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DEPARTMENT OF ECOLOGY

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May 24, 1990

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Mr. Steven H. Wisness
Hanford Project Manager
U.S. Department of Energy
P.O. Box 550
Richland, WA 99352

Re: Notice of Deficiency for the HWVP Permit Application

Dear Mr. Wisness:

This letter transmits Ecology's comments on the July 1989 draft of the Hanford Waste Vitrification Plant (HWVP) Dangerous Waste Permit Application as revised by the USDOE/WHC Notice of Deficiency (NOD) response table dated February 20, 1990. The permit application was reviewed for compliance with final facility status standards in the state dangerous waste regulations, chapter 173-303 WAC.

The HWVP permit application's primary deficiency remains its lack of detail. This lack of detailed design information is attributable to the fact that definitive design for many of the major HWVP systems will not be completed until many years after the initial dangerous waste permit has been issued. In order to address this deficiency while maintaining a meaningful oversight role for Ecology, a phased permitting/construction schedule has been devised. The initial HWVP dangerous waste permit (including the application) will contain a description of the proposed facility based primarily on preliminary design. In addition, the permit will contain specific requirements pertaining to site preparation activities. The permit will be modified as more definitive designs and operating procedures become available.

Some details of this permitting strategy are discussed in the NOD and are being further developed at the unit manager level. The success of this approach depends on Ecology's unobstructed access to all available design media for the vitrification plant. Unfortunately, few additional design documents have been made available to Ecology since our last NOD. I am asking for your help in accelerating efforts underway to streamline the clearance process and make all requested documents available for our review. All preliminary and definitive design documents should be available for our review as soon as they are produced. Without this access to HWVP design information, the dangerous waste permit will not be issued by July 1991 and construction will be delayed. To allow timely review of HWVP design documents by all parties involved, Ecology requests that future submittals include five copies of each document.

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Ecology requests that USDOE/WHC respond to this notice of deficiency by responding to individual comments rather than redrafting the permit application. This will allow a more efficient response and review for the outstanding issues. The permit should then be redrafted in response to Ecology's next NOD. Because of the major revisions required to this permit application, Ecology suggests that USDOE/WHC respond to this NOD in 90 days instead of the standard 60 day response time. This additional time is intended allow USDOE/WHC to incorporate more detailed information on site preparation activities into the permit application.

Please extend my thanks to staff of USDOE and WHC for their assistance in our review of the HWVP permit application. Technical inquiries regarding this NOD should be directed to Mike Gordon at (206) 438-7024.

Sincerely,

for Timothy L. Nord
Hanford Project Manager

Enclosures

cc: Dan Duncan
Linda Powers (AR)

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Enclosure 1

DEPARTMENT OF ECOLOGY
CONCURRENCE WITH REVISIONS TO THE
HANFORD WASTE VITRIFICATION PLANT
DANGEROUS WASTE PERMIT APPLICATION
May 22, 1990

The Washington State Department of Ecology concurs with the following responses to our November 21, 1989 comments on the Hanford Waste Vitrification Plant (HWVP) Dangerous Waste Permit Application. Concurrence is based on the responses as they appear in the HWVP Notice of Deficiency Response Table dated February 20, 1990.

1, 7, 12, 16, 17, 18, 20, 21, 22, 23, 25, 26, 27, 28, 30, 31, 32, 34, 38, 48, 51, 58, 60, 61, 62, 63, 65

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DEPARTMENT OF ECOLOGY
NOTICE OF DEFICIENCY FOR THE
HANFORD WASTE VITRIFICATION PLANT
DANGEROUS WASTE PERMIT APPLICATION
May 24, 1990

The following comments reference page and section numbers from the July 1989 draft of the Hanford Waste Vitrification Plant Dangerous Waste Permit Application as revised by the February 20, 1990 Notice of Deficiency response table. Comment numbers are the same as those given in Ecology's November 21, 1989 Notice of Deficiency.

