



**U.S. Department of Energy**  
**Office of River Protection**

**P.O. Box 450**  
**Richland, Washington 99352**

03-OSR-0021

Mr. R. F. Naventi, Project Manager  
Bechtel National, Inc.  
2435 Stevens Center  
Richland, Washington 99352

Dear Mr. Naventi:

CONTRACT NO. DE-AC27-01RV14136 - U.S. DEPARTMENT OF ENERGY (DOE)  
NOTICE TO PROCEED WITH PRETREATMENT CONSTRUCTION ACTIVITIES

- References:
1. BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Request for Review and Approval of the Construction Authorization Request for the Hanford Tank Waste Treatment and Immobilization Plant," CCN-027627, dated January 31, 2002.
  2. BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Request for Review and Approval of the Construction Authorization Request for the Hanford Tank Waste Treatment and Immobilization Plant," CCN-027638, dated February 19, 2002.
  3. BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Request for Review and Approval of the Construction Authorization Request for the Hanford Tank Waste Treatment and Immobilization Plant," CCN-030609, dated May 1, 2002.
  4. ORP/OSR-2002-18, *Safety Evaluation Report for Waste Treatment Plant (WTP) Construction Authorization*, Revision 3, dated March 17, 2003.
  5. ORP letter from R. J. Schepens to R. F. Naventi, BNI, "U.S. Department of Energy (DOE) Notice to Proceed with Construction Activities," 02-OSR-0517, dated November 13, 2002.
  6. ORP letter from R. J. Schepens to R. F. Naventi, BNI, "U.S. Department of Energy (DOE) Notice to Proceed with Partial Construction Activities," 02-OSR-0289, dated July 9, 2002.
  7. ORP letter from R. C. Barr to R. F. Naventi, BNI, "River Protection Project – Waste Treatment Plant (RPP-WTP) Limited Construction Authorization Agreement, Revision 1," 01-OSR-0509, dated December 20, 2001.

8. ORP letter from R. J. Schepens to R. F. Naventi, BNI, "Notification of Construction Authorization Readiness Assessment and Associated Concerns," 02-OSR-0480, dated October 4, 2002.
9. BNI letter from R. F. Naventi to R. J. Schepens, ORP, "Hanford Tank Waste Treatment and Immobilization Plant – Construction Authorization Readiness in Consideration of Recent Assessments and Inspections of Engineering Activities," CCN-042775, dated October 30, 2002.
10. BNI letter from R. F. Naventi to R. J. Schepens, ORP, "Readiness for Waste Treatment and Immobilization Plant (WTP) Pretreatment Facility Full Construction," CCN-048490, dated February 26, 2003.

Bechtel National, Inc. (BNI) is authorized to proceed with the following construction activities: (1) full construction of the Low Activity Waste (LAW) facility; (2) full construction of the High Level Waste (HLW) facility; (3) full construction of the Pretreatment (PT) facility; and (4) construction of selected portions of the Balance of Facilities (BOF) structures and systems for the Hanford Tank Waste Treatment and Immobilization Plant (WTP). Following detailed review of material provided to the DOE Office of River Protection (ORP) in References 1 through 3, ORP has determined that BNI has the programs and processes in place for successful project execution of these activities, as summarized in Reference 4. The specific scope of work associated with this construction has been agreed to by BNI and ORP and is described in detail in the attached Construction Authorization Agreement. The signed agreement has been given the following document number: ORP/OSR-2003-01, *Construction Authorization Agreement between the U.S. Department of Energy Office of River Protection and Bechtel National Inc.*, Revision 1, dated March 17, 2003. Newly authorized construction activities covered by this Construction Authorization Agreement are:

- Full PT facility construction
- Construction of the glass former storage facility within the BOF.

Authorization of construction of the full LAW and HLW facilities, the PT pits, tunnels, and basemat, and selected portions of the BOF structures and systems had previously been granted to BNI by ORP in Reference 5. These construction activities continue to be authorized:

- Full LAW and HLW facility construction.
- Installation of selected portions of the BOF structures and systems.

All partial construction activities authorized in References 5 and 6 continue to be authorized by this Authorization Agreement. In addition, the following activities currently authorized by the Limited Construction Authorization Agreement (Reference 7) continue to be authorized. These activities are:

- Construction activities detailed in the Limited Construction Authorization Request (LCAR) Table 1, "WTP Project Limited Construction Activities."
- The radiological surveys, potential radiological contamination control and site remediation activities, and the use of industrial radioactive sources as described in the LCAR, Section 4.0, "Radiological Safety."

Construction work shall be performed in accordance with the Contract DE-AC27-01RV14136. The WTP regulatory process for radiological, nuclear, and process safety requires that construction activity be authorized in the form of an authorization agreement. The authorization agreement describes the specific terms and conditions associated with ensuring the achievement of adequate safety. The construction authorization agreement has been executed and a copy is enclosed.

During review of the Construction Authorization Request, ORP identified many portions of the Preliminary Safety Analysis Report (PSAR) that required changes to provide reasonable assurance that the preliminary design should achieve adequate safety. BNI responded formally to all of the questions on these concerns, and all the questions have been acceptably resolved.

The most significant deficiencies resulted in formal question responses committing BNI to corrective actions, many of which will be completed in the first revision of PSAR following full facility construction authorization (excluding the Analytical Laboratory), currently expected in June 2003. The remainder of the deficiencies were considered less significant, and therefore, have not been included specifically in the attached authorization agreement. For completeness, BNI is requested to notify ORP, in the annual update of the PSAR, the summary status of actions taken to complete the commitments made in all of the question responses. However, the authorization basis for the construction phase remains as described in the attached Construction Authorization Agreement, the elements of which may be modified according to the requirements of DOE/REG-97-13, *Office of River Protection Position on Contractor-Initiated Changes to the Authorization Basis*, Revision 9.

Before issuance of Rev. 0 of the Construction Authorization Agreement, ORP performed four engineering inspections on BNI processes. These inspections identified a number of deficiencies with the performance of engineering work (e.g., calculation accuracy). ORP notified BNI of these deficiencies (Reference 8) regarding the performance of engineering work as it related to the design process and stated BNI must demonstrate that its plans and actions had comprehensively addressed the design process deficiencies in order for ORP to conclude BNI was ready for construction. BNI provided a comprehensive corrective action plan to resolve the engineering deficiencies (Reference 9) and its justification to proceed with construction upon completion of the immediate corrective actions.

BNI notified ORP of its readiness to proceed with full PT construction on February 26, 2003 (Reference 10). ORP performed a Construction Authorization Request Readiness Inspection from March 3-13, 2003, to confirm that BNI had completed the commitments detailed in the BNI corrective action plan, and to confirm BNI's readiness for construction of the full PT facility. The readiness inspection found that BNI had initiated extensive corrective actions to improve engineering work performance. Because these corrective actions had been implemented recently, the team could not assess their effectiveness. To provide assurance that the corrective actions are timely and effective, BNI agreed to "perform a thorough assessment of the effectiveness of the engineering work performance improvement initiatives for all disciplines performing engineering design work, submit the assessment results, and identify any additional corrective actions deemed necessary" before the first revision of PSAR following authorization for full facility construction, as a condition of approval. The readiness inspection concluded that important to safety activities were being conducted consistent with the requirements of the SRD and ISMP and should provide adequate safety. The readiness inspection will be documented in "Pretreatment Facility Construction Authorization Readiness Inspection Report for the Period March 3-13, 2003," A-03-OSR-RPPWTP-011 (in preparation).

If you have any questions, you may contact me, or your staff may call Robert C. Barr, Director, WTP Safety Regulation Division, (509) 376-7851.

Sincerely,

Roy J. Schepens  
Manager

OSR:LFM

Attachment

**CONSTRUCTION AUTHORIZATION  
AGREEMENT BETWEEN  
THE U.S. DEPARTMENT OF ENERGY,  
OFFICE OF RIVER PROTECTION AND  
BECHTEL NATIONAL INC.**



March 17, 2003

U.S. Department of Energy  
Office of River Protection  
P.O. Box 450, H6-60  
Richland, Washington 99352

**CONSTRUCTION AUTHORIZATION  
AGREEMENT BETWEEN  
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March 17, 2003

U.S. Department of Energy  
Office of River Protection  
P.O. Box 450, H6-60  
Richland, Washington 99352

Approved: \_\_\_\_\_

Date: \_\_\_\_\_

# PREFACE

As directed by Congress in Section 3139 of the *Strom Thurmond National Defense Authorization Act for Fiscal Year 1999*, the U.S. Department of Energy (DOE) established the Office of River Protection (ORP) at the Hanford Site to manage the River Protection Project (RPP), formerly known as the Tank Waste Remediation System. ORP is responsible for the safe storage, retrieval, treatment, and disposal of the high level nuclear waste stored in the 177 underground tanks at Hanford.

The initial concept for treatment and disposal of the high level wastes at Hanford was to use private industry to design, construct, and operate a Waste Treatment Plant (WTP) to process the waste. The concept was for DOE to enter into a fixed-price contract for the Contractor to build and operate a facility to treat the waste according to DOE specifications. In 1996, DOE selected two contractors to begin design of a WTP to accomplish this mission. In 1998, one of the contractors was eliminated, and design of the WTP was continued. However, in May 2000, DOE chose to terminate the privatization contract and seek new bidders under a different contract strategy. In December 2000, a team led by Bechtel National, Inc. was selected to continue design of the WTP and to subsequently build and commission the WTP.

