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Documentation of Hanford Site Independent Review of the Hanford Waste Vitrification Plant Preliminary Safety Analysis Report

Prepared for the U.S. Department of Energy
Office of Environmental Restoration and
Waste Management

Westinghouse
Hanford Company Richland, Washington

Hanford Operations and Engineering Contractor for the
U.S. Department of Energy under Contract DE-AC06-87RL10930

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Documentation of Hanford Site Independent Review of the Hanford Waste Vitrification Plant Preliminary Safety Analysis Report

D. I. Herborn

Date Published
October 1991

Prepared for the U.S. Department of Energy
Office of Environmental Restoration and
Waste Management

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Hanford Company**

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DOCUMENTATION OF HANFORD SITE INDEPENDENT REVIEW OF THE HANFORD WASTE VITRIFICATION PLANT PRELIMINARY SAFETY ANALYSIS REPORT

1.0 INTRODUCTION

Westinghouse Hanford Company (Westinghouse Hanford) is the Integrating Contractor for the Hanford Waste Vitrification Plant (HWVP) Project, and as such is responsible for preparation of the HWVP Preliminary Safety Analysis Report (PSAR). The HWVP PSAR was prepared pursuant to the requirements for safety analyses contained in U.S. Department of Energy (DOE) Orders 4700.1, *Project Management System* (DOE 1987); 5480.5, *Safety of Nuclear Facilities* (DOE 1986a); 5481.1B, *Safety Analysis and Review System* (DOE 1986b); and 6430.1A, *General Design Criteria* (DOE 1989). The Westinghouse Hanford procedures that, in large part, implement these DOE requirements are contained in WHC-CM-4-46, *Nonreactor Facility Safety Analysis Manual* (WHC 1989). This manual describes the overall Westinghouse Hanford safety analysis process in terms of requirements for safety analyses, responsibilities of the various contributing organizations, and required reviews and approvals.

The requirements for Westinghouse Hanford independent review of the HWVP PSAR are contained in Section 1.0, Subsection 4.3 of WHC-CM-4-46. Specifically, this manual requires the following:

- Formal functional reviews of the HWVP PSAR by the future operating organization (HWVP Operations), and the independent review organizations (HWVP and Environmental Safety Assurance, Environmental Assurance, and Quality Assurance)
- Review and approval of the HWVP PSAR by the Tank Waste Disposal (TWD) Subcouncil of the Safety and Environmental Advisory Council (SEAC), which provides independent advice to the Westinghouse Hanford President and executives on matters of safety and environmental protection.

2.0 THE COMMENT RESOLUTION PROCESS FOR THE FORMAL FUNCTIONAL REVIEWS

The Review Comment Record (RCR) process was used to obtain comments from Westinghouse Hanford independent reviewers of draft versions of the HWVP PSAR, which were designated as Revisions A and B. The RCR process also was used to document comment resolution and disposition. Parallel reviews were conducted by the U.S. Department of Energy Field Office, Richland (RL) by representatives of the following RL organizations: Vitrification Project Office, Quality Assurance Division, and the Safety and Environment Division. Reviews also were conducted by RL's general support services contractor, Stone and Webster Engineering Company.

Copies of the RCRs submitted by Westinghouse Hanford and RL reviewers are contained in WHC-MR-0259, *Hanford Waste Vitrification Plant Project Preliminary Safety Analysis Report Comment Response Records* (Herborn et al. 1991a). Final resolution or closing out of all of these comments was achieved and is indicated by appropriate signatures on the RCR forms.

3.0 SAFETY AND ENVIRONMENTAL ADVISORY COUNCIL TANK WASTE DISPOSAL SUBCOUNCIL REVIEW

Following review and close-out of comments on HWVP PSAR, Revisions A and B, by the Westinghouse Hanford independent review and operations organizations, the PSAR received top-level management review by the SEAC TWD Subcouncil. This review was accomplished at a series of Subcouncil meetings, at which the PSAR was reviewed on a chapter-by-chapter basis. Formal questions were asked by the Subcouncil to which the HWVP Project staff responded. In a number of cases, specific actions resulted from this interaction.

Detailed documentation of the Subcouncil review is available in the form of approved meeting minutes. The SEAC TWD Subcouncil meeting minutes for the HWVP deliberations are presented in Appendix A.

4.0 APPROVAL OF THE HANFORD WASTE VITRIFICATION PLANT PRELIMINARY SAFETY ANALYSIS REPORT

Approval of HWVP PSAR, Revision 0, by the required Westinghouse Hanford organizations and offices is documented by the signatures on the Approval Page (iv) of the PSAR (Herborn et al. 1991b), which is reproduced in Appendix B.

The HWVP PSAR, Revision 0, was approved by the RL Manager for release to the U.S. Department of Energy-Headquarters (DOE-HQ) for final review. This transmittal letter is presented in Appendix B.

5.0 REFERENCES

- DOE, 1986a, *Safety of Nuclear Facilities*, DOE Order 5480.5, U.S. Department of Energy-Headquarters, Washington, D.C.
- DOE, 1986b, *Safety Analysis and Review System*, DOE Order 5481.1B, U.S. Department of Energy-Headquarters, Washington, D.C.
- DOE, 1987, *Project Management System*, DOE Order 4700.1, U.S. Department of Energy-Headquarters, Washington, D.C.

DOE, 1989, *General Design Criteria*, DOE Order 6430.1A, U.S. Department of Energy-Headquarters, Washington, D.C.

Herborn, D. I., and L. M. Campbell, 1991a, *Hanford Waste Vitrification Plant Project Preliminary Safety Analysis Report Comment Response Records*, WHC-MR-0259, Westinghouse Hanford Company, Richland, Washington.

Herborn, D. I., and D. A. Smith, 1991b, *Hanford Waste Vitrification Plant Preliminary Safety Analysis Report*, WHC-EP-0250, Revision 0, Westinghouse Hanford Company, Richland, Washington.

WHC, 1989, *Nonreactor Facility Safety Analysis Manual*, WHC-CM-4-46, Westinghouse Hanford Company, Richland, Washington.

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APPENDIX A

**SAFETY AND ENVIRONMENTAL ADVISORY COUNCIL TANK WASTE
DISPOSAL SUBCOUNCIL MEETING MINUTES**

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D. H. Jones
S1-57

Addressee

K. R. Jordan
B3-51

subject: SAFETY AND ENVIRONMENTAL ADVISORY COUNCIL (SEAC) TANK WASTE DISPOSAL
(TWD) SUBCOUNCIL MEETING 91-12

INTERNAL DISTRIBUTION

Approval	Date	Name	Location	w/att

SEAC Members

T. L. Aldridge	R3-20
P. B. Bourne	B3-04
W. R. Brooksher	L4-01
D. J. Newland	R2-38
M. Haas	T5-50
L. K. Severud	H5-60
D. D. Wodrich	R2-23
D. E. Wood	B2-19

From: Waste Tank Environmental Assurance and Integration DHJ91020
Phone: 3-4558 S1-57
Date: May 1, 1991
Subject: SAFETY AND ENVIRONMENTAL ADVISORY COUNCIL (SEAC) TANK WASTE
DISPOSAL (TWD) SUBCOUNCIL MEETING 91-12

To: K. R. Jordan B3-51
cc: Distribution Coversheet

The subject meeting was held on April 17, 1991. The purpose of the meeting was a review of chapters 4, 5 and 6 of the HWVP PSAR, Rev. 0. The following questions and comments were raised during the meeting:

Questions and Comments on Chapter 3:

1. The worst-case PFP accident situations described on page 3-19 (and summarized on page 2-11) should be revised to be consistent with the PFP accident description presented in the Grout FSAR.
  - Action: Description will be obtained from A. L. Ramble and suggested revisions will be made.
2. It was questioned whether the WESF accident presented in chapter 3 is the worst-case B Plant accident, especially in light of the large source terms associated with potential B Plant filter releases. The HWVP project responded that safety analyses (i.e., SARs) are not available for future B Plant operations.

Questions and Comments on Chapter 4:

1. The usage classification (i.e., hazard class) of the HWVP couldn't be found anywhere in the PSAR.
  - Action: That HWVP has a high hazard classification will be stated in chapter 1, 2 or 4.
2. The II-over-I safety classification approach outlined in was not appropriately discussed in chapter 4.
  - Action: The discussion from will be included after checking with F. R. LaSalle on suggested portions.

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May 1, 1991

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3. The compliance assessment of DOE Order 6430.1A in Appendix A, which is based on an SAIC report, is difficult to follow. The HWVP project stated that this assessment is at a snapshot in time, that it will be revisited, and that noncompliant and "TBD" items will be tracked for closure (i.e., compliance).
  - Action: Appendix A will be revised to explain that the noncompliant items are discussed, and that the "TBD" items will be listed.
4. The question was asked what the impact of MRP 5.46, Rev. 3 might be. The HWVP project indicated that electrical criteria will probably change, as well as the Safety Class 2 designation related to worker functions in the control room.
5. It was stated that the missile selection discussion in Section 4.2.4.2 is correct; whereas, the SDC-4.1 discussion is incorrect and needs revision.
6. Questions were asked about the maximum radionuclide concentrations given in the PSA and the expected ability to process all of the mission feeds. The HWVP project responded that a conservative approach, as described in chapter 4, was followed.
7. Questions were asked about the CSB design, capacity, canister heatup analyses, and the need to perform accident analyses. All were satisfactorily answered.
8. It was stated that criticality safety should be presented from the approach of establishing concentration limits and not on the basis of an evaluation of the reference feed. The HWVP project indicated that criticality reevaluations are following the suggested approach.
9. A number of nonmandatory action suggestions were made as follows: (1) feed specifications should be based on the assumption that PUREX will not restart, (2) a train safety switch is really an administrative control, which impacts probability of failure assumptions, (3) it is good practice to design ventilation stacks so that they can be flushed, which is the case for the HWVP Zone I stack.
10. A number of revisions were agreed to as follows:
  - Actions: (1) On page 4-1, delete the element "neptunium" as being a potentially sensitive term and correct the rationale for DSTs (to remove liquid from SSTs). (2) On page 4-12, in the third paragraph review and clarify if necessary the insert starting with "... (5.1) ...", and (3) on page 4-50, refer to chapter 7 for definitions of low level and transuranic wastes.

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Questions and Comments on Chapter 5:

1. A question was asked about the safety classification of the electrical systems. It was responded that safety classes 1, 2 or 3 were specified, as appropriate.
2. It was indicated that HWVP HVAC descriptions were very detailed and thus somewhat confusing. The main features were verbally explained. It was stated that the DCS will control HVAC systems from the CCR, and that these controls will be separate from process controls.
3. Questions were asked about utility systems, especially the functioning and routing the steam and condensate system and the process cooling water system. All questions were satisfactorily responded to.
4. A question was asked with regard to the design interface between the HWVP and the Tank Farms. It was explained that physically the HWVP feed lines interface with a new diversion box (Project W028) and the HWVP waste lines interface with an old diversion box (ER 152). HWVP safety analyses consider transfer line accidents, but do not include diversion box incidents, which are the responsibility of Tank Farm SARs.

Plans for Next Subcouncil Meeting:

1. Scheduled for Thursday, April 25, 1991 in Conference Room 206, VITRO Building and will cover HWVP PSAR chapters 6, 7 and 8.
2. The Subcouncil requested a primer-level viewgraph presentation on chapter 6 that summarizes the process flow sheet and material balances; safety features (especially those associated with formic acid systems and equipment); and control parameters.
  - The basis for the formic acid injection point into tanks (in liquid or vapor space) needs to be explained.
3. The Subcouncil also requested a 15-minute presentation on chapter 8 that focuses on design features that address occupational safety during operations and maintenance. Exposure estimates should be provided where they have been determined.

Grout FSAR, Rev. A

Subsequent to the meeting, the TWD chairman polled the members to determine if they agreed that the Grout FSAR, Rev. A could be transmitted to DOE. A consensus was reached that all issues raised by TWD had either been adequately addressed in the version to be transmitted or included in listed

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items for future resolution. On the basis of this consensus, the chairman concurred in the transmittal on April 24, 1991.

D. H. Jones, Secretary
SEAC TWD Subcouncil

Approval:
W. F. Shely, Chairman
SEAC TWD Subcouncil

m11

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Subject: SAFETY AND ENVIRONMENTAL ADVISORY COUNCIL (SEAC) TANK WASTE DISPOSAL
(TWD) SUBCOUNCIL MEETING 91-13

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Name	Location
<u>SEAC Members</u>	
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M. Haas	T5-50
L. K. Severud	H5-60
D. D. Wodrich	R2-23
D. E. Wood	B2-19

**Westinghouse
Hanford Company****Internal
Memo**

From: Waste Tank Environmental Assurance and Integration DHJ91021
Phone: 3-4558 S1-57
Date: May 6, 1991
Subject: SAFETY AND ENVIRONMENTAL ADVISORY COUNCIL (SEAC) AND TANK WASTE
DISPOSAL (TWD) SUBCOUNCIL MEETING 91-13

To: K. R. Jordan B3-51

cc: Distribution Coversheet

The subject meeting was held on April 25, 1991. The purpose of the meeting was a review of chapters 6, 7 and 8 of the HWVP PSAR Rev. 0. Viewgraphs presented will be kept by the Secretary in Subcouncil files. The following questions and comments were raised during the meeting:

Questions and Comments on Chapter 8:

1. Hanford experience with contamination incidents should be taken into specific account in the design and evaluation of HWVP. A recent report by H. W. Heacock summarizes Hanford events and accidents in this area.
  - Action: Reference should be made to the Heacock report and a commitment to review this Hanford Site experience should be made in the PSAR. This will be accomplished in Section 8.9.1, As Low As Reasonably Achievable Analysis, under "Items Requiring Further Development".
2. It was questioned whether the piping design was evaluated with regard to potential worker exposure to piping runs containing radioactive liquids. The HWVP project responded that consideration was given to this in access zone classification and traffic flow analyses associated with plant design; plus abnormal occurrence evaluations, such as "suck backs", are presented in chapter 9.
3. The question was asked whether an analysis had been performed that "mapped" the expected occupational exposures throughout the plant. The HWVP project responded that source estimates based on operating experience had been made at various locations in the plant in order to confirm the preliminary design shielding requirements. It is too early in the design to perform detailed exposure analyses.
4. The designs of the closed loop process cooling water and steam/condensate systems were questioned from the point of view of adequately precluding leaks that could contaminate the Vitrification Building and ultimately result in worker exposures. It was asserted that it will not be possible to achieve the design leakage paths under all credible failure potentials, and that there is a high probability that the leak detection and isolation features will not be effective.

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- Action: The HWVP project will make presentations on these systems and will either demonstrate that the current design will perform satisfactorily from a safety perspective, or the project will establish a commitment that is acceptable to the Subcouncil.
5. The orientation of the Railroad Well with respect to the Vitrification Building was questioned with regard to the possibility of a train crash. The HWVP project stated that the design is the same as DWPF's, and that the crash probability is reduced to an acceptable level by switches and use of "donkey" train.

Questions and Comments on Chapter 6:

1. A question was asked on the types of leak detection and collection features that will be used at the plant. The HWVP project responded that standard Hanford Site measures, such as troughs, sumps, low points, pipe encasements, etc. will be employed.
2. With regard to hydrogen detection in process tanks and the associated OSR, the question was asked in the OSR required measuring the concentration of hydrogen. The HWVP project responded that the OSR is written on a required amount of air dilution, which can be readily measured.
  - Action: The general concern of hydrogen detection will be addressed in Section 6.9.1 under "Items Requiring Further Development".
3. The question was brought up of how much liquid radioactive waste the HWVP plans to return to the Tank Farms, and why this is being planned. The HWVP project responded that, after the vast majority of radionuclides are removed from the feed and vitrified, the remaining liquid volume that will be returned to the Tank Farms will be slightly more than the volume of feed received. This was a policy decision made a number of years ago (i.e., it was more cost-effective to use the 242A Evaporator and Grout facility to concentrate and dispose of the low-level waste (LLW) than to have HWVP build its own facilities.) HWVP plans are for this returned LLW to meet Grout Facility specifications.
4. It was commented the assumptions on HWVP evaporators having a DF of 10^{-4} was either very conservative or indicated a poor design. It was asserted that optimally-designed Hanford evaporators achieved a DF of 10^{-6} . The HWVP project replied that the design and DF are the same as that used at DWPF. Actual test data are expected to show the evaporators will likely exceed this assumed performance.
5. The safety of introducing formic acid into process tanks below the liquid level was questioned because of the potential of vigorous chemical reactions producing gaseous reaction products inside the piping. It is generally preferable to introduce chemicals into the tank vapor space to preclude such an incident. The HWVP project responded that the location of formic acid injection (liquid or vapor

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space) has moved back and forth over the last several years. The design is based on the DWPF process and can easily be changed.

- Action: The HWVP project will review the current design concept and potential associated hazards that will either: (1) demonstrate the design will perform satisfactorily from a safety perspective, (2) revise the design, or (3) establish an alternate commitment that is acceptable to the Subcouncil.
6. The question was asked about what features prevent staff from mating a steam line with a formic acid line resulting in a significant reaction. The HWVP project responded that such an inadvertent hookup is made difficult by nozzle arrangements. Such a connection could conceivably be made with a flex jumper, but this would not be expected to result in major adverse consequences.
  7. The possibility of mixing of incompatible chemicals was questioned. The HWVP project responded that most piping is dedicated to specific chemicals, and that where common piping issued for different chemicals, then installation of removable spool pieces designated for a specific chemical is required. In addition, administrative procedures will require that seal pots be flushed when line usage is switched.
  8. The feed specification was discussed in relation to measuring feed concentration. In addition, the basis for determining the nominal concentrations for NCAW was questioned. R. C. Roal will contact R. A. Watrous for details on the basis.
  9. The potential effect of organics in CC feed was questioned. The HWVP project responded that a small amount of non-volatile organics will be no adverse effects on melter safety. Large amounts of organics in the feed would have to be removed during pretreatment.
  10. It was observed that the PSAR information on the flow sheet and material balances was much too detailed to be easily understandable. In the FSAR, when the flow sheet, material balances, and system design are fixed, the goal will be to make the presentation as logical and easily understandable as possible. A summary flow sheet with only key streams will be considered.
  11. The design practice of tying flush lines to process lines, and requiring complicated block valves and interlocks to prevent inadvertently pressurizing the flush lines was questioned. The HWVP project stated by the WHC independent safety review organization, which resulted in the addition of some safety features.
    - Action: The HWVP project will make a presentation on this topic addressing the specifics of the design features, and the rationale why potential consequences are acceptable.

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12. A question was raised whether precipitation or accumulation of solids in the DWTT or other process tanks was addressed as a potential criticality concern.
  - **Action:** The HWVP project will revise the discussion in Section 6.9.6 under "Items Requiring Further Development" to make sure that proper consideration is given during the criticality safety evaluation to the precipitation and accumulation of solids in process tanks.

Questions and Comments on Chapter 7:

1. The relationship between the HWVP, WRAP and TEDF was discussed. The HWVP project stated that WRAP has as a criterion the requirement to take an HWVP failed melter. If necessary, a commitment will be made to use DOT-approved containers to transport a failed melter to WRAP. With regard to disposing non-hazardous waste water, HWVP will have the capability to recycle it or send it to TEDF under conditions that will meet their acceptance criteria.
2. A question was raised if HWVP plans to decontaminate and repair a significant amount of its equipment. The HWVP project responded that it will primarily replace failed equipment and properly dispose of it. Some decontamination and repair of equipment may be performed in the REDC and CDMC (e.g., pumps and agitators).
3. The Subcouncil will see if L. A. Garner has any additional questions or concerns on this chapter. If this is the case, she will get into contact with D. F. Iwatate.

Plans for Next Subcouncil Meetings:

1. The next Subcouncil meeting is scheduled for Thursday, May 2, 1991 in Conference Room 206, VITRO Building for 2:00 p.m. and will covers chapter 9 and 10.
  - The HWVP project will make a presentation on a matrix that correlates accidents, engineered safety features for which credit is assumed, and OSRs. If possible, this matrix will be distributed to the subcouncil members for review prior to the meeting.
2. The Subcouncil review meeting on chapters 10 and 12 is scheduled for the week of May 6th.

D. H. Jones, Secretary
SEAC TWD Subcouncil

Approved:

W. F. Sheely, Chairman
SEAC TWD Subcouncil

mll

CORRESPONDENCE DISTRIBUTION COVERSHEET

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SUBCOUNCIL MEETING 91-14

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		W. R. Brooksher	L4-01	
		M. Haas	T5-50	
		D. J. Newland	R2-28	
		L. K. Severud	H5-60	
		D. D. Wodrich	R2-23	
		D. E. Wood	B2-19	

From: Facility Operations Division
Phone: 3-4115 R2-67
Date: May 9, 1991
Subject: SAFETY AND ENVIRONMENTAL ADVISORY COUNCIL TANK WASTE DISPOSAL
SUBCOUNCIL MEETING 91-14

To: K. R. Jordan B3-51

cc: Distribution
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The subject meeting was held on May 2, 1991. The purpose of the meeting was a review of Chapters 9 and 11 of the HWVP PSAR, Revision 0. The following questions and comments were raised during the meeting:

General Issues

1. During the review of Chapter 11 on operational safety requirements (OSRs), it became apparent that criteria were being used other than off site/on site consequences for the establishment of OSRs. This included OSRs for hydrogen, environmental releases and the facility worker. The Subcouncil found a similar condition during the review of Revision A of the Grout FSAR. Some of the OSRs were developed as a result of informal customer feedback, formal customer correspondence and requirements in CM-4-46, but not contained in DOE Orders. In view of the current legal environment and the need for a solid base for technical evaluation, consistent internal WHC criteria for OSRs needs to be formulated, agreed upon and implemented.
2. The review of Chapter 6 in meeting 91-13 resulted in a further review of the process flowsheets for HWVP. A similar examination was made by the Subcouncil at Grout. The Subcouncil does not find evidence that there is a baseline flowsheet for integrated waste processing. In chemical plants, the flowsheets provide the base parameters for product form, feed and raw material requirements, equipment requirements, material balance and flow rates. These flowsheets provide the base for the facility design and operation and the safety envelope. The lack of these comprehensive flowsheets for both HWVP and Grout as well as feed characterization of tank contents will make it difficult to demonstrate comprehensive operational safety. This issue will be reviewed outside the Subcouncil with senior line management.

A presentation was made on PSAR Chapters 9 and 11 using a matrix format describing the relationship between accident analyses, credited engineered safety features, and operational safety requirements (OSRs).

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Questions and Comments on Presentation Matrix

1. It was questioned whether an active Safety-Class 1 Zone HVAC system was really needed under worst-case credible accident conditions to assure public safety. A structure that could assure sufficient confinement would be a lot less costly. The HWVP project responded that hazard classification analyses indicate that under worst-case accident conditions the leakage of radionuclides released during the accident would violate offsite risk acceptance guidelines.
2. The use of the term "backup power" was questioned in connection with the requirements of which provides the preferred Hanford site-wide definitions (i.e., "safety class power" and "emergency power").
  - Action: The HWVP project will either provide justification why its definitions are acceptable, or change the PSAR terminology to be consistent with Site-wide usage.
3. With regard to steam and process coolant water isolation features to prevent flooding in the Vitrification Building, it was questioned whether it may not be better to prevent flooding of the exhaust tunnel by design (e.g., not being a low point) than to provide safety class features to preclude flood damage.
  - Action: The HWVP project needs to provide the rationale for the current design, options for a design that prevents flooding of the Zone I HVAC system, and/or the costs associated with such changes. Then a decision can be made on the basis of technical justification and/or cost-effectiveness of potential design change recommendations.
4. With regard to the railroad track switch interlocks that prevent an overspeed locomotive from leaving the main line and entering the railroad well (RW) at high speed, it was questioned whether it may not be better to prevent a train car from impacting the RW endwall by design (e.g., reorient the RW with respect to the Vitrification Building) than to provide safety class features.
  - Action: The HWVP project needs to provide the rationale for the current design, options for a design that prevents impact with the Vitrification Building, and/or the costs associated with such changes. The decision can be made on the basis of technical justification and/or cost-effectiveness of potential design change recommendations.

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5. The question was asked if wind-borne missile damage to non-Safety Class I buildings was looked at in the extreme wind accident analysis. The HWVP project responded that missile damage to the Cold Chemical Building was examined and that a significant release of hazardous material from this initiator was found not to be credible.
6. The necessity of active Zone I confinement was questioned since the ash fall accident, where active confinement flow is assumed lost, yielded acceptable consequences. The HWVP project responded that the DBE, which assumes active Zone I confinement, involves a much larger source term (all process tanks fail versus SRAT and offgas system releases for the ash fall incident) and a longer release period. It was determined that the DBE without active Zone I confinement yielded consequences that exceeded the risk acceptance guidelines.
7. The technical basis for the OSR on hydrogen control was questioned. The HWVP project responded that this OSR was written in response to a PSAR comment by DOE-RL. (General Issue 1).
  - Action: The HWVP project will review its hydrogen explosion analysis in relation to those prepared by PFP and Tank Farms (contact C. J. Moore) to see if any changes are justified.
8. The need for OSRs on equipment that is concerned with HWVP occupational worker and/or onsite personnel safety was discussed. The HWVP project stated that this is currently required by MRP 5.46, Rev 2. However, draft MRP 5.46, Rev 3 is expected to specify that control room habitability/manual action is the worker safety issue of concern. Thus, as soon as Rev 3 becomes official, then it will be possible to reduce some OSRs (e.g., on WHT confinement, on CAMs, etc.). (General Issue 1).
9. With regard to transfer line leak detectors and the associated OSR, the question was asked as to which project will be responsible for them and why is there a need for an OSR to control them. The HWVP project responded that the leak detectors will be under the control of HWVP, and that the OSR was written to satisfy the current WHC criterion on "environmental impact". The Subcouncil identified a need to assure that WHC criteria on OSRs are internally consistent. (General Issue 1).

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10. The question was asked why a radionuclide release from the CSB vault was not analyzed as a credible accident. The HWVP project responded that evaluations to date indicate that this is not a bounding accident because mechanisms for release of powdered glass from damaged canisters and for a driving force to disperse material from the vault area are judged not to be present in sufficient form. This accident sequence is currently being reviewed from a PRA perspective.
11. With regard to effluent monitors and associated OSRs, the question was asked what types of radiation was being monitored. The HWVP project responded that from an accident analysis standpoint the beta-gamma monitors in the Zone I stack will be of safety interest.
12. It was noted that operators may have difficulty implementing the OSRs because the of manner in which they are currently written (e.g., Section 11.5.2.2.1 specifies applicability for Modes 1, 2 and 3; whereas, in Section 11.5.2.2.5 gives only a recovery action for Mode 1 and operators wouldn't know what is required for Modes 2 and 3). The HWVP project responded that the intent of the OSR descriptions provided in the PSAR are not to establish actual operational requirements, but rather to identify plant systems that may be impacted.
  - Action: Chapter 11 should contain a sufficiently qualified discussion to reflect the purpose of the OSRs with regard to system design and that they do not constitute specific operational requirements that will have to be met in the future.
13. With regard to OSRs on HVAC system operability, the need for monitoring for specific values of pressure differences was questioned. It is operationally more difficult to determine these values than to establish that the fans are running. The HWVP project responded that there is a need to establish that the exhaust system is performing its safety functions.
14. There was a discussion of problems associated with the GENII computer code. The question was asked if the project had taken this into consideration in the accident analyses. The HWVP project responded that it was aware of these, and in some cases was the instigator of required changes. For this reason HEDOP was asked to review and approve the appropriate analyses in Chapter 9, which it has.

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15. There was an OSR discussion of surveillance frequency requirements on instrumentation calibration as well as on monitoring instrument readouts. The HWVP project responded that at this stage, no calibration requirements have been considered, but rather the intent in the OSR is to verify that systems are functioning properly. The monitoring frequencies were based on best judgements at this stage.
16. The need for administrative OSRs was questioned. In addition, the Subcouncil was uncomfortable with the format and content in which they are written. The HWVP project responded that they are mandated by WHC-CM-4-46, NRC R.G. 3.26, and DOE-RL. In addition, administrative OSRs are not very meaningful at the PSAR stage of a program. The Subcouncil was concerned about setting precedents, and suggested that the project review the PFP administrative OSRs and try to be consistent with them.
  - Action: The HWVP project will review the PFP administrative OSRs to determine if there are any good reasons why the HWVP OSRs should be significantly different. If not, Chapter 11 should be revised to be consistent with other WHC submittals. In addition, the administrative OSR on the Railroad Well should be moved to either the first part of Section 11.5.13, or be presented last in the previous section.
17. Conclusions about a discussion on feed specifications and flow sheets between R. C. Roal and R. A. Watrous were reported. The Subcouncil felt that for the whole waste management process there is no realistic, baseline flow sheet, and associated feed streams, for the integrated system (e.g., pretreatment, HWVP, Grout Facility, etc.). (General Issue 2).

Plans for Next Subcouncil Meeting:

1. The next Subcouncil meeting is scheduled for Thursday, May 9, 1991 in Conference Room 278A, VITRO Building and will cover:
  - HWVP PSAR Chapters 10 and 12
  - HWVP project report on all Action items

D. J. Hart, Secretary Pro Tem
SEAC TWD Subcouncil

skw

APPROVAL:

W. F. Sheely, Chairman
SEAC TWD Subcouncil

From: Process and Analytical Laboratories
Phone: 3-4115 R2-67
Date: May 14, 1991
Subject: SAFETY AND ENVIRONMENTAL ADVISORY COUNCIL (SEAC) TANK WASTE DISPOSAL (TWD) SUBCOUNCIL MEETING 91-15

To: K. R. Jordan B3-51

cc: Distribution
DJH File/LB

The subject meeting was held on May 9, 1991. The purpose of the meeting was a review of Chapters 10 and 11 of the HWVP PSAR, Revision 0. The following questions and comments were raised during the meeting:

Questions and Comments on Chapter 10:

The attached list of comments were made by Mr. D. J. Hart, and constituted the basis for the review of this chapter.

1. It was commented that the HWVP PSAR did not discuss the Westinghouse corporate organization that has resources available to assist WHC and the HWVP project.

Action: The HWVP PSAR will be revised to include a discussion of the Westinghouse Electric Corporation relationship similar to that presented in the Grout Treatment Facility SAR.

2. It was commented that the operating organization would be more effectively described by basic functional structure than by position. The HWVP project responded that the provision of detailed positions was at the request of another PSAR reviewer.

Action: The HWVP PSAR will be revised to include a discussion of the basic functional structure.

3. There was a discussion on the comment regarding the A/E being the independent safety review authority on design. The HWVP project stated that under the integrated management team organization adopted by DOE-RL and WHC that WHC is responsible for reviewing and approving all safety criteria and the SARs.

Action: The HWVP PSAR will be revised to state that WHC will be responsible for the overall safety of the HWVP project.

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4. It was commented that there should be a short discussion on the preoperational testing program so that the impression isn't left that not much will be done in this area until the FSAR stage. The HWVP project responded that there currently is a considerable program in this area and that future plans are well developed.

Action: The HWVP PSAR will be revised to briefly discuss preoperational testing programs currently underway and future plans.

5. It was commented that the description of the training program lacks information on standard programs currently used by other WHC operating organizations.

Action: The HWVP PSAR will be augmented to include information on standard WHC programs.

6. It was commented that the Emergency Planning discussion seemed to be in greater depth than is necessary. The HWVP project responded that the details were provided so that members of the public could understand that the Hanford Site has a comprehensive emergency response program currently in place.

Action: In the HWVP PSAR, revise the discussion to indicate that the HWVP Emergency Plan will be referenced in the FSAR, not included in the FSAR.

7. It was commented that the discussion of the Strontium Hot Semi-Works in the decommissioning section seemed irrelevant. The HWVP project responded that this discussion was provided to demonstrate to the public that Hanford has had previous experience with decontaminating and decommissioning other plants, which lends credibility to claims about future programs for HWVP.

8. It was commented that this chapter lacked information on management systems that will assure control over the design and construction.

Action: The HWVP PSAR will be augmented with a brief discussion of DOE Order 4700.1 and the hierarchy of project management plans.

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Questions and Comments on Chapter 12:

1. It was commented that it is difficult to relate the information presented in Chapter 12 to the requirements specified in the other PSAR chapters. The HWVP project responded that the Chapter 12 format represents basically a step-wise process: (1) it presents the melding of QA requirements from multiple source documents into those applicable to the whole project, and (2) these QA requirements are assigned to participants on the basis of IMT responsibilities.
2. It was commented that it is difficult to make the connection between safety class items classification and how the safety criteria/requirements will be met. The HWVP project responded that there are a number of means to verify that correct actions are taken. During design, these consist of: audits of a whole system, surveillances of critical items, and management assessments to ensure the QA program is functioning properly. During fabrication/construction, inspections and tests are the means to verify actions are correct.
3. The question was asked how WHC would know if other participants or their vendors/subcontractors would meet the appropriate QA requirements. The HWVP project responded that WHC QA requirements are passed down the chain of responsibility to the lowest subcontractor. Through oversight, WHC has QA purview of all activities performed by other participants and their vendors.
4. With regard to Section 12.12, Control of Measuring and Test Equipment, the question was asked if use of "stickers and tags" to trace calibration status applied to all installed gauges/meters and portable equipment. Since stickers and tags may fall off, PUREX has been allowed to use "alternative methods" and the Subcouncil advised the HWVP project to also look at this. The HWVP project stated that the QA program is principally concerned that only properly calibrated equipment is used, and that it thought that sufficient flexibility is built in with regard to using the best method.

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Review of Previous Action Items:

The attached summary was passed out with the current status of the actions identified during the review. The summary presents three types of actions:

1. Those comments which were readily incorporated from the review. Change pages were provided to reflect incorporation. Each Subcouncil member was to review their comments for adequate resolution.
2. Those action items which require additional explanation by the HWVP (Items 6/5, 9-11/2 and 9-11/7).
3. Actions for which Fluor made an explanatory presentation.

Reviews of Steps 2 and 3 are provided below.

Type (2) Action Item Review:

1. Item 6/5: Since the HWVP project position of introducing formic acid into the tank vapor space satisfies the Subcouncil recommendation, it was readily accepted by the Subcouncil.
2. Item 9-11/2: The HWVP project position with regard to the use of the term "backup power" is that it does not contradict the recommendations in _____ and allows the PSAR to remain flexible. The Subcouncil said that this is not a safety issue, but rather one of clarity. The Fluor representative stated that the detail design analysis was underway and until completed, the use of backup power provided better terminology.
3. Item 9-11/7: Since the technical basis for the OSR on hydrogen control is direction from DOE-RL and the HWVP hydrogen explosion analysis is conservative, the Subcouncil found that this is not a safety issue. The HWVP project will review other WHC facility analyses and in future analyses will try to maintain a consistency with them.

Type (3) Action Item Review:

1. Item 8/4: A Fluor representative made a presentation on the potential worker exposure from a coil leakage accident. The attached diagrams on process cooling water and steam typical closed loop arrangements are representative of the 4 steam and 8 water loops in HWVP. The Subcouncil was satisfied with the design features and equipment location that prevent/mitigate a slug of contaminated water from endangering workers. The

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Subcouncil advised the HWVP project to perform FMEAs on these systems when the design is finalized, and to have HWVP Operations review these from the perspective of credible operator errors/human factors.

2. Item 6/11: A Fluor representative made a presentation on the potential worker exposure from a flush line incident. The attached diagram on melter feed loop and sample flush water arrangements shows the systems involved. The Subcouncil was generally satisfied with the design features that prevent/mitigate against endangering workers. However, it expressed some concern that one "safety valve", which receives permissive signals on air pressure, tank level, and radioactivity, provides most of the protection. The Subcouncil advised that if FMEAs indicate the potential for adverse consequences (risk) for a flush line incident, then the project should consider either a second independent "safety valve", or moving the flush tank to a shielded location.

Action: Fluor is to provide the Subcouncil with the flow rates and pressures associated with the equipment in the flush water diagram. This is not preclusive to PSAR approval by the Subcouncil.

3. Item 9-11/3: A Fluor representative made a presentation on the flooding protection analysis for the Zone I exhaust tunnel. It was assumed that all process tanks are full and spill, all closed loops spill, waste from Tank Farms continues to be pumped for one-half hour and spills, firewater is pumped into the Vitrification Building and spills into the cells, etc. The conservatively-assumed water source fills the lined cells to a height of 4.5 ft, with the air ports for the tunnel still 1.5 ft above the flood level. The exhaust tunnel does not form a trap, but rather water would flow downhill to the sand filter, which has considerable volume. The Subcouncil thought that flooding within the Vitrification Building would not adversely impact offsite safety since Zone I confinement flow could be maintained, and thus found the design acceptable.
4. Item 9-11/4: A Fluor representative made a presentation on the railroad well (RW) orientation and the potential for a train crash. The orientation of the RW was based on engineering considerations and the best way to handle material flow into and out of the plant. Even if a train were to crash into the end wall at speeds of 15 mph or less, the Zone I HVAC operating at 160,000 cfm can maintain confinement flow for this situation. Thus, no unacceptable offsite consequences can arise from such an accident. Since this accident scenario is low probability and

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offsite safety is not adversely impacted, the Subcouncil found the design acceptable. Further review with the safety analyst on the consequences will be conducted.

Concern Raised by B. K. Horsager:

1. The attached concern is associated with the Safety Class 1 confinement system being adversely impacted by Safety Class 2 and 3 equipment. The Fluor representative responded that this issue has been taken care of by the requirement that all Safety Class 2 and 3 air supplies and dampers will be shutdown during a DBA by Safety Class 1 equipment.

DOE-HQ Technical Review Group Outstanding Concerns:

1. The Subcouncil believed that the TRG concern with regard to worker exposure analyses will be adequately addressed by the HWVP ALARA program.
2. The Subcouncil believed that WHC is actively addressing the TRG concern with storage of failed melters.
3. The Subcouncil believed that the TRG concern with regard to feed specification is similar to the one that it raised with regard to the integrated waste management process (e.g., pretreatment, HWVP, Grout Facility, etc.). There was substantial discussion with respect to plutonium presence and criticality control. The safety analyst provided insight that the accident analysis assumed that the material transferred was at the criticality control limits in the tank farm. This provides a more conservative approach than using the average feed analysis.
4. The Subcouncil wanted more information on the TRG concern with regard to the resuspension factor. Since this is a normal operation/release issue, it does not impact the accident analyses and offsite safety.

Action: Provide the Subcouncil with the supporting information used in the resolution discussions with the TRG, especially the Mishima analysis.

The Subcouncil reviewed the remaining actions for its members to approve the PSAR.

1. Bob Roal to examine the Mishima resuspension analysis.
2. Each member to review the resolution pages for comment incorporation provided.

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3. Schedule a special review session for May 13, 1991, with Health and Safety Assurance, G. D. Wright, to examine the independent safety review process and any open issues.

Plan for Next Subcouncil Meeting

1. Review independent safety methods and issues.
2. Provide Chairman with a position statement on the PSAR.

D. J. Hart, Secretary Pro Tem
SEAC TWD Subcouncil

skw

Attachments 5

APPROVED BY:

_____
W. F. Sheely, Chairman
SEAC TWD Subcouncil

Date 5/21/91

TWD SUBCOUNCIL ACTION ITEMS

<u>Meeting Date</u>	<u>Chapter/ Action</u>	<u>Issue</u>	<u>Status</u>	<u>Notes</u>
4-18-91	3/1	PFP accident description	Complete	See pp. 3-19/2-11
4-18-91	4/1	HWVP hazard/usage classification	Complete	See pp. 1-2/4-9
4-18-91	4/2	III-over-I safety class approach	Complete	See p. 4-80
4-18-91	4/3	6430.1A compliance assessment "TBD" items	Complete	See revised App A
4-18-91	4/10	Various Chapter 4 suggestions	Complete	See pp. 4-1 thru 4-51
4-25-91	8/1	Site experience on contamination incidents	Complete	See p. 8-76 (uncleared report can't be referenced)
4-25-91	8/4	Worker exposure from coil leakage accident	Open	Fluor will make presentation
4-25-91	6/2	Measuring hydrogen concentration	Complete	See p. 6-116
4-25-91	6/5	Location of formic acid injection point	Complete	See justification of current design
4-25-91	6/11	Flush lines connected to pump discharge	Open	Fluor will make presentation
4-25-91	6/12	Criticality from precipitation of solids	Complete	See p. 6-118
5-2-91	9-11/2	Safety class electrical power terminology	Complete	See justification for use of term "backup power"

5-2-91	9-11/3	Flooding of Zone I exhaust tunnel	Open	Fluor will make presentation
5-2-91	9-11/4	RW orientation and train crash	Open	Fluor will make presentation
5-2-91	9-11/7	Hydrogen explosion assumptions/analysis	Complete	See review of other Hanford projects
5-2-91	9-11/12	Implementing OSRs by operations personnel	Complete	See pp. 11-1/2
5-2-91	9-11/16	Administrative OSR consistency	Complete	See pp. 11-28 thru 11-30

FLUOR DANIEL

CALCULATIONS and SKETCHES

DATE _____
CONT. NO. _____
BY _____ CHK'D _____
SHEET NO. _____

PROCESS COOLING WATER

TYPICAL CLOSED LOOP ARRANGEMENT

FLUOR DANIEL
CALCULATIONS and SKETCHES

DATE _____
CONT. NO. _____
BY _____ CHK'D _____
SHEET NO. _____

PROCESS STEAM

TYPICAL CLOSED LOOP ARRANGEMENT

ATTACHMENT 4
 Page 1 of 1

HWVP CONCERNS

- DOES NOT MEET THE REQUIREMENT THAT AT LEAST ONE CONFINEMENT BOUNDARY AND IT'S VENTILATION SYSTEM BE SAFETY CLASS 1. (6430.1A; 1300-7.2)
- IF SAFETY CLASS 2 CELL PENETRATION FAILS AND ZONE II EXHAUST CONTINUES TO RUN, CONCEIVABLY CELL ATMOSPHERE COULD BE EXHAUSTED THROUGH ZONE II (NON SAFETY CLASS SYSTEM).
- IF ZONE III EXHAUST FAILS BUT SUPPLY CONTINUES TO RUN THE SAFETY CLASS 1 BOUNDARY COULD BE PRESSURIZED.

HWVP CONCERNS

CORRESPONDENCE DISTRIBUTION COVERSHEET

Author

Addressee

Correspondence No.

D. J. Hart
3-4115K. R. Jordan
B3-51

Subject: SAFETY AND ENVIRONMENTAL ADVISORY COUNCIL TANK WASTE DISPOSAL
SUBCOUNCIL MEETING 91-16

INTERNAL DISTRIBUTION

Approval	Date	Name	Location	w/att

SEAC Members

T. L. Aldridge	R3-20
P. B. Bourne	B3-04
W. R. Brooksher	L4-01
M. Haas	T5-50
D. J. Newland	R2-28
L. K. Severud	H5-60
D. D. Wodrich	R2-23
D. E. Wood	B2-19

From: Process and Analytical Laboratories
Phone: 3-4115 R2-67
Date: May 14, 1991
Subject: SAFETY AND ENVIRONMENTAL ADVISORY COUNCIL TANK WASTE DISPOSAL
SUBCOUNCIL MEETING 91-16

To: K. R. Jordan B3-51

cc: Distribution
DJH File/LB

The subject meeting was held on May 13, 1991. The purpose of the meeting was to review the independent safety review of the HWVP PSAR, Rev. 0. The focus of the meeting was to gain insight as to the effort and approach applied and the acceptability of the document to the Restoration and Remediation Safety Assurance organization. G. D. Wright was the assigned Safety Assurance manager for the PSAR. The Subcouncil choose to interview him to gain insight into the overview.

Mr. Wright related that the approach his organization used was not only a comprehensive review of the document, but also a review of the document while it was in development in the preceding revisions and safety review during the design process. The resources that were applied included four engineers in his organization who have a wide range of technical experience in the nuclear field spanning nuclear engineering and reactor operations, mechanical engineering, structural engineering and health physics. Specialists from within Westinghouse in HVAC systems and electrical systems were also obtained to assist in the reviews. In addition LATA was subcontracted to assist in the reviews.

In summary Mr. Wright concluded that there were no major issues which would preclude issue of the PSAR. He felt that the issues they had brought up through the RCR process were adequately addressed and postponing some of the items for further definitive design was appropriate. Specifically the issues that were included in the letter issued April 12, 1991 by E G. Hess to R. A. Smith identified these items and that their disposition would be handled as part of the open item list.

One of the specific items above was the need for an accident analysis in a design basis fire. Mr. Wright commented that carrying this as an open issue was acceptable since there was no major source of combustibles available. This position would be reexamined as part of the FSAR development. Mr. Wright was further questioned on hydrogen mitigation given the concerns at DWPF at Savannah River. He stated that his group was aware of the DWPF concerns and that they had been factored into the safety analysis and design.

Mr. Wright shared with the Subcouncil some issues which will need to be monitored including the following:

- The people that Fluor assigns to the design of the project need to be pressed to keep high quality, experienced people on the design.
- In terms of the PSAR/FSAR, standards for the acceptability of the document are being developed as we go. There is little precedence for the standards such a document must meet for a chemical processing facility.
- Maintainability and safety of the design is part of the continuing review. Attention is needed for the filter systems, baffles and damper operation.
- There is an appraisal of the Fluor independent safety review of the design process about to be initiated which will provide some insight as to the effectiveness of the review.

It is his expectation that the safety team assigned to the project will continue to monitor the above issues in conjunction with management of the project.

The Chairman polled the committee as to the acceptability of the PSAR and recommendation for approval. Mr. Roal will review with the safety analyst the basis for the consequences of the railroad tunnel accident since the HVAC system is supposed to be designed to mitigate the release by the railroad car penetrating the wall. Mr. Slougher will reexamine the resolution of the administrative OSRs and the QA criteria applied in Chapter 12 relative to waste acceptance criteria and form. Other members of the Subcouncil present had no outstanding issues. When the issues above have been resolved the Chairman will be advised so the document can be approved.

An updated matrix of actions with the Subcouncil and the Project was passed out and is attached for review. The lone open issue on the list for a revision to the training material was reviewed on May 14 and found to be acceptable.

Based on the status of the HWVP PSAR, grout documentation and evaluations of pretreatment strategies, it was determined that there was no need to meet as a subcouncil on May 16, 1991. The Chairman advised that the SEAC will be reviewing OSR issues on May 16 and subcouncil members were invited to attend.

D. J. Hart, Secretary Pro Tem
SEAC TWD Subcouncil

skw

Attachment

APPROVED BY:

W. F. Sheely, Chairman
SEAC TWD Subcouncil

TWD SUBCOUNCIL ACTION ITEMS

Meeting Date	Chapter/Action	Issue	Status	Notes
4-18-91	3/1	PFP accident description	Complete	See pp. 3-19/2-11
4-18-91	4/1	HWVP hazard/usage classification	Complete	See pp. 1-2/4-9
4-18-91	4/2	III-over-I safety class approach	Complete	See p. 4-80
4-18-91	4/3	6430.1A compliance assessment "TBD" items	Complete	See revised App A
4-18-91	4/10	Various Chapter 4 suggestions	Complete	See pp. 4-1 thru 4-51
4-25-91	8/1	Site experience on contamination incidents	Complete	See p. 8-76 (uncleared report can't be referenced)
4-25-91	8/4	Worker exposure from coil leakage accident	Complete	Fluor made presentation
4-25-91	6/2	Measuring hydrogen concentration	Complete	See p. 6-116
4-25-91	6/5	Location of formic acid injection point	Complete	See justification of current design
4-25-91	6/11	Flush lines connected to pump discharge	Complete	Fluor made presentation
4-25-91	6/12	Criticality from precipitation of solids	Complete	See p. 6-118
5-2-91	9-11/2	Safety class electrical power terminology	Complete	See justification for use of term "backup power"

WHC-MR-0289

5-2-91	9-11/3	Flooding of Zone I exhaust tunnel	Complete	Fluor made presentation
5-2-91	9-11/4	RW orientation and train crash	Complete	Fluor made presentation
5-2-91	9-11/7	Hydrogen explosion assumptions/analysis	Complete	See review of other Hanford projects
5-2-91	9-11/12	Implementing OSRs by operations personnel	Complete	See pp. 11-1/2
5-2-91	9-11/16	Administrative OSR consistency	Complete	See pp. 11-28 thru 11-30
5-9-91	10/1	Westinghouse Corporate organization	Complete	See p.10-3
5-9-91	10/2	Functional structure of operations	Complete	See p. 10-5
5-9-91	10/3	A/E independent safety review	Complete	See p. 10-5
5-9-91	10/4	Preoperational testing program	Complete	See p. 10-10
5-9-91	10/5	Training program description	Open	
5-9-91	10/6	Emergency Planning	Complete	See pp. 10-19 and 10-22
5-9-91	10/8	Information on management systems	Complete	See p. 10-4

DISTRIBUTION COVERSHEET

Author

D. J. Hart
3-5703

Addressee

K. R. Jordan
B3-51

Subject: SAFETY AND ENVIRONMENTAL ADVISORY COUNCIL (SEAC), TANK WASTE DISPOSAL
(TWD) SUBCOUNCIL HWVP PSAR APPROVAL AND FOLLOW UP ON ISSUES

INTERNAL DISTRIBUTION

Approval	Date	Name	Location	w/att

SEAC Members

T. L. Aldridge	L8-20
P. B. Bourne	B3-04
W. R. Brooksher	L4-01
M. Haas	T5-50
D. J. Newland	R2-28
L. K. Severud	H5-60
D. D. Wodrich	R2-23
D. E. Wood	B2-19

**Westinghouse
Hanford Company****Internal
Memo**

From: SEAC TWD Subcouncil
Phone: 6-8859 B4-03
Date: June 24, 1991
Subject: SAFETY AND ENVIRONMENTAL ADVISORY COUNCIL (SEAC), TANK WASTE DISPOSAL (TWD) SUBCOUNCIL HWVP PSAR APPROVAL AND FOLLOW UP ON ISSUES

To: K. R. Jordan B3-51

cc: DJH:File/LB

This letter is to document the subcouncil approval of the HWVP PSAR since its last meeting, documented in the meeting minutes 91-16, dated May 14, 1991. All issues raised by the subcouncil with respect to the HWVP PSAR, revision 0, were resolved by HWVP with the subcouncil members. R. C. Roal, Vice Chairman, signed the PSAR on May 17, 1991 indicating subcouncil approval.

During the review of the PSAR the subcouncil identified several issues which need to be addressed and resolved in the FSAR when it is issued. These issues are shown below.

- The process flowsheet supporting the PSAR is not adequate for the FSAR. Comprehensive process flowsheets for ALL HWVP feeds identified in the Project Schedule 44 must be presented.
- The analysis of the design for the closed loop steam and cooling water returns in the operating gallery must demonstrate acceptable routine exposure and risk of exposure to operating personnel in accident conditions.
- The design shall ensure that the consequences of a locomotive breaking the wall into the canyon process cells has acceptable on-site/off-site consequence, without reliance on administrative controls.
- The personnel exposure incurred by operations and maintenance personnel to support expected operation/maintenance scenarios shall be estimated to ensure ability to comply with DOE Order 6430.1A requirements.
- The HVAC Zoning and Safety Class Systems must be clearly identifiable and compliance with the design criteria substantiated.

K. R. Jordan
Page 2
June 24, 1991

N/A

- The final design of the formic acid addition into process tanks should be examined. It is preferable to introduce chemicals into the vapor space. This design has changed several times during the project. We believe that it is important to prevent vigorous chemical reactions which produce gaseous reaction products inside the piping.
- Since there are no unacceptable on-site /off-site consequences resulting from a hydrogen concentration build up and the method by which it is measured and controlled is uncertain, the OSR requirement and design to control should be reexamined in light of forthcoming DOE guidance on OSR's.
- In the PSAR the term "backup power" was extensively used because the detail design and analysis of the systems were not completed and it was not certain which would be "emergency power". The completion of this analysis and the correct terminology should be validated.
- The ability to implement the administrative OSR's, as they were described in the PSAR, caused considerable concern for the subcouncil. These OSR's should be reexamined in the FSAR to ensure completeness and that they can be implemented.

Given these issues and those which the Project is analyzing and resolving as a part of the open item process the subcouncil will meet and review progress with the Project regularly to ensure closure.

W. F. Sheely, Chairman
Tank Waste Disposal Subcouncil

kls

APPENDIX B

**HANFORD WASTE VITRIFICATION PLANT PRELIMINARY
SAFETY ANALYSIS REPORT APPROVAL DOCUMENTATION**

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Document Title: HANFORD WASTE VITRIFICATION PLANT
PRELIMINARY SAFETY ANALYSIS REPORT

Approved by: R.A. Smith 3/1/91
Hanford Waste Vitrification Plant Project Date

Approved by: W.H. Smith 3/1/91
Hanford Waste Vitrification Plant Date
Operations

Approved by: E. J. Hill 3/1/91
Health and Safety Assurance Date

Approved by: W.H. Carlinger 3-1-91
Quality Assurance Date

Approved by: D.J. Ogier 3/1/91
Environmental Assurance Date

Approved by: Michael L. Wall 5/17/91
Tank and Waste Disposal Subcouncil Date
Safety and Environmental Advisory Council

Approved by: E. J. Hill 5/21/91
President, Westinghouse Hanford Company Date

United States Government

Department of Energy

Richland Operations Office

memorandum

DATE: JUN 26 1991

REPLY TO
ATTN OF: VPO:BLN /91-VTB-059

SUBJECT: APPROVAL OF THE HANFORD WASTE VITRIFICATION PLANT PRELIMINARY SAFETY ANALYSIS REPORT, REVISION 0

TO: Leo P. Duffy, Director
Office of Environmental Restoration
and Waste Management, EM-1

The HWVP Preliminary Safety Analysis Report (PSAR) has been prepared by the HWVP Project Office and is submitted for review and approval in accordance with DOE Order 5481.1B and SEN 6. This document, which follows the U. S. Nuclear Regulatory Commission Regulatory Guide 3.26, STANDARD FORMAT AND CONTENT OF SAFETY ANALYSIS REPORTS FOR FUEL REPROCESSING PLANTS, has undergone extensive review within the DOE-RL and contractor organizations. Under the direction of EM-343 the PSAR has also been reviewed by Los Alamos National Laboratory and the EM Technical Review Group. Comments from these reviews have been resolved with the reviewers and the comments have been incorporated in accordance with the resolutions. This document is approved for release to DOE-HQ with limited distribution as required for the DOE-HQ final review.

Copies of the PSAR are concurrently being transmitted to the EM Technical Review Group to facilitate their review. If there are any questions concerning the PSAR, please contact Bruce L. Nicoll of my staff on FTS 444-6006.

John D. Wagoner
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Enclosure

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