#	Page	
2	2-9	**Deficiency:** Information on the design and operation of some HWVP systems was not included in the initial permit application. USDOE/WHC continue to assert that only those units which will treat or store dangerous waste should be considered regulated units. Information on all other systems, "will be provided 'for information only' purposes, and will not be included in the permit application." **Comment:** Section WAC 173-303-810(6) identifies general permit conditions for operation and maintenance of dangerous waste facilities. The conditions apply to, "all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with the conditions of the permit." These facilities and systems would include all critical systems defined in the previous NOD as structures whose failure could lead to the release of hazardous or radioactive materials into the environment or into uncontrolled portions of the vitrification plant. Any system or procedure identified by Ecology as a critical system and/or necessary for achieving compliance with the conditions of this permit (either directly or indirectly) will be considered a regulated unit, and detailed information on its design and operation must be included in the permit application. Thus, all HWVP systems and procedures are potentially regulated. Based on Ecology's review of conceptual and preliminary design media, units which do not directly treat or store dangerous waste may still be subject to permit conditions. **Requirement:** Until Ecology identifies a system as "critical" or as necessary for compliance with a permit condition, information on that HWVP system must be submitted for Ecology's review, but may be submitted under a separate cover from the permit application. For the purpose of the initial permit application, Ecology has identified a portion of the site preparation activities as "critical systems". These activities are outlined in comment #13.
3	2-12	**Deficiency:** Section 2.1.3.6 states that "the Precoat Feed Tank will not handle dangerous waste and, therefore, will not be permitted." Section 3.2.6.2 states that "hydrogen gas build up in the Precoat Feed Tank,... could conceivably lead to an accumulation in excess of the lower explosive limit".

Requirement: The latter statement indicates that design and operation of the precoat feed tank (PFT) should be subject to permit conditions to ensure that hydrogen gas concentrations do not exceed the lower explosive limit. For example, the permit must indicate design controls and operating procedures to provide adequate air inleakage into the PFT, and the HWVP contingency plan must describe mitigation and response to excess hydrogen in all treatment and storage tanks, including the PFT. These revisions to the permit application must be submitted, reviewed and approved before installation of the PFT.

4 2-13 **Deficiency:** B Pond must not be used as a disposal site for HWVP effluents unless it has been certified as "clean closed" pursuant to the Hanford Federal Facility Agreement and Consent Order, Action Plan Section 6.3.1.

Requirement: The permit application must be revised to indicate that nondangerous wastewater from HWVP operations will not be sent to B Pond unless clean closure has been attained, and a state wastewater discharge permit has been approved in accordance with chapter WAC 173-216. The permit application must be revised and approved when the final disposal alternative for HWVP wastewaters has been selected.

5 2-14 **Deficiency:** The topographic map (plate 2-2) does not clearly indicate the location of the following:

- sewers and septic systems
- loading and unloading areas
- fire control facilities
- drainage barriers
- run-off control systems
- contamination from past practices

Requirement: USDOE/WHC should revise the topographic map and accompanying text to indicate the location of these HWVP systems. The map and text should also distinguish between existing, temporary (construction), and permanent structures.

6 2-15 **Deficiency:** The topographic map does not identify the location of unplanned release UN-216-E-12.

Requirement: The map and text should be revised to indicate the location and current status of this, and other known spills, and to document that any residual contamination will be removed or will not affect HWVP operation and closure.

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8 2-15 **Comment:** An inundation map for the floodplain resulting from failure of the Grand Coulee Dam (prepared by the U.S. Department of the Interior, Bureau of Reclamation) indicates that the HWVP site is above the floodplain for failure of even the largest of the Columbia River's dams. No additional inundation maps will be required.

9 2-27 **Comment:** Ecology's comments on the control of gaseous and gas entrained emissions will be submitted after completing review of the HWVP Clean Air Act Permit Application and supporting documents. Ecology's review will evaluate compliance with the state Clean Air Act, chapter 70.94 RCW for both radioactive and nonradioactive emissions, and the dangerous waste facility performance standards in 173-303-283(3)(b) WAC for preventing degradation of air quality. No change to the Part B permit application is required at this time. Prior to operation of the HWVP, the dangerous waste permit will be revised to specify emission limits based on best available control technology and best available radionuclide control technology (BACT/BARCT).