On January 10, 2001, the U.S. Department of Energy published the revised Nuclear Safety Management rule, 10 CFR 830. This rule, in Subpart B, "Safety Basis Requirements," established specific requirements for the establishment and maintenance of the safety basis of DOE nuclear facilities, including the River Protection Project Waste Treatment Plant (WTP) project.

A key element of the River Protection Project Waste Treatment Plant (WTP) is DOE regulation of safety. The regulation is authorized by the document entitled *Policy for Radiological, Nuclear, and Process Safety Regulation of the River Protection Project Waste Treatment Plant Contractor* (DOE/RL-96-25) (referred to as the Policy) and implemented through the document entitled *Memorandum of Agreement for the Execution of Radiological, Nuclear, Process Safety Regulation of the RPP-WTP Contractor* (DOE/RL-96-26) (referred to as the MOA). These two documents provide the basis for the safety regulation of the WTP at Hanford, including the implementation of regulatory requirements such as 10 CFR 830.

The foundation of both the Policy and the MOA is that the mission of removal and immobilization of the existing large quantities of tank waste by the WTP Contractor must be accomplished safely, effectively, and efficiently.

The Policy maintains the essential elements of the regulatory program established by DOE in 1996 for the privatization contracts. The MOA clarifies the DOE organizational relationships and responsibilities for safety regulation of the WTP. The MOA provides a basis for key DOE officials to commit to teamwork in implementing the policy and achieve adequate safety of WTP activities.

The Policy, the MOA, the WTP Contract, and the four documents incorporated in the Contract define the essential elements of the

regulatory program being executed by the ORP. The four documents incorporated into the Contract (and also in the MOA) are as follows:

*Concept of the DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor*, DOE-96-0005,

*DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor*, DOE/RL-96-0003,

*Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor*, DOE/RL-96-0006, and

*Process for Establishing a Set of Radiological, Nuclear, and Process Safety Standards and Requirements for the RPP Waste Treatment Plant Contractor*, DOE/RL-96-0004.

DOE patterned its safety regulation of the WTP Contractor to be consistent with the concepts and principles of good regulation (reliability, clarity, openness, efficiency, and independence) used by the Nuclear Regulatory Commission (NRC). In addition, the DOE principles of integrated safety management were built into the regulatory program for design, construction, operation, and deactivation of the facility. The regulatory program for nuclear safety permits waste treatment services to occur on a timely, predictable, and stable basis, with attention to safety consistent with that which would occur from safety regulation by an external agency. DOE established a dedicated regulatory organization to be a single point of DOE contact for nuclear safety oversight and approvals for the WTP Contractor. This organization performs nuclear safety review, approval, inspection, and verification activities for ORP using the NRC principles of good regulation while defining how the Contractor shall implement the principles of standards-based integrated safety management.

A key feature of this regulatory process is its definition of how the standards-based integrated safety management principles are implemented to develop a necessary and sufficient set of standards and requirements for the design, construction, operation, and deactivation of the WTP facility. This process meets the expectations of the DOE necessary and sufficient closure process (subsequently renamed Work Smart Standards process) in DOE Policy 450.3, *Authorizing Use of the Necessary and Sufficient Process for Standards-based Environment, Safety and Health Management*, and is intended to be a DOE approved process under DOE Acquisition Regulations, DEAR 970.5204-2, *Laws, Regulations and DOE Directives*, Section (c). DOE approval of the contractor-derived standards is assigned to the Manager, Office of River Protection.

The WTP Contractor has direct responsibility for WTP safety. DOE requires the Contractor to integrate safety into work planning and execution. This integrated safety management process emphasizes that the Contractor's direct responsibility for ensuring that safety is an integral part of mission accomplishment. DOE, through its safety regulation and management program, verifies that the Contractor achieves adequate safety by complying with approved safety requirements.

This documents issued is available to the public through the DOE Public Reading Room at the Consolidated Information Center, Washington State University, Room 101L, Richland, Washington.  
Copies may be purchased for a duplication fee.



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**CONSTRUCTION AUTHORIZATION AGREEMENT  
BETWEEN  
THE U.S. DEPARTMENT OF ENERGY (DOE),  
OFFICE OF RIVER PROTECTION (ORP) AND  
BECHTEL NATIONAL, INC.**

**1.0 PURPOSE**

This Construction Authorization Agreement (hereafter referred to as the "Agreement") identifies the scope of the construction work authorized by the ORP and the terms and conditions associated with ensuring the achievement of adequate nuclear, radiological, and process safety.

**2.0 SCOPE OF THE AUTHORIZATION AGREEMENT**

This Agreement applies to the performance of specified construction activities associated with the River Protection Project Waste Treatment and Immobilization Plant (WTP) performed by BNI and its subcontractors. The WTP is a large radiochemical processing facility located in the 200 East Area of the Hanford Site that will treat and immobilize Hanford tank wastes. The specific construction activities authorized under this Agreement are:

- Full facility construction of the Low Activity Waste (LAW) facility.
- Full facility construction of the High Level Waste (HLW) facility.
- Full facility construction of the Pretreatment (PT) facility
- Construction of the following selected portions of the Balance of Facility (BOF) systems and structures:
  - Electrical utility distribution systems
  - Switchgear building
  - BOF switchgear building
  - ITS switchgear building
  - Administration building
  - Chiller/compressor building
  - Water treatment building and storage tanks
  - Cooling tower facility
  - Fire water pump house and fire water storage tanks
  - Non-dangerous, non-radioactive (NDNR) liquid effluent facility
  - Access control facility
  - Simulator facility, located off site
  - Warehouse
  - Steam plant

- Wet chemical storage facility (WCSF)
- Diesel generator facility (includes both standby and emergency diesel generators)
- Fuel oil facility
- Melter assembly building
- Glass former storage facility.

In addition, the following activities currently authorized by Revision 0 of the Construction Authorization Agreement (November 13, 2002) and Revision 0 of the Partial Construction Authorization Agreement (July 9, 2002) continue to be authorized by the Agreement.

The following activities currently authorized by the Limited Construction Authorization Agreement (Revision 1, dated December 19, 2001) also continue to be authorized:

- Construction activities detailed in the Limited Construction Authorization Request (LCAR), Table 1, "WTP Project Limited Construction Activities."
- The radiological surveys, potential radiological contamination control and remediation activities, and the use of industrial radioactive sources as described in the LCAR, Section 4.0, "Radiological Safety."

### **3.0 DOE BASIS FOR APPROVAL**

The ORP has performed safety reviews and conducted oversight of the WTP Contractor in the areas of radiological, nuclear, and process safety. These safety reviews and oversight activities have been conducted in accordance with the specific regulatory actions established in the WTP contract. Based on these reviews and oversight activities, the ORP has concluded that construction activities, if properly performed, will achieve adequate safety. The following specific regulatory actions, safety reviews associated with amendments to these documents, and oversight activities have led to this conclusion:

- a. The Standards Approval regulatory action, which included the following reviews and approvals:
  - Review and approval of the Safety Requirements Document (SRD) as documented in RL/REG-98-01, *DOE Regulatory Unit Evaluation Report of BNFL Inc. Safety Requirements Document*, in RL/REG-98-20, *DOE Regulatory Unit Evaluation of BNFL Inc. Safety Requirements Document, Rev. 1A.*, and in the Safety Evaluation Reports for the various Authorization Basis Change Notices (ABCNs) submitted with the latest Standards Approval Package. The details of these SRD reviews can be found on the ORP website (<http://www.hanford.gov/osr/index.cfm>).
  - Review and approval of the Integrated Safety Management Plan (ISMP) as documented in RL/REG-98-19, *DOE Regulatory Unit Evaluation of BNFL Inc. Integrated Safety Management Plan, Revision 3A*, and in the Safety Evaluation Reports for the various ABCNs submitted with the latest Standards Approval

Package. The details of the these ISMP reviews can be found on the ORP website (<http://www.hanford.gov/osr/index.cfm>).

- b. The portion of the Construction Authorization regulatory action related to the activities described in Item 2 above, which included the following reviews and approvals:
- Review and approval of three Construction Authorization Requests (CAR)<sup>1,2,3</sup> as documented in ORP/OSR-2002-18, *Safety Evaluation Report for Waste Treatment Plant (WTP) Partial Construction Authorization*, Revision 3, dated March 17, 2003. The approval of the CARs is subject to the conditions described in detail in the Appendix to this Construction Authorization Agreement.
- c. The Oversight Process regulatory action, which included ORP inspections of WTP contractor activities during the WTP design phase. These inspection activities are established in RL/REG-98-05, *Inspection Program Description for the Regulatory Oversight of the RPP-WTP Contractor*. Safety issues raised in these inspections are resolved in accordance with the Corrective Action Program established in RL/REG-98-06, *Corrective Action Program Description*. The following ORP inspections were conducted between May and September 2002 in readiness for LAW and HLW full facility construction authorization:
- Configuration Management (IR-02-007) performed May 13-17, 2002.
  - Standards Selection (IR-02-013) performed July 22-26, 2002.
  - SRD Design Standards Implementation (IR-02-012) performed September 16-20, 2002.
  - Design Process (IR-02-015) performed September 16-20, 2002.

These engineering related inspections identified 12 findings of non-compliance with authorization basis requirements. Many of these findings identified inadequate implementation of design controls.

On October 30, 2002, BNI provided a comprehensive corrective action plan to resolve the engineering deficiencies and its justification to proceed with construction upon

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<sup>1</sup> CCN: 02762, BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Request for Review and Approval of the Construction Authorization Request for the Hanford Tank Waste Treatment and Immobilization Plant," dated January 31, 2002.

<sup>2</sup> CCN: 027638, BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Request for Review and Approval of the Construction Authorization Request for the Hanford Tank Waste Treatment and Immobilization Plant," dated February 19, 2002.

<sup>3</sup> CCN: 030609, BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Request for Review and Approval of the Construction Authorization Request for the Hanford Tank Waste Treatment and Immobilization Plant," dated May 1, 2002.

completion of the immediate corrective actions.<sup>4</sup> Based on BNI's immediate corrective actions and commitments in its response letter, the reviewers concluded the engineering deficiencies were sufficiently limited and resolved to authorize construction, subject to the following condition: BNI will implement the corrective actions specified in Attachment 2, "Assessment of the Effect of Design Process Implementation Issues on Construction Authorization Readiness," to the BNI letter dated October 30, 2002. These corrective actions must be completed by the dates provided in the letter.

Before issuing the Construction Authorization Agreement for LAW and HLW full facility construction, PT facility pits, tunnels, and basemat, and selected portions of the BOF, ORP conducted a construction authorization request readiness inspection to assess the effectiveness of the corrective actions identified above, and to assess readiness for full construction.

- Construction Authorization Request Readiness Inspection (A-03-OSR-RPPWTP-002) performed November 4-7, 2002.

The ORP concluded that BNI's implementation of the proposed corrective actions was adequate to support construction authorization of the full LAW and HLW facilities subject to completing the corrective actions from the October 30, 2002 BNI letter.

The following ORP inspections were conducted between November 2002 and February 2003 in readiness for PT full facility construction authorization:

- ALARA Design (A-03-OSR-RPPWPT-003) performed November 18-22, 2002
- Assessment, Corrective Actions, and Price Anderson Amendment Act of 1988 (PAAA) Inspection (A-03-OSR-RPPWPT-004) performed November 18 through December 9, 2002.
- Authorization Basis Management Assessment (A-03-OSR-RPPWPT-007) performed January 6-15, 2003
- Document Control (A-03-OSR-RPPWPT-005) performed January 6-16, 2003.
- On-Location Inspection (A-03-OSR-RPPWPT-006) performed December 5, 2002 through January 24, 2003.

These inspections identified six findings of non-compliance including: (1) failure to implement provisions to facilitate decontamination, decommissioning, and closure of the HLW C5 exhaust duct and piping; (2) failure to ensure that information related to Authorization Basis Change Notices (ABCN) and Safety Evaluations were readily available for ORP review; (3) failure to perform Safety Evaluations when required; (4) failure to ensure Safety Evaluations were documented in sufficient detail such that a

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<sup>4</sup> CCN: 042775, BNI letter from R. F. Naventi to R. J. Schepens, ORP, "Hanford Tank Waste Treatment and Immobilization Plant – Construction Authorization Readiness in Consideration of Recent Assessments and Inspections of Engineering Activities," dated October 30, 2002.

knowledgeable individual reviewing the safety evaluation could identify the technical issues considered during the Safety Evaluation and the basis for the determination; (5) failure to ensure that ABCNs submitted to ORP include a summary of the Safety Evaluation; and (6) failure to include a Field Change Request into a drawing when it was revised. Adequate corrective actions have been provided by BNI and accepted by ORP for all six findings.

A construction authorization request readiness inspection was conducted prior to issuing this Construction Authorization Agreement for full PT facility construction to verify completion of the corrective actions from the October 30, 2002 BNI letter, and to assess readiness for construction.<sup>5</sup>

The readiness inspection found that BNI had initiated extensive corrective actions to improve engineering work performance. Because these corrective actions had been implemented recently, the team could not assess their effectiveness. To provide assurance that the corrective actions are timely and effective, BNI agreed to “perform a thorough assessment of the effectiveness of the engineering work performance improvement initiatives for all disciplines performing engineering design work, submit the assessment results, and identify any additional corrective actions deemed necessary” before the first update of PSAR following authorization for full facility construction as a condition of approval. The readiness inspection concluded that important-to-safety activities were being conducted consistent with the requirements of the SRD and ISMP and should provide adequate safety.

#### **4.0 AUTHORIZATION BASIS**

The WTP authorization basis is the composite of information provided by the WTP contractor in response to radiological, nuclear, and process safety requirements. The implementation of these requirements forms the basis upon which the DOE grants permission to perform regulated activities. The following specific documents (including material incorporated by reference) provided by BNI are the basis for DOE’s decision to authorize full construction activities:

- a. Safety Requirements Document (SRD), Volume II, 24590-WTP-SRD-ESH-01-001-02, as modified through March 13, 2003 using the AB authorization process.
- b. Integrated Safety Management Plan (ISMP), 24590-WTP-ISMP-ESH-01-001, Rev. 1a, as modified through March 13, 2003 using the AB authorization process.
- c. Quality Assurance Manual (QAM), 24590-WTP-QAM-QA-01-001, Rev. 3, dated January 6, 2003.
- d. Radiation Protection Program for Design and Construction (RPP), 24590-WTP-RPP-ESH-01-001, Rev. 0, dated December 11, 2001.

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<sup>5</sup> 03-OSR-0110, ORP letter from R. J. Schepens to R. F. Naventi, BNI, "Pretreatment Facility Construction Authorization Readiness Inspection Report, A-01-OSR-RPPWTP-011," in preparation.

- e. Construction Authorization Requests (CARs), which consist of the following BNI submittals:
- 24590-WTP-PSAR-ESH-01-002-01, *Preliminary Safety Analysis Report to Support Construction Authorization; General Information*, Rev. E, dated February 1, 2002 (Volume I)
  - 24590-WTP-PSAR-ESH-01-002-03, *Preliminary Safety Analysis Report to Support Construction Authorization; LAW Facility Specific Information*, Rev. F, dated February 1, 2002. (Volume III)
  - 24590-WTP-PSAR-ESH-01-002-04, *Preliminary Safety Analysis Report to Support Construction Authorization; HLW Facility Specific Information*, Rev. H, dated February 14, 2002. (Volume IV)
  - 24590-WTP-PSAR-ESH-01-002-05, *Preliminary Safety Analysis Report to Support Construction Authorization; Balance of Facility Specific Information*, Rev. F, dated February 14, 2002. (Volume V)
  - 24590-WTP-PSAR-ESH-01-002-02, *Preliminary Safety Analysis Report to Support Construction Authorization; PT Facility Specific Information*, Rev. E, dated May 1, 2002. (Volume II)
- f. Partial Construction Authorization Request (PCAR) covering General Information:
- 24590-WTP-PSAR-ESH-01-001-01, *Preliminary Safety Analysis Report to Support the Partial Construction Authorization, General Information*, Rev. E, dated November 9, 2001

## 5.0 TERMS AND CONDITIONS

The following terms and conditions apply to full facility construction authorization:

- a. Construction activities shall be performed in accordance with the WTP authorization basis.
- b. BNI shall maintain the authorization basis current with respect to changes made to the facility design and administrative controls, and in light of significant new safety information. BNI-initiated changes to the authorization basis shall be performed in accordance with RL/REG-97-13, *Office of Safety Regulation Position on Contractor-Initiated Changes to the Authorization Basis*, as amended.
- c. BNI shall incorporate and implement new or revised radiological, nuclear, and process safety requirements as directed by the ORP in accordance with RL/REG-98-14, *Office of Safety Regulation Position on New Safety Information and Back-fits*.

- d. BNI shall identify and correct conditions that do not conform to the WTP authorization basis in accordance with the ISMP, which describes BNI's implementation of RL/REG-98-06, *Corrective Action Program Description*.
- e. BNI shall report occurrences that involve nuclear, radiological, or process safety to the ORP in accordance with the 24590-WTP-PL-CN-01-002, *Construction Occurrence Reporting Plan*.
- f. BNI shall inform ORP that it is ready to commence construction activities prior to commencing CAR activities.
- g. BNI shall complete the conditions of acceptance identified in the Appendix to this Agreement on the schedule therein.
- h. In the event that BNI requests modification to the conditions of acceptance, BNI shall notify DOE no later than five business days before the due date of any affected conditions, propose an alternative condition, and provide the justification for the modification, including an assessment of its safety significance, if any. DOE shall promptly review the request, and provided that DOE concludes the request has been adequately justified, the agreement may be modified accordingly.

## **6.0 CONTRACTOR QUALIFICATION**

Construction activities will be performed under DOE Contract DE-AC27-01RV14136. Evaluation of contractor qualifications was a key factor in the solicitation process associated with awarding the Contract. During the solicitation process, the DOE Source Evaluation Board determined that BNI was qualified to perform the work specified in the Contract. In addition, during the CAR review described in Section 3.b above, the ORP reviewed information provided in the CAR specifically related to BNI's qualifications to perform important-to-safety activities and determined that the information adequately demonstrated BNI's qualifications to safely perform the activities authorized in this Agreement. On this basis, the ORP has determined that BNI is qualified to perform important-to-safety WTP construction activities.



## Appendix – Conditions of Acceptance

The U.S. Department of Energy, Office of River Protection (ORP) identified the following conditions of acceptance in its review of the Partial Construction Authorization Request (PCAR) and the subsequent CARs. The conditions were included as Appendix B of the Safety Authorization Report, ORP/OSR-2002-18, *Safety Evaluation Report for Waste Treatment and Immobilization Plant (WTP) Construction Authorization*, Revision 3, issued March 17, 2003.

The conditions of acceptance for the general information evaluation and for the facility specific evaluations are shown below by the section in which they were cited.

### Section 3.6 Criticality Safety Program

**Conditions of Acceptance** – BNI must complete the following with the first PSAR revision following authorization for full facility construction:

1. Revise the CSL for the Pu/metals ratios, which would account for the effects of washing or leaching, as committed to in the response to Question PT-PSAR-090. (See Section 3.6.2, Item 3.)
2. Include in the CSER and the PSAR an analysis showing that backwashing feed from tanks AW-103 and SY-102 will be safely subcritical. Or, if the backwashing feed for AW-103 and SY-102 cannot be shown to be safely subcritical, include in the PSAR a commitment to establish administrative controls prohibiting backwashing feed from tanks AW-103 or SY-102 with nitric acid, as committed to in the response to Question PT-PSAR-321. (See Section 3.6.2, Item 3.)
3. Include in the PSAR and CSER information on fissile material released and accumulated in the offgas system, as committed to in response to Question PT-PSAR-318. (See Section 3.6.2, Item 3.)
4. Include in the PSAR and CSER information on precipitation batch sizes and their Pu content, as committed to in response to Question PT-PSAR-323. (See Section 3.6.2, Item 3.)
5. Document in the PSAR and CSER the basis for diuranate accumulation in the evaporator system not posing a criticality concern, as committed to in response to Question PT-PSAR-085. (See Section 3.6.2, Item 3.)

### Section 3.7 Radiation Protection

**Conditions of Acceptance** – BNI must include the following provisions in the RCP. Except for Item 2 below, these provisions should be provided with the FSAR:

1. Provide a detailed organizational chart that shows the radiation safety organization and its relationship to senior plant personnel and other line managers; also, provide job descriptions defining specific authorities and responsibilities of radiation safety personnel. (See Section 3.7.3, Item 2.)
2. Specify the review and revision cycle of procedures and provide to DOE before the start of the preoperational testing phase. (See Section 3.7.3, Item 3.)
3. Describe the mechanism for ensuring that RWPs are not used past their termination dates. (See Section 3.7.3, Item 3.)
4. Describe the methods for analyzing airborne concentrations; methods for calibrating air sampling and counting equipment; action levels and alarm setpoints; the basis used to determine action levels, investigation levels, and derived air concentrations and minimum detectable activities for the radionuclides; the frequency and methods for analyzing airborne concentrations; counting techniques; specific calculations and levels; action levels and investigation levels; locations of continuous air monitors, if used; and locations of annunciators and alarms. (See Section 3.7.3, Item 6.)
5. Identify the types and quantities of contamination monitoring equipment and the methods and types of instruments used in the radiation surveys. (See Section 3.7.3, Item 7.)
6. Identify the locations of the facility's respiratory equipment. (See Section 3.7.3, Item 11.)
7. Describe the radiation measurement selection criteria for performing radiation and contamination surveys, sampling airborne radioactivity, monitoring area radiation, and performing radioactive analyses. List the types and quantities of instruments that were available, as well as their ranges, counting mode, sensitivity, alarm setpoints, and planned use. Describe the instrument storage, calibration, and maintenance facilities and laboratory facilities used for radiological analyses. (See Section 3.7.3, Item 12.)

## **Section 3.12 Procedures and Training**

### **Procedures**

**Conditions of Acceptance** – BNI must complete the following changes to Section 12.3 of Volume I of the PSAR with the first PSAR revision following authorization for full facility construction:

1. Revise Section 12.3.1.1 to state that, "The project readiness assessment process determines the procedure set required to support Construction activities. Procedures are developed and issued before the activity governed by the procedure takes place"; in addition, provide a table in Section 12.3.1.1 to indicate which activities are being addressed in management control procedures during design and construction, cold commissioning, and hot commissioning and operations, as committed to in response to Question LAW-PCAR-103. (See Section 3.12.2, Procedures, Item 2.)

2. Revise Section 12.3.2.2 to state, "The procedures covering the following topics are in place as needed for the construction phase of the project. Changes and additions to the procedure set will be identified before cold commissioning and scheduled for completion before the activity taking place: major management control systems, system and facility operations (including control of hazardous processes), major maintenance activities (including safe work practices), hazardous materials control activities, radiological control activities, and emergency response activities (including radiological and hazardous chemical release)," as committed to in response to Question LAW-PCAR-106. (See Section 3.12.2, Procedures, Item 4.)
3. Revise Section 12.3.1.1 as follows to clarify who can approve procedures: "The procedure process is governed by the project procedure on procedures. It requires that management associated with ES&H and QA review new procedures and concur that they are or are not within the authorization basis. ES&H and QA review changes to existing procedures if they affect the authorization basis or QA requirements. At a minimum, management associated with the relevant safety disciplines concurs with new procedures and changes to existing procedures that affect the authorization basis requirements," as committed to in response to Question LAW-PCAR-104. (See Section 3.12.2, Procedures, Item 6.)
4. Add the following to Sections 12.3.3.1 and 12.3.3.2.1: "The project procedure complies with the WTP QAM and addresses permanent procedure revisions and expedited procedure changes," as committed to in response to Question LAW-PCAR-107. (See Section 3.12.2, Procedures, Item 7.)
5. Add the following to Section 12.3.1.1: "For construction activities, the basic work planning process is based on the concept that for standard construction tasks, step-by-step work instructions are not required. A combination of technical specifications, field procedures, and drawings are used to perform the work. Individuals involved in the work are trained to the requirements. The work is planned using a construction administrative procedure addressing construction work packages. When unique or complex tasks are performed, work planning is addressed in a construction administrative procedure addressing special instruction work packages. This procedure provides for using a work package with additional controls, including, where appropriate, step-by-step instructions," as committed to in response to Question LAW-PCAR-105. (See Section 3.12.2, Procedures, Item 8.)

## **Training**

**Conditions of Acceptance** – BNI must complete the following changes to Section 12.4 of Volume I of the PSAR with the first PSAR revision following authorization for full facility construction:

1. Define the periodic basis for comparing training materials with the list of tasks selected for training. (See Section 3.12.2, Training, Item 4.)

2. Clearly state in the learning objectives the knowledge, skills, and abilities the trainee must demonstrate; that learning objectives are sequenced based on their relationship to one another; the conditions under which required actions will take place; and the standards of performance the trainee should achieve when completing the training. (See Section 3.12.2, Training, Item 5.)
3. Define review and approval requirements for lesson plans, training guides, and other training materials before they are issued and used. (See Section 3.12.2, Training, Item 6.)
4. Demonstrate that when an actual task cannot be performed and is walked-through, the conditions of task performance, references, tools, and equipment reflect the actual task to the extent possible. (See Section 3.12.2, Training, Item 8.)
5. Define the periodic basis for conducting training program evaluations. (See Section 3.12.2, Training, Item 4.)

### **Section 3.13 Human Factors**

**Condition of Acceptance** – BNI must complete the following action with the first PSAR revision following authorization for full facility construction:

1. As committed in the response to Question LAW-PSAR-210, implement a Human Factors Implementation Plan following SRD Safety Criterion 4.3-6 and the SRD Appendix B (Section 2.6), which require use of IEEE 1023-1988, Section 6, "Implementation in the Design, Operations, Testing, and Maintenance Process." (See Section 3.13.2, Item 5.)

### **Section 3.15 Emergency Preparedness**

**Condition of Acceptance** – BNI must complete the following action with the first PSAR revision following authorization for full facility construction:

1. Revise PSAR Section 15.3 to reflect that DOE/RL-94-02, *Hanford Emergency Management Plan*, Section 14.0, "Program Administration," and its requirements will be contained as part of the Emergency Response Plan, as committed to in response to Question LAW-PSAR-012. (See Section 3.15.2, Item 12.)
2. Revise PSAR Section 15 to reflect that, for WTP Emergency Response Plan program administration, BNI will provide WTP input to the Hanford Emergency Readiness Assurance Plan. Develop an internal assessment of the emergency preparedness activities program and implement it before cold commissioning, and develop a vital records program to ensure documents essential to the continued functioning of WTP are available during and after an emergency. This was committed to in response to Question LAW-PSAR-129. (See Section 3.15.2, Item 12.)

3. Revise PSAR Section 15.4.6 to clarify that training and drills will be conducted using DOE G-151.1, *Emergency Management Guide*, Volume V, Section 4.0, "Training and Drills," as a guide. Clarify that the emergency manager will periodically assess the drill and training program, and the results will be used to improve the program. Clarify that all identified deficiencies from drills will be compiled in a database and tracked until adequate corrective actions are implemented. Clarify that management will attend emergency response training to determine where enhancements can be made to ensure that proper training is provided. This was committed to in response to Question LAW-PSAR-129. (See Section 3.15.2, Item 13.)
4. Revise PSAR Section 15.4.6.2 to reflect that exercises will be conducted in accordance with DOE/RL-94-02, *Hanford Emergency Management Plan*, and DOE/RL emergency procedures RLEP 3.10, "Developing Exercise Packages" (DOE-0223, *Emergency Plan Implementing Procedures*), as committed to in response to Question LAW-PSAR-129. (See Section 3.15.2, Item 14.)

### **Section 3.16 Deactivation and Decommissioning**

**Conditions of Acceptance** – BNI must complete the following changes to Chapter 16 of Volume I of the PSAR with the first PSAR revision following authorization for full facility construction. All of these conditions were previously identified in the Partial Construction Authorization<sup>6</sup> and remain in effect.

1. In Chapter 16 of the PSAR, clarify its commitment to reduce radiation exposure to workers and the public during and following D&D, as committed to in response to Question LAW-PCAR-028. (See Section 3.16.2, Item 1.)
2. Add the following statement to Section 16.3.5: "While the proposed decommissioning method has not been specified, the facility is being designed to limit contamination, facilitate decontamination, and minimize the dose and generation of waste in the event re-use or demolition of the facility is the ultimate decommissioning method," as committed to in response to Question LAW-PSAR-197. (See Section 3.16.2, Item 1.)
3. Change the R1, R2, and R3 contamination classifications listed in Section 16.3.1 to be consistent with current practices, as committed to in response to Question LAW-PCAR-030. (See Section 3.16.2, Item 3.)

### **Section 3.17 Management, Organization, and Institutional Safety Provisions**

**Conditions of Acceptance** – BNI must complete the following actions. Except for Item 4, the actions should be completed with the first PSAR revision following authorization for full facility construction:

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<sup>6</sup> 02-OSR-0289, ORP letter from R. J. Schepens to R. F. Naventi, BNI, "U.S. Department of Energy (DOE) Notice to Proceed with Partial Construction Activities," dated July 9, 2002.

1. Describe organizational responsibilities and staffing interfaces for the CM program in PSAR Volume I, Section 17.4, as committed to in response to Question LAW-PCAR-005. (See Section 3.17.2, Configuration Management, Item 1[c].)
2. Revise the first paragraph in PSAR Volume I, Section 17.4.6, to read, "The USQ process will be established during implementation of the approved FSAR, which will precede start of the hot commissioning portion of the operations phase. The USQ process will allow project management to make changes to the facility, the procedures, and the Authorization Basis documents; ..." In addition, establish a "USQ-like" process before the start of cold commissioning, and describe this process in a PSAR supplement on a schedule providing for adequate review by DOE, as committed to in response to Question LAW-PSAR-161. (See Section 3.17.2, Configuration Management, Item 5[a].)
3. Revise the last sentence of paragraph two in PSAR Volume I, Section 17.4.6, to read, "However, a USQ evaluation is required for a nonconforming or degraded condition if the resolution of the condition is to 'use as is' or 'repair.' A USQ evaluation would also be required for an interim compensatory action that is proposed to deal with the degraded or nonconforming condition as part of the disposition process," as committed to in response to Question LAW-PSAR-160. (See Section 3.17.2, Configuration Management, Item 5[b].)
4. Revise procedure 24590-WTP-GPP-SIND-001-0, *Reporting Occurrences in Accordance with DOE Order 232.1A*, to address hazards and activities for the cold commissioning phase before the start of the preoperational testing phase, as committed to in response to Question LAW-PCAR-037. (See Section 3.17.2, Incident Reporting and Investigation, Item 2.)

### **Section 3.18 Fire Protection**

**Conditions of Acceptance** – BNI must complete the following by the date or milestone indicated:

1. Have procedures in place as part of the March 1, 2003, implementation plan for the WTP fire protection program for performing periodic safety inspections; inspecting and tracking fire barrier penetration seals, doors, dampers, and related devices, as committed to in response to Question LAW-PSAR-218. (See Section 3.18.2, Item 1[b].)
2. Have procedures in place as part of the March 1, 2003, implementation plan for the WTP fire protection program for performing periodic evaluations of the overall WTP fire protection performance and for identifying and tracking fire safety issues, as committed to in response to Question LAW-PSAR-218. (See Section 3.18.2, Item 3[a].)
3. Fully implement the fire prevention program as part of the March 1, 2003, implementation plan for the WTP fire protection program; and revise the Non-Radiological Worker Health and Safety Plan to include the relevant fire protection requirements from Subparts F and J of 29 CFR 1926, "Safety and Health Regulations for

Construction," to ensure that an adequate set of fire safety requirements are specified for work at the WTP construction site, as committed to in response to Question LAW-PSAR-215. (See Section 3.18.2, Item 3[c].)

4. As a condition of construction of the LAW, HLW, and PT buildings, BNI should not preclude compliance with the requirements of the 1997 UBC unless relief has been granted by DOE approval of the requested equivalency. (See Section 3.18.2, Item 4.)
5. Revise the analysis in Appendices E.3 and E.8 of the PT PFHA with the first PT PSAR revision following authorization for full facility construction to reflect an ambient temperature of 113°F, as committed to in response to Question PT-PSAR-073. (See Section 3.18.2, Item 5[b]).
6. Include in Chapter 2 of the HLW PFHA, with the first PSAR revision following authorization for full facility construction, the information on the ability to achieve and maintain a safe state after the loss of the melter offgas system components due to credible fire scenarios, as committed to in response to Question HLW-PFHA-037. (See Section 3.18.2, Item 5[c].)

#### **Section 4.1.1 LAW Facility Description**

##### **Facility Description**

**Conditions of Acceptance** – BNI must include the following provisions in the PSAR. Except for Item 6 below, these provisions should be provided with the first PSAR revision following authorization for full facility construction:

1. Include the evaluation of the aircraft impact on the LAW building and associated justification, as committed to in response to Question LAW-PSAR-153. (See Section 4.1.1.2, Facility Description, Item 3[f].)
2. Include the commitment to design anchorage using cracked concrete assumptions unless the structure is evaluated and determined to be uncracked, as committed to in response to Question LAW-PSAR-211. (See Section 4.1.1.2, Facility Description, Item 5[c].)
3. Include the methodology to be used for qualifying SDC equipment in the LAW facility, as committed to in response to Question LAW-PSAR-202. (See Section 4.1.1.2, Facility Description, Item 5[g].)
4. Design ITS piping in the LAW building to ASME B31.3, "Process Piping," occasional load criteria, and include this commitment in the PSAR, as committed to in response to Question LAW-PSAR-201. (See Section 4.1.1.2, Facility Description, Item 5[h].)
5. Designate two cranes in the vicinity of the offgas system as SDS SC-III for their seismic safety function to prevent crane components or the bridge from falling on the SDC offgas SSCs. To protect against damage from the third crane (RWH-CRN-00008), provide

either a protective cage surrounding the offgas duct in the process area or, if a protective cage cannot be provided, designate the third crane also as SDS SC-III for its seismic safety function to protect the SDC offgas duct from falling crane components or the bridge, as committed to in response to Question LAW-PSAR-200. (See Section 4.1.1.2, Facility Description, Item 5[i].)

6. Provide, as committed to in response to Question LAW-PSAR-207, initial information (from ISM Cycle III) in the first PSAR revision and full information when the FSAR is submitted, for the following (see Section 4.1.1.2, Facility Description, Item 8):
  - (a) A detailed analysis of control room habitability for the facility (including the LAW building) to demonstrate that there is adequate time to evaluate accident conditions, to perform mitigating actions required at the LAW facility to place the facility in a safe state, and to evacuate the LAW facility safely
  - (b) A systematic evaluation of ITS SSCs and non-ITS equipment that may impact ITS SSCs and an analysis of the LAW design to identify LAW ITS controls and indications that must be provided in the PT control room design to ensure that the LAW can be placed and maintained in a safe state following any DBEs.
7. Include the following commitment, as stated in response to Question LAW-PSAR-207: LAW SDC and SDS controls and indications provided in the PT control room that are required to place/maintain the LAW facility in a safe state following any DBEs will be independent of the integrated control network controls and indications and will be designed according to the standards in SRD Safety Criterion 4.3-4. (See Section 4.1.1.2, Facility Description, Item 8.)

## Process Description

**Conditions of Acceptance** – BNI must include the following provisions in the first PSAR revision following authorization for full facility construction:

1. Include the radiological shielding function of the wet process cell walls as an ITS function in the event of a mis-feed of HLW to the LAW facility, as committed to in response to Question LAW-PCAR-098. (See Section 4.1.1.2, Process Description, Item 1.)

## Section 4.1.2 LAW Facility Hazard and Accident Analysis

Two conditions of acceptance originally identified in Section 4.1.2, "LAW Facility Hazard and Accident Analysis," in Revision 1 of the SER, were completed:

1. Revise the design calculation report 24590-LAW-DBC-S13T-00005, *Thermal Analysis for Basemat and Pour Cave Walls*, to incorporate the results of the computational fluid dynamics analysis of the pour cave. The analysis must confirm that the concrete temperatures of the melter and pour caves could be maintained within design limits

during the postulated glass spill and loss of cooling accident scenario. All structural calculations affected by the computational fluid dynamics analysis must be revised, as appropriate. These should be completed before authorization for full LAW facility construction. (COMPLETE) (See Section 4.1.2.2, Item 8.)

2. Complete hazard and accident analysis of internal flooding, including identification of control strategies required to protect the safety functions of the facility structure, assuming PSAR reference structural design, before the start of full LAW facility construction. (COMPLETE, is superseded by conditions of acceptance [3] and [5] below.) (See Section 4.1.2.2, Item 2.)

**Conditions of Acceptance** – BNI must complete the following actions, except for Item 5 below, with the first PSAR revision following authorization for full facility construction:

1. Correct the discrepancies related to the CSD records identification system used in SIPD and as referenced in the LAW and HLW PSAR texts and tables, as committed to in responses to Questions LAW-PSAR-069 and -169, and as agreed to in the authorization for construction for walls to grade. (See Section 4.1.2.2, Item 1.)
2. Include the analysis related to the mis-feed hazardous situation, identifying control strategies that include the provision of gamma monitor activated automatic valve closure as SDC SSCs in the PT facility to prevent the mis-feed to the LAW facility and to designate certain LAW process cell shield walls as SDS SSCs to mitigate the event, as committed to in responses to Questions LAW-PCAR-098 and LAW-PSAR-056. (See Section 4.1.2.2, Item 1.)
3. Include interim information on internal flooding events, as committed to in response to Question LAW-PSAR-036. (See Section 4.1.2.2, Item 2.)
4. Include the design features for mitigating the potential for steam explosion in the LAW melter and the results of the evaluation of the potential for water injection via wash water or feed nozzle cooling water, as committed to in response to Question LAW-PSAR-064. (See Section 4.1.2.2, Item 2.)
5. Submit the internal flooding event hazard evaluation (for the preliminary design) to ORP for approval, and receive DOE approval, before start of construction of the nonstructural aspects of the LAW design expected to be credited as SDC or SDS SSCs for the internal flooding event, on a schedule mutually agreed to by ORP and BNI. (See Section 4.1.2.2, Item 2.)
6. Include the results of the offgas system evaluation for ammonium nitrate deposition potential, including what control strategies, if any, will be implemented to address concerns identified through this evaluation, as committed to in response to Question LAW-PSAR-113. (See Section 4.1.2.2, Item 2.)
7. Include that approximately 30 minutes after being on UPS system power, the plant would be evacuated, therefore eliminating the need for exhausters fans to protect the facility

workers from NO<sub>x</sub> release in the LAW facility, as committed to in response to Question LAW-PSAR-029. (See Section 4.1.2.2, Item 5.)

8. Correct the omission of additional safety functions for the basemat based on the seismic DBE event being SL-2 for the facility and co-located worker, the mis-feed event being SL-1 for the facility worker, and the liquid spill/overflow from the LAW concentrate receipt vessel being SL-2 for the facility worker, as agreed to in the authorization agreement for walls to grade construction. (See Section 4.1.2.2, Item 8.)

### **Section 4.1.3 LAW Facility Important-to-Safety SSCs**

**Condition of Acceptance** – BNI must complete the following with the first PSAR revision following authorization for full facility construction:

1. Include a complete list of RRC SSCs, with associated safety functions, as committed to in response to Question LAW-PSAR-066. (See Section 4.1.3.2, Item 1.)

### **Section 4.2.1 HLW Facility Description**

#### **Facility Description**

Two conditions of acceptance originally identified in the Revision 0 of the SER, and in effect in the authorization basis, were completed:

1. Perform transient computational fluid dynamics analysis of the DBE 2700-L molten glass spill before authorization for full HLW facility construction. (COMPLETE) (See Section 4.2.1.2, Facility Description, Item 3[f][i].)
2. Provide the seventeen structural calculations that demonstrate structural design adequacy of HLW walls to grade as described in Section 4.2.1.2, Facility Description, Item 3(b) of this SER. (COMPLETE)

**Conditions of Acceptance** – BNI must complete the following by the date or milestone indicated:

1. Include an evaluation of the aircraft impact on the HLW building and associated justification, as committed to in response to Question LAW-PSAR-153, with the first PSAR revision following authorization for full facility construction. (See Section 4.2.1.2, Facility Description, Item 3[f][iii].)
2. Include the commitment to design anchorage using cracked concrete properties, as committed to in response to Question HLW-PSAR-256, with the first PSAR revision following authorization for full facility construction. (See Section 4.2.1.2, Facility Description, Item 4.)

3. Include information on the analysis of the potential effects on ventilation and air-cleaning SSCs of common-cause external events, including volcanic ashfall, in the first PSAR revision following completion of the analysis and in the FSAR, as committed to in response to Question PT-PSAR-257. (See Section 4.2.1.2, Facility Description, Item 7.)
4. Provide, as committed to in response to Question HLW-PSAR-224, initial information (from ISM Cycle III) in the first PSAR revision following authorization for full facility construction and full information when the FSAR is submitted, for the following (see Section 4.2.1.2, Facility Description, Item 8):
  - (a) A detailed analysis of control room habitability for the facility (including the HLW building) to demonstrate that there is adequate time to evaluate accident conditions, to perform mitigating actions required at the HLW facility to place the facility in a safe state, and to evacuate the HLW facility safely
  - (b) A systematic evaluation of ITS SSCs and non-ITS equipment that may impact ITS SSCs and an analysis of the HLW design to identify HLW ITS controls and indications that must be provided in the PT control room design to ensure that the HLW can be placed and maintained in a safe state following any DBEs.
5. Include the following commitment in the first PSAR revision, following authorization for full facility construction, as stated in response to Question HLW-PSAR-224: HLW SDC and SDS controls and indications provided in the PT control room that are required to place/maintain the HLW facility in a safe state following any DBEs will be independent of the integrated control network controls and indications and will be designed according to the standards in SRD Safety Criterion 4.3-4. (See Section 4.2.1.2, Facility Description, Item 8.)

### **Process Description**

**Conditions of Acceptance** – One condition of acceptance originally identified in the Revision 0 of the SER and in effect in the authorization basis, was completed:

1. Revise the design drawings that were used to support the hazard and accidental analysis of the embedded C5 ventilation ductwork to reflect the configuration used in the accident analysis with the first PSAR revision following authorization for full facility construction. (COMPLETE) (See Section 4.2.1.2, Process Description, Item 5)

**Conditions of Acceptance** – BNI must complete the following in the first PSAR revision following authorization for full facility construction:

1. Include information on monitoring vessel vent and overflow lines to ensure their functionality, as committed to in response to Question HLW-PSAR-010. (See Section 4.2.1.2, Process Description, Item 4.)

2. Revise HLW PSAR Tables 3-3, 3-4, and 3-5 to eliminate shortcomings in the chemical compatibility assessments identified by the reviewers, as committed to in response to Question HLW-PSAR-017. (See Section 4.2.1.2, Process Description, Item 9.)

### **Section 4.2.2 HLW Facility Hazard and Accident Analysis**

Three conditions of acceptance originally identified in the Revision 1 of the SER were completed and one remains open:<sup>7</sup>

1. Correct the discrepancies between the CSD records in Appendix A and the HLW PCAR and PSAR text and tables, as committed to in responses to Questions LAW-PSAR-069 and -169 and as agreed to in the authorization for construction of HLW walls to grade. (See Section 4.2.2.2, Item 1.) (OPEN – must be closed as part of the first PSAR revision following authorization for full facility construction.)
2. Provide the analysis of the 2700-L molten glass spill accident. (COMPLETE)
3. Complete hazard and accident analysis of internal flooding, including identification of control strategies required to protect the safety functions of the facility structure, assuming PCAR and PSAR reference structural design, before the start of full HLW facility construction. (COMPLETE; superceded by conditions 4 and 5 below)

**Conditions of Acceptance** – BNI must complete the following with the first PSAR revision following the authorization for full facility construction (except as noted in Items 5 and 13 below):

1. Analyze the potential for ammonia in the HLW feed to be released from the liquid phase into the gaseous phase, reaching a flammable concentration and igniting, as committed to in response to Question HLW-PSAR-240. (See Section 4.2.2.2, Item 1.)
2. Include the results of the offgas system evaluation for ammonium nitrate deposition potential, including the control strategies, if any, that will be implemented to address concerns identified through this evaluation, as committed to in response to Question HLW-PSAR-024. (See Section 4.2.2.2, Item 1.)
3. Include information on overflow events involving submerged bed scrubber condensate vessels, including control strategies, as committed to in response to Question HLW-PSAR-127. (See Section 4.2.2.2, Item 1.)
4. Include interim information on internal flooding events, as committed to in response to Question HLW-PSAR-003. (See Section 4.2.2.2, Item 2[a].)

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<sup>7</sup> The HLW walls to grade SER condition of acceptance (condition [2]) – submit an evaluation of the combined effects of seismically induced radiological releases from the PT, LAW, and HLW buildings on the workers, co-located workers, and the public through a seismic probabilistic risk analysis study – is addressed in Section 4.6 of this SER.

5. Submit the internal flooding event hazard evaluation (for the preliminary design) to ORP for approval, and receive DOE approval, before start of construction of the nonstructural aspects of the HLW design expected to be credited as SDC or SDS SSCs for the internal flooding event, on a schedule mutually agreed to by ORP and BNI. (See Section 4.2.2.2, Item 2[a].)
6. Revise Section 4.4.4 to explicitly address all incoming feeds as sources to the concentrate receipt tank that may result in vessel overflow events, as committed to in response to Question HLW-PSAR-188. (See Section 4.2.2.2, Item 2[a].)
7. Perform a sensitivity study to compare respirable releases from a crack to an orifice and revise the calculations and PSAR, as necessary, as committed to in response to Question HLW-PSAR-128. (See Section 4.2.2.2, Item 3.)
8. Re-analyze the hydrogen generation deflagration DBE and the PSAR based on re-evaluation of the hydrogen correlation used in the event analysis, as committed to in response to Question HLW-PSAR-235. (See Section 4.2.2.2, Item 3[a].)
9. Revise the PSAR to show that the HLW melter shell will be qualified to SC-II, as committed to in response to Question HLW-PSAR-150. (See Section 4.2.2.2, Item 3[b].)
10. Remove the 6600-L molten glass spill as a DBE from PSAR Section 3.4.1.4, as committed to in response to Question HLW-PSAR-253. (See Section 4.2.2.2, Item 3[b].)
11. Include a description of the 2700-L molten glass spill event and associated control strategies, as committed to in responses to Questions HLW-PCAR-012 and HLW-PSAR-191. (See Section 4.2.2.2, Item 3[b].)
12. Revise 24590-HLW-Z0C-W14T-00013, *Revised Severity Level Calculations for the HLW Facility*, and 24590-HLW-Z0C-H01T-00001, *Design Basis Event – HLW Process Vessel Hydrogen Deflagrations*, to more conservatively account for the radiolytic affects (i.e., the concentrations of the nitrate/nitrite ions by using Equation 2-3 from RPT-W375-SA00002, *Topical Report on the Management of Risks Posed by Explosive Hazards Present at the RPP-WTP*, rather than Equation 2-2) and the thermolytic affects (i.e., by establishing design air purge flow rates through vessel head spaces using an activation energy,  $e_a$ , of 100 kJ/mole [vs. 91 kJ/mole] and assuming the vessels are at 220°F). This was committed to in response to Questions HLW-PSAR-235 and PT-PSAR-336. (See Section 4.2.2.2, Item 4[b].)
13. Re-evaluate transportation events as part of the control room habitability evaluations and include initial results of this HLW evaluation in the first PSAR revision following authorization for full facility construction and include final results in the FSAR. This was committed to in response to Question PT-PSAR-204. (See Section 4.2.2.2, Item 6[c][vi]).

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**Section 4.2.3 HLW Facility Important-to-Safety SSCs**

**Conditions of Acceptance** – BNI committed to complete the following in the first revision of the HLW PSAR following the authorization for full HLW facility construction:

1. Include a complete list of RRC SSCs, with associated safety functions, as committed to in responses to Questions HLW-PSAR-039, -170, -213, -250, -251, and -252. (See Section 4.2.3.2, Item 1.)
2. Update the HLW PSAR to clarify the inclusion of ITS purge air into the spare process lines (concentrate receipt vessel stub out lines), as committed to in response to Question HLW-PSAR-260. (See Section 4.2.3.2, Item 1.)
3. Delete the ABCN proposed addition to HLW PSAR Section 3.4.1.1.2.6, which read, "Subsequent failure of the secondary pipe, should the primary pipe leak, is not eminent (sic) within a reasonable time frame for detection of the primary pipe leak via the cell leak detection system," as committed to in response to Question HLW-PSAR-260. (See Section 4.2.3.2, Item 1.)
4. Perform a confirmatory calculation or other documentation that shows that the design of the melter pour spout drip tray accomplishes the bulk confinement of inadvertent melter pours based on melter experience with similar designs and document the results in the HLW PSAR, as committed to in discussions with DOE. (See Section 4.2.3.2, Item 1.)
5. Revise the appropriate section of Table 4-1 to identify the SDC bulge and SDC lines (primary and secondary) to be consistent with the ABCN text descriptions, as committed to in response to Question HLW-PSAR-260. (See Section 4.2.3.2, Item 1.)
6. Revise the PSAR to state that the secondary piping of the concentrate receipt vessel coaxial containment piping will be routed to the wet process cell, as committed to in response to Question HLW-PSAR-260. (See Section 4.2.3.2, Item 1.)
7. Add the slope requirement for the coaxial containment/spare process piping as an explicit design feature in HLW PSAR Sections 4.3.7.6 and 5.6.2, as committed to in response to Question HLW-PSAR-260. (See Section 4.2.3.2, Item 1.)
8. Revise HLW PSAR Section 5.5 to include draft limiting conditions of operation and surveillance requirements for the melter pour spout drip tray, as committed to in discussions with DOE. (See Section 4.2.3.2, Item 1.)
9. Correct the information in the PSAR on the safety functions of the high-high level interlocks, quality of instrument air, design of the hydrogen mitigation system to meet the single-failure criteria of the SRD, Appendix A, the design of the C5 ventilation system for wind effects, and the seismic qualification (SC-I) of the smoke/fire dampers. This was committed to in responses to Questions HLW-PSAR-051, -098, -120, -184, -189, -190, -228, and -229. (See Section 4.2.3.2, Item 2.)

10. Correct the information in the PSAR on the functional requirements for the canister handling crane and grapple, immobilized HLW cask, impact absorbers, and HEPA filter preheaters, as committed to in responses to Questions HLW-PSAR-023, -058, -059, and -099. (See Section 4.2.3.2, Item 4.)

### Section 4.3.1 PT Facility Description

**Facility Description** – The reviewers concluded that the facility description was conditionally acceptable. In addition, six conditions of acceptance identified in Revision 2 of this SER were completed.

**Conditions of Acceptance** – BNI must complete the following actions and obtain DOE acceptance of the information provided as conditions of acceptance before DOE authorization of PT subsurface pits, tunnels, and basemat structural concrete placement:

1. Develop a structural design evaluation summary table, as committed to in response to Question PT-PSAR-227. (See Section 4.3.1.2, Item 3[b].) (COMPLETE)
2. From the preliminary SSI analysis results, for each wall and horizontal seismic motion, tabulate (a) the in-plane shear force in the direction of the length of the wall, (b) the maximum in-plane shear stress in the direction of the length of the wall, and (c) maximum out-of-plane bending moments, one about the horizontal axis and one about the vertical axis. (See Section 4.3.1.2, Item 3[d].) (COMPLETE)
3. Compare the out-of-plane bending moments in the subsurface walls from the preliminary SSI analysis for the horizontal seismic motions with those from the GTSTRUDL analysis of the PT building. The applied dynamic soil pressure is based on ASCE 4-98, *Seismic Analysis of Safety-Related Nuclear Structures and Commentary*. These were committed to in responses to Questions PT-PSAR-227. (See Section 4.3.1.2, Item 3[d].) (COMPLETE)
4. Modify the design moments and shear forces in calculation report 24590-PTF-DGC-S13T-00002, *Design of Pits, Foundations and Below Grade Walls for PT Building*, using a method similar to that used in the HLW facility design. Include this effect on demand-to-capacity ratios in the structural design evaluation summary. These commitments were provided in the responses to Questions PT-PSAR-227 and -231. (See Section 4.3.1.2, Item 3[d].) (COMPLETE)
5. Include both through-thickness thermal loads and thermal growth loads in design calculations and provide justification for not considering all load combinations, as committed to in responses to Questions PT-PSAR-225, -226, and -227. (See Section 4.3.1.2, Item 3[g].) (COMPLETE)
6. Provide a code requirement interpretation for shear wall design limits that would provide a basis for concluding that the shear forces were acceptable using ACI 349-01, as committed to in response to Question PT-PSAR-227. (See Section 4.3.1.2, Item 4.)

(COMPLETE)

7. Perform a revised seismic SSI analysis based on the revised building layout in which lateral dynamic soil pressure will be calculated directly for a few critical below-grade walls using soil pressure elements in the SASSI model before authorization for full PT facility construction. If soil pressure is not obtained directly from the revised SSI analyses, the SASSI-generated moment results will be used to estimate the lateral dynamic soil pressure. This was committed to in responses to Questions PT-PSAR-224 and -227. (See Section 4.3.1.2, Item 3[d].) (COMPLETE)

BNI must complete the following by the date or milestone indicated:

1. Perform an evaluation of PT internal flooding as part of the common-cause/common-mode failure analysis during ISM Cycle III; identify control strategies for internal flooding events, as necessary, to prevent unacceptable impacts to the safety function of the structure located above the basemat. Before floors are constructed above the basemat, demonstrate, in the flooding assessment, the vulnerability to flooding from internal sources. Where vulnerabilities are detected, provide appropriate mitigation. Provide the results from this analysis to ORP for approval and document them in the first PSAR revision following completion of the hazard analysis. This was committed to in response to Question PT-PSAR-256. (See Section 4.3.1.2, Item 3[f][ii].)
2. Update the SDC UPS description in the PSAR to provide one Plant Protection System division and one respective UPS power division for each redundant SDC division in the PT facility by the first revision of the PSAR following authorization for full facility construction, as committed to in response to Question PT-PSAR-205. (See Section 4.3.1.2, Item 6.)

**Process Description** – The reviewers concluded that the process description was conditionally acceptable.

**Conditions of Acceptance** – BNI must complete the following by the date or milestone indicated:

1. Assess tank waste characterization data and internal WTP process streams including solids particle size distribution and waste solids hardness. Also re-assess requirements selected for erosion/corrosion based on this assessment. Document the results of this assessment in the first revision of the PSAR following authorization for full facility construction. (See Section 4.3.1.2, Item 3.)
2. Perform additional laboratory tests to establish a safe upper limit for nitric acid concentration with new and degraded resin. Complete the laboratory tests and include the evaluation of the results in the PSAR at the time the testing is complete and the control system and ion-exchange column design is finalized, as committed to in response to Question PT-PSAR-025. (See Section 4.3.1.2, Item 9.)

### Section 4.3.2 PT Facility Hazard and Accident Analysis

**Conditions of Acceptance** – BNI must complete the following by the date or milestone indicated:

1. Perform a hazard analysis for water hammer and consider water hammer loads in the design of piping supports in the ISM Cycle III hazard topography process and document the results in the following annual PSAR update, as committed to in response to Question PT-PSAR-276. (See Section 4.3.2.2, Item 1.)
2. Analyze the release rate and ammonia concentration and document the result in the first PSAR revision following authorization for full facility construction, as committed to in response to Question PT-PSAR-199. (See Section 4.3.2.2, Item 1.)
3. Develop and include a basis for the frequency and locations of periodic flushing (if needed) of vent lines to prevent ammonium nitrate buildup and determine the need for inspection ports in the first PSAR revision following authorization for full facility construction, as committed to in response to Question PT-PSAR-290. (See Section 4.3.2.2, Item 1.)
4. Revise discussions in the PSAR pertaining to sampling to eliminate inconsistencies and incorporate administrative controls described in the LAW and HLW sections of the PSAR for sampling required to protect the LAW and HLW facilities in the first PSAR revision following authorization for full facility construction, as committed to in response to Question PT-PSAR-333. (See Section 4.3.2.2, Item 1.)
5. Verify that design features for diluting sodium permanganate are inherent using Revision 0 design media, and if necessary, include an ITS permanganate concentration monitor in the design or a TSR to preserve minimum heel volumes in the first PSAR revision following authorization for full facility construction, as committed to in response to Question PT-PSAR-025. (See Section 4.3.2.2, Item 2.)
6. Revise severity level calculations and DBE calculations to account for  $^{241}\text{Am}$  concentrations at Contract maximum in the first PSAR revision following authorization for full facility construction, as committed to in response to Question PT-PSAR-029. (See Section 4.3.2.2, Item 3.)
7. Incorporate changes to DBE calculations, seismic probabilistic risk analysis, operation risk assessment, and the PSAR resulting from reconfiguration of shear walls to address seismic forces and resizing of HLP system vessels in the first PSAR revision following authorization for full facility construction, as committed to in response to Question PT-PSAR-256. (See Section 4.3.2.2, Item 3.)
8. Revise hydrogen generation rates and severity level analysis in the first revision of the PSAR following authorization for full facility construction to do the following:

- (a) Revise the calculation in 24590-PTF-Z0C-W14T-00002, *Revised Severity Level Calculation for the Pretreatment Facility*, to more conservatively account for the concentration of the nitrate/nitrite ions by using Equation 2-3 from RPT-W375-SA00002, *Topical Report on the Management of Risks Posed by Explosive Hazards Present at the RPP-WTP*. This was committed to in response to Question PT-PSAR-023. (See Section 4.3.2.2, Item 3[a].)
  - (b) Perform all hydrogen generation rate calculations for tanks that could self-boil within 300 hours using a maximum temperature of 220°F and increased activation energy (100 kJ/mole), as committed to in response to Question PT-PSAR-336. (See Section 4.3.2.2, Item 3[a].)
  - (c) Designate hydrogen deflagration events to be SL-1 for all receptors, as committed to in response to Questions PT-PSAR-024 and -028. (See Section 4.3.2.2, Item 3[a].)
  - (d) Evaluate the potential for piping systems and ancillary equipment to accumulate hydrogen as well as potential control strategies, as committed to in response to Question PT-PSAR-289. (See Section 4.3.2.2, Item 3[a].)
  - (e) Finalize calculations to verify that the instrument air supply rate and noncondensed steam conditions are sufficient to keep the evaporators below 25% of the lower flammability limit in the offgas systems, as committed to in response to Question PT-PSAR-293. (See Section 4.3.2.2, Item 3[a].)
9. Develop administrative controls during ISM Cycle III to prevent hydrogen buildup in vessels containing low liquid levels when pulse jet mixers are automatically stopped and document the results in the FSAR, as committed to in response to Question PT-PSAR-294. (See Section 4.3.2.2, Item 3[a].)
  10. Correct calculation errors documented in Questions PT-PSAR-023, -042, -199, -258, and -259, as committed to in response to these questions in the first revision of the PSAR following authorization for full facility construction. (See Section 4.3.2.2, Item 3[a].)
  11. Reconsider the need for the emergency elution system in the first revision of the PSAR following authorization for full facility construction, as committed to in response to Question PT-PSAR-025. (See Section 4.3.2.2, Item 3[b].)
  12. Delete references to target frequencies in the first revision of the PSAR following authorization for full facility construction, as committed to in response to Questions PT-PSAR-051, -052, -055, -125, -127, and -211. (See Section 4.3.2.2, Item 4.)
  13. Evaluate the flooding hazard for ITS equipments (both electrical and mechanical) as part of the hazard topography evaluation scheduled during ISM Cycle III and document results in the PSAR annual updates, as committed to in response to Question PT-PSAR-256. (See Section 4.3.2.2, Item 5.)

14. Address failure of the temperature control system or a steam supply valve in the ultrafiltration feed tank in the DBE boiling calculation in the first revision of the PSAR following authorization for full facility construction, as committed to in response to Question PT-PSAR-198. (See Section 4.3.2.2, Item 6[a].)
15. Develop a separate tank bump DBE analysis and document the results in the first revision of the PSAR following authorization for full facility construction, as committed to in response to Question PT-PSAR-098. (See Section 4.3.2.2, Item 6[a].)
16. Include the revised DBE analysis for leaks in the transfer line between the tank farms and the PT facility in the first revision of the PSAR following authorization for full facility construction, as committed to in response to Question PT-PSAR-055. (See Section 4.3.2.2, Item 6[a].)
17. Document that shield doors and hatches will be required to fail in their last position on a seismic event. This information and necessary revisions to seismic qualification of these interlocks shall be incorporated in the first revision of the PSAR following authorization for full facility construction, as committed to in response to Question PT-PSAR-003. (See Section 4.3.2.2, Item 6[b][viii].)
18. Revise Table 3A-27 of the PSAR to reflect that the volume of the overflow collection vessels and the hot cell pit are sufficient to contain the overflow for the time required to implement emergency procedures to stop all transfers. This must be done in the first revision of the PSAR following authorization for full facility construction, as committed to in response to Question PT-PSAR-003. (See Section 4.3.2.2, Item 6[b][viii].)
19. Revise the PSAR to reflect that the cask and sealed metal container placed in the cask would provide two physical barriers credited to mitigate the consequences of a load drop in the truck bay. This must be done in the first revision of the PSAR following authorization for full facility construction, as committed to in response to Question PT-PSAR-074. (See Section 4.3.2.2, Item 8.)
20. Add a description of redundant chilled water booster pumps and associated ITS instrumentation and controls to the cooling water supply header for the cesium and technetium in line heat exchangers to meet the required design criterion to have cooling water pressure greater than vessel pressure. This must be done in the first revision of the PSAR following authorization for full facility construction, as committed to in response to Question PT-PSAR-042. (See Section 4.3.2.2, Item 8.)
21. Correct SSC descriptions and inconsistencies in the PSAR, referenced drawings, and DBE calculations in the first revision of the PSAR following authorization for full facility construction, as committed to in response to Questions PT-PSAR-270, -271, and -275. (See Section 4.3.2.2, Item 9.)

## PT Important-to-Safety SSCs

**Conditions of Acceptance** – BNI must complete the following by the date or milestone indicated:

1. Identify RRC SSCs and correct the list of identified RRC SSCs in the first PSAR revision following authorization for full facility construction, as committed to in response to Questions PT-PSAR-239 through -242. (See Section 4.3.3.2, Item 1.)
2. Include a complete list of RRC SSCs with associated safety function in the first PSAR revision following authorization for full facility construction, as committed to in response to Questions PT-PSAR-239 through -242. (See Section 4.3.3.2, Item 2.)
3. Confirm in a DBE calculation that water-saturated air caused by a break in the evaporator steam line will be mixed with enough dry air from other C5 cells before it reaches the primary C5 ventilation system filters to preclude exceeding moisture limitations or propose alternate controls. This will be done in the first revision of the PSAR following authorization for full facility construction, as committed to in response to Question PT-PSAR-287. (See Section 4.3.3.2, Item 4.)
4. Evaluate use and proper sizing of the bulge vent line to supplement drain capacity as part of the PSAR control strategy to provide bulge drains before bulge procurements are complete, as committed to in response to Question PT-PSAR-297. (See Section 4.3.3.2, Item 4.)
5. Update the PSAR to be consistent with DBE calculation report 24590-PTF-Z0C-10-00005, *Design Basis Event – Pretreatment Loss of Contamination Control*, to specify redundant radiation monitors and interlocks for minimizing contamination in the evaporator/condensate systems in the first revision of the PSAR following authorization for full facility construction, as committed to in response to Question PT-PSAR-008. (See Section 4.3.3.2, Item 5.)
6. Analyze the potential effects on ventilation and air-cleaning SSCs of common-cause external events, such as volcanic ashfall, and document the results in the first PSAR revision following completion of the analysis, as committed to in response to Question PT-PSAR-257. (See Section 4.3.3.2, Item 5.)

## Section 4.4.1 BOF Facility Description

### Facility Description

**Conditions of Acceptance** – BNI must complete the following actions in the first PSAR revision following authorization for full facility construction:

1. As discussed in Section 4.4.1.2, Facility Description, Item 6:

- (a) Provide the electrical design basis for the ITS electrical ductbank, as committed to in response to Question BOF-PSAR-007.
- (b) Clarify the design basis for ITS monitoring and control circuits in the