comment Resolution Report (by Commentor)

Commentor De Lamartinie, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
037	07	2.2.3 and 5.2.4.z		Design Criteria	Low Priority		5/19/99	Accept
	Vacuum and Purge System/VPS	The acceptance criteria is inconsistent. The maximum pressure increase is 2.4 torr in both case, but in Section 2.2.3.e, it requires that the MCO pressure remains below 10 torr. In Section 5.2.4.z, it requires a base pressure be 0.5 torr or less. These requirements do not appear to be consistent.			Acceptance criteria and nominal operating conditions are not inconsistent. The acceptance criteria is less than 10 torr. The practical operating condition is 0.5 torr, which is less the 10 torr. This will be explained in future revisions of the document.			
033	07	2.2.7/2.3.1.2/2.3.2.2/5.2.4		Design Criteria	Med. Priority		5/19/99	Accept
	Vacuum and Purge System/VPS	The unit used to characterize a leak rate (or a leak tight) is not understandable. What does "Pa.l/sec" (or "atm-cm3/sec") mean or what does it refer to? Note: In Section 2.3.2.2 (pgs. 2-21), the leak tight is even referred in "Pa" ???			Pa.l/sec (or atm cm3/sec) is a volumic flowrate unit in l/sec (or cm3/sec) corrected for pressure condition considered here as 1 Pa (or latm). Such units, even if slightly different from "normal conditions" (both 1 atm and 25 deg C) are commonly used in vacuum technologies. Editorial mistake in Section 2.3.2.2 will be corrected.			
035	07	5.2.4.1		Design Criteria	Med. Priority		6/4/99	Accept
F-19	Vacuum and Purge System/VPS	What are the requirements for filtration for gas drawn from the MCO? Is it the filters which are inside the MCO that are providing this filtration? What are the specifications of the particulates which may exit the MCO through the HEPA filters?			The process gas removed from the MCO is filtered by metallic HEPA filters contained inside the MCO. The MCO HEPA filter performance criteria is specified in HNF-S-0556. This filter is specified to be designed to remove 99.97% of particulate having a mean particle diameter of 0.3micron at a flow rate of 100 CFM at standard conditions.			

SNF-4306
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor **Riesenweber, S**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
H-1-82162		Process Equipment Skid P & I D Vacuum Purge System						
002	07			Configuration	Med. Priority		5/24/99	Accept
	Vacuum and Purge System/VPS	The P&ID does not actually represent the condenser (VPS-COND-2*13) configuration based on the vendor information received. Examples include: A) The vapor flow does not pass through the condensate tank (VPS-TK-2*16), it only passes through the condenser. B) The VPS cool water flow does not pass through the condensate tank. C) Isolation drain and vent valves are provided with the condensate tank to facilitate tank drawing. If the P&ID does not show the valves or that there is a way to drain this tank.			Accept. Will verify the vendor information is consistent with the drawing.			
003	07			Technical	Med. Priority		5/24/99	Accept
F-20	Vacuum and Purge System/VPS	Calculations do not make it clear that the ejector (PWC-EJR-4013) will create sufficient vacuum to bulk transfer from an MCO, support helium purge, and drain a condensate tank simultaneously. First Article Testing does not appear to model multiple loads (from simultaneous activities in different bays) to verify the capacity of the ejector.			Accept. MCS is programmed to prevent multiple activities involving ejector at one time. Additional scheduling screens are being added to assist operations.			
HNF-3553 Annex B		FSAR Annex B						
018	07	B2.5.1.6	B2-23	Editorial	Low Priority		5/24/99	Accept
	Vacuum and Purge System/VPS	A temperature conversion is wrong: a temperature difference of .2 degrees C is equivalent to .4 degrees F, not 32.4 degrees F.			Accept. Will correct.			
SNF-3062		Vacuum Purge System						
001	07			Editorial	Low Priority		5/24/99	Accept
	Vacuum and Purge System/VPS	Drying vacuum pressure action points between the SDD (Section 2.3.2) are not consistent with the pressures stated in the DRD (Section 3.5.2.4).			Accept. Documentation will be corrected.			
003	07			Editorial	Low Priority		5/24/99	Accept
	Vacuum and Purge System/VPS	The "proof mode" pressure rise criteria is not consistent between SDD (Section 2.3.2, 20 ton) and the SAR (Section B2.5.1.10, 8 ton). Also, the sequence/timing of OCRWM test is not consistent between the two documents.			Accept. Documentation will be corrected.			

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Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Riesenweber, S

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
007	07			Technical	Med. Priority		6/4/99	Accept
	Vacuum and Purge System/VPS	A lack of lockable isolation valves will make it difficult to perform maintenance and troubleshooting on the system.			OSHA/lock & tag review will be performed and corrective active taken as appropriate.			
002	07	2.3.2		SAR	Med. Priority		5/24/99	Accept
	Vacuum and Purge System/VPS	Section 2.3.2 indicates that satisfactory completion of the pressure rebound test results in bypassing the condenser. The SAR System B.2.5.1 states that this is initiated by a temperature change of less than 0.2 degrees C. These two action points for the same activity are inconsistent.			Accept. Documentation will be corrected.			
005	07	3.1.1.12		Technical	Med. Priority		6/4/99	Accept
	Vacuum and Purge System/VPS	It is not clear what mechanism controls the level of vacuum achieved.			Control is provided by the He flow rate which has a SC feedlock control.			
004	07	3.1.1.6		Technical	Med. Priority		6/4/99	Accept
	Vacuum and Purge System/VPS	The based on the physical configuration with the valves positioned lower than the incoming/outgoing line, it is possible that some flush water will flow back into the MCO. Is this acceptable? Does the impact the requirement in Section 3.1.1.9?			Helium drying and pressure rebound test will assure that no water remains in normal operation.			
006	07	3.1.3.13		Technical	Med. Priority		5/24/99	Accept
	Vacuum and Purge System/VPS	There is no indication on the P&IDs (H-1-82162/82163) that flow control valves exist to assure 1 gpm. A normal amount of positive, adjustable flow control is noted on all elements of the fluid systems.			Accept. A special test will be developed to verify flow rated periodically.			
008	07	3.2.2.1		Editorial	Low Priority		6/4/99	Accept
	Vacuum and Purge System/VPS	Section 3.2.2.1 does not indicate how primary confinement of contaminated effluents is made.			SDD will be revised as appropriate.			
009	07	4.1.1		Technical	Low Priority		5/24/99	Accept
	Vacuum and Purge System/VPS	Section 4.1.1 states that water removal is accomplished by pressurizing the MCO with He. Actually, He pressure in conjunction with a suction pulled by an eductor in the PWC transfers the bulk liquid.			Accept. SDD will be revised as appropriate.			

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(3) Comment Resolution Report (by Commentor)

Commentor Clark, D

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
001	07-1	5.2.5.e	5	Editorial	Low Priority		5/25/99	Accept
	Vacuum Purge System/VPS	Section 5.2.5.e occurs on two separate requirements (pages 5-14).			Accept. Will correct.			

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(3) Comment Resolution Report (by Commentor)

Commentor **Riesenweber, S**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
H-1-82161		Process Equipment Skid P & I D MCO/Cask Interface						
001	07-1			Editorial	Low Priority		5/24/99	Accept
	Vacuum Purge System/VPS	Why is the line supplying the long dip tube valve on the top of the MCO labeled VPS-- it seems to contain only He and DI water.			Reject. No change will be made to labeling.			

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Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Nelson, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-3064		Helium MSLD and Auxiliary Vacuum						
001	07-3			Editorial	Med. Priority		5/21/99	Accept
	Helium MSLD and Auxiliary Vacuum/MSLD	The design media provided are inadequate to evaluate whether the He MSLD and Auxiliary Vacuum System will serve their intended purpose. Section 3.1.3 of the SDD is incomplete. Drawing references are not provided. The sketches and text outline provided appear to provide a Conceptual Design that should be adequate, but overall, this SDD was not ready for a design review.				Accepted. SDDs are currently being upgraded and revised.		

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(3) Comment Resolution Report (by Commentor)

Commentor **Crawford, G**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
073	100	Table 2-1		Configuration	Med. Priority		5/24/99	Accept
	Specialty Equipment/SE	Table 2-1 does not compare well with MEL SNF-4148. SNF-4148 lists 31 items in Systems 100 and 101. Of those, 31 items only 14 are found on Table 2-1 of SNF-3076. Of the 43 items SNF-3076. Of the 43 items listed in SNF-3076 only 14 are in the MEL.			Accept. This SDD is changing because of ongoing design was on special tools. All documents will be revised when design work is complete.			
		Conclusion the MEL, SDD, and DRD for Systems 100 and 101 are very inconsistent and all three need to be updated and corrected.						

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Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Severud, V

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
W-441-P4		Process Hood/Seal Ring Procurement Specification						
001	100		L-2	Administrative	Med. Priority		6/4/99	Accept
	Specialty Equipment/SE	The seismic spectrum needs to be provided in this specification to support testing.			It is true that the seismic response spectra does need to be provided to support seismic testing. This information is being developed. When appropriate seismic response spectra does become available this information will be added to the specification.			
003	100	Appendix K		Administrative	Low Priority		6/4/99	Accept
	Specialty Equipment/SE	Safety Equipment List requires use of HNF-PRO-097 and includes certification of condition 3/1 to WHC-SD-GN-DGS-30006. This is good and the revision and release date of each of these documents should be added or given in attached list of references. The current rev's and release dates are: HNF-PRO-097, Rev. 0, 1997 and WHC-SD-GN-DGS-30006, Rev. 2, 1997.			The suggestions for inclusion of the applicable revision dates for these documents is a good suggestion. This change (inclusion of Revision date in footnote for the SEL) will be forwarded to the keeper of the CVD safety equipment list for processing during the next revision cycle for the SEL.			
002	100	Appendix L		Administrative	Med. Priority		6/4/99	Accept
	Specialty Equipment/SE	Safety Class Component Test Plan Guidelines are missing from spec.			Seismic test plan guides are included in the specification. The approach selected for Safety Class components was to determine which components were not available as Safety Class components from an approved supplier. Items that have been identified as not available for purchase as Safety Class have had CGI dedication forms developed for them. These CGI testing and inspection forms are not part of the specification but are instead standalone documentation packages. These CGI dedication packages address additional inspection and testing requirements for Safety Class components.			

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SNF-4506
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Clark, D

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-3065		Communication Systems						
001	11	3.1.1.1	3-1	Design Criteria	Med. Priority		5/13/99	Accept
	Communication System/COMM	Says talk-back speakers are not required. FSAR Section B2.9.1 says talk-back speakers are provided in Process Bays, which agrees with DRD Section 6.11.4.1.d.			252 Talk-back speakers will not be utilized due to background noise in the bays. The DRD will be corrected.			
003	11	3.1.1.2		Design Criteria	Med. Priority		5/13/99	Accept
	Communication System/COMM	States phone wiring is Category 5. The Category 5 classification actually refers to LAN wiring. This comment also applies to DRD Section 6.11.4.2.b.			254 Category 5 wiring will be used for both LAN and phones. The DRD will be modified to clarify this.			
004	11	4.1.2		Design Criteria	Med. Priority		5/18/99	Accept
F-27	Communication System/COMM	Backup power drives horns and speakers after loss of power. FSAR Section A2.9.1 implies backup power is available to entire comm. System (except HLAN). The FSAR requirement makes more sense since providing breakup power to entire system to ensure operability of interface to remainder of 100K Area. DRD Section 6.11.4.1.e also mentions speakers and horns only.			The facility UPS currently powers a receptacle for the HLAN connection. A DCN Request was generated to include the speakers/horns on the UPS as required by the DRD. The phone system is provided with back-up power at the Hanford Site level. A facility power outage will not affect standard phones. The FSAR and SDD will be clarified.			
002	11	6.11.4.1	3-2	Design Criteria	Med. Priority		5/18/99	Accept
	Communication System/COMM	States on pg. 3-2 outside speakers will withstand 70 mph winds. FSAR Table B1-1 specifies 80 mph winds in the natural phenomena hazards. DRD Section 6.11.4.1 also specifies 70 mph winds.			The FSAR will be changed to match the DRD and SDD.			
W-441-C1		CVD Facility Construction Specification						
003	11			Technical	Med. Priority		5/24/99	Accept
	Communication System/COMM	DRD and SDD For communication system require installation of Category 5 LAN and phone cable. This requirement is not reflected in the Construction Spec. Also, Category 5 cable installation normally requires special training for the installers.			Category 5 LAN and phone cables will be used.			

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Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor **Riesenweber, S**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
H-1-82222 SH 1		P & I D Water & Compressed Gases						
002	12			Technical	Low Priority		5/13/99	Accept
	Compressed Air System/ CA/IA	Set points for some PCVs are not provided on the drawing. PCVs did not appear on the Master Equipment List.			Drawing H-1-82222, Sht. 2, PCV 5006 did not have a set point. DCN Request #51 adds the set point (100 psig). Added to the MEL with ECN 653490.			
003	12			Technical	Med. Priority		5/13/99	Accept
	Compressed Air System/ CA/IA	A refrigerated dryer is provided prior to and in series with the desiccant dryer. The refrigerant dryer is not needed. This configuration will result in increased maintenance costs and may reduce the system reliability. If the refrigerant dryer is retained, the pre-filter and coalescing filters should be located before it to avoid oil loading in the dryer.			Comment sent to A/E for evaluation (ref. DCN Request #51).			
001	12	Zone E-6		Configuration	Low Priority		5/13/99	Accept
F-28	Compressed Air System/ CA/IA	Pre-filter, after-filter, and coalescing filter not labeled.			A DCN Request will be generated to add the following labels: Pre-filter (CA-F-5022), coalescing filter (CA-F-5023), and after filter (CA-F-5024).			
SNF-3066		Compressed Air System						
001	12	4.1.1.1		Technical	Med. Priority		5/21/99	Accept
	Compressed Air System/ CA/IA	States pressure switch is set at 145 psig - ON, 175 psig - OFF. Components (I.e., PCVs) are identified as 100 psi max pressure (see DCN W-441-121, pages 18 & 19).			Accept. Changes are being made to SNF-3066.			
W-441-C1		CVD Facility Construction Specification						
002	12	15487, 2.1.3		Technical	Med. Priority		5/21/99	Accept
	Compressed Air System/ CA/IA	Dryer specification does not indicate that a "humidity alarm" (dewpoint meter/alarm) is required with the dryer on H-1-82222, Rev. 0. This could result in needed equipment not being provided by the dryer mfg..			Accepted.			

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SNF-4506b
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor		De Lamartinie, L					Reviewer	
Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Disposition Response
SNF-2356 Operating Manual, Rev. 1								
003	13	3.1.1	3-4	Editorial	Low Priority	Document will be revised.	5/19/99	Accept
Helium System		Last sentence of second paragraph reads: "A small purge...or line breaks". The sentence is not understandable or is wrong.						

SNF-4506
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor **Riesenweber, S**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
H-1-82167		Process Equipment Skid Block Flow Diagram						
001	13	Zone C-8 & B-8		Editorial	Low Priority		6/4/99	Accept
	Helium System	Zone C-8 and B-8 the lines labeled "SCHe Purge C" [SCHe-*11-SS-1'] [SCHe-*12-SS-1'] and SCHe Purge D" should be labeled "SCHe/He Purge C" and D to clarify that both safety class and general service He flows through the lines. Review all dual-use lines for similar concerns.						
		While it is true that either helium from the safety class bottles, or the general service helium could flow through the lines discussed in this comment the line itself is Safety Class and the name "SCHe purge" is most appropriate.						

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(3) Comment Resolution Report (by Commentor)

Commentor Nelson, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-3067		General Service Helium System						
005	13-1			Editorial	Low Priority		5/21/99	Accept
	General Service Helium System/He	Throughout this SDD the use of gauge pressure and absolute pressure are intermixed. It is often not clear which is intended.			Accepted. Will revise.			
006	13-1	4.1.1.1	4-3	Editorial	Low Priority		5/21/99	Accept
	General Service Helium System/He	HE-*09-SS-1/2" is shown as a 3/4" line on H-1-82222 for bay 3 only (HE-309-SS-3/4). Should be 1/2"			Drawing will be evaluated to determine where line No. one not consistent.			
004	13-1	Section 2.1.1	2-1	Technical	Low Priority		5/21/99	Accept
	General Service Helium System/He	This section states that a secondary function of the GSHe system is to provide the primary supply of He to the SCHe system. This requirement is not listed in Section 6.6.4.8 of DRD.			Only high-level requirements in DRD. The requirement is to provide He for processing to the PES/MCO.			
007	13-1	Section 4.1.1.1	4-4	Editorial	Low Priority		5/21/99	Accept
	General Service Helium System/He	HE-V-TBD should be HE-V-01.			Accepted. Will revise.			

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(3) Comment Resolution Report (by Commentor)

Commentor **Riesenweber, S**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
H-1-82222 SH 1		P & I D Water & Compressed Gases						
004	13-1			Technical	Med. Priority		5/18/99	Accept
	General Service Helium System/He	Zone D-6 shows 3/8" tube connections from trailers to main GSHe distribution system. As much as 40 scfm of He could be required (10 scfm @ each bay); the small size tubing will experience high flow velocities and pressure drops--this may be acceptable, but is probably not good practice. Re-evaluate tube size.			Calculation has been done with the DRD requirement of 25 cfm max. The system can support higher flow rates if the criteria changes.			
005	13-1			Editorial	Low Priority		5/18/99	Accept
	General Service Helium System/He	Zones D-7 and F-7 pressure regulating valves are shown backwards (sensing upstream rather than downstream).			Error on drawing will be corrected in next DCN on helium system.			
006	13-1	Figure 4-1	4-2	Technical	Low Priority		5/18/99	Accept
	General Service Helium System/He	Figure 4-1, pg. 4-2 indicates that SRV-5026 and SRV-5027 (safety class relief valves are set at 125 psig. Drawing H-1-82222, Sh. 1 indicates a 25 psig set pressure as does Figure 2-1 (pg. 2-4) and Section 3.1.5. Correct value should be 25 psig.			The drawings are correct. The SRVs are set at 25 psig. The SDD figures are being corrected.			
MEI-2288		He Use Calculation						
001	13-1			Technical	Med. Priority		5/18/99	Accept
	General Service Helium System/He	This calculation is outdated (i.e., N2 is not even used in the current process). It should be revised or removed from the calc list. If it is removed, it should be superceded by another cal that estimates the He usage as is required in the DRD.			Concur. Mactec Meier has prepared a new calc. for hydrogen and it will be incorporated into calc log.			
SNF-3067		General Service Helium System						
001	13-1	2.2		Editorial	Low Priority		5/21/99	Accept
	General Service Helium System/He	Section 2.2 doesn't list MCO pressure transmitters as safety class SSCs consistent with the SEL (HNF-SD-SNF-SEL-002, Rev. 6).			Not all of the GSHe is SC. Need PT numbers to determine where the problem is.			
003	13-1	3.1.1.2		Technical	Med. Priority		5/21/99	Accept
	General Service Helium System/He	Section 3.1.1.2 states MCO He pressure to be 22.0+- 1.5 psi absolute, He pressure is 4 psig. Absolute pressure is atmospheric pressure + gage pressure (14.7 + 4 = 18.7 psi). It doesn't appear that the requirement can be met. Correct pressure disparity--assure any changes are taken into account for other parts of the system (i.e., SCIC).			Accepted. Will revise.			

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(3) Comment Resolution Report (by Commentor)

Commentor Riesenweber, S

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
002	13-1	3.3.2		Configuration	Low Priority		5/21/99	Accept
	General Service Helium System/He	Section 3.3.2 identifies piping tested to MSLD test. HNF-SD-SNF-SEL-002 Rev. 6 identifies Sensitive Leak Detection. Rev. 6 DCN does not list SDD as impacted.			SDD was updated before changes were made to SEL. SDD will be updated.			

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(3) Comment Resolution Report (by Commentor)

Commentor **Riesenweber, S**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
CVD-16		SCHe Flowrate and Accident Scenarios						
002	13-2		34	Technical	Med. Priority		5/24/99	Accept
	Safety Class Helium/SCHe	Case 3 is modeled with PI5*81 set a 3 psig. H-1-82165 shows set at 2 psi. This will result in a reduced flowrate from that calculated.			Accept.			
001	13-2	Case 1	7	Editorial	Low Priority		5/24/99	Accept
	Safety Class Helium/SCHe	PCV5*54 is incorrectly labeled and modeled as set at 3 psig rather than 4 psig as is shown on H-1-82165.			Accept.			
General		General						
028	13-2			Technical	Med. Priority		6/4/99	Accept
F-34	Safety Class Helium/SCHe	Calculation MEI-2621-ME-03, "Size He Gas Piping" was requested but could not be found. This calc. may provide assurance that piping and components were sized properly. However, the title of the calc. does not appear to indicate that components (i.e., valves, flow indicators, etc.) were considered. The total He system (i.e., GSHe and SCHe) should be looked at as a unit to assure proper flow and pressures throughout.			Project will evaluate that He system.			
029	13-2			Technical	High Priority		6/4/99	Accept
	Safety Class Helium/SCHe	No flowrate control devices (i.e., rotometers) are found in the SCHe or GSHe systems. Especially high and wasteful, or even possibly low flowrates could occur because in system such as these, system pressure/flow curves are only approximations. Actual flows can vary due to unanticipated differences in resistances (i.e., improperly reamed tubing). It is suggested that tubing and components be somewhat oversized and flow control devices be used to achieve the desired flowrate. Otherwise, proof testing should be used to verify flowrate calculation in Merrick Calc. CVD-16.			Calculations have been performed and will be verified during acceptance testing.			
H-1-82165		Safety Class Helium System P & I D						
001	13-2			Technical	Med. Priority		5/24/99	Accept
	Safety Class Helium/SCHe	A 1 psi pressure differential between the PCVs from the general service He (PCV*80/82) and the SCHe supply PCVs (PCV*27/08) set points is low. Nuisance flow alarms on the SCHe system are likely--especially when flow is initiated to the MCO.			Accept. Will be evaluated.			

Revision 0

HNF-SD-SNF-DRD-002 **Design Requirements Document, Rev. 4**

(3) Comment Resolution Report (by Commentor)

Commentor **Riesenweber, S**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
077	13-2	5.5.5.a		Editorial	Low Priority		5/24/99	Accept
	Safety Class Helium/SCHe	The section states "the equipment shall be part of the SCIC system operation." It is not clear that the SCHe system is PART OF the SCIC system; instead it interfaces with it, or is activated by it.			Accept. Will revise the DRD.			
075	13-2	5.5.5.b		Editorial	Low Priority		6/2/99	Accept
	Safety Class Helium/SCHe	This section states that the "SCHe system shall "provide a vent path for purging MCO gasses." The vent path does not appear to be part of the SCHe system; instead, it vents through the VPS which is only SC to the edge of the process hood. Suggest revising DRD wording.			Accept. Project will provide the written logic for the system configuration in the SCHe HVAC SDDs.			
078	13-2	5.5.5.h		Technical	Med. Priority		6/3/99	Accept
F-35	Safety Class Helium/SCHe	The section states that "SCHe flow capacity shall achieve a steady-state concentration <4%." Since the bottles will be depleted in equal to or greater than 1 hour, the concentration could rise after that duration. The statement should acknowledge the He depletion time.			Accept. Will revise to clarify that concentrations of hydrogen will be <4%, while He is flowing and that the oxygen will be purged prior to the He depletion. Mixing for oxygen removal will be evaluated.			
076	13-2	5.5.5.o	5-27	Technical	Med. Priority		6/2/99	Accept
	Safety Class Helium/SCHe	The section states that the "SCHe shall initially fill and pressurize the MCO and space for 1.5 minutes prior to the start of purge gas flow...." It is not clear from P&IDs H-1-82161 and H-1-82165 that this will occur when power is lost. It appears that the flow through line SCHe-*09/10-SS-1" will occur immediately, pressurizing the MCO. This flow will also pressure SCHe-*01/11 and as soon as this line reaches 4 psig, PCV 5*54/55 will begin relieving pressure creating purge flow. It is not clear how much time delay will actually occur with a loss of power.			Accept. A-E is performing a calculation to verify time delay function.			
SNF-3068		Safety Class Helium						
001	13-2	3.1.1		Editorial	Low Priority		5/24/99	Accept
	Safety Class Helium/SCHe	Section 3.1.1, Req. 1 - It is not clear that the SCHe system IS PART of the SCIC system as stated.			Accept. SDD will be revised.			
002	13-2	3.1.1, Req. 3		Technical	Med. Priority		5/1/2499	Accept
	Safety Class Helium/SCHe	This section states that the dual lines are provided to meet the single-point failure criteria. There is a point at which the lines tie together and proceed to the MCO. The document should explain why redundancy isn't needed all the way to the MCO.			Accept. SDD will be revised to reflect the single failure approach.			

SNF-4306
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Riesenweber, S

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
004	13-2	3.1.1, Req. 7 & DRD Section 5.5.5.g		Editorial	Low Priority		5/24/99	Accept
	Safety Class Helium/SCHe	Section 3.1.1, Req. 7 & DRD Section 5.5.5.g should state "valves go open, OR CLOSED, as appropriate..." instead of "valves go open....."				Accept. SDD will be revised to address other valves that fail closed.		
005	13-2	3.1.1, Req. 8		Editorial	Low Priority		5/24/99	Accept
	Safety Class Helium/SCHe	This section refers to a "worst" case SC line break inside the isolation valves. This wording is unclear or misleading--maybe "In-between" is intended.				Accept. Wording will be clarified.		
006	13-2	3.1.1, Req. 9		Configuration	Low Priority		5/24/99	Accept
	Safety Class Helium/SCHe	Where is the .08-in. screen size located in the system?				Accept. It is on the end of the long dip tube. Wording will be revised.		
003	13-2	3.1.1.1, Req. 5 & DRD Section 5.5.5.e		Technical	Med. Priority		5/24/99	Accept
	Safety Class Helium/SCHe	Section 3.1.1, Req. 5 and DRD Section 5.5.5.e states that the fail open valves are used. Actually, some valves fail closed to support the safety function (i.e., GOV 1*5/9). Further, both documents state that the valves are "electrically operated." According to the P&ID, the valves are air operated but electronically controlled.				Accept. SDD will be revised to address other valves that fail closed.		
008	13-2	3.1.6		Editorial	Med. Priority		5/24/99	Accept
	Safety Class Helium/SCHe	This section should indicate the "basis" and "how requirements are met" as is done in Section 3.1.1.				Accept. SDD revisions will incorporate this comment.		
007	13-2	DRD Req. 5.5.5.o		Editorial	Low Priority		5/24/99	Accept
	Safety Class Helium/SCHe	DRD Requirement 5.5.5.o for initial fill and pressurization of the MCO was not found in the SDD.				Accept. SDD will be revised.		

SNF-4148

Master Equipment List

SNF-4148
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor **Riesenweber, S**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
007	13-2			Editorial	Low Priority		5/24/99	Accept
	Safety Class Helium/SCHe	1) SCHe-PCV-5*55 does not indicate a set pressure. This is a SC function to assure purge flow.			Accept. Corrections will be made.			
		2) This reference also indicates that the valve is made by Nupro, while the P5 Specification identifies a Fisher valve.						
		3) The valve should be referred to as a "Back Pressure Control Valve" or something similar to indicate its function.						

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SNF-4506
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor **Crawford, G**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
065	14	Table 6-2; Table 5-3	6-2; 5-3	Design Criteria	Med. Priority		5/18/99	Accept
	Cranes and Hoists/ HOI	These table appears to be the only mention of requirements in DRD from the crane. However the Construction Spec. 14610 lists more requirements. The Construction Spec. calls for ASME B30.16 where DRD calls out ANSI B30 series. These are the same spec but callout isn't consistent. DRD is not very detailed or even complete in addressing cranes, and since a separate SDD has been written for the crane, the requirements for the crane should be included in DRD. The DRD requirements should include not only required codes, but also quantifiable functional performance criteria should be included. Among these would be lifts required and cycle times needed to support plant production.			DRD is the high level requirements document and callout of B30 is acceptable to the project. The DRD provides high-level functional requirements only in this instance. Detailed requirements are contained in C-1 Spec.			
MEI-2288-ST-06, A thru 001		Crane Calculation						
	14			Technical	Med. Priority		5/18/99	Accept
	Cranes and Hoists/ HOI	No calculations were included to demonstrate that two tons is the correct capacity for the crane planned lifts. This should be included. Consideration should (have) been given to maintenance activities in bays when sizing hoist. Support revising calculation.			The crane is designed to lift the cask lid or the hood attachment which both weigh less than the crane capacity.			
SNF-3072		Cranes and Hoists						
003	14	3.1.4		Technical	Med. Priority		5/21/99	Accept
	Cranes and Hoists/ HOI	Calls out DOE-RL-92-36, Section 13 only. The Construction Specification calls for all DOE-RL-92-36. Actually, both Sections 5 and 13 of RL-92-36 are applicable. Section 5 covers hooks and especially hooks for critical lifts which this crane must perform.			Accepted. Will correct.			
004	14	4.1.1		Editorial	Low Priority		5/21/99	Accept
	Cranes and Hoists/ HOI	(Seventh bullet). Hook is not connected to rope. Hook is connected to hook block which rope runs through.			Accepted. Will accept.			
001	14	4.1.5		Technical	Low Priority		5/21/99	Accept
	Cranes and Hoists/ HOI	How can crane reliability be "not applicable?" The crane must function as a normal part of operations.			Not as a safety function. Only as an Operability.			

SNF-4506
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Crawford, G

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
002	14	4.2.2		Editorial	Low Priority		5/21/99	Accept
	Cranes and Hoists/HOI	I think controls for crane are fixed to mezzanine hand rail, not on a pendent as indicated.			Controls are on mezzanine. Will correct.			
W-441-C1		CVD Facility Construction Specification						
001	14	14610	14610-3	Editorial	Low Priority		5/21/99	Accept
	Cranes and Hoists/HOI	Bridge Cranes. Part 2 Products. This section does not stipulate the 5/1 (ultimate strength) design factor called for by DOE-RL-92-36 (Hoisting & Rigging Manual), Section 12.8.4.2. It is included only by reference in Part 1, Section 1.2.1.5.			OK. Will evaluate w/Design Agent.			

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Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor **De Lamartinie, L**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-2356		Operating Manual, Rev. 1						
002	18	3.0	3-2	Design Criteria	Low Priority		5/19/99	Accept
	Effluent Drains System/EFS	Table 3-1 is an important list of CVD systems. It is the only document of the Design Report that describe lists of systems. It seems it should deserve to have a better place, even to be a stand-alone document.			Suggestion will be evaluated and a proper location for information will be decided by the project.			
001	18	3.1.1 and others	3-1	Design Criteria	Low Priority		5/19/99	Accept
	Effluent Drains System/EFS	P&ID H-1-83766 is mentioned. This drawing is not included in Project Document List.			H-1-83766 has been cancelled. Ops. Manual will be corrected.			

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SNF-4506
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor **Riesenweber, S**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
H-1-82223		P & I D Drainage System						
001	18			Design Criteria	Med. Priority		5/18/99	Accept
	Effluent Drains System/EFS	No leak detection element is found in the process bay sumps or the retention basin. DRD 6.6.4.6.d states "drain piping shall be routed to a basin with monitoring capability where spill discharge shall be detected."			Leak detection has been recommended and the system has been evaluated to determine the impacts of adding leak detection to the sumps. The sump will hold ~180 gallons prior to reaching a point it can drain out through the piping to retention basin. The valves must be manually opened or activated by the fire sprinkler system.			
		Note: Leak detection is recommended in all process bay sumps. Since the drain valves on the sumps are closed unless a fire sprinkler system flow is detected, a leak in the PWC or TW system could go undetected.			The sump will be monitored by Operations per procedure to mitigate a sump overflow. The for spill detection will be evaluated and document revised as necessary.			
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
024	18	6.6.4.6.a, b, c, d, e		Code Compliance	Med. Priority		6/4/99	Accept
F-41	Effluent Drains System/EFS	The document states: 1) Firewater will be "assumed to be contaminated". 2) DOE 6430.1a, 275-99-0.2, "Process Wastes" states that "radiation, liquid level, or conductivity detectors shall be provided in collection systems." These systems don't appear to be provided. This type of system could also be beneficial in detecting process leaks. Operating Manual SNF-2356 states that a "moisture sensor will be provided."			To minimize the CVD facility complexity and cost all liquid streams that could be contaminated are processed in the same PWC treatment system and returned to the basin for processing. While some streams could potentially be sampled and be verified to be clean enough to be disposed of as non contaminated liquid waste this approach is not warranted due to the minimal volumes of such potential liquid wastes.			
SNF-2356		Operating Manual, Rev. 1						
004	18	3.3.8		Configuration	Low Priority		5/19/99	Accept
	Effluent Drains System/EFS	Section 3.3.8 further states that the sump has a "low discharge opening to drain the sump". In reality, the opening appears to be about 1 ft. up from the bottom of the sump.			DRD will be revised as appropriate.			
SNF-3073		Effluent Drains System						
002	18	2.3		Configuration	Med. Priority		6/3/99	Accept
	Effluent Drains System/EFS	States that "contaminated water..., is transported to the PWC system via dedicated piping..." 1) The referenced P&IDs do not show this dedicated piping on a system for removal of the water. 2) The DRD states that water will be pumped using a "portable pumping system." No description of the portable pumping system was found. Since this water would be contaminated, the pump should be readily available and the process for using it thought out and included in the SDD and operating manual.			SDD and Operating manual will be revised to describe the configuration. A special tool will be designed to provide the wand connection.			

SNF-45025
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Nelson, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-3074		Condensate Collection System						
001	19			Editorial	Low Priority		5/24/99	Accept
	Condensate Collection System/CCS	Provide reference to Drawing H-1-82223 on SDD Appendix D, Vol. 1, HVAC.			Accept.			
004	19			Technical	Med. Priority		6/1/99	Accept
	Condensate Collection System/CCS	The condensate collection tanks hang from the underside of the second level process bay decks. To check the site glass and operate the drain valve, an operator will need to climb a high ladder. This location for the condensate collection tank creates an unnecessary safety issue.			Accept. Will evaluate and resolve as appropriate.			
002	19	3.1.1		Editorial	Low Priority		5/24/99	Accept
F-42	Condensate Collection System/CCS	Section 3.1.1 should at least refer to DRD-002, Section 2.2.9(g) for functional requirements of the CCS.			Accept.			
003	19	4.1.6.1	4-2	Technical	Med. Priority		6/1/99	Accept
	Condensate Collection System/CCS	This section should provide information on the size of the condensate collection tanks and an estimate of the amount of condensate to be collected. From these could be estimated the sampling and draining frequency which might affect operations.			Accept.			

SNF-4506
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Moleff, T

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
014	20	6.14.4.10		Design Criteria	Med. Priority		5/20/99	Accept
	Electrical System/ES	System Voltage Drop Criteria - a through f. Requirements a through f require calculations with results that may determine, e.g., wire size for use in drawings or construction specifications. System voltage drop calculations were not found or any requirements as a result of voltage drop calculations.			Meier (CVDF A/E) uses tables in Electrical Design/Build Guide, by Gary P. Durand, 1989 to evaluate conductor sizes/length and voltage drop. No calculations are needed if the criterion is met.			
015	20	6.14.4.12		Design Criteria	Med. Priority		5/21/99	Accept
	Electrical System/ES	Power Factor - The requirements is to achieve a minimum design power factor of 0.95. A power factor calculation is not found, nor a Construction Specification in Division 15 or Division 16 of W-441-C1 that requires capacitor for continuous-duty motors rated 20 hp and larger.			Power factor requirement is to set a goal for achieving an energy efficient system and is not a safety requirement. Construction spec. W-441-C1, 2.1.2.5 do call for Energy Efficient type motors but PF requirement is not specifically called for. It appears, CVDF project will have to make a future evaluation if energy efficient motors meet the intent or based on the actual system parameters installation a single capacitor for the PF correction may be needed. This will require revision of DRD.			
016	20	6.14.4.15		Design Criteria	Low Priority		5/21/99	Accept
	Electrical System/ES	Wiring - b. States, concealed knob-and-tube wiring (NEC Article 324) shall not be permitted for interior wiring. Requirement 6.14.4.15.b is not found in Division 16, "Electrical" or W-551-C1 or on any electrical drawings. Does the DRD specify the correct requirement?			Spec W-441-C1, 3.1.1 allows only wiring in rigid or IMC conduits, therefore Concealed knob-and-tube wiring method is excluded from use. DRD requirement is met.			
017	20	6.14.4.15		Design Criteria	Low Priority		5/21/99	Accept
	Electrical System/ES	Wiring - g. States, "Conductors in high-temperature areas shall be NEC type FEP or TFE as required." Requirement 6.14.4.15.g is not found in Division 16 or W-441-C1 or in any electrical drawings. Furthermore, no indication of high-temperature areas are provided. Some thoughts: In the world of nuclear power generation, some solenoid valves require high temperature wire to the solenoid. Do any solenoid valves or heater connection require high temperature wire for reliability?			This is a vague requirement "High Temperature". High temperature is not defined. A/E design shall consider environment conditions and select wire/cable to meet NEC and UL listing requirements for the intended use. Therefore deletion of FEP and TFE from DRD is recommended.			
018	20	6.14.4.15		Design Criteria	Med. Priority		5/21/99	Accept
	Electrical System/ES	Wiring - j. The proper sequence for phasing is A-B-C as specified in 6.14.4.15.3.j. Requirement 6.14.4.15.j is not found in Division 16 or W-441-C1 or in any electrical drawing. How does it get to the fabricator?			Verify in field and revise specification, 6.14.4.15.i.			

SNF-4306
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Moleff, T

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
019	20	6.14.4.17		Design Criteria	Low Priority		5/21/99	Accept
	Electrical System/ES	Design and Installation Requirements - h. Exposed raceways shall be labeled per WHC-SD-SNF-DGS-002. Division 16 of W-441-C1 and electrical drawings are silent in regard to labeling exposed raceways.			CVDF Project evaluate preferred method of tagging conduits and wires and direct Meier to generate DCN for implementing in the specification W-441-C1.			
006	20	6.14.4.4		Design Criteria	Low Priority		5/21/09	Accept
	Electrical System/ES	Building Separation a. States, "All building walls within the minimum distance shall be of masonry construction unless separated by a two-hour rated barrier wall. No unprotected walls or building openings shall be within the minimum distance." Requirement 6.14.4.4.a is not clear or quantitative. No reference is made to minimum distance in Division 16, "Electrical" of W-441-C1 or on any of the electrical drawings. What does the requirement have to do with "electrical", and if required for "electrical", what is it supposed to do and how does the "contractor" get the requirement?			Agree. DRD needs to be revised to clarify fire separation from transfers is not required because the transformers include less flammable transformer oil.			
007	20	6.14.4.4		Design Criteria	Med. Priority		5/18/99	Accept
	Electrical System/ES	Building Separation b. The 1500 kva oil-filled transformer is required to have at least one hydrant connected to an adequate water supply, with standard hose and UL-approved A-B-C fog nozzles in the immediate vicinity, or at least one 135-KG (300-lb) wheeled, day chemical extinguisher. Compliance with requirement 6.14.4.4.b is not in Division 16, "Electrical" of W-441-C1 or in the electrical and mechanical drawings or in the SDD for Fire Protection. How is this requirement met?			There are fire hydrants located near the transformer that will supply adequate water. The Operations personnel also have access to extinguishers. Drawings will be checked to assure they reflect as-built configurations. DRD requirements will be reviewed and revised as necessary.			
012	20	6.14.4.7		Design Criteria	Low Priority		5/21/99	Accept
	Electrical System/ES	System Protection - It appears that Open Item 825 on the "CVD Open Item Report" addresses, in part, the 6.14.4.7 requirement. The language of Open Item 825 does not include the nine features of 6.14.4.7. All of the excluded items do not appear to be addressed in design documentation.			Items 1,2,4,7,8, and 9 of DRD section 6.14.4.7 are common engineering (A/E) functions and are addressed in CAPTOR/DAPPER report. Insulation level (Item 3) for the main transformer is specified in W-441-C1, 2.7.2.1 and other electrical equipment is considered to be adequately covered by the industry standards (UL, ANSI etc.). Reliability (item 5) and interchangeability (item 6) are general requirements, no specific criterion is provided to evaluate compliance. Therefore items 5 and 6 will be deleted from DRD.			

SNF-4506
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Moleff, T

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
013	20	6.14.4.9		Design Criteria	Med. Priority		5/21/99	Accept
	Electrical System/ES	Spare Capacity - b and c. Battery and inverter sizing to meet specific system capacity requirements are not found in Division 16 of W-441-C, electrical drawings, or Calculation MEI-2288-EL-05, Rev. 0.			Calculation in DCN-226 (in progress), indicates 56% spare capacity.			
		E. through I. Requirements e through I are not found in Division 16 of W-441-C1 or in the electrical drawings.						
022	20	Calculation MEI-2288-EL-03, Rev. 0 (Comments)		Design Criteria	Med. Priority		5/21/99	Accept
	Electrical System/ES	1. The calculations do not provide the basis for input loads assigned to determine panel loading.			1. Will add reference to H-1-82247 and will revise panel designations in accordance with this drawing.			
		2. The calculation will need to be revised for load changes and breaker ratings during as-built drawing preparation. As-built calculations should be submitted with "as built" package.			2. Agreed, as-built calculations should be included in the "as built" package.			
SNF-3075		CVDF Electrical SDD System 20						
001	20	3.1.4.2		Editorial	Low Priority		5/24/99	Accept
	Electrical System/ES	Change spelling of "ininerruptible" to uninterruptible."			Accept. Will revise.			
002	20	3.4.2		Technical	High Priority		5/24/99	Accept
	Electrical System/ES	There is a TSR on Stand-by Power.			Accept.			

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(3) Comment Resolution Report (by Commentor)

Commentor Moleff, T

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
009	20-1	6.14.4.5		Design Criteria	Med. Priority		5/21/99	Accept
	Electrical Power Distribution System/ EPD	Main Service and Distribution Equipment b. States, "In the selection of metering devices, consideration shall be given to their compatibility for use with an existing or projected energy MCS." The only metering device is shown in Drawing H-1-82246 with no tie to the MCS. How is requirement for metering device compatibility with MCS met?			MCS referred here is not CVDF system but is electrical utilities existing FDAS (Field Data Acquisition System). DRD will be revised to clarify.			
010	20-1	6.14.4.5		Design Criteria	Low Priority		5/21/99	Accept
	Electrical Power Distribution System/ EPD	Main Service and Distribution Equipment c. States, "The power bus shall be isolated or insulated such that bare bus bars all not be exposed with a door is opened or a rear panel removed." There are no words in Division 16 of W-441-C1 or in the electrical drawings that clearly state the requirement for power bus isolation or insulation.			This is a normal industry practice e.g. installation of barriers in accordance with NEC section 384-3.a. It is a redundant requirement in DRD which will be removed.			
011	20-1	6.14.4.5		Design Criteria	Med. Priority		5/21/99	Accept
	Electrical Power Distribution System/ EPD	Main Service and Distribution Equipment d. States, "Main breakers shall have solid-state trip units with selective characteristics to facilitate overload and short circuit protection and system coordination." The solid-state tripping requirement in 6.14.4.5.b is not found in Division 16 or W-411-C1 or in the electrical drawings.			Need to verify what is in the field and clarify documentation.			

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(3) Comment Resolution Report (by Commentor)

Commentor **Moleff, T**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
020	20-3	6.14.4.18		Design Criteria	Med. Priority		5/21/99	Accept
	Ground System	Grounding - a. States, "The CVDF ground grid shall tie into the water piping within the 167-K cross tie tunnel at the ultimate ground connection or as allowed by NEC Article 250-81." Requirement 6.14.4.18.a is not found in Division 16 or W-441-C1 or in any electrical drawings.			Will generate an ECN to remove this requirement from the DRD.			

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(3) Comment Resolution Report (by Commentor)

Commentor Moleff, T

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
021	20-5	16.14.4.21		Design Criteria	Med. Priority		5/21/99	Accept
Lightning/Surge Protection System		Lightning Protection - a. States, "Lightning protection systems shall be designed and installed in accordance with the recommendations and requirements of NFPA 80." Division 16 of W-441-C1 does not have any lightning protection requirements. Drawing H-1-82246 does show a 15 kV lightning arrestor but no application criteria referred. Where is calculation to meet lightning protection requirements to NFPA 780, and how do calculation results get into construction requirements.			The Design Agent has not responses to this comment yet. We will revise according to the Design Agent's evaluation and modify the intake as required.			
		Since the 4-26-99 meeting with the Design Authorities, Mactec-Meier Letter No. 98-461 was provided which dispositions this comment. However, the comment now becomes that this letter or its contents should now become part of the calculation data base in SNF-3001.						

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(3) Comment Resolution Report (by Commentor)

Commentor **Moleff, T**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
008	20-6			Design Criteria	Low Priority		5/24/99	Accept
	Standby Power	Standby Diesel Power Supply Design document was not available for review.			Accept. Design change to add diesel generator is in process.			

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(3) Comment Resolution Report (by Commentor)

Commentor Clark, D

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-3553 Annex B		FSAR Annex B						
015	24	B.2.7.2		Design Criteria	Med. Priority		5/20/99	Accept
	Fire Protection System/FP	FSAR Section B.2.7.2 says fire protection system is qualified as PC-2. MEL and SDD (SNF-3077) show fire protection System as PC-1			Comment accepted. Chapter 2 is currently in revision and will reflect the qualifications identified in the current revision of the SEL.			

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Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Nelson, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-3078		De-Ionized Water System						
001	25			Editorial	Low Priority		5/24/99	Accept
	De-Ionized Water System/DI	Drawing H-1-82223, Sht. 1, Zone C-2 Pipe Label DI-001-SS-1/2" should be DI-004-SS-1/2".			Accept. Will revise.			
003	25			Configuration	Low Priority		5/24/99	Accept
	De-Ionized Water System/DI	Drawing H-1-822164, Sht. 1, Zone 1F shows PWC-014-SS-1" going to TK-4001 on H-1-82223, Zone C5. Dwg. H-1-82223 shows this line going to PWC-F-4044. No filter appears to exist in this line.			Accept. Will revise.			
004	25			Editorial	Low Priority		5/24/99	Accept
	De-Ionized Water System/DI	Drawing H-1-82223, Sht. 1, Zone B4 shows an unlabeled isolation valve which should be marked PWC-V-018.			Accept. Will revise.			
002	25	4.1.1.2(10)		Editorial	Low Priority		5/24/99	Accept
	De-Ionized Water System/DI	DI-V-D10 referenced in this item is missing from Figure 4-4 (pgs. 4-7) and H-1-82164 Shts. 1, Zone D6.			Accept. Will revise.			
005	25	4.1.1.2(10)		Editorial	Low Priority		5/24/99	Accept
	De-Ionized Water System/DI	DI-V-OIO referenced in this item is missing from Figure 4-4 (pages 4-7) and H-1-82164, Sht. 1, Zone D6.			Accept. Will revise.			

Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Kriskovich, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
CVD-20 (Merrick Cales)		Analysis of the Flow Velocity in the Sample Lines Used for Stack Monitoring						
001	30			Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	The calculation identifies that an evaluation will be completed for up to 10 micron particles. However, the calc only looked at 2 micron particles.			DCN-122 added performance specification for the design and procurement of the stack sampling system. It includes up to 10 microns.			
002	30			Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	For the deposition calculations, it identifies the length of sample line acceptable, however, this is for a straight run. Bends in the system will drastically reduce the efficiency. How has this been determined? Are there an acceptable amount of bends in the system and where is this shown?			NRC submitted calculations that include all fittings for their deposition calculations.			
General		General						
006	30			Editorial	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	I do not see references on any of the construction or procurement specs. How will future engineers know where the details are for this equipment if the critical documents are not identified?			More information is required to answer this comment. The project will have system design documents available for the Cog. engineers and operators.			
016	30			Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	After installations were the vent systems pressure decay tested per the N510 criteria?			Yes. DCN-182 documents changes the safety classification and provides direction for testing per N510 criteria. The pressure decay method is specified per N510.			
018	30			Editorial	Med. Priority		5/19/99	Accept
	HVAC System/HVAC	Two columns should be added to the SEL. One identifying the safety function of the component, and the other identifying the critical characteristics of the component to perform its safety class function.			The safety function is in the SEL and MEL. The MEL has the critical characteristics (so does the SDD for each system).			
007	30	Tour of CVDF		Code Compliance	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	Tour of CVDF. There seems to be no drains on the filter housing. If condensation occurs, especially when the bay doors are open, how will the moisture be removed? N509 states there will be drains.			Will be evaluated.			

SNF-4506
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor Kriskovich, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
008	30	Tour of CVDF		Technical	Low Priority		5/18/99	Accept
	HVAC System/HVAC	What is the black box on the exhaust duct near the bay doors?				Duct smoke detector.		
009	30	Tour of CVDF		Configuration	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	The accessibility of valve located on the local exhaust is difficult.				Will evaluate the need to get to the valve. Its function and the 2-3 year operating life of facility will be considered prior to making a modification to the system.		
010	30	Tour of CVDF		Configuration	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	Draining the scalpot/condensate tank is not readily accessible.				Will evaluate.		
012	30	Tour of CVDF		Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	Have calculations been completed to confirm the ventilation systems meet the 3 over 1 criteria?				Yes. Evaluation for 3 over 1 has been completed. HNF-4291, Rev. 0.		
011	30	Tour of CVDF.		Configuration	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Isolation valves for cooling system are not accessible.				DCN 208 reroutes the chilled water pipes.		
H-1-82196 SH 1		Partial Plan Process Bays						
001	30			Technical	Med. Priority		6/3/99	Accept
	HVAC System/HVAC	What is the flow ratio between the discharge of the local exhaust and the recirc discharge? 1 didn't see calcs to show that the ratio would provide adequate confinement.				Calculations are being performed/revised that will address this question.		
H-1-82204		P & I D Process Bay Supply Typ						
001	30			Configuration	Low Priority		5/18/99	Accept
	HVAC System/HVAC	I do not see the fire screen shown on this print. Screens are shown on detail drawings.				Drawing H-1-82194 shows fire screen.		

(3) Comment Resolution Report (by Commentor)

Commentor **Kriskovich, J**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
Comment								
002	30			Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	What is the purpose of the smoke detector in the duct after the fan. It will detect a fire or smoke in the heater, but not in the bay. The filters will remove quite a bit of that smoke.			This is an NFPA 90 requirement.			
003	30			Design Criteria	Low Priority		5/18/99	Accept
	HVAC System/HVAC	I did not see this but I heard this--smoke detection is rated to ambient conditions above 30 degrees F. It is installed next to the bay door and it could get below that.			True. Temporarily, the temp may drop below 30 degrees F. Smoke detector should be able to withstand an occasional drop in temperature.			
H-1-82206 P & I D Exhaust System								
001	30			Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	No drains on the housings. N509 requires drains. If not, a deviation to N509 will be required and we will need DOE and Washington State approval.			Comment accepted. Evaluation will be done by A-E to determine best path forward.			
H-1-82210 SH 1 Equipment Schedule								
001	30			Editorial	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	The HEPA filter housing schedule calls out Flanders E-5 housing. This may be the same type of housing that these specific filters fit into, but the filter housing is not a Flanders E-5. It is made by Barneby and Sutcliffe. Recommend including Flanders part number for filter.			Modifications will be made to line out the documentation with what we have.			
002	30			Design Criteria	High Priority		5/18/99	Accept
	HVAC System/HVAC	The equipment schedule shows the flow rate the system will be operating. However, in the case of the Process Bays and local exhaust, the numbers are higher than the rating on the filter. 12,400 cfm, the most you could go is 12000 (N509). Local has 6,500 cfm future, the most you can go is 6000 (N509).			The Design Agent has modified the design per DCN 182 to incorporate high flow filters. The Design Agent will provide the project with the calculations showing that these filters will function during a power outage and during normal operation.			
		This ties back to my comment on not using the VFD. You will surpass these flow rates.						
H-1-82212 Exhaust Stack Details & Sections								

Revision D

SNF-4506
Revision D

(3) Comment Resolution Report (by Commentor)

Commentor Kriskovich, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
Comment								
001	30			Editorial	Low Priority			Accept
	HVAC System/HVAC	Detail 3. Is this to remove condensate from the stack? Label on drawing.			Will evaluate.			
H-1-82215 SH 1 Equipment Location								
001	30			Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	The CAM and record sampler are located in the Mechanical Room. This seems like a very long distance to get a sample. I commented on this with the calculations, this is at least a 20 ft. run, not counting the bends and at least a minimum of 5 bends. I also saw something that would identify 3 probes in the stack. This would add to the number of bends. This is not shown on the drawings currently. This needs to be evaluated.			There is one probe in the stack. A calculation has been done by NRC (company supplying the stack monitor). The project is evaluating changes to reduce the number of bends in line. (See changes per Comment 122.)			
HNF-3553 Annex B FSAR Annex B								
009	30	B.5.6.1		SAR	Med. Priority		6/4/99	Accept
	HVAC System/HVAC	B.5.6.1, 3rd bullet - Have any calculations been performed to assure the orifice diameter is sufficiently small enough to allow dilution of the hydrogen air stream?			Formal calculations have been drafted but are still in the review cycle. Preliminary results indicate that to achieve a concentration of <1% H2 in the Local exhaust duct with a bounding assumption of 150PSI cask pressure and 100% hydrogen concentration in the cask head space that a 1 MM orifice would be required. Note that this calculation is likely overly conservative, for example the pressure drop through the remainder of the system was disregarded, and bounding inputs were used in a calculation with a criteria of 1% hydrogen.			
HNF-SD-SNF-DRD-002 Design Requirements Document, Rev. 4								
062	30			Technical	Low Priority		6/3/99	Accept
	HVAC System/HVAC	I see no discussion on a temperature limit for the cam. I assume these are AMS-4, they have a limiting air temperature of 140 degrees F. I see a reference to 122 degrees F, but I believe there should be a statement to limit the temperature			The stack monitor CAM will be evaluated.			
063	30			Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	I do not see the sample flow rate criteria in this section. I saw it on the drawings but not here. How was it established on the drawings?			Add requirement for flow rate of sample probe in the stack to the DRD.			

SNF-4506
Revision 0

(3) Comment Resolution Report (by Commentor)

Commentor **Kriskovich, J**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
064	30			Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	Do the setpoints for the stack cam and the alarms come out of the cam section 6.12.4.2? Even there I do not see the setpoints. Will this alarm on high rad, interlock and shutdown the fan, what will it do?				There are no interlocks, only alarms to control rooms. The alarm setpoints will be included in the instrument setpoint document being developed.		
070	30	3.3.6		Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	Why are tornado missiles considered not credible having any calculation or technical basis been prepared for this?				WHC-SD-SNF-DB-010, Section 3.0 provides criteria for wind and tornado. Tornadoes are not required to be included in the design and evaluation criteria.		
071	30	3.3.6		Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	What about snow load, or does ash load take care of this?				Verifying w/Mactec Meier. Information found in seismic analysis states that information was provided by Meier. Also states that if design snow loads are 20 lb./sq. ft. or less, not required to be included in seismic evaluation per TM-5809-10 DOANAF-1982.		
045	30	3.4.3		Editorial	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	Why isn't ventilation listed here as a control? I believe it is credited for this accident.				Please confirm that accident in question is overpressurization of MCO by Helium supply.		
060	30	6.12.4.4, G, 2		Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	I had a comment on the calculations for the stack flow deposition, it also states in the section that a 10 micron particle will be used, but the calcs only have a 2 micron particle				DCN-122 adds performance specification for the design and procurement of the stack sampling system that includes up to 10 microns.		
072	30	6.5.2		Code Compliance	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	AG-1 is not a guidebook. It is a requirement identified in WAC 246-247 and is the nuclear code on air and gas treatment.				Callout will be corrected as required.		
049	30	6.5.2.1		Code Compliance	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	This section applies to HEPA filters and only lists ERDA 76-21 and N509. Why are N510 and AG-1 not listed in this section?				When the project started and the systems were designed, the criteria documents were ERDA, DOE 6430.1A and WHC-CM documents. The project is working at updating requirements and modifying design where it is required.		

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(3) Comment Resolution Report (by Commentor)

Commentor **Kriskovich, J**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
050	30	6.5.4.1		Design Criteria	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	Section 6.5.4.1 states the system shall be designed to maintain or reestablish flow to prevent hydrogen. This implies that a large concentration of flammable gas could be present prior to restarting the vent system. Therefore, controls for flammable gas should be in place.			The restart of the system and the release of hydrogen are controlled by the design. The purge to vent is delayed until the HVAC system is operating.			
069	30	6.5.4.1.a		Code Compliance	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	Does this non-seismic confinement isolation damper have a HEPA filter since it will be directly opened to the atmosphere?			All flow paths have HEPA filter prior to discharge to environment. Unsure of which specific damper is in question.			
051	30	6.5.4.2.f		Code Compliance	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	What does equivalent efficiency mean? You would need a waiver from N509 for this.			The DRD will be changed to reflect that the project is following the criteria in N 509. The Design Agent has already assessed the modification to the design and has issued DCN 182.			
052	30	6.5.4.3.c		Editorial	Low Priority		5/18/99	Accept
	HVAC System/HVAC	The adequacy of the filtration is an environmental requirement not just a safety analysis requirement.			Accept.			
053	30	6.5.4.3.j		SAR	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	Are the fire protection systems for the HEPA filters and vent train identified with performing a safety function to assure the filters remain in tact, etc.?			Yes, the system will shut down in the event the temperature rises rapidly (rate of rise) or if smoke is detected in the damper. System will be re-evaluated.			
054	30	6.5.4.3.k		Design Criteria	Med. Priority		5/18/99	Open
	HVAC System/HVAC	How was the temperature setting for the detector determined?			Temperature setting is based on..... NEED TO READDRESS TBD			
055	30	6.5.4.4.g		Editorial	Low Priority		5/18/99	Accept
	HVAC System/HVAC	It is impossible to get "all" particulates. Performance criteria should be provided.			Accept. Will be revised.			

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(3) Comment Resolution Report (by Commentor)

Commentor **Krskovich, J**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
056	30	6.5.4.5		Design Criteria	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	Is this all the criteria for fans? What about the testing criteria (AMCA)? These are SS fans, they should have been tested to get a fan curve. It is not possible. Consider "all" anticipated normal operation.			DCN 182 modified the Construction Specification to change safety classification of fans. This includes the new testing specifications.			
057	30	6.5.4.7.f		Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	What will the demonstration of the re-circ system consist of to verify there is no adverse harm to the facility personnel?			The system is designed to have a negative pressure in the process areas and a positive pressure in the administrative areas. The DRD used poor words to provide a requirement that the exhaust from the stack would not flow into the facility and will be revised.			
058	30	6.5.5		Editorial	Low Priority		5/18/99	Accept
	HVAC System/HVAC	"All" potential contamination is impossible. I need to get a copy of the failure mode and affect document.			Comment accepted.			
061	30	Section 2.12.4.4, G, 3		Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	It states the vertical and horizontal runs must be minimized. In the design this vertical leg of tubing from the stack to the mechanical room is about 20'. This does not seem like it is minimized. The sample cabinet could be directly mounted on the stack.			Calculations have been completed and the tubing will be modified to reduce bends.			
059	30	Section 6.12.4.4		Editorial	Low Priority		5/18/99	Accept
	HVAC System/HVAC	Is everyone aware of what 10CFR52 App E contains? This is a continuous 168 hr test. It requires changing flow rates, calibrating equipment during the test and taking 14 stack flow measurements over the 168 hrs.			Comment accepted.			
046	30	Table 5-1		Editorial	Low Priority		5/18/99	Accept
	HVAC System/HVAC	What is the purpose and correlation of this table? I do not understand what it is trying to explain. It is confusing.			Will be evaluated.			
047	30	Table 5-2		Editorial	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	Fans should be included in this table under the HVAC section.			Will be evaluated.			

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(3) Comment Resolution Report (by Commentor)

Commentor **Kriskovich, J**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
048	30	Table 5-2		Editorial	Low Priority		5/18/99	Accept
	HVAC System/HVAC	AMCA should be listed in the table for the from criteria.			Will Verify.			
MER-2288-HV-03, -04, 05, Heating and Cooling Load Calculations								
001	30			Technical	High Priority		5/18/99	Accept
	HVAC System/HVAC	These calculations show the general heating and cooling load calcs, but I did not see where the system pressure loss and system curve were determined. This is necessary to assure the systems are properly designed to handle normal operating conditions (e.g., heat generation from the MCO) and upset conditions. Also, I did not see mention what happens to the heating and cooling loads based on the bay doors opening. Nor did I see the infiltration accounted for of 300 and 600 cfm through the door when it is closed and other infiltration paths. Perform calculations to show how temperature and flow balance are affected.			Mactec Meier has prepared calculations used to design the HVAC system. Since the system is going through more design changes, calculations may change or get updated. Mactec Meier will turn over final set of calculations with design changes. Final calculation set will be reviewed by Jim Kriskovich.			
002	30			Technical	Med. Priority		5/18/99	Accept
	HVAC System/HVAC	There are several calculations that are referenced throughout many of the requirements documents, FSAR, etc. However, the list of HVAC calculations did not seem to include all these discussed in these documents. Are these other calculations that are part not listed in the calcs?			Mactec Meier has prepared calculations used to design the HVAC system. Since the system is going through more design changes, calculations may change or get updated. Mactec Meier will turn over final set of calculations with final design package.			
SNF-3081 HVAC Systems								
001	30	2.1.1		Design Criteria	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Section 2.1.1 - Is there any communication with the CVD Facility transfer and the Administration vent system if the Admin. vent system goes down? So contamination does not occur.			No. The Administration is at positive. The processes at negative.			
002	30	2.3.1		Design Criteria	Low Priority		5/21/99	Accept
	HVAC System/HVAC	Why does the Admin. Building need to be maintained between 72 and 75? The standard temperature, I believe, has gone down to 68 degrees F in ASHRAE.			Accept. The project will evaluate the temperature range.			
004	30	2.3.2		Design Criteria	Med. Priority			Accept
	HVAC System/HVAC	I see the six air changes discussed in several documents. How was 6 air changes determined to be satisfactory?			Will evaluate and add justification to calculations or revise as appropriate.			

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(3) Comment Resolution Report (by Commentor)

Commentor Kriskovich, J

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006	30	3.1.1.4.5		Design Criteria	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	What will control the VFD. Flow?				Flow. Document will be revised.		
007	30	3.1.1.4.7		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Since the fan is designed to support the upset condition, when the VFD is bypassed, the fan sound like it has a very large capacity and could cause damage to the facility, system or someone. Perform an evaluation with fan at full speed to use if the system will support this.				Calculations are being performed to verify the standby power coming on line will not impact operation of the facility. Jim Kriskovich will review calculation.		
008	30	3.1.6.3.4		Design Criteria	Med. Priority		5/21/99	Accept
009	HVAC System/HVAC	99.9% filter efficiency. I believe this should be 99.95% leak rate acceptance criteria. Also see Sections 3.1.6.4.3 and 3.7.1.18.				Accepted. Will revise.		
009	30	3.1.6.4.2		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	This section implies that confinement by the vent system is relied upon to keep dose consequences acceptable for both onsite and offsite. This means the system should be safety class. Verify consistency with SAR.				Document will be revised to remove offsite reference.		
012	30	3.2.1.12		Design Criteria	Low Priority		5/21/99	Accept
	HVAC System/HVAC	Section 3.2.1.12 HEPA filter requirements are identified in AG-1, not ERDA 76-21. Current requirements are per ASME AG-1 (DC see Section 3.4.3.4).				Accepted. Will revise.		
010	30	3.2.1.3		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Is the discharge from the stack the only concern to the Admin. Bldg.? What if the level of general exhaust system shuts down and the bay is pressurized, thus, possibly getting back to the admin. Section? Section 3.2.1.4 states those are interlocks in place to prevent this. Are these interlocks safety SSCs?				Administration is pressurized. Would require two failures. 1) the bay goes to pressure, and 2) the administration system starts pulling a vacuum. Won't happen because the administration is not designed to pull vacuum.		

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(3) Comment Resolution Report (by Commentor)

Commentor Kriskovich, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
011	30	3.2.1.5		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	What will the HEPA filter be changed at (differential pressure)? There is an alarm at 3". A new filter has a 1" DP, this only allows 2" buildup. During the VFD bypass, or normal high load conditions, this could be exceeded. Evaluate increasing allowable DP (i.e., 5").			Accepted. Will evaluate.			
014	30	3.2.5.1		Design Criteria	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	These climate temperatures seem not realistic. I assume they are out of ASHRAE or SDC5.1. I believe they should be a wide range. Possibly -10 to -20 up to 100 degrees F. Look at WHC-SD-GN-ERS01. This lists climate conditions based on PC category.			Accepted. Will evaluate change.			
015	30	3.3.2.3		Technical	Med. Priority		5/21/99	Accept
F-61	HVAC System/HVAC	Where are the calculations located to show the pressure losses in the ductwork?			Mactec-Meier has copies of all the calculations. The ones that Merrick did before the changeover are located in the library for the CVD.			
016	30	3.3.7.7		Technical	Med. Priority		5/24/99	Accept
	HVAC System/HVAC	How is it shown the vent train withstands a fire for two hours? Provide analysis to substantiate this claim.			This must be evaluated in the FHA.			
017	30	3.4.2.3		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Why is there a TSR for a filter to have a minimum of 1" dP? Even at rated flow, a new filter will be below 1" dP. If operating at less than rated flow, it will even be lower. This is a normal condition and will not cause a problem.			Accepted. Will revise.			
018	30	3.4.3.3		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	This is in conflict with Comment 17 and Section 3.4.2.3. This states that HEPA filters have to have a clean resistance pressure drop not to exceed 1" wg.			Accepted. Will evaluate.			
019	30	3.4.3.6		Design Criteria	High Priority		5/21/99	Accept
	HVAC System/HVAC	Why isn't there a requirement to have the fans tested for pressure and flow. This is required out of N509 and AG-1. The state will probably ask for this information.			DCN 182 added these requirements.			

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(3) Comment Resolution Report (by Commentor)

Commentor Kriskovich, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
020	30	4.1.4.3		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Is the flow switch located on the duct from the process hood a SS item? This will confirm whether or not you have the flow/velocity necessary to maintain the capture velocity.			Yes.			
021	30	4.1.4.4		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Intake for facility. See my comment from the tour. This intake is located directly above the heat exchangers. This may cause problems, especially in the winter.			Comment passed on to the A-E for evaluation.			
022	30	4.1.4.4		Design Criteria	Med. Priority		5/24/99	Accept
	HVAC System/HVAC	6430.1a identifies confinement as -0.3" wg, but this section identifies it as -0.1" wg to -0.25" wg. Why was 0.3" wg not used.			6430.1a confinement criteria of -0.3" water gauge is for hoods which is not applicable to our design.			
023	30	4.1.4.4		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Is the interlock for loss of ventilation resulting in loss of confinement SS?			No. Confinement is never lost by an interlock.			
024	30	4.1.6.4.3		Design Criteria	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	This section identifies 200 mrem/hr. as the dose criteria for the filters. I have another comment with a different document (FSAR) that identifies 70 mrem/hr. Which is correct? What does normal capacity of HEPA bank mean? Filters usually are 1000 cfm for this size system. Therefore, it is probably rated at 6000 cfm?			20 mrem/hr. SAR is being changed to reflect the higher number.			
026	30	4.1.6.5.3		Technical	Med. Priority		5/24/99	Accept
	HVAC System/HVAC	Temperature interlock of 190 degrees F. What type cam is being used in this system? The CAM can lose efficiency and performance at 140 degrees F. Any calculation been completed or is there justification in place stating this 190 degrees F trip is acceptable?			The temperature interlock of 190 degrees F is for fire protection and is not for normal operations of the HVAC system. The efficiency and performance of the CAMs is not impacted by this interlock.			
003	30	Figure 2-2		Editorial	Low Priority		5/21/99	Accept
	HVAC System/HVAC	Figure 2-2 does not show all equipment. I understand this is just a sketch, but I am not sure of the purpose of the sketch.			Just a sketch.			

(3) Comment Resolution Report (by Commentor)

Commentor Kriskovich, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
Comment								
013	30	General		Technical	High Priority		5/21/99	Accept
	HVAC System/HVAC	I have not read any requirements or seen calculations on relative humidity and what the heater performance should be. N509 requires less than 70% Rah. No heaters exist--H509 requires heaters.			The system has a humidity alarm set at 70% RH.			
025	30	General		Technical	High Priority		5/21/99	Accept
	HVAC System/HVAC	How is the NOC/air permit worded to handle when the VFD is bypassed and the system will be running at full flow? This could be a serious issue.			The changes to the system added by the standby power have not been incorporated into the NOC yet.			
005	30	Section 2.3.5		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	What is the safety class of the referenced air system? If these drive the systems, some may need to be SS. Is any instrumentation included?			Safety significant.			
SNF-4148 Master Equipment List								
001	30			Technical	High Priority		5/25/99	Accept
	HVAC System/HVAC	What is the safety class of the PLC used for the ventilation system? I cannot find this listed in the SEL. Currently GS, should be SS.			The automatic temperature control system that operates the HVAC is general service. The system is not required to operate when the standby power is initiated.			
003	30			Technical	High Priority		5/21/99	Accept
	HVAC System/HVAC	What is the electrical power safety designation for the HVAC? This would include the MCC, transfer switch, etc. Without power, the system is lost. Currently GS, should be safety significant.			Designation will be re-evaluated. SEL, MEL, CGI, and/or specification revision will be performed as necessary.			
002	30	Table A-4		Technical	Med. Priority		5/24/99	Accept
	HVAC System/HVAC	Table A-4 for system 30-3. The HCS master is GS without this or if it fails the system is lost. Shouldn't this be SS?			Switch designation will be re-evaluated. SEL, MEL, CGI, and/or specification revision will be performed as necessary.			
SNF-4257 CVD Design Report								
007	30	3.4.4.2.3 HEPA Filters		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	This section states the HEPA filter must accomplish 99.9% HEPA filters in place leak that must meet 99.95%. This is not efficiency. It is a leak rate.			Accepted. Will revise.			

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SNF-4306
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(3) Comment Resolution Report (by Commentor)

Commentor **Kriskovich, J**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
006	30	B.4.4.2.2		Code Compliance	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	HEPA filters are no longer considered to N509 or MIL Spec. 51068. All this has been moved to ASME AG-1.				Accepted. Will revise.		
009	30	B.4.4.2.3 Ductwork		Code Compliance	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Why is ERDA 76-21 used and not N509 or AG-1? ERDA is a guidance document, not criteria.				The project started 5 years ago before AG-1 was in effect onsite. The DRD was written for what was required when design was initiated.		
008	30	B.4.4.2.3 HEPA filters		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	It states 99.97% for efficiency. See comment #3.				Accepted. Will revise.		
011	30	B.4.4.2.5		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	What will the pass/fail criteria be in the TSR for the HEPA filters? Criteria needs to be put in the TSR.				Accepted. Will revise.		
012	30	B.4.4.3.1		Technical	Med. Priority		5/21/99	Open
	HVAC System/HVAC	What pressure could the vent system see due to the 30 psi gauge vent line ductwork? Has this been analyzed at all? Provide calculation.				Mactec-Meier has calculation. Will provide.		
001	30	B.4.4.3.2		Code Compliance	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Same comment as above pertaining to the HEPA filter criteria from N509 to AG-1. Also, this looks like it was copied from Section B.4.4.2.2, all the system identical?				Accepted. Will revise.		
013	30	B.4.4.3.2		SAR	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Will there be a TSR functional test to verify the 1.5 minute minimum standby power requirement?				DCN 182 has updated the requirements to add testing per ASME N509 & N510.		
002	30	B.4.4.3.3		Design Criteria	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Same comment as before on the HEPA pass/fail criteria. (See B.4.4.2.5)				Accepted. Will revise.		

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(3) Comment Resolution Report (by Commentor)

Commentor Kriskovich, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
003	30	B.4.4.3.4 HEPA Filters		Design Criteria	Low Priority		5/21/99	Accept
	HVAC System/HVAC	This decon factor seems low. What will background radiation reading be?				It should be zero.		
004	30	B.4.4.3.4 Standby Operation		Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	It states the variable spread drive will be bypassed. This means the fan will run full speed. Have any calculations been completed to determine what will happen to the system and facility?				Being done at the A-E.		
005	30	B.4.4.4.2		Configuration	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	How will the interlock for the pneumatically operated dampers work? Is it driven by a relay or the PLC and what drives the damper? A compressor or bottle? Is this SS?				The air supplied to the tank is general service. The tank and associated check valves are safety significant. The valves are supplied by general service electrical during normal operations and safety significant power from generator during a facility power loss.		
W-441-C1 CVD Facility Construction Specification								
007	30			Code Compliance	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	General comment for the housing: Was an air/aerosol uniformity mixing test completed and were the results sent with the housing? Requirement from N509.				Will check with construction management team on test reports received from vendor.		
015	30	Section 15856	2.2.1	Technical	Med. Priority		5/24/99	Accept
	HVAC System/HVAC	It states the housing shall be designed and constructed to withstand 10" wg. What is the capacity of the fan? If it is greater than 10" at dead head, there could be a problem. Section 2.2.10 also identifies 10" for the transition pieces.				The capacity of the fans can withstand 11" water gauge at full speed. Pressure testing will be performed per N510 requirements.		
004	30	Section 15856	2.2.16.1	Technical	High Priority		5/21/99	Accept
	HVAC System/HVAC	It states the filter housing shall be designed to PC-2 and PRO-97. But in the SEL it states the filter housing is 3 over 1, as a result it can not fail in a PC-3 event. So, it must be designed to PC-3 criteria or qualified for 3 over 1 by use of HNF-PRO-97 and WHC-SD-GN-DGS-30006, Rev. 2				The March 1 requirement is for an analysis that is being done to determine if the system could fail during a PC3 event and impact a safety class system/equipment.		

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(3) Comment Resolution Report (by Commentor)

Commentor **Krskovich, J**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
005	30	Section 15856	2.3	Code Compliance	Med. Priority		6/3/99	Accept
	HVAC System/HVAC	Did the manufacturer qualify the testing manifolds per N509? And did they submit documentation showing this?				DCN 182 was issued to impose this criteria.		
006	30	Section 15856	2.4.2	Technical	Low Priority		5/21/99	Accept
	HVAC System/HVAC	MIL 51068 has been cancelled about 3 years ago. AG-1 now covers HEPA filters. 51079 is also cancelled.				Accept. Requirements were in place when system was originally designed. Will revise.		
008	30	Section 15856	2.6.4	Configuration	Med. Priority		5/24/99	Accept
	HVAC System/HVAC	What is the vacuum relief breather and where will it be used? Is it located on the filter housing and used when changing filters?				The vacuum release breather is installed for DOP testing only.		
009	30	Section 15856	2.7.2.2	Code Compliance	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Acceptance criteria for the pressure decay test should be based on the volume (per N510) of the unit being tested, not the flow rate.				Accepted. Will evaluate for change.		
011	30	Section 15890	12.87 & 12.88	Code Compliance	High Priority		5/21/99	Accept
	HVAC System/HVAC	This states 8" and 12" wg. minimum pressure classes. Obviously this is different than the 10" from the filter housing, why? The entire vent system needs to be designed for the max the fan can pull, unless a technical justification has been completed explaining why not.				Section 15890 does not have a 12.87 and 12.88. The whole system will be tested per requirements of N509/510 using the maximum flow rates for a fan. This will help verify that the system can operate without the air handling units, simulate the operation during a facility power loss. As per DCN 182, the system will be tested at 10" wg.		
010	30	Section 15890	2.5.5	Code Compliance	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	N509 should have been used for this leak rate test, not ERDA 76-21.				Accepted. See DCN 182.		
012	30	Section 15910	2.3	Technical	Med. Priority		5/21/99	Accept
	HVAC System/HVAC	Duct test holes. I saw on the tour, holes in the ductwork. Possibly used for pilot tube, etc. . . Specify on the drawing how these holes capped during operation and labeled?				Part of Apollo drawings and will not be captured on construction P&IDs.		

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(3) Comment Resolution Report (by Commentor)

Commentor De Lamartinie, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
CVD-12, Rev. 0		Calculations for Mass Balance on Process Flow Diagram						
001	46			Technical	Low Priority		5/19/99	Accept
	Process Water System/PWS	The objective of this note is to determine the mass of water removed from the MCO during the bulk water removal step. The note effectively calculates the mass of water removed from the MCO during 30 minutes at 5 gpm. Why is such a calculation being done? The objective should be to determine the flowrate necessary to remove 500 liter of bulkwater in ½ hour.			The CVD process calculations will be supplemented with the First Article Test Reports and the process simulator analysis.			
CVD-18A, Rev. 3		PWC EJ-4031 Sizing						
001	46		2	Technical	Med. Priority		5/19/99	Accept
	Process Water System/PWS	Some assumptions which have been considered are out of date. For example, water temperature.			The calculation will be supplemented by independent analysis by the Numatec Thermal Hydraulics group (Fred Heard) in which the current operating conditions and facility layouts will be used.			
002	46		3	Design Criteria	Med. Priority		5/19/99	Accept
	Process Water System/PWS	Qualification of the used software (Crane Companion V2.1) is not documented.			The Merrick QA Plan documents the utilization of software. CVDF QA (Tom Hays) performed a surveillance of their software validation process.			
003	46		6	Editorial	Low Priority		5/25/99	Accept
	Process Water System/PWS	Origin of appendices is not defined.			Will add references.			
CVD-5		Calculate the RLW Tank LW-TK-4032 Cooling						
001	46			Technical	Med. Priority		5/19/99	Accept
	Process Water System/PWS	This note seems completely out-of-date. It should be cancelled.			The adequacy of the pump and other thermal hydraulic aspects of the PWC System will be verified by independent calculations to be performed by the Numatec Thermal Hydraulics group (Fred Heard).			
CVD-7, Rev. 0		RLW System Cost Estimate						
001	46			Editorial	Low Priority		5/19/99	Accept
	Process Water System/PWS	The note is not understandable. Moreover, such a cost evaluation has nothing to do with equipment calculation notes.			The adequacy of the pump and other thermal hydraulic aspects of the PWC System will be verified by independent calculations to be performed by the Numatec Thermal Hydraulics group (Fred Heard).			

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(3) Comment Resolution Report (by Commentor)

Commentor De Lamartinie, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
CVD-9		Calculate the RLW Tank LW-TK-4032 Cooling						
001	46			Administrative	Low Priority		5/19/99	Accept
	Process Water System/PWS	This note seems completely out-of date. Needs to be cancelled.			The adequacy of the pump and other thermal hydraulic aspects of the PWC System will be verified by independent calculations to be performed by the Numatec Thermal Hydraulics group (Fred Heard).			
H-1-82164		Process Water Conditioning P & I D						
001	46		1	Technical	Med. Priority		5/19/09	Accept
	Process Water System/PWS	No effort has been made on the water line to minimize the amount of piping equipment and avoid piping restrictions. Considering it is contaminated water containing particulates, this increases plugging risks, erosion risks, and promotes maintenance issues. Two particular prices of equipment seems critical: - FE4037: there are risks of plugging of this vortex flowmeter because water is not yet filtered and could contain particulates. - Ejector PWC-EJC-4031: the high flow velocity within the body of the ejector increases the risk of erosion.			It is expected that the particulate will be in the PPM range. The First Article Test Report documents worst case carryout of particulate from the MCO.			
002	46		1	Technical	Med. Priority		5/19/99	Accept
	Process Water System/PWS	Pipe PWC-014-SS-1: it is surprising that the vent of these vessels has the same diameter as the liquid inlet pipe. A larger vent line is expected. What is the design basis for this pipe?			Deferred to the A-E for evaluation.			
003	46		1	Editorial	Low Priority		5/24/99	Accept
	Process Water System/PWS	For the same system, "Demineralized water" and "de-ionized water" consistent terms should be used.			Accept. Will revise for consistency.			
004	46		1	Technical	Med. Priority		5/19/99	Accept
	Process Water System/PWS	What is the meaning of Specialty Item SP/06 inside the tanks TK-4032/4033? What is its purpose? What are its characteristics?			This is a spray nozzle for washing the inside of the tank with DI water. Its characteristics are documented in the W-441-P2 Specification.			

H-1-82223 **P & I D Drainage System**

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(3) Comment Resolution Report (by Commentor)

Commentor De Lamartinie, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
002	46		1	Editorial	Low Priority		5/19/99	Accept
	Process Water System/PWS	It is questionable why this drawing is called "mechanical".				No response. Document hierarchy will be reviewed for adequacy.		
003	46		1	Technical	Med. Priority		5/19/99	Accept
	Process Water System/PWS	Filling the PW-TK-4001 overflow hydraulic trap has to be done from a water piping network, or manually on the tank side of the hydraulic trap. To avoid communication of tank and room atmospheres, a different arrangement should be considered.				The A-E will be directed to investigate this issue.		
004	46		1	Technical	Med. Priority		5/19/99	Accept
	Process Water System/PWS	What is the meaning of Specialty Item SP/07 inside the tank TK-4001? What is its purpose? What are its characteristics?				This is a spray nozzle for washing the inside of the tank with DI water. Its characteristics are documented in the W-441-P2 Specification.		
005	46		1	Technical	Med. Priority		6/4/99	
	Process Water System/PWS	Why not connect the tank vent to a duct rather than to room atmosphere?				An analysis of this suggestion will be conducted and changes could be made as appropriate.		
006	46		1	Editorial	Low Priority		5/19/99	Accept
	Process Water System/PWS	Reference of "PWC Equipment skid" P&ID is not indicated on pipe PWC-001-SS-1". This makes it difficult to trace out this line.				As a substitute, refer to the CVDF EFDs H-1-83964 through H-1-83967.		
HNF-3904, Rev. 0		Process Specification for Ion exchange Modules						
001	46			Editorial	Low Priority		5/19/99	Accept
	Process Water System/PWS	This document is not mentioned in any project document list. Also, the drawing mentioned on Pg. 2 (H-1-83203) has not been found.				This specification and the IXM drawings will be included in the PWC SDD.		
002	46			Technical	Med. Priority		5/18/99	Accept
	Process Water System/PWS	There is no reference in this document about the shielding required around the IXM. How has it been designed?				Per HNF-3904, criteria is ACI-301-89 and ACI-318-89. The specification and drawings details the design of the IXM. The DRD will be updated to describe requirements related to IXM.		

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(3) Comment Resolution Report (by Commentor)

Commentor De Lamartinie, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
003	46			Technical	Med. Priority		6/4/99	Accept
	Process Water System/PWS	The lack of data related to incoming water composition is not acceptable. How can we judge the risk of fouling of the resins, the replacement frequency, etc.?			The inventory in the water removed from the MCO's being transferred into the PWC system is documented in the DRD table 2-2. More detailed documentation is also available in HNF-SD-W441-CN-001 which is referred to in the DRD.			
004	46	1.0	1	Configuration	Med. Priority		5/19/99	Accept
	Process Water System/PWS	It is said, "the modules are operated in conjunction with a cartridge and/or sand filter which filters the water before it is routed to the IXM". Why is this filter (supposed to be upstream the IXM) not shown on any documents of the project?			HNF-3904 will be corrected. The CVDF does not have any IXM pre-filters.			
005	46	3.2	5	Technical	Med. Priority		5/19/99	Accept
	Process Water System/PWS	The temperature specification for the resins is a range between 40 and 100 deg. F (4.4 to 37.8 deg C). Water in PWC is supposed to be received at more than 46 deg C, and no cooling has been provided before feeding the IXM. How do you ensure modules will work within the operating range?			The IXM has a 60 degrees C operating limit. The water as introduced to the IXM will be at 38 degrees C or less. Specification will be revised to require compatibility with 60 degree C water temperature. Calculation will be performed to verify incoming water temperature.			
SNF-3082		Process Water Conditioning System						
007	46			Technical	Med. Priority		5/19/99	Accept
	Process Water System/PWS	There are inconsistencies about Pump PWC P-4035/4036 characteristics. In this SDD, flowrate = 45 gpm / pressure 155 ft. In the Operation Manual, flowrate = 45 gpm / pressure 140 ft. In the Procurement Spec. flowrate = 36 gpm / pressure 165 ft.			The SDD and Ops. Manual will be revised to be consistent with the latest version of the Procurement Specification.			
W-441-C1		CVD Facility Construction Specification						
013	46		15456-1	Editorial	Low Priority		5/19/99	Accept
	Process Water System/PWS	Tank labeling "LW" should be read "PWC".			PWC is correct. DCNs have to be issued to correct this.			
014	46		15456-1	Editorial	Low Priority		5/19/99	Accept
	Process Water System/PWS	Why is this tank TK-4002 not mentioned in any other document?			This tank has been deleted. DCNs have been issued to correct this.			

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(3) Comment Resolution Report (by Commentor)

Commentor De Lamartinie, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
032	46-1	2.2.5.b and Appendix D		Design Criteria	Med. Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	The specification on LSA quantities is not understandable. No analysis of 10 CFR71 has been made to provide comprehensive data. For instance, it is impossible to understand without a deep analysis of 10CFR71 what "A2 quantities in Appendix A of 10CFR71" means. List the applicable information in DRD.			The DRD Appendix D will be revised to reflect an interface control agreement with the K-West Basin IWTS.			
034	46-1	5.2.4.a		Design Criteria	Low Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	A screen and a filtration are mentioned in this section. Are we talking about the same thing? Does it mean particulates up to 2 mm may enter the process? Can the screen plug? Is it recoverable?			The filter is a screen @ 2mm. The screen can plug but it is not expected. There is no recovery action specified for this event. Wording to be modified.			
041	46-1	5.4.4.1/5.4.4.2		Design Criteria	Med. Priority		6/4/99	Accept
	Process Water Conditioning System/PWC	It is not appropriate to put requirements on both: - The process to be used (Specific IX columns are imposed). - The outlet products. What if the imposed process is not able to reach the expected performance?			While it is true that specifying both the criteria and the design approach in a design requirements document is not generally a good practice for the exact reason that you indicate (the preconceived design approach may not achieve the required performance). In this specific case however the ion exchange capacity of the IXM's is so large relative to the loading of the small quantity of water removed from the MCO that the performance can easily be achieved.			
042	46-1	5.4.4.2.f & k		Editorial	Low Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	"nanoCi/g of TRU" should be read "nanoCiTRU/g of IX".			Accept. Will be revised according to the comment.			

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(3) Comment Resolution Report (by Commentor)

Commentor Nelson, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-3082		Process Water Conditioning System						
001	46-1	3.1.1.12	3-4	Configuration	Low Priority	The SDD will be revised to reflect DRD requirements.	5/19/99	Accept
	Process Water Conditioning System/PWC	Refers to the filtration requirements of Section 5.4.4.1e of the DRD. This DRD section does not address filtration. Moreover, the DRD requirements for filtration performance are missing. The DRD Has Section 5.4.4.1 requirements a through e, while SNF-3082 refers to requirements a through f.						
003	46-1	4.1.1.2	4-4	Editorial	Low Priority	The SDD and Operations Manual will be revised to consistency.	5/19/99	Accept
	Process Water Conditioning System/PWC	States "Normally flow is fed continuously through the IXMs", Section 4.2.3.1 states "during MCO bulk water draining, the full flow of the water from the transfer pumps is directed through the PWC ejector and no flow is directed through the IXM or filter loop." These statements appear to be in conflict. "Normal" operation configuration should be clarified.						
004	46-1	4.1.1.2 and 4.1.4		Editorial	Low Priority	SNF-3082 and SNF-3084 will be revised to be consistent.	5/19/99	Accept
	Process Water Conditioning System/PWC	Sections 4.1.1.2 and 4.1.4 provide a better description of SMP details than all of SNF-3084. Suggest canceling SNF-3084.						
002	46-1	4.1.4(J)(6)		Editorial	Low Priority	The SDD will be corrected.	5/19/99	Accept
	Process Water Conditioning System/PWC	States PWC-008-SS-1-1/2" connects to PWC-TK-4033. All drawings show this pipe connecting to PWC-TK-4032.						

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(3) Comment Resolution Report (by Commentor)

Commentor **Nelson, J**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
005	46-1	4.2.3.5(2) and 4.2.3.6		Technical	High Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	<p>Section 4.2.3.5(2) and 4.2.3.6 describe flow rates and sampling rates but the process is not clear. For example, for a 40 gpm flow rate through the IXM operating for 42 minutes, 1,680 gal. of water will be processed through the IXM.</p> <p>This comment is true for SNF-3044 also.</p> <p>It appears that each of two samplers (4039 and 4040) will take one sample of 10 ml for every 100 gal. of water processed, resulting in approximately 34 samples taken over a 42 minute span. This is too many. It also appears that each 500 ml sample bottle will only be used to hold one 10 ml sample. (SNF-3082, Section 4.2.3.6(3), pg. 4-22). This would result in 34 sample bottles juggled by an operator in a 42 minute period. This would be too much manipulation of bottles. The operation of the sampling system needs to be clarified.</p> <p>Report should evaluate the sampling process for simplification and clarify the process. Consider using an alarmed conductivity meter for real-time indication of IX module condition.</p>						
		The SDD and Operations Manual will be reviewed for consistency and correctness.						
006	46-1	Section 5.2.4(a)		Design Criteria	Med. Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	<p>Section 5.2.4(a) of the DRD requires "Water removed from the MCO shall be filtered as close to the MCO as practical to minimize the migration of radioactive particulates to downstream equipment." No filtration is provided until the MCO water passes through the IXM's during processing and finally through PWC-Filter 4042 before storage in PWC Tank4001. These systems are physically far removed from the MCO, so this design does not appear to satisfy the requirements of the DRD. Moreover, the feed line to the IXM's (PWC-007-SS-1 1/2) runs unfiltered MCO water through all of the process bays right next to the stairways to each of the upper decks. Particulates will settle in this line creating an unnecessary radiation dose hazard for the operators.</p>						
		The drain header is designed to prevent accumulation of contaminated material and is routinely flushed with DI water.						

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(3) Comment Resolution Report (by Commentor)

Commentor **Riesenweber, S**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
CVD-18B, Rev. 3		Merrick PWC Pump Sizing Calculation						
001	46-1			Technical	Med. Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	The educator sizing cut sheets provided were intended for air handling with a water motive force (used for exhausters). There is no indication that this educator is designed or will work properly for pumping water. It is possible that it will work with water, but unlikely that the pressures and flows derived from this literature are correct. This could impact the results of the calculation.			This was investigated by the Merrick Engineers with the manufacturer and the resulting calculations were properly performed. In addition, the educator was utilized in the First Article Test and its performance is documented in the First Article Test Reports. Additional calculations are being performed and will be added to the database.			
002	46-1			Technical	Med. Priority			Accept
	Process Water Conditioning System/PWC	The calculation, last revised 1/8/98, states that the pump impeller will be 6-1/2" diameter. DCN #355 dated 3/8/99 revises the P2 specification to increase the pump diameter to 6-5/8"; no documentation was found to justify this change.			The adequacy of the pump and other thermal hydraulic aspects of the PWC System will be verified by independent calculations to be performed by the Numatec Thermal Hydraulics group (Fred Heard).			
003	46-1			Technical	Med. Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	The calculation does not evaluate Net Positive Suction Head Available to the pumps. This parameter can have a significant impact on the pump performance and reliability.			The adequacy of the pump and other thermal hydraulic aspects of the PWC System will be verified by independent calculations to be performed by the Numatec Thermal Hydraulics group (Fred Heard).			
004	46-1			Technical	Med. Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	No other calculation was found to select the educator or evaluate the affect of the suction pipe length and elevations from the furthest Process Bay to the PWC skid. If system hasn't been retested since impellor size changed, it should be done.			The adequacy of the pump and other thermal hydraulic aspects of the PWC System will be verified by independent calculations to be performed by the Numatec Thermal Hydraulics group (Fred Heard).			
005	46-1			Technical	Med. Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	The calculation assumes that the fluid is 100% water. It is my understanding that solids will be present in the system and that the filter is on the IX Module side of the pump and educator. These solids could cause an erosion problem--especially in the educator.			Solids will be in the PPM range and, therefore, will have a negligible impact.			
H-1-83766, Rev. 4		PCW						
001	46-1			Technical	Med. Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	The Tank (PWC-TK-4033) parallel pump (PWC-P-4035/4036), 3-way valve (GOV 4045/4046) is not configured to support safe maintenance and troubleshooting. Lockable isolation valves for pumps would be valuable as would discharge check valves.			Total system shutdown is required to perform maintenance. The use of three-way ball valves serve the function of check valves. OSHA/lock and tag evaluation will address this.			

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(3) Comment Resolution Report (by Commentor)

Commentor **Riesenweber, S**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
002	46-1			Technical	Med. Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	Zone D-4 lockable isolation valves are recommended prior to hoses connecting to IXM-4037/4038.				This will be added per DCN.		
003	46-1			Technical	Med. Priority		5/18/99	Accept
	Process Water Conditioning System/PWC	Make sure design can accommodate draining IXMs, and also maintenance procedures.				Will verify.		
MEI-2288-ME-01, Rev. 0 Verify Pipe Sizing From Skid to LW Storage Tank								
001	46-1			Technical	Med. Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	Calculation evaluates friction losses, but neglects head losses due to elevation changes. Revise calculation				The adequacy of the pump and other thermal hydraulic aspects of the PWC system will be verified by independent calculations to be performed by the Numatec Thermal Hydraulic group (Fred Heard)		
002	46-1			Technical	Med. Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	Calc does not identify whether pipe size is adequate or not based on results. The calculation should provide a conclusion for the question asked.				The adequacy of the pump and other thermal hydraulic aspects of the PWC system will be verified by independent calculations to be performed by the Numatec Thermal Hydraulic group (Fred Heard).		
SNF-3073 Effluent Drains System								
003	46-1	3.1.4.2		Editorial	Low Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	References ASME B31.3 as "Power Piping Code." ASME B31.3 is actually entitled, "Process Piping Code."				Correct. This will be revised.		
001	46-1	7.1		Editorial	Low Priority		5/19/99	Accept
	Process Water Conditioning System/PWC	Reference Drawings H-1-82247 - No information relating to this system was found on this drawing.				Reference will be changed to Sheet 1.		

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(3) Comment Resolution Report (by Commentor)

Commentor **De Lamartinie, L**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-3083		Conditioned Water Shipping System						
001	46-2			Editorial	Low Priority		5/24/99	Accept
	Conditioned Water Shipping System/CWS	Why create a specific subsystem (and associated documents) for a system that doesn't even include any equipment (i.e., CWS could have been included in PWC).			This will be evaluated in the SDDs.			

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(3) Comment Resolution Report (by Commentor)

Commentor **De Lamartinie, L**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-3084		Contaminated Water Sampling and Analysis System						
003	46-3			Editorial	Low Priority		5/24/99	Accept
	Contaminated Water Sampling and Analysis System/ SMP	Why create a specific system (and associated documentation) for a system where equipment is not even labeled according to the system number?			This will be evaluated in the SDDs.			

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(3) Comment Resolution Report (by Commentor)

Commentor **Nelson, J**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-3084		Contaminated Water Sampling and Analysis System						
004	46-3			Technical	Low Priority		5/24/99	Accept
	Contaminated Water Sampling and Analysis System/ SMP	SNF-3084 contains no discussion of the use of a shielded cask for storage and transport of samples from the PWC system. This is required by the DRD, Section 6.9.2.1(b), page 6-57 and duplicated word-for-word in Section 6.9.4.1(b), page 6-59.			Accept. The cask used is the standard K Basin cask. Details will be added to the SDD.			
001	46-3	3.1.1		Editorial	Low Priority		5/24/99	Accept
	Contaminated Water Sampling and Analysis System/ SMP	Should provide the appropriate reference to the DRD section being addressed. Such as DRD Sections 5.4.4.1 and 5.4.4.2.			Accept. Will revise.			
002	46-3	4.1.1	4-1	Editorial	Low Priority		5/24/99	Accept
	Contaminated Water Sampling and Analysis System/ SMP	PWC-005-SS-1" should be PWC-005-SS-1-1/2".			Accept. Will revise.			

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(3) Comment Resolution Report (by Commentor)

Commentor De Lamartinie, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-2344 Rev. 0		Evaluation of the SNF CVDF Tempered Water System						
001	47			Editorial	Low Priority		5/19/99	Accept
	Cooling Water System	This note (and others like Calc # CVD-10) mentions that the drying sequence includes a heating phase at 75 deg C after drying. This phase is not described in the operation manual and in other notes. Consequently, it is not clear: - Is such a phase necessary? - What the basis has been for designing the TW system : 50 or 75 deg C?			The original scope had a 75 degrees C operating phase. The heaters were designed for this temperature. The 75 degrees C was removed from the operating sequence. The heater design was not changed. This is going to be discussed in the design documentation.			
002	47	3.1	10	Technical	Med. Priority		5/19/99	Accept
	Cooling Water System	In this note, it is said that the MCO decay heat power at 835 W is only a few percent of the energy input by the TWS heater and will not significantly effect the heat-up time. Nevertheless, in the test report (HNF-4057, pgs. 4-8), one (1) hour has been subtracted from the 6.5 hours to take into account a nominal 400 Watts of decay heat. A discussion about the meaning of the term "significantly" is suggested. This could result in inaccurate calculation results. Suggest revision of calculation to explain the differences with the test report.			The process simulator calculation takes into account the decay heat of the fuel. This calculation report was just completed.			
003	47	4.0	48	Technical	Med. Priority		5/19/99	Accept
	Cooling Water System	The purpose and the conclusions of the note are confusing. It talks about the time necessary to heat the MCO. What does MCO mean? The wall of the MCO or the fuel inside the MCO? The note leads to conclusions which are contradictory with test results. As a consequence, what confidence can we have in this calculation note ?			Refers to independent calculations, First Article Test Simulation and the Process Simulator Calculation. Calculation note will be cancelled or updated prior to turnover.			
004	47	4.0	48	Technical	Med. Priority		5/19/99	Accept
	Cooling Water System	The note concludes that the MCO can be cooled from 75 deg C to 15 deg C within 24 hours. How has been used such conclusion to determine, in the Operation manual, that cooling the MCO from 46 deg C to 25 deg C will be done in 6 hours? Revise calculation to justify what is on the Operation Manual and Test results.			Operations manual will be revised to be consistent with the Process Simulator Analysis Report.			
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
031	47	2.2.4.d		Design Criteria	Med. Priority		5/19/99	Accept
	Cooling Water System	Why does the DRD require the TWS system able to control temperature up to 85 deg. C, when another requirement is to remain below 50 deg. C (i.e., Table 2.2 or Section 5.3.4.c)?			This was answered previously.			

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(3) Comment Resolution Report (by Commentor)

Commentor De Lamartinie, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
038	47	2.2.7.b and 5.3.4.d		Design Criteria	Med. Priority		6/4/99	Accept
	Cooling Water System	Section 2.2.7 requires cooling the cask at 25 deg. C. In Section 5.3.4, it requires "to cool the MCO and cask down to 15 deg. C at the water inlet." There is no clue that these two requirements are consistent.				This will be verified and modified as necessary.		
039	47	5.3.4		Design Criteria	Med. Priority		6/4/99	Accept
	Cooling Water System	There is no specification on the time available for heating or cooling. The DRD should provide measurable performance requirements.				Project will evaluate suggestion and update DRD if necessary.		
040	47	5.3.4.j		Design Criteria	Med. Priority		5/19/99	Accept
	Cooling Water System	What does "slightly contaminated" mean? Are there assumptions on the level of contamination?				These will be determined by the Cask Loadout System and entered into the design documentation (SDDs). Interface table showing maximum contamination will be put in the SDD.		

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(3) Comment Resolution Report (by Commentor)

Commentor De Lamartinie, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-4057		Cold Vacuum Drying Proof of Performance (First Article Testing) Test Results						
002	47-1	4.3.4	4-8	Technical	Med. Priority		5/19/99	Accept
F-81	Tempered Water/TW	<p>This document mentions that the first tests have been done using a smaller pump impeller. Then it was "replaced and the results were a system flow of 20 gpm at 37 psig pressure as shown".</p> <p>The other documents of the project mention the following flowrates:</p> <ul style="list-style-type: none"> - DRD: 15 gpm - PFD: 20 gpm - Calc: 26 gpm (in HNF 2344), 20-30 gpm in CVD-1 - P&ID: 30 gpm - Proc. Spec: 28 gpm - Operation manual: 20 gpm <p>In addition to the inconsistencies among all these documents, it is questionable why a pump "smaller than 20 gpm" has been selected at the beginning of the test, apparently not in compliance with design specification (as far as these ones are clear !).</p> <p>Some doubts may arise about the representativeness of the test configuration.</p>						
	003	47-1	4.3.5	4-8	Technical	Med. Priority	5/19/99	Accept
	Tempered Water/TW	<p>Isn't it contradictory to say, "The fuel heating equipment performed as expected," then in the following sentence say, "The heat-up times were nearly double what was originally predicted". It seems that the test is not so successful.</p>						
005	47-1	4.8.4	4-27	Technical	Med. Priority		6/4/99	Accept
	Tempered Water/TW	<p>The real requirement is "cooling the Cask/MCO to 25 deg C". It seems the criteria used during the test was the fuel temperature (of course, higher) which is assumed to be the same as the Cask/MCO temperature.</p> <p>As it is presented, there is no clear conclusion from this tests, and one could believe from the last sentence of 4.8.5 that 21 hours are necessary to cool the MCO (when 6 only have been considered in the Operation manual)?? Revise the test report to justify timed identified in Operations Manual.</p>						

WHC-S-0453, Rev. 0

Fabrication Specification for MCO

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(3) Comment Resolution Report (by Commentor)

Commentor De Lamartinie, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
001	47-1	7.4.1	20	Technical	Med. Priority		6/4/99	Accept
	Tempered Water/TW	Pressure Test: The pressure test required on the MCO is an overpressure inside the MCO at 180 psig. This doesn't correspond to the MCO operating conditions of CVD which are: - vacuum inside the MCO, together with - A pressure on the external wall of the MCO of 25 psig. As the effect on the MCO walls is completely different from the required pressure test, it is not certain that the MCO could bear CVD operating conditions.			The MCO design requirements are based on processing at CVD (including full vacuum internal pressure) as well as SNF requirements before and after processing at CVD. The 150 PSI internal pressure requirement is one specification requirement with a wide basis. The design specification for the MCO is contained in HNF-S-0426. In this document in section 4.9.2 one of the design requirements listed is "Processing operating pressure: full vacuum internal with 25 psig external pressure, at 75oC". The MCO design specification fully addresses you concern. Documentation will be reviewed for consistency and adequacy.			

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(3) Comment Resolution Report (by Commentor)

Commentor Nelson, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-3085		Tempered Water/Tempered Water Cooling						
005	47-1			Editorial	Low Priority		5/19/99	Accept
	Tempered Water/TW	Drawing H-1-83964, Sheet 2, Zone A5 is missing TW sampling valve PWC-V-*033.			This will be corrected in Rev. 1 of the EFD.			
009	47-1			Technical	Med. Priority		5/19/99	Accept
	Tempered Water/TW	It appears that a single point failure of the flex hose connecting the bottom of the cask (from TW-QD-*18 to TW-*01-SS-1 1/2) would allow draining of the cask before drying is complete. This is in conflict with the requirements for safety class systems.			A new double containment design is being finalized to address this single point failure.			
001	47-1	3.1.1.1 (p 3-1) and 4.1.4 (p. 4-10)		Technical	Med. Priority		5/19/99	Accept
	Tempered Water/TW	Provide a calculation reference for the TW/MCO heat transfer basis requirements.			See Item No. 292, plus Process Simulator Analysis Report.			
004	47-1	3.1.1.3	3-4 (middle of page)	Editorial	Low Priority		5/19/99	Accept
	Tempered Water/TW	Line TW-*02-SS-1/2 should be TW-*02-SS-1-1/2".			This will be corrected.			
003	47-1	3.1.13	3-3 (bottom of page)	Editorial	Low Priority		5/19/99	Accept
	Tempered Water/TW	Use of PWC-QD-*020 will route cask drain water through PWC-V-048. This should be added to the process description.			This will be added.			
002	47-1	Figure 1-1	1-2	Editorial	Low Priority		5/19/99	Accept
	Tempered Water/TW	Flow direction arrow on line TW-*02-SS-1-1/2" is backwards.			This will be corrected.			

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(3) Comment Resolution Report (by Commentor)

Commentor **Riesenweber, S**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-3085		Tempered Water/Tempered Water Cooling						
006	47-1			Technical	Med. Priority		5/19/99	Accept
	Tempered Water/TW	Section B.1.1.1.1 states that the pump provides 28 gpm @ 27 psig. This means that depending on the pressure drop across TW-CLR-3*110 and the cask annulus, SRV 3*11 could and probably would be relieving some pressure at all times. This is not a good design condition for a safety relief valve. Use of a backpressure regulator is recommended to maintain the system pressure below the SRV set pressure.			The tempered water system is undergoing independent design analysis and review. The bypass flow scheme will be specifically addressed.			
007	47-1			Editorial	Low Priority		5/19/99	Accept
	Tempered Water/TW	The flow rates through FCV*22 & 23 are reported differently in various documents (Calc. CVD-1 = 2 gpm eat 6 gpm sample) (Master equipment List 2 gpm each) (SDD &P4 Specification 1 gpm each).			All documents on this subject will be reviewed for consistency.			
008	47-1	3.1.1.1.1		Technical	High Priority		5/19/99	Accept
F-84	Tempered Water/TW	Section 3.1.1.1 provides several comments. A. The stated flow rate is 15 gpm. Where in the system is the 15 gpm encountered? Cask annulus? B. Why is the flow indicator (FI 3*16) located upstream to the two flow control valves (FCV*22 & FCV*23)? With this configuration, it is uncertain how much water is actually flowing through the annulus. C. Three flow control valves are provided which bypass from the supply line (FCV*22, 23, 18). These Griswold valves are constant volume/pressure compensating. It would best to have FCV*18 be a backpressure regulating valve that would maintain the supply line pressure as high as possible without activating SRV3*11. D. The safety relief valve (SRV3*11) is set at 25 psig, the SDD states that the annulus seal ring is designed for 25 psig. It appears that overpressurization of the seal ring may cause a leak to the process bay; thus, the SRV should be set to a lower pressure (I.e., 20 psig).			A. The nominal flow rate through the cask annulus is 20 gpm, with a minimum of 15. The flow will be verified during pre-operational testing and periodically reverified prior to receipt of the MCO/cask. B. Flow indicator is located upstream to minimize SC components. Periodic testing and flowrate will be performed. C&D. Will be evaluated by independent review and a design change will be made as necessary.			
		Recommend SRV installation of a backpressure regulator.						

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(3) Comment Resolution Report (by Commentor)

Commentor Nelson, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-3086		Chilled Water System						
001	47-3	3.1.1		Administrative	Med. Priority		5/24/99	Accept
	Chilled Water System/CHW	Section 3.1.1 should do more than duplicate requirements from the DRD and then say "Yes, we did all that." At a minimum, each section discussing "how the system meets the requirement" should provide the appropriate references to drawings and calculation notes.			Accept. SDD is currently in revision.			
002	47-3	4.1.1.2	4-4	Technical	Med. Priority		5/19/99	Accept
	Chilled Water System/CHW	Section 4.1.1.2, Item 1, pg. 4-4 bypass line CHW-007-CT-4 (shown on Drawings H-1-82201, Sht. 1, Zone D5 and H-1-82208, Sh. 1, 2, and C2 through C8) appear to be missing a pressure control valve.			This will be corrected.			

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(3) Comment Resolution Report (by Commentor)

Commentor Nelson, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
SNF-3087		Vacuum and Purge System Chilled Water						
001	47-4	Section 4.1.1(4)	4.3	Editorial	Low Priority		5/19/99	Accept
	Vacuum and Purge System Chilled Water/VPSCHW	Figure 4.2 indicates the use of a flex hose to connect VPSCHW-*01-CT-1" to the PES. Drawings H-1-82224 and H-1-82162 indicate flanged connections.			This will be corrected.			
002	47-4	Section 4.1.1(8)	4-4	Editorial	Low Priority		5/19/99	Accept
	Vacuum and Purge System Chilled Water/VPSCHW	Text says condenser outlet is connected to VPSCHW-*02-CT-1" but H-1-82162 shows it connecting to VPSCHW-*02-SS-1". This discrepancy exists on the inlet line as well.			The line transitions between stainless steel pipe to copper tubing at the boundary of the PES skid.			

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(3) Comment Resolution Report (by Commentor)

Commentor Clark, D

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
H-1-82209		P & I D Stack Monitoring System						
001	50			Editorial	Low Priority		5/18/99	Accept
	Stack Monitoring System/SM	As currently drawn, exhaust stack appears to be part of SMS vendor-supplied equipment.			Agree. Will request the A-E to clarify the drawing.			
002	50			Editorial	Low Priority		5/13/99	Accept
	Stack Monitoring System/SM	Sample probe SMP-PMB-5001 does not appear in MEL.			Sample probe SMP-PMB-5001 will be added to the MEL.			
H-1-82214		Stack Monitoring Exhaust Spool Piece Details						
001	50			Editorial	Med. Priority		5/13/99	Accept
	Stack Monitoring System/SM	Drawing shows three shrouded probe assemblies. Remainder of design documentation only shows one probe.			Drawing H-1-82214 was deleted by DCN 122. References to this drawing will be corrected.			
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
025	50			Editorial	Low Priority		5/25/99	Accept
	Stack Monitoring System/SM	Paragraph 6.5.4.6 refers to incorrect paragraph no.: "6.12.4.5." Should be "6.12.4.4."			Accept. Will be corrected.			
026	50			Technical	Med. Priority		5/13/99	Accept
	Stack Monitoring System/SM	Power source for Stack Monitoring System (SMS) is inconsistently specified. DRD Section 6.12.1.3 and SDD (SNF-3088) Section 3.3.4 require SMS to be powered by facility UPS. DCNs W-441-189 and -193 deleted SMS from UPS (Drawing H-1-82247-3). FSAR (HNF-3553) Section B2.7.1.3 requires SMS power from standby diesel.			The stack monitoring system is supposed to be on the UPS. DCN-189 inadvertently deleted the SM from the UPS. The A/E has been requested to correct the design. The UPS is powered by the diesel upon loss of normal power. The FSAR will be modified to reflect the above information.			
SNF-3088		Stack Monitoring System						
001	50	3.1.1.2	3-2	Technical	Med. Priority		5/18/99	Accept
	Stack Monitoring System/SM	Page 3-2, Section 3.1.1.2 states that H-1-82216 specifies the sample probe. Other than a SNF instrument number, there are no sample probe specs on this drawing or in any other system documentation except the DRD requirements.			The SDD was corrected to reference stack monitoring vendor drawing 808465-001.			

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(3) Comment Resolution Report (by Commentor)

Commentor Clark, D

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
002	93-1	6.13.4.d		Design Criteria	Low Priority		5/18/99	Accept
	Monitoring & Control/MCS	6.13.4.d refers to non-existent Table 5-3 for MCS environmental requirements.			Accept. Will correct reference.			
W-441-P3		Monitoring and Control System Procurement Specification						
001	93-1			Configuration	Low Priority		5/18/99	Accept
	Monitoring & Control/MCS	The connection between HLAN and the MCS was deleted in Rev. 1 of W-441-P3. However the connection is still shown on H-1-82291, sheet 1.			Will be corrected to be shown as a capability (still in spec), not an actual connection.			

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(3) Comment Resolution Report (by Commentor)

Commentor Clark, D

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
ELEM-2		Elementary Diagram Cabinet 2A						
001	93-2			Technical	Med. Priority		5/18/99	Accept
	Safety Class Instrumentation and Control/SCIC	SCIC trips for TW pump and heater do not follow SCIC electrical separation requirements. Also, trip power sources are shown differently in electrical drawings, SCIC performance spec, and Framatone drawings.			Earlier design was not in compliance with IEEE. Added independent starters for CH. A and B (separation meet).			
General		General						
004	93-2			Editorial	Low Priority		5/18/99	Accept
	Safety Class Instrumentation and Control/SCIC	HNF-???? - CVD Set Point Determination (Draft)			Variables and subscripts frequently appear with no explanation of what they represent (I.e., pg. 13, Step 2.5, E2).			
005	93-2			Editorial	Low Priority		5/18/99	Accept
	Safety Class Instrumentation and Control/SCIC	HNF-???? - CVD Set Point Determination (Draft)			Setpoint calcs for seismic switches are not included.			
HNF-3553 Annex B		FSAR Annex B						
019	93-2		B4-41	SAR	Med. Priority		5/25/99	Accept
	Safety Class Instrumentation and Control/SCIC	Pg. B4-41 and Table B4-5 show process bay temperature trip of SCIC @ 95 degrees F. Procurement Specification W-441-P4 and SDD (SNF-3091, pages 4-12), show trip set point of 105 degrees F. Trip set points should be consistent across all documents.			Accept. This is still in review. Parameter limit is 105 degrees F and new setpoint is 98 degrees F. Documents will be revised to reflect this change.			
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
068	93-2			Design Criteria	Med. Priority		5/18/99	Accept
	Safety Class Instrumentation and Control/SCIC	How does the SCIC prevent undetected water addition as required by DRD section 5.6.5.1.j?			Interlocks preclude water addition by closing valves from water sources.			

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(3) Comment Resolution Report (by Commentor)

Commentor **Clark, D**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
003	93-2	5.6.5		SAR	Low Priority		5/25/99	Accept
	Safety Class Instrumentation and Control/SCIC	Section 5.6.5 list of actuations and trips doesn't include "bay over temperature" required by FSAR.			Accept. Will be revised.			
SNF-3001		Calculation Index						
002	93-2			Design Criteria	Med. Priority		5/18/99	Accept
	Safety Class Instrumentation and Control/SCIC	SCIC Calculations (example I/C-CVDF-97-001-SCI&C) cannot be found. SCIC Calcs. appear to have been replaced by unreleased HNF-????, "Cold Vacuum Drying Set Point Determination." These calcs are required to support set points specified in the FSAR and SDD.			Setpoint calc. Is in SNF-4551.			
SNF-3091		Safety Class Instrumentation and Control						
003	93-2	Section 3.1.1		Editorial	Low Priority		5/18/99	Accept
	Safety Class Instrumentation and Control/SCIC	The requirements list in Section 3.1.1 does not address all of the DRD requirements.			Accepted. Will revise.			
001	93-2	Section 3/1/6		Editorial	Low Priority		5/18/99	Accept
	Safety Class Instrumentation and Control/SCIC	First sentence should read "... After bulk water removal has. . . ."			Accepted. Will revise.			
002	93-2	Section 4.2.5		Editorial	Low Priority		5/18/99	Accept
	Safety Class Instrumentation and Control/SCIC	Should state that both the TW overtemperature and seismic trips are still active.			Accepted. Will revise.			

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(3) Comment Resolution Report (by Commentor)

Commentor Moleff, T

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
General		General						
023	CM	CM Training		Configuration	Med. Priority		5/24/99	Accept
	Configuration Management	Provide training specific to the CM function.			Accept. It is ongoing through indoctrination and meetings.			
020	CM	CVDF CM Practice		Configuration	Med. Priority		5/24/99	Accept
	Configuration Management	It is not known if the CVDF CM practice is based on a documented CM program. The CVDF subproject needs a document to show that the CM requirements of SNFP Configuration Management Plan HNF-SD-CM-001, Rev. 3 are being met.			Accept. Matrix will be developed.			
022	CM	ECNs & DCNs		Configuration	Med. Priority		5/24/99	Accept
	Configuration Management	The "Change Impact Review" block requirements need to be revised. It should be required to: 1) Identify the specific section/paragraph of the impacted document. 2) Transmit the ENC/DCN to the owner of the impacted document to make timely and appropriate changes			Accept. Matrix will be developed.			
025	CM	Inconsistencies between documents		Configuration	Med. Priority		5/24/99	Accept
	Configuration Management	Fix inconsistencies during future ECN/DCN impacts on documents. This includes inconsistencies in component numbering. It is recommended that existing documentation be reviewed for impacts.			Accept. An "impacted document" database and tracking system is being implemented. Procedures will be developed to describe the process. Evaluation of existing ECNs/DCNs will be performed.			
019	CM	Letter from Gallagher to Boes		Configuration	Med. Priority		5/13/99	Accept
	Configuration Management	This letter is a calculation that determines lightning protection for the CVDF building and needs to be added to SNF-3001 calc database.			Comment accepted. Mactec-Meier letter #98-461, dated October 30, 1998, containing the CVDF Lightning Protection Requirement Analysis used as the original basis for the design of CVDF lightning protection features will be added to the CVDF Supporting Data and Calculation Database document (SNF-3001).			
026	CM	MEL/SEL/Component List		Configuration	Med. Priority		5/24/99	Accept
	Configuration Management	There should only be one list and not three lists to assure consistency and accuracy. It is suggested that the MEL be the one list.			Accept. A project decision will be made after SAR review and approval by DOE-RI.			

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(3) Comment Resolution Report (by Commentor)

Commentor Moleff, T

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
024	CM	Open Item Tracking		Configuration	Med. Priority		5/13/99	Accept
	Configuration Management	Develop an auditable method to track ALL open items, including their resolution.				<p>An issue tracking system does exist. There are several issues tracking lists that are handled by different persons and statused following different processes. In October 1998, it was decided that it was not effective to put all the issues in the same database, thus, the number of lists. A strategy for statusing, closing, and transferring issues from one list to the other was defined as shown in the attached table. However, the fact that two reviewers had the same comment shows that we have not communicated very well within the project (especially to the newly hired employees) the path we're following on tracking issues.</p> <p>The comment is, therefore, accepted and a Corrective Action Plan will be put together which will include:</p> <ul style="list-style-type: none"> - Update the "CVDF Tracking System" table to include all existing lists, including the database generated by the Independent Design Review. - Discuss the tracking system during project meetings to remind project staff the importance of tracking issues. - Update the issues list and bring the number of open issues down. - Make a decision at the project level on when it will be appropriate to have an unique database for all CVDF open issues. 		
027	CM	Specification C1		Configuration	Med. Priority		5/18/99	Accept
	Configuration Management	It is difficult to track SS and SC to the C1. Recommend a tracking matrix that will identify SS, SC, and GS components and interfaces.				The SEL and MEL are used to help identify safety classification of components. Both documents have been transmitted to the Construction Management Team.		
HNF-SD-SNF-CM-001, Re SNFP Configuration Management Plan								
001	CM			Configuration	Med. Priority		5/24/99	Accept
	Configuration Management	CM-001 needs to be revised to provide guidance to: 1) How CM requirements are to be passed on to Sellers. 2) What CM requirements should be passed on to Sellers.				Accept. Will pass comment on to CM001 authors. This is not CVD-specific, rather an SNF document.		
SNF-4088 CVDF Electrical System Captor/Dapper Study								
001	CM			Technical	Med. Priority		5/21/99	Accept
	Configuration Management	Since the 4-26-99 meeting with the Design Authorities, the Captor/Dapper Study was provided. This study may impact disposition 014 and 012. The specific comments are: 1) How will Captor/Dapper be reconciled with Calculation MEI-2298-EL-03, Rev. 0? 2) How will Captor/Dapper be reconciled with DCN-W-441-143 which requires electrical loads and may change results.				Calculations will be revised based on the as-built data. The portions covered in the final CAPTOR/DAPPER study will be deleted from other calculations.		

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(3) Comment Resolution Report (by Commentor)

Commentor Moleff, T

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
002	CM			Configuration	Med. Priority		5/21/99	Accept
	Configuration Management	Captor/Dapper study resulted in 6 "recommended further actions". These actions may impact original design calculations MEI-2288-EL-03 and MEI-2288-EL-04. The comment or action is to do the following: 1) Add Captor/Dapper to SNF-3001 calc database. 2) Review EL-03 and EL-04 to see what C/D superceded and write a summary to show what is still valid design criteria for the calculations. Also, C/D was issued about the same time that DCN-W-441-193 was issued that removed significant electrical load. The action is to review C/D against DCN-193 to see if the 6 "Recommend Future Actions" of C/D are still valid.			Item 1: Agree. CAPTOR/DAPPER Study will be listed in SNF-3001. Item 2: A-E has been directed (letter NHC-9953276) to evaluate and implement CAPTOR/DAPPER recommendations for reconciliation of calculations, see I.D. No. 429.			

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(3) Comment Resolution Report (by Commentor)

Commentor **McGee, J**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
		Comment						
General		General						
014	QA	General		Administrative	Low Priority		5/13/99	Accept
	Quality Assurance	The delays associated in determining if SC & SS components are available from approved sources or if CGI is applicable may push out schedule (because of failures), i.e., redesign and specifying new components plus going through additional CGI dedication. Change the procurement and dedication process to project responsibility.			The strategy followed by the project was (and is still is) to identify up front all SS and SC components that are not available from approved vendors and prepare a CGI Dedication form (compliant with a CGI Dedication Desk Instruction prepared by the project) that will serve as a basis for dedicating the different components. The dedication process will be performed by laboratories that are very familiar with the process as needed. The recommendation from the reviewer could not be implemented earlier for lack of funding (the project was not allowed to purchase equipment earlier) and can not be implemented now due to the status of procurement.			
015	QA	General		Administrative	Low Priority		5/13/99	Accept
	Quality Assurance	Considering the short design/operating life of CVDF and extremely conservative safety boundary (ref: Muhlestein 007), it appears that a more graded CGI dedication process could be introduced rather than the more stringent requirements illustrated in the current CGI dedication forms. Will SS and SC classifications be reconsidered? If so, CGI application may change.			The CGI dedication process has no other option than being compliant with the SAR requirements. The same level of conservatism needs to be applied. As for the second question, the answer is "yes, the CGI dedication process will be adapted to the changes to the safety classification of components." However, in case of a downgrade of a component, the project may elect to stay on more stringent requirements due to schedule impacts of changing course and to risks of components being upgraded during DOE review of the SAR.			
HNF-SD-SNF-DRD-002		Design Requirements Document, Rev. 4						
028	QA	4.0		Technical	Low Priority		5/24/99	Accept
	Quality Assurance	QA refers to HNF-1551 states that hot conditioning systems were used as part of the guidance for establishing "OCRWM" requirements for CVDF. Does the elimination of hot conditioning systems from SNF change the requirements for "OCRWM" requirements application on CVDF? If HNF-1551 is cancelled, delete from DRD.			HNF-1551 has been cancelled. DRD will be revised.			

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(3) Comment Resolution Report (by Commentor)

Commentor **McGee, J**

F-95

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
027	QA	DRD Section 4.0, QA		Design Criteria	Med. Priority		5/24/99	Accept
	Quality Assurance	HNF-1551, AD-11-014, HNF-SD-SNF-RPT-007, "OCRWM" requirements applicable to CVDF is not defined. These documents and other referenced documents (i.e., QARD Matrix & FDH QAPP-OCRWM-001) discuss "OCRWM" requirements but fail to identify specific application to various CVDF controls (i.e., design and procurement). No list or matrix is provided for cross walk from "OCRWM" requirements to other QA requirement documents (NQA-1, 10CFR830.120, AP-11-014) that has been applied to design or procurement activities.			Accept. This is underway.			
		HNF-SD-SNF-RPT-007, App. B, indicates that "OCRWM" requirements will be satisfied by process administration validation but fails to describe the process validation to specific "OCRWM" requirements.						
		Internal memo 3/31/98 by R. P. Ruth appears to delay "OCRWM" applications during design and procurement do to schedule impact. The memo makes changes to other SDs without review and approval of project Design Authorities or other supporting participants.						
		Project should identify and document specific OCRWM requirements to apply to Appendix B of HNF-SD-SNF-RPT-007.						

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SNF-4148

Master Equipment List

(3) Comment Resolution Report (by Commentor)

Commentor McGee, J

F-96

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
004	QA			Configuration	Med. Priority		5/24/99	Accept
	Quality Assurance	The following items identify examples of incorrect information noted in the MEL Table A-2 07-1 VPS-01-SS-1" identifies SC and is part of P3 procurement. "Reference to P3 is incorrect"			Accept. Will evaluate and revise as appropriate.			
		Table A-1 30-3 PV-CKV-031&060 identify SS and part of P1 procurement. Also 46-1 PWC-HEADER-CKV-BAY 2 through 5 identify SS and are in P1. "Reference to P1 is incorrect"						
		Table A-1 13-2 ScHe-TK-5-01 to 5-04 specify SC and part of P7 procurement. "P7 not addressed in 'DRD' or anywhere"						
		Table A-1 46-1 PWC-IXM-4037 is listed as part of P2 procurement. "Reference to P2 is incorrect"						
		Table A-2 30-3 PV-01-SS-1" & PV-02-SS-1" list SS and are part of P1 procurement. "Reference to P1 is incorrect"						
		Table A-1 30-3 pipe supports listed as SS and identified as part of procurement P1 and construction C1 "Reference to P1 is incorrect"						
		Table A-1 46-1 PWC-F-4042 filter is listed as SC and part of P2 procurement. "P2 is the wrong reference"						
		(Note: P1, 2, and 3 are GS on all SSCs. Need to ensure accurate references to correct packages.)						
005	QA			Configuration	Med. Priority		5/24/99	Accept
	Quality Assurance	Recent development and use of the MEL and its priority of application to the design agency's in changes and identification of SS or SC components may cause confusion among all project participants. Going from one process (SEL) to three (MEL/SEL/Component List) this late in the facility evaluation of design, fabricate, and construction creates opportunities for errors in configuration management.			Accept. Evaluation of solution has started.			
		Recommend incorporating SEL and Component List information into the MEL to reduce the potential confusion created by three somewhat redundant documents.						

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W-441-C1

CVD Facility Construction Specification

(3) Comment Resolution Report (by Commentor)

Commentor McGee, J

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
016	QA			Configuration	Med. Priority		5/13/99	Accept
F-97	Quality Assurance	Tracking SS and SC application from the MEL and SEL to specifics in the C1 spec. is difficult. SS and SC is discussed in broad paras with no identification of boundaries between GS and SS or SC. (i.e.: 1.2 of 1589- and 2.2.3 of 15480). Recommend including or referencing MEL in C1 Specification.			Comment not accepted. The MEL/SEL should not be referenced in the C1 specification since all information required by the construction contractor to carry out his scope of work should be delineated within the specification itself, not in some other project document. The C1 specification is aligned with the MEL/SEL. Any changes to the MEL/SEL are formally transmitted to the A/E, and any of these changes that affect the existing design documentation (e.g., C1 specification) are reconciled by incorporating the changes into the design documents via the DCN process.			
		C1 spec. does not include a matrix or reference to SS or SC systems identified in the MEL or SEL.			<p>The specification identifies any systems/components that are designated as Safety Significant or Safety Class. A good example of this is provided in Section 11100-3.6.1, Table 1, on page 11100-12 (added per DCN W-441-184). This table provides a matrix aligned with the SEL/MEL for the various mechanical systems interfacing with the process equipment skids. In other locations, such as Section 15480-2.2.3, on page 15480-3, the specification simply states that an entire system (in this case, the PWC and PV piping systems, and including all components comprising those systems) is Safety Significant. The same is true in Section 15890-1.1.2 (for all Local and General Exhaust system ductwork and components).</p> <p>The SEL and MEL documents did not exist until roughly mid-way through the CVDF construction effort, long after the C1 specification was developed and approved. If the facility construction were not now nearly complete, then incorporation of a matrix reflecting the MEL/SEL information for the Safety Significant and Safety Class systems/components would be strongly considered. However, at this late stage of construction, there appears to be little value in adding this information, and it could even lead to confusion by the construction contractor.</p>			
017	QA			Configuration	Med. Priority		5/13/99	Accept
	Quality Assurance	C1 spec. has markups (red line) indicating changes to sections and paragraphs. There is no trace-back to or reference the actual change document (DCN, ECN). Revisions to some sections may need to be performed rather than loose configuration management or control. (Examples are C1-15910 & 15890)			The reviewer is correct that in the copy of the W-441-C1 construction specification contained in the Comprehensive Design Report (SNF-4257, Appendix G), many of the red-line mark-ups (identifying changes per approved DCNs) do not indicate the reference DCN number. This lack of traceability makes it difficult to verify the rationale and accuracy of the red-lined information. It should be noted however, that the red-lined versions of the specification used by CM and CVDF engineering personnel (located in the field CM office and the CVDF engineering offices, respectively) do include the appropriate references for traceability of the red-lined changes. Prior to formal release of the SNF-4257 documentation, the W-441-C1 specification in Appendix G will be revised to include this information.			

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(3) Comment Resolution Report (by Commentor)

Commentor **Muhlestein, L**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
		Comment						
HNF-3553 Annex B		FSAR Annex B						
005	SAR		B1-19	SAR	Low Priority		5/20/99	Accept
	Safety Analysis Report	It is stated that the most significant inventory of hazardous material is in Building 275-EA. However, the document does not give the reader an idea of what hazardous material is stored in this building. Therefore, the reader can not draw any conclusions as to whether or not this material is a threat to the CVDF.			Building 275-EA, the Essential Materials Warehouse, is located 8 miles distant from the CVDF. It was concluded in the FSAR that because of the distance involved, there was no threat to CVDF and need not be addressed in the SAR.			
		Provide a list of the hazardous material stored in Building 275-EA and a better discussion to justify that this material is not a threat to the CVDF.						
006	SAR		B3-50	SAR	Med. Priority		5/20/99	Accept
	Safety Analysis Report	This paragraph states that the accident considered the processing of 200 MCOs per year (number of MCOs processed per year = 2 E+02 per year). The initiating event frequency for all of the sequence event trees has a value of 20 E+03 (Figures B3-1 to B3-12), or 100 times higher. The reader is not told why there is a difference, such as 100 equipment demands per MCO processed. What is the reason for the discrepancy, or is there an error of 10-2 in all of the event frequencies for each sequence event tree?			Comment accepted. The computer code that generates the event tree figures presents the number 200 in the format “.20E+3”. In producing and duplicating the SAR, the decimal point was lost and the number appeared to be 20E+3. New event trees will show the number as “200”.			
		Identify the reason for the discrepancy and complete any changes that may need to be made or additional information that may be required.						
014	SAR		B4-102	Editorial	Low Priority			Accept
	Safety Analysis Report	There is an error in this paragraph which needs to be corrected. This paragraph states the cask venting jumper when this functional requirement refers to the MCO venting jumper.			Will evaluate.			
		Correct this paragraph to refer to the MCO venting jumper.						

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(3) Comment Resolution Report (by Commentor)

Commentor Muhlestein, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
007	SAR		B4-22 and B4-79	SAR	Med. Priority		5/20/99	Accept
	Safety Analysis Report	In Table B4-2 for the Process water conditioning (PWC) system, the seismic pump interlock is listed as safety significant for the liquid release accident, and the process water transfer lines in the process bays are listed as safety significant for the gaseous release accident. However, on Page B4-79 which lists the functional requirements for safety class SSCs for the PWC, the pump seismic interlock and the PWC transfer line are listed. Note on Page B4-82 the PWC is not listed under the safety significant SSCs to be discussed. Which is correct? Are there other errors between this table and the listing of functional requirements for the safety class SSCs?			Chapter 4 of the SAR is currently in revision for correctness and consistency within the chapter and relative to other chapters. This information will be verified and included in the current revision.			
		Correct these differences as required and ensure that there are not any other errors between the listing of the safety class and safety significant SSCs and the functional requirements for each system						
001	SAR	General		SAR	Med. Priority		5/24/99	Accept
	Safety Analysis Report	The CVDF Fire Hazards Analysis has not been completed which results in TBDs listed in Chapter B11.0. Note that on Page B2-5 it states that the fire hazards analysis has been completed and concludes that no release of radioactive material to the environment would result from any CVDF fire scenarios. Also see Page B2-66 (5th Par) which is a conclusion from the fire hazard analysis.			Accept. FHA is schedule for release in June.			
		Complete the fire hazards analysis and remove these TBDs before the document is approved.						
002	SAR	General		SAR	Low Priority		5/13/99	Accept
	Safety Analysis Report	General relative to Accident Analysis, Section B3.0. The accident analyses are completed according to the SNFP procedures and DOE requirements and practices. However, the assumptions made in completing the analyses are extremely conservative, resulting in an extremely conservative safety boundary, and, hence, very expensive CVDF design requirements.			Comment accepted. The project appreciates the comment on SAR completeness and adequacy of SCCs to meet SAR requirements. The SAR conservatism is, however, driven by technical data that serves as input to all SNF SARs.			
		Based on the analyses, appropriate safety functions were identified, and appropriate equipment (systems, structures or components) was identified to satisfy the safety functions. The safety class components and the safety significant components are a reasonable selection of components that will meet the identified safety functions.						
		This is a comment relative to the completeness of the FSAR. No action is required.						

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(3) Comment Resolution Report (by Commentor)

Commentor **Muhlestein, L**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
003	SAR	General		SAR	Med. Priority		5/13/99	Accept
	Safety Analysis Report	General relative to Design Requirements. The design requirements in the FSAR and DRD are consistent. The design requirements listed in the FSAR for the safety class and safety significant structures, systems and components (SSCs) are identical to the design requirements listed in the CVDF design requirements document (DRD) for SSCs.			Thank you.			
		This is a comment relative to the completeness of the FSAR. No action is required.						
008	SAR	General		SAR	Med. Priority		5/20/99	Accept
	Safety Analysis Report	Often information is cited in the Annex B FSAR without any reference to where the information comes from and/or without justification. As an example, on Page B3-55, in lines 36 to 42 it states with out any reference or justification, "The total quantity of water available for release into the process water tank room is 650 L. At the start of processing, there is 500 L in the MCO and 150 L in the receiver tank..." The 500 L in the MCO can be found in earlier discussions, but there is no reference to the 150 L in the receiver tank and why there could not be more, or less. As another example, on Page B3-101 there is the statement, "About 12 hours after the failure of the tempered water piping, some MCO temperatures exceed 800 o C." There are no calculations referenced to justify the statement. These are just two of many examples where the reader is left to trust the document as being correct because the statements or information cannot be checked or verified.			Comment accepted. Support for the parameter values used in the SAR can be found in the design calculations. In general, significant support for design parameters is only given for those parameters important to the analyses. Including support for every parameter in the SAR would make the document much more difficult to read, and a balance must be made between referencing backup material and including it in the SAR.			
		Provide more detailed information to justify statements which cannot be referenced, and/or provide better references to information or statements that are provided in the FSAR.						
010	SAR	General		Editorial	Low Priority		5/20/99	Accept
	Safety Analysis Report	There is a lot of duplication in the text of the document which makes the document very difficult to read. For example, on Page B2-13 the third paragraph is an exact duplication of the second paragraph on Page B2-12. Table B2-2 is an exact duplicate of Table B1-1 even the footnotes.			Comment accepted. The duplicate text cited on page B1-6 will be revised as appropriate. Relative to duplication of Tables, DOE-STD-3009-94 dictates to a large degree the information that must be included in each chapter. Occasionally, cross referencing is used to avoid duplicating information. However, in this instance the information was included in both locations.			
		Review the document and remove duplicated information providing a reference back to the appropriate page, table, and/or figure.						

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(3) Comment Resolution Report (by Commentor)

Commentor Muhlestein, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
016	SAR	General		Editorial	Med. Priority		5/20/99	Accept
	Safety Analysis Report	<p>General: The Annex B - Cold Vacuum Drying Facility FSAR is not a stand alone document and must be reviewed in conjunction with the main document, HNF-3553, Spent Nuclear Fuel Project Final Safety Analysis Report, and with the Calculation Notes, SNF-2770. This is because Annex B references in numerous places information that is supposed to be provided in the main document. However, in referencing back to the main document the information is not there, or is not there in sufficient detail to fully address the question or item. This is particularly true in Sections B7.0, B8.0, B9.0, B10.0 B11.0, B12.0, B13.0, B14.0, and B15.0. Further, information from the Calculation Notes is referenced in the Annex B FSAR without further justification. Sometimes information from the Calculation Notes is not adequately referenced.</p> <p>This is a comment appropriate to further reviews. The document, HNF-3553, Spent Nuclear Fuel Project Final Safety Analysis Report with Annex B, and the Calculation Notes, SNF-2770, should be reviewed as a complete package.</p>			<p>Comment accepted. Chapter 3 has been reviewed and additional supporting material added as appropriate and text modified to clarify relevant concepts. In addition, referencing in the programmatic chapters has been checked to correct circular and inadequate referencing. It is necessary to provide a balance between the benefit of providing complete information in one document, and the detriment of making the document too long to serve its purpose. Therefore, we did not add all references to Appendix B. Future reviewers will be able to review the Spent Nuclear Fuel Project Final Safety Analysis Report and the Calculation notes when they review Annex B.</p>			
013	SAR	Reference Page B1-17		Editorial	Low Priority		5/20/99	Accept
	Safety Analysis Report	<p>The CVDF FSAR ought to be more current on the N Basin activities than the 1998 reference.</p> <p>Update the CVDF FSAR to contain more current information relative to the state of the N Basin.</p>			<p>Comment accepted. The referenced text will be revised to reflect current status of N Reactor and the outdated reference will be removed.</p>			

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(3) Comment Resolution Report (by Commentor)

Commentor Muhlestein, L

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
004	SAR	Table B1-1	B1-7	SAR	Med. Priority		5/18/99	Accept
	Safety Analysis Report	There needs to be a better discussion that ties the seismic information together so that one can evaluate the seismic design adequacy of the CVDF. For example, what is the peak ground acceleration of the design basis earthquake for the CVDF? The peak ground acceleration of the design basis earthquake for the K Basins is 0.2 g with the K Basin structure down graded to a peak ground acceleration of 0.12 g. These facilities are in near proximity to the CVDF. In Table B1-1 the performance category 3 equal hazard response spectra for the CVDF is listed as 0.26 g. Many people will not be able to differentiate the difference between the peak ground acceleration of the design basis earthquake and the equal hazard response spectra. The reference in the document is for the recent 100 K seismic hazard curves which are given in Figure B1-5, Page B1-7. Later on Page B3-135 it is stated that, "A design basis earthquake for the CVDF is considered an 'unlikely' event [i.e., interpreted as the order of 1 x 10-4 per year]". Based on Figure B1-5, given an earthquake occurs the probability that the peak ground acceleration exceeds 0.2 g or 0.26 g is the order of 3 to 5 x 10-4 per year.			Concur. Will evaluate best means of presenting seismic information.			
		The seismic information needs to be better tied together and summarized such that one can evaluate the seismic design adequacy of the CVDF						
017	SAR	Table B5-1	B5-2	Editorial	Low Priority		5/20/99	Accept
	Safety Analysis Report	The third column, Control basis, provides no added benefit because many of the entries are repetitious.			The content of Table B5-1 is dictated by DOE-STD-3009-94, and would therefore be difficult to modify.			
		Consider simplifying the table.						
HNF-3673		CVDF Technical Safety Requirements						
001	SAR	General relative to TSRs.		SAR	Low Priority		5/13/99	Accept
	Safety Analysis Report	The TSRs derived in Section B5.0 of the CVDF FSAR track identically to the TSRs in the CVDF TSR document (HNF-3673, Rev 0-A). The Limiting Conditions of Operation (LCO) and Administrative Controls (AC) listed in the FSAR are identical to those in HNF-3673, Rev. 0-A, and the TSR bases in HNF-3673, Rev. 0-A track well with the accident analyses in the FSAR. The TSRs are a very conservative set of requirements that will ensure that the CVDF can be safely operated and will met its intended functions.			Thank you.			
		This is a comment relative to completeness of the FSAR. No action is required.						
HNF-SD-SNF-SEL-002		Safety Equipment List						

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(3) Comment Resolution Report (by Commentor)

Commentor **Muhlestein, L**

Item No.	Subsystem	Document Section	Page No.	Category	Priority	Disposition	Disp Date	Reviewer Disposition Response
001	SAR	General relative to the Safety Equipment List		SAR	Med. Priority		5/24/99	Accept
	Safety Analysis Report	The CVDF safety equipment list (SEL), HNF-SD-SNF-SEL-002, Rev. 6, was prepared based on an earlier version of the SAR (HNF-SD-SNF-SAR-002, Safety Analysis Report for the Cold Vacuum Drying Facility, Phase 2, supporting Installation of Processing Systems, 1998). The information in the safety equipment list (HNF-SD-SNF-SEL-002, Rev. 6) tracks reasonably well with the safety class and safety significant SSCs identified in the Annex B - Cold Vacuum Drying Facility FSAR (for example, the equipment listed in Table B4-2, Pages B4-21 to B4-24). However, at this point it is difficult to tell if the SEL is all inclusive based on the final CVDF FSAR (i.e., lists each and every safety class or safety significant component by system in a detailed list by component tag number).			Accept.			
		When the CVDF FSAR is completed, the safety equipment list needs to be updated to ensure that all of the safety class and safety significant components are clearly identified in the SEL						

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Appendix G. Supplementary Documents Reviewed

The following documents were originally provided by the project and referenced during the review process.

Support and Reference Documents Not Subject to Review
Reference Documents
Operating Manual, Rev. 1 (SNF-2356)
Calculation Index (SNF-3001)
Process Flow Diagrams (H-1-825867, H-1-825868, H-1-81166)
Document/Drawing Hierarchy (SNF-4248)
Supporting Baseline and Compliance Documents
Compliance Matrix for Requirements (6430.1A and NRC Equiv.)
Supporting Safety Documents
Hazards Analysis Report (HNF-SD-SNF-HIE-004)
Supporting Test Documents
Hanford SNF Cold Vacuum Drying First Article Initial Test Finding Report (HNF-3342)
Cold Vacuum Drying Proof of Performance (First Article Testing) Test Results (HNF-4057)

The following documents were requested by the Review Team and used during the review process.

**LIST OF DOCUMENTS REQUESTED BY THE CVDF DESIGN REVIEW TEAM
AS OF MAY 11, 1999**

	<u>Document Number</u>	<u>Title</u>	<u>Date Furnished</u>
1.	DOE Order 6430.1a	<i>General Design Criteria</i>	4/13/99
2.	List of DCNs	<i>DCN Log</i>	4/13/99
3.	List of ECNs	<i>ECN Log</i>	4/13/99
4.	No number	<i>List of ASME Code Vessels at the CVD</i>	4/14/99
5.	HNF-SD-SNF-DB-003	<i>NRC Requirements Document</i>	4/13/99
6.	HNF-3552	<i>Project Execution Plan</i>	4/13/99
7.	HNF-3673	<i>Technical Safety Requirements</i>	4/13/99
8.	FDH-QAPP-OCRWM-001	<i>OCRWM Requirement Report</i>	4/13/99
9.	AP-11-014	<i>QA Plan Document</i>	4/13/99
10.	MEI-2288-EL-01	<i>Calc for Lighting Levels</i>	4/14/99
11.	MEI-2288-EL-02	<i>Sag & Tension Calcs</i>	4/14/99
12.	MEI-2288-EL-03	<i>Calc for Electrical Service & Feeder Sizing</i>	4/14/99
13.	MEI-2288-EL-04	<i>Calc for Fault Current and Equipment Rating</i>	4/14/99
14.	MEI-2288-EL-05	<i>Calc for Fire Alarm & Battery Size Determination</i>	4/14/99
15.	DCN-057-E.1	No Title	4/14/99
16.	DCN-441-121	No Title	4/14/99
17.	DCN-441-124	No Title	4/14/99
18.	DCN-441-140	No Title	4/14/99
19.	DCN-441-155	No Title	4/14/99
20.	IEEE STD 603-1991	<i>IEEE Standard for Safety Systems for Nuclear Power Generating Stations</i>	4/14/99
21.	AP 1-020-02	<i>Readiness Determination Process</i>	4/14/99
22.	HNF-SD-SNF-HIE-004	<i>CVDF Hazard Analysis Rpt For Bldg Confinement</i>	4/14/99
23.	HNF-SD-SNF-DB-003	<i>SNF Proj. Path Forward Addt'l. Rqmts.</i>	4/14/99
24.	HNF-PRO-704	<i>Hazard & Accident Analysis Process</i>	4/14/99
25.	WHC-SD-SNF-FRD-020	<i>K-Basin SNF SVDF Functions and Requirements</i>	4/14/99
26.	WHC-SD-SNF-DGS-002	<i>SNF Project Equipment & Piping Labeling Guide</i>	4/14/99
27.	HNF-S-0435	<i>Performance Spec. for the K Basin Low Temp. Drying Module</i>	4/14/99
28.	HNF-2058	<i>Initial Revision and Approval of MCS Software Rqmts Specs.</i>	4/14/99
29.	HNF-1551	<i>OCRWM-QARD-Compliance Plan</i>	4/14/99
30.	SNF-2408	<i>CVDF Definitive Design Summary</i>	4/15/99
31.	WHC-SD-SNF-DB-004	<i>SNF Project Seismic Design Criteria</i>	4/15/99

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32.	WHC-SD-SNF-DB-010	<i>CVD System Natural Phenomena Hazards</i>	4/15/99
33.	WHC-SD-SNF-DB-002	<i>SNF Project Path Forward Nuclear Safety Equivalency to Comparable NRC Licensed Facilities</i>	4/15/99
34.	MEI-228-ST-06-G	<i>Seismic Force on Bridge Crane</i>	4/15/99
35.	MEI-228-ST-06-L	<i>Check Stress on Welded Connection</i>	4/15/99
36.	<i>Anchor Bolts and Base Plates Structural Calculations for Project W-441-C1 Cold Vacuum Drying Facility, Meier Associates, Inc.</i>		
	• MEI-2288-ST-10-K	Anchor Bolts at Tank Room	4/15/99
	• MEI-2288-ST-10-L	Anchor Bolts at Line 2 & 7	4/15/99
	• MEI-2288-ST-10-M	Anchor Bolts at C-3-6	4/15/99
	• MEI-2288-ST-10-N	Anchor Bolts at A-3-6	4/15/99
	• MEI-2288-ST-10-O	Anchor Bolts at E-3-6	4/15/99
	• MEI-2288-ST-15-I	Base Plates	4/15/99
37.	<i>Cold Vacuum Drying Facility Structural Analysis Report, Merrick & Company – Merrick & Co. states that this is probably the book of ALL structural calculations. They are available in the MO-285 library.</i>		4/19/99
38.	<i>Analysis of Tornado/Tornado Missile Risk to New SNFP Facility; Final Report, M.M. Beary, Contract MRV-SBW-482901, Science Applications International Corporation.</i>		4/15/99.
39.	<i>Report 1435-001 Shannon and Wilson, Geotechnical Engineering Studies, Cold Vacuum Drying Facility, 100KW area, Hanford Reservation, Washington, Shannon and Wilson Company.</i>		4/19/99
40.	HNF-2179	<i>Seismic Analysis of TN-DE&SH Cask Transportation Trailer System for the CVD Facility</i>	4/15/99
41.	MER-2288-S-02	<i>Bridge Crane Support Calcs</i>	4/15/99
42.	96004.1.2	<i>Advent - Seismic Evaluation of Cold Vacuum Drying Facility Secondary Enclosure and Process Water Tank Room.</i>	4/15/99
43.	<i>Single-Point Failure Analysis for Safety Related I&C (CVDF)</i>		Doesn't exist per Dick Whitehurst.
44.	HNF-PRO-097	<i>Engineering Design & Evaluation</i>	4/15/99
45.	HNF-SD-SNF-FHA-003	<i>Draft Fire Hazards Analysis</i>	4/15/99
46.	WHC-SD-W236A-TI-002	<i>Seismic Hazard Curves</i>	4/19/99
47.	Evaluated Suppliers List	(Jack)	4/19/99
48.	MEL sorted by Type and Comp. Tag #	(Dave)	4/19/99
49.	I/C-CVDF-97-001 (SCIC)	<i>Part of Set-Point Calcs (Dave)</i>	4/19/99
50.	QAPP-OCRWM-001	<i>QA Prog. Plan for Implementation of the OCRWM QARD for SNF Projects (Jack)</i>	4/19/99
51.	QA-OCRWM-1	<i>OCRWM QARD Rqmts Matrix (Jack)</i>	4/19/99
52.	DOE-STD-1020-94	<i>Natural Phenomena?? (George)</i>	4/21/99
53.	DOE-RL-92-36	<i>Hoisting & Rigging Manual (George)</i>	4/20/99

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54.	Draft of Final FHA	<i>Fire Hazards Analysis</i>	4/21/99
55.	HNF-3034	<i>SNF Cask Coupling Seismic & Stress Analysis (Vern)</i>	4/20/99
56.	W-441-201	DCN – Has not been issued yet.	N/A
57.	Letter NHC-9951641	<i>Mezzanine & Proc. Hood Struct. Requirements (Vern)</i>	4/20/99
58.	MER-2288-S-01	<i>Seismic calcs for stack & foundation design (Vern)</i>	4/20/98
59.	MER-2288-S-09C	<i>Process Hood Support Analysis (Vern)</i>	Can't find
60.	HNF-3904	<i>IX Module Procurement Spec (Luc)</i>	4/21/99
61.	WHC-S-0453	<i>MCO Specification (Luc)</i>	4/21/99
62.	SNF-2356	<i>CVDF Operations Manual (Steve)</i>	4/21/99
63.	MER-2288-CA1	<i>Compressed/Instr. Air Calc (Steve)</i>	4/22/99
64.	DCN-008	<i>Constr Spec 15487 (Steve)</i>	4/20/99
65.	WHC-SD-WM-ER-607	<i>SNF Vac. Drying Thermal-Hydraulic Analysis & Dynamic Model Development Status (Steve)</i>	4/21/99
66.	JMI-98030109-01	(Steve) Furnished copy of predecessor document	Request Canceled
67.	CVD-1	<i>Merrick calc – drying pump (Steve)</i>	4/20/99
68.	CVD-16	<i>Merrick calc – SC He (Steve)</i>	4/20/99
69.	CVD-16 alt	<i>Merrick calc – SC He (Steve)</i>	Can't find
70.	CVD-25	<i>Merrick calc – SC He (Steve)</i>	4/22/99
71.	HNF-SD-SNF-TI-059	<i>A Discussion on the Methodology for Calculating Radiological and Toxicological Consequences for the SNF Project (for Lewis)</i>	4/22/99
72.	HNF-SD-SNF-TI-040	<i>MCO Internal Gas Comp. And Pressure During Interim Stg. (Lewis)</i>	4/21/99
73.	Ltr. 97-SFD—172	<i>Risk Evaluation Guidelines to Ensure Inherently Safer Designs (Sellers, 1997) (for Lewis)</i>	4/21/99
74.	SNF-2770	<i>Design Basis Accident Analysis Report (Lewis)</i>	4/22/99
75.	HNF-SD-SNF-CN-023	<i>Thermal Analysis of Cold Vacuum Drying of Spent Fuel (Lewis)</i>	4/22/99
76.	MER-2288-S-09a	<i>Process Hood/ Seal Ring (Vern)</i> In MO-285 Library – contains full-sized prints.	4/22/99
77.	MER-2288-S-09b	<i>Process Hood/ Seal Ring (Vern)</i>	4/20/99
78.	WHC-SD-SNF-FRD-020	<i>K-Basin SNF CVDF F&R (Luc)</i>	4/21/99
79.	HNF-2341, Rev 0	<i>Hanford SNF CVD Process – Goth Simulation of Normal Operations (Luc)</i>	4/21/99
80.	HNF-2344	<i>Goth-SNF Simulation of the Hanford</i>	

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		<i>SNF CVD Tempered Water System (Luc)</i>	4/21/99
81.	WHC-SD-SNF-OCD-001 R3	<i>SNF Proj. Product Specification (Luc)</i>	4/22/99
82.	WHC-SD-SNF-TM-001 R0	<i>Flowsheet Description for the CVDF Supporting the CVDF Project (Luc)</i>	4/26/99
83.	WHC-SD-W441-CN-001 R2	<i>Radionuclide Inventory of Bulk MCO Water at the CVDF (Luc)</i>	4/22/99
84.	Merrick CVD-10 R3	<i>CVDF Mass Balance – Water Removed During Purge & Heat (Luc)</i>	4/20/99
85.	Merrick CVD-11 R0	<i>CVDF Mass Balance During Annulus Draining (Luc)</i>	4/20/99
86.	Merrick CVD-12 R0	<i>CVDF Mass Balance During Bulk Water Removal Step (Luc)</i>	4/20/99
87.	WHC-SD-SNF-ES-22 R0	<i>Study for the Disposal of Process Water from the K Basins CVDF (Luc)</i>	4/22/99
88.	Merrick CVD-2 R0	<i>Compare IX Columns to IX Modules (Luc)</i>	4/20/99
89.	Merrick CVD-5 R0	<i>Calculate the RLW Tank LW-TK-4032 Cooling (Luc)</i>	4/20/99
90.	Merrick CVD-7 R0	<i>RLW System Cost Estimate (Luc)</i>	4/20/99
91.	Merrick CVD-9 R0	<i>IXM Modification with Filter Elements (Luc)</i>	4/20/99
92.	Merrick CVD-18a R3	<i>Size PWC-EJR-4031 (Luc)</i>	4/20/99
93.	Merrick CVD-18b R3	<i>Size PWC-P-4235/6 (Luc)</i>	4/20/99
94.	Merrick CVD-22 R1	<i>Velocity Required to Transport Particulates from the MCO (Luc)</i> Can't find	
95.	MEI-2288-ME-01 R1	<i>Pump PWC P-4001 (Luc)</i>	4/20/99
96.	HNF-1523 R1	<i>K-Basins Particulate Water Content Behavior & Impact (Luc)</i>	4/21/99
97.	HNF-1527 R2	<i>Estimates of Particulates (?) in MCO (Luc)</i>	4/21/99
98.	HNF-SD-SNF-CN-008 R0	<i>Particulate Inventory of an MCO (Luc)</i>	4/21/99
99.	HNF-SD-SNF-CN-010 R0	<i>Uncertainty Analysis of Available Water in Fuel Particulate Loaded in an MCO (Luc)</i>	4/21/99
100.	HNF-SD-W441-CN-001 R2	<i>SNF Inventory in Bulk MCO Water at the CVDF (Luc)</i>	Same as #83
101.	Logic & Loop Diagrams (per H-1-82160, note 4) [Dave]		4/23/99
102.	SNF-4290	<i>Analysis of Failure Modes and Their Affects on Safety-Class Systems & Components of the Cold Vacuum Drying Facility (Dave)</i>	Not released
103.	SNF-4213	<i>Final Human Factors Engineering Report for the Cold Vacuum Drying Facility Analysis, Results, and Findings (Dave)</i>	4/22/99

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104.	H-2-828041	<i>Multi-Canister Overpack Assy.(Luc)</i>	4/22/99
105.	H-2-828042	<i>MCO Mechanical Closure (Luc)</i>	4/22/99
106.	H-2-828045	<i>MCO Mechanical Closure Shield Plug (Luc)</i>	4/22/99
107.	H-2-828047	<i>MCO Process Valves (Luc)</i>	4/22/99
108.	H-2-828060	<i>K-Basin SNF Storage Basket Mark IA (Luc)</i>	4/22/99
109.	H-2-828065	<i>K-Basin SNF Scrap Basket Mark IA (Luc)</i>	4/22/99
110.	H-2-828070	<i>MCO Mark IV SNF Storage Basket (Luc)</i>	4/22/99
111.	H-2-828075	<i>MCO Mark IV SNF Scrap Basket (Luc)</i>	4/22/99
112.	DCN-W441-210	<i>DCN (Dave)</i>	Not Issued
113.	Full Size EFD Drawings	<i>(Design Team Library)</i>	4/21/99
114.	MEI-2288-ST-06-A	<i>Est. Bridge Crane Loads (George)</i>	4/22/99
115.	MEI-2288-ST-06-B	<i>Loads to Runway Beam (George)</i>	4/22/99
116.	MEI-2288-ST-06-C	<i>Loads to Column (George)</i>	4/22/99
117.	MEI-2288-ST-06-D	<i>Bridge Crane (George)</i>	4/22/99
118.	MEI-2288-ST-06-E	<i>Crane Runway & Connections (George)</i>	4/22/99
119.	MEI-2288-ST-06-F	<i>Lateral Force from Bridge Crane (George)</i>	4/22/99
120.	MEI-2288-ST-06-G	<i>Seismic Forces on Bridge Crane (George)</i>	4/22/99
121.	MEI-2288-ST-06-H	<i>STADD Model of Bridge Crane (George)</i>	4/22/99
122.	MEI-2288-ST-06-I	<i>Check "Stub Beam" Connection (George)</i>	4/22/99
123.	MEI-2288-ST-06-J	<i>Stub Beam (George)</i>	4/22/99
124.	MEI-2288-ST-06-K	<i>Shear Stress (George)</i>	4/22/99
125.	MEI-2288-ST-06-L	<i>Check Stress on Welded Connection (George)</i>	4/22/99
126.	MEI-2288-ST-06-M	<i>Brace (George)</i>	4/22/99
127.	MEI-2288-HV-01	<i>General Design Parameters (Jim)</i>	4/22/99
128.	MEI-2288-HV-02	<i>Building Transmission Factors (Jim)</i>	4/22/99
129.	MEI-2288-HV-C, C1	<i>HVAC Computer Load Calc (Jim)</i>	4/22/99
130.	MEI-2288-HV-C2	<i>Sample Zone Load Calc for Computer Load Prog. Verification (Jim)</i>	4/22/99
131.	MEI-2288-HV-C2.1	<i>Sample HVAC Load Calc for Computer Load Prog. Verification (Jim)</i>	4/22/99
132.	MEI-2288-HV-03	<i>Process Bays Room Design Criteria (Jim)</i>	4/22/99
133.	MEI-2288-HV-04	<i>Process Bays Cooling and Heating Load Summary (Jim)</i>	4/22/99
134.	MEI-2288-HV-05	<i>Process Bays Psychometrics (Cooling) [Jim]</i>	4/22/99
135.	MEI-2288-HV-06	<i>Process Bays Psychometrics (Heating) [Jim]</i>	4/22/99
136.	MEI-2288-HV-07	<i>General Supply System Room Design Criteria (Jim)</i>	4/22/99
137.	MEI-2288-HV-08	<i>General Supply System Cooling and Heating Load Summary (Jim)</i>	4/22/99

138.	MEI-2288-HV-09	<i>General Supply System Psychometrics (Cooling) [Jim]</i>	4/22/99
139.	MEI-2288-HV-10	<i>General Supply System Psychometrics (Heating) [Jim]</i>	4/22/99
140.	MEI-2288-HV-11	<i>Administration Area Room Design Criteria (Jim)</i>	4/22/99
141.	MEI-2288-HV-12	<i>Administration Area Cooling and Heating Load Summary (Jim)</i>	4/22/99
142.	MEI-2288-HV-13	<i>Administration Area Psychometrics (Cooling) [Jim]</i>	4/22/99
143.	MEI-2288-HV-14	<i>Administration Area Psychometrics (Heating) [Jim]</i>	4/22/99
144.	MEI-2288-HV-15	<i>Chilled Water Load Summary (Jim)</i>	4/22/99
145.	MEI-2288-HV-16, 16.1	<i>Electric Heating Coil Load Summary/ Unit Heater Calcs (Jim)</i>	4/22/99
146.	MEI-2288-HV-17	<i>Fan Pressure Calculations (Jim)</i>	4/22/99
147.	MEI-2288-HV-18	<i>Pump Pressure Calculations (Jim)</i>	4/22/99
148.	MEI-2288-HV-19	No Longer Applicable	
149.	MEI-2288-HV-20	<i>Exhaust Stack Sizing (Jim)</i>	4/22/99
150.	MEI-2288-HV-21	<i>Seismic Restraints for Ductwork (Jim)</i>	Can't find
151.	MEI-2288-HV-22	<i>Trane Split Chilled Refrigerant Line Sizing (Jim)</i>	Can't find
152.	MEI-2288-HV-23	<i>Chilled Water Expansion Tank Sizing (Jim)</i>	Can't find
153.	CVD-8 Stack Monitoring	<i>dP through CVDF Stack (Jim)</i>	4/22/99
154.	CVD-19 Stack Monitoring	<i>Determination of the Minimum Stack Air Flow to Remain Turbulent (Jim)</i>	4/22/99
155.	CVD-20 Stack Monitoring	<i>Analysis of the Flow Velocity in the Sample Line used for Stack Monitoring (Jim)</i>	4/22/99
156.	MEI-2288-ME-01-B	<i>System Curve [3 pgs.] (Steve)</i>	4/23/99
157.	MEI-2288-ME-01-E	<i>Water Retention Basin Size (Steve)</i>	4/22/99
158.	MEI-2288-ME-01-N	<i>Size of Air Compressor (Steve)</i>	4/22/99
159.	MEI-2288-FP-01	<i>Hydraulic Calculation (Steve)</i>	4/22/99
160.	MEI-2288-FP-02	<i>Hydraulic – Area 1 (Steve)</i>	4/22/99
161.	MEI-2288-FP-03	<i>Hydraulic – Area 2 (Steve)</i>	4/22/99
162.	H-1-83203	<i>CVD IX Module (Luc)</i>	Not released
163.	H-1-83766	(Luc)	4/27/99
164.	MER-2288-S-11	(Vern)	Can't find
165.	CVD-3 PH	<i>Size FV-1*19 Helium Purge Control (Steve)</i>	4/23/99
166.	CVV-22	<i>Process Gas Flowrate (Steve)</i>	Can't find
167.	MEI-2288-ME-01-I	<i>Estimate He Use (Steve)</i>	4/22/99
168.	MEI-2288-ME-01-J	<i>Estimate Total He Use (Steve)</i>	4/22/99
169.	MEI-2621-ME-03	<i>Size He Gas Piping (Steve)</i>	Can't find
170.	MER-2288-HV-21	(Vern)	Can't find

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171.	HNF-SD-SNF-OMM-003	<i>Cask & Transportation System Installation & Operations & Repair & Maintenance (Vern)</i>	4/23/99
172.	HNF-SD-SNF-FDR-003	<i>Design Analysis Report for the TN & WHC Cask & Transportation System (Vern)</i>	4/27/99
173.	WHC-SD-GN-DGS-30006 Rev 1-A	<i>Guidelines for Assessing the Seismic Adequacy of Existing Performance Category Equipment at the Hanford Site (Vern)</i>	4/27/99
174.	HNF-????	<i>CVD Set Point Determination (Dave)</i>	4/23/99
175.	H-1-82291	<i>CVD MCS I/O Connection Diagrams (Dave)</i>	4/23/99
176.	H-1-82292	<i>CVD MCS I/O Connection Diagrams (Dave)</i>	4/23/99
177.	H-1-82293	<i>CVD MCS I/O Connection Diagrams (Dave)</i>	4/23/99
178.	H-1-82294	<i>CVD MCS I/O Connection Diagrams (Dave)</i>	4/23/99
179.	H-1-82295	<i>CVD MCS I/O Connection Diagrams (Dave)</i>	4/23/99
180.	H-1-82296	<i>CVD MCS I/O Connection Diagrams (Dave)</i>	4/23/99
181.	H-1-82214	<i>Stack Monitoring (Dave)</i>	4/26/99
182.	CVD-1	<i>Size P-3*14 T.W. Recirculation Pump (Luc)</i>	4/27/99
183.	DOE-STD-1073-93	<i>Guide for Operational Configuration Management (Ted)</i>	4/27/99
184.	SNF-4088	<i>CVDF Electrical System CAPTOR/DAPPER Study (Ted)</i>	4/27/99
185.	Letter 98-461	<i>CVDF Lightning Protection Requirements Analysis (Ted)</i>	4/27/99
186.	HNF-PRO-447	<i>Procurement of Safety-Class items and Management of Spares (Ted)</i>	4/28/99
187.	QUESTION -	Do we normally write in the DCN# that affects drawings next to or within the clouded areas? (Dave)	4/28/99
	ANSWER -	Yes, <u>within</u> (per Carl Haller). Furnished two desk instructions for DCNs to Dave.	
188.	HNF-PRO-1819	<i>PHMC Engineering Requirements 5-copies (Ted, George, Vern, Steve, and Dave)</i>	4/28/99
189.	Merrick CVD-6	<i>Vacuum System Model (Steve)</i>	5/7/99
190.	Merrick CVD-15	<i>Blower VPS-2*05/06 Pressure Drop Calculation (Steve)</i>	5/7/99
191.	Merrick CVD-16	<i>SCHe Flow Rate and Line Break Scenario</i>	

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	(Steve)	5/7/99
192.	Merrick CVD-25	<i>SCHe Flow Requirements</i> (Steve) 5/7/99
193.	Merrick CVD-25alt	<i>SCHe Flow Requirements</i> (Steve) 5/7/99
194.	Merrick CVD-29	<i>SCHe Flow Rates & ΔP</i> (Steve) 5/10/99
195.	Merrick CVD-29a	<i>SCHe Flow Rates & ΔP</i> (Steve) 5/10/99
196.	Merrick CVD-29b	<i>SCHe Flow Rates & ΔP</i> (Steve) 5/10/99
197.	Merrick CVD-29c	<i>SCHe Flow Rates & ΔP</i> (Steve) 5/10/99
198.	MEI-2288-ME-01-V	<i>Pump Heat for VPSCHW Chiller</i> (Steve) 5/7/99
199.		<i>Sizing Calc for Vacuum Pump</i> (Steve) 5/10/99
200.	No Number	<i>Vendor Information on Vacuum Pump/Blower</i> (Steve) 5/10/99

[illegible]