10 2-28 **Deficiency:** Section 2.5.2 states that "the concentration of flammable components in the vapor phase will not exceed 50 percent of the lower explosive limit for the actual offgas composition." No specific flammable offgas components have yet been identified in the permit application, the Clean Air Act permit application, the Hanford Defense Waste EIS, or the SEPA Checklist for HWVP.

Requirement: Information on the control of flammable components in the offgas must be specified in the permit application and approved in the permit before the offgas systems are installed. Chapter 3, Waste Characteristics, should also be revised to estimate the expected concentrations of flammable compounds in the HWVP offgas. This estimate must be provided in the next draft of the permit application.

11 2-30 **Deficiency:** Section 2.52 states that an excavation side slope of 1:1 will be used to eliminate the need for shoring, without explaining how this slope was selected.

Requirement: This section should be revised to include justification for the 1:1 side slope.

13 2-34 **Deficiency:** Buffer zone requirements for HWVP tanks containing ignitable or reactive wastes have not been specified in sufficient detail to allow review in this permit application. This is but one example of the general lack of specific detailed information on the design and operation of HWVP systems. The lack of detailed design information is attributable to the fact that definitive design for many of the major HWVP systems will not be completed until many years after the initial dangerous waste permit has been issued.

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Requirement: In order to address this deficiency while maintaining a meaningful oversight role for Ecology, the following phased permitting/construction schedule has been devised.

- The initial HWVP dangerous waste permit (including the application) will contain a description of the proposed facility based primarily on preliminary design. In addition, the permit will contain specific requirements pertaining to site preparation activities, such as:

  a. soil excavation, compaction, and grading,
  b. construction of the site stormwater drainage system,
  c. construction of any permanent buildings,
  d. construction of the septic system,
  e. construction of roads and railroads which will be used to transport hazardous substances and dangerous waste,
  f. installation of electrical, raw water, fire water, and wastewater services,
  g. installation of final security and lighting systems (if any).

No construction beyond that which is authorized in the initial permit may proceed until the permit is revised and approved.

- After completion of definitive design for remaining portions of the facility, the HWVP permit (including the application) will be revised to include this design information. Upon approval of the revised permit, construction of these portions of the facility may begin. This sequence of design-permit-construct may occur 2-3 times before the HWVP is completed. HWVP components constructed off-site (e.g., melter) may be constructed before their inclusion in the permit, but may not be installed until after the permit is revised and approved. To prevent delays in installation, or expensive refabrication of these off-site systems, Ecology should have the opportunity to review and comment on these systems prior to off-site construction.

- The HWVP permit will be revised again before operation of the facility. This revision will specify operating procedures, and remaining permitting conditions (e.g., trial burn plan, contingency plan, waste analysis plan, closure plan).

14 2-36 **Deficiency:** Section 2.8.1 states that the HWVP dangerous waste storage area location is not yet determined.

Requirement: As noted in comment #13, siting and design of the storage area must be approved in advance by Ecology. The permit application must be revised to contain a schedule for submittal of information on the storage area and other critical systems of the HWVP which are not yet definitively designed.

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15 2-36 Comment: The third bullet in section 2.8.1 states that "a Chemical Waste Disposal Analysis letter will be sent to the HWVP," before shipping waste from HWVP to the Nonradioactive Dangerous Waste Storage Facility (NRDWSF). The NOD response table states that the requirements for HWVP waste designation in the permit application will be revised to be consistent with the NRDWSF Part B Permit Application. This consistency is important, however, responsibility for dangerous waste designation of HWVP waste belongs to HWVP. In accordance with section 173-303-170 WAC, waste designation must be completed by the generator, before the waste is transferred from HWVP to NRDWSF.

19 3-1 Comment: Section 3.0 of the permit application states that "radionuclides are not subject to regulation under 173-303 WAC." In support of this statement, the NOD response table asserts the following:

- EPA did not intend "to give the state authority to regulate the radionuclides constituent of mixed wastes.

- The RCRA Section 1004(27) exclusion of source, special nuclear, and byproduct material applies to the state Hazardous Waste Management Act.

- In accordance with 10 CFR 962, information on radionuclides will not be provided.

- This approach is consistent with the Hanford Federal Facility Agreement and Consent Order Action Plan, Section 6.3.

Deficiency: Information on the radionuclide content of HWVP wastes is needed to fully designate its chemical hazards and biological toxicity. This information will also be used in determining waste compatibility.

Ecology has been authorized to implement the state Hazardous Waste Management Act "in lieu of" the federal RCRA statute. As a result, many wastes which are not regulated, or are even specifically excluded from regulation under RCRA, may be regulated under the state dangerous waste regulations (e.g., some PCB waste, fly ash, some trivalent chrome waste). The RCRA Section 1004(27) exclusion does not apply to HWVP waste because the enforceable hazardous waste statute in Washington is chapter 70.105 RCW, not RCRA. Without the RCRA exclusion, solid waste containing radionuclides is still a solid waste.

The dangerous waste regulations, chapter 173-303 WAC, require that all solid wastes which exhibit any of the dangerous waste criteria or characteristics in WAC 173-303-070 must be regulated as dangerous wastes. While radionuclides may not be regulated for their radioactive properties, they are regulated for their reactive, ignitable, toxic, and carcinogenic properties.

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Section 6.3 of the Action Plan does not speak directly to permitting treatment, storage or disposal (TSD) facilities. However, it does indicate that, at the discretion of the lead regulatory agency, radionuclides may or may not be removed with the other hazardous substances during closure of a TSD. This determination would be made only after full disclosure of the extent of radionuclide contamination. Section 6.3 of the Action Plan should not be construed as supporting a USDOE/WHC decision to withhold information on radionuclides.

Requirement: Revise section 3.0 to clarify that solid wastes containing radionuclides which fail any of the designation tests in WAC 173-303-070 will be subject to regulations under chapter 173-303 WAC. At this time, Ecology does not intend to regulate a solid waste which designates solely for the property of radioactivity. However, this issue is undergoing legal review. If it does not already, section 3.0 should be revised to contain complete information on HWVP waste characteristics, including radionuclides.

24 3-5 **Comment:** Section 3.1.1.2 states that "mercury is not listed as a component of the reference feed but may be present in concentrations that would make it a dangerous waste." The NOD response table notes that "one analysis of the designated waste feed tank residual has indicated a trace of mercury."

Requirement: Data from this "one analysis" and other analyses of future HWVP feed should be attached to the next revision of the permit application. Also, note whether other constituents expected to be in actual HWVP feed were excluded from the reference feed. These issues must be fully resolved by the HWVP Waste Analysis Plan.

29 3-10 **Deficiency:** Section 3.1.4.2 of the permit application states that the vitrified waste will not be a dangerous waste. Ecology's previous NOD indicated that the vitrified waste would be designated an extremely hazardous waste. The NOD response table states that "a petition to 'delist' this waste will also be investigated," and that, "the reference to 'WAC 173-303-084, -101, -102, or -103'... will be deleted from the permit application."

A petition to 'delist' is not appropriate for waste designated under the dangerous waste criteria in WAC 173-303-084, -101, 102, and 103. However, in light of the revised Part A for Double-Shell Tanks, which added F003 to the DST waste codes, a petition to delist the vitrified waste would be necessary before the glass could be considered nondangerous. USDOE/WHC could petition to exempt the glass from state dangerous waste regulations under section WAC 173-303-910(3). This exemption would be based on the physical and chemical stability of the waste. Deleting the section on criteria designation would only make section 3.1.4.2 more deficient.

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Requirement: Section 3.1.4.2 should be revised with the correct designation information provided in Ecology's previous NOD. The remainder of the permit application should be revised to reflect the designation of vitrified waste as an extremely hazardous waste.

33 3-16 **Deficiency:** Section 3.1.10 states "operation of the HWVP will not involve burning of waste or waste mixtures. Therefore, the requirements of this section [pertaining to incineration and performance tests] are not applicable to the HWVP." Although HWVP does not meet the definition of an incinerator in WAC 173-303-040(41), Ecology has determined that HWVP must meet the applicable standards in WAC 173-303-670 in order to prevent degradation of air quality as required by the performance standards in WAC 173-303-283(3). Moreover, Ecology is working to adopt 40 CFR Subpart X provisions which provide for regulation of miscellaneous units (whether 'tank-like', or 'incinerator-like') using appropriate standards for similar units. The HWVP melter meets the tank definition in WAC 173-303-040(88), but it also possesses characteristics of other thermal treatment units (e.g., offgas treatment system, special monitoring requirements). Application of Subpart X to the HWVP melter and other innovative waste treatment technologies will ensure that these devices are fully regulated.

Requirement: Measures to prevent degradation of air quality will be specified in the Clean Air Act Permit. However, the HWVP will also be required to meet the appropriate standards for dangerous waste incinerators in WAC 173-303-670. These appropriate standards include emission limits, trial burn(s), monitoring, and inspection requirements.

35 3-18 **Deficiency:** Section 3.2.1.3 states that "Solar Evaporation Tank waste will be sampled for heavy metals, reactivity, and gross alpha, beta, and gamma prior to removal of solids for disposal." The nondangerous wastewater discharge (previously directed to B Pond) is subject to nearly the same degree of analysis. The NOD response table states that the "applicable designation requirements will be adhered to for" these discharges. The NOD response table does not specify the parameters and frequency for which these streams will be sampled and analyzed.

Requirement: Revise this section to specify the parameters and frequency for which the Solar Evaporation Tank solids and nondangerous wastewater discharges will be sampled and analyzed.

36 3-21 **Deficiency:** The NOD response table states that a new facility design has modified the arrangement of the hot cell drains and the other analytical facility drains. Laboratory organic wastes will be controlled in some unspecified manner.

Requirement: Section 3.2.2.1 should be revised to reflect the design changes and means of controlling laboratory organic waste.

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37 3-21 **Deficiency**: The NOD response table states that deviations from state and EPA waste analysis protocols will be "compiled into environmental analytical methods manuals". The table states that "DOE and EPA have been involved in developing alternate approaches to sample analysis and deviation documentation". Recent conversations with EPA indicate that USDOE's proposed informal approach to deviation documentation will not be sufficient. Given that HWVP analytical work will not begin until after 1997, delays associated with petitioning for deviation from EPA and state protocols should not prevent HWVP from obtaining such variances long before operations begin.

Requirement: If USDOE/WHC have obtained approval from EPA for the proposed approach to deviation documentation, this should be submitted with the next revision of the permit application. Otherwise, section 3.2.2.3 should be revised to indicate that before significantly modifying state or EPA protocols for waste analysis, USDOE/WHC will first submit a petition for equivalent testing or analytical methods in accordance with WAC 173-303-910(2) and 40 CFR 260.21.

39 3-24 **Deficiency**: The NOD response table states that "deviations to EPA protocols associated with the HWVP facility shall be documented via the methods manual." The response table also states that "analytical procedures will not be included in facility permit applications." As noted in comment #37, petitions for equivalent testing or analytical methods must be approved before USDOE/WHC may make major modifications to EPA and state analytical procedures. In addition, all major and minor deviations from established analytical procedures must be documented and approved in the Hanford site-wide dangerous waste permit.

Requirement: In the next revision of the permit application, section 3.2.2.4.1 must be revised accordingly. Requirements for documentation of analytical procedures in the site-wide permit are being developed.

40 3-25 **Requirement**: In the next revision, section 3.2.2.4.2 should be revised to include a definition of analytical inferences.

41 3-26 **Requirement**: The reference to table 3-8 should be corrected in the next revision.

42 3-31 **Requirement**: Design features and operating and monitoring procedures to prevent the build up of organic vapors and hydrogen gas should be added to section 3.2.6.2 and must be reviewed and approved before operation begins.

9011181093 2

43 4-1 **Requirement**: Vitrified waste canisters must be permitted as dangerous waste canisters under WAC 173-303-630. See comment #29. The permit application must be revised accordingly and approved before construction of the canister storage building begins.

44 4-24 **Deficiency**: See comment #35.

45 4-24 **Deficiency**: The NOD response table indicates that liquids which have leaked from the Receipt and Lag Storage Tank (RLST) are pumped back into the RLST before being pumped to the Slurry Receipt and Adjustment Tank (SRAT) or the Slurry Mix Evaporator (SME). This procedure does not appear to comply with requirements in WAC 173-303-640(7) for cessation of use upon detection of a leak.

Requirement: In the next revision, section 4.2.1.1 should be further revised to clarify that liquids which have leaked from the RLST will not be pumped back into the RLST. This section should clearly state how leaked liquids will be removed and where they will be sent.

46 4-25 **Comment**: Ecology's previous NOD stated that a tank integrity assessment must be performed before construction of an HWVP tank system. That statement should be corrected to indicate that a tank integrity assessment must be performed before installation of an HWVP tank system.

47 4-27 **Requirement**: For each material of construction in tables 4-2 through 4-10, a description of material properties and performance data under conditions expected in each tank system must be submitted, reviewed and approved before installation of any tank system.

49 4-46 **Requirement**: In the next revision, flow rates and stream densities should be revised in accordance with the plant operating rate of 100 pounds per hour.

50 4-55 **Requirement**: Before installation of any tank containment systems, detailed specifications for these secondary containment systems must be submitted, reviewed, and approved in the permit application.

52 4-69 **Requirement**: Before construction of the solar evaporation tank, calculations which demonstrate that one foot of freeboard will be adequate to prevent overflow must be submitted, reviewed and approved.

9011181093 3

53 4-69 **Requirement:** Design diagrams, calculations, and data used in designing emissions control devices for tanks which may contain extremely hazardous waste that is toxic by inhalation must be submitted, reviewed and approved before installation of any such tank.

54 4-70 **Requirement:** Before construction of the solar evaporation tank, the permit application must be revised, reviewed and approved to ensure that in-tank neutralization will not result in uncontrolled mixing of incompatible materials or generation of noxious fumes.

55 4-71 **Deficiency:** See comment #33.

56 7-1 **Requirement:** Once site-wide spill notification procedures have been approved, section 7.4.1.3 should be revised accordingly.

57 11-2 **Deficiency:** The NOD response table revised the clean closure performance standard to read, "all traces of dangerous waste will be removed to background or designation limits, or limits of other applicable standards." This closure performance standard is inadequate.

Requirement: This section should be revised to state that clean closure will have occurred when all hazardous and radioactive substances are removed to background levels in any remaining structures and in the soils around the HWVP. This cleanup standard is consistent with the closure performance standard in WAC 173-303-610(2) and with the clean closure provisions in section 6.3.1 of the Hanford Federal Facility Agreement and Consent Order Action Plan. This degree of cleanup is greater than that which is being implemented at some past-practice cleanups at Hanford, but a background cleanup standard has been determined appropriate for closure of new facilities.

59 11-3 **Recommendation:** USDOE/WHC should submit a baseline soil sampling plan in the next revision of the HWVP permit application. This study will assist in establishing the cleanup levels described in comment #57.

64 3A **Requirement:** Submit primary method descriptions in the next revision of the permit application.

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DISTRIBUTION COVERSHEET

Author	Addressee	Correspondence No.
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Subject

NOTICE OF DEFICIENCY FOR THE HWVP PERMIT APPLICATION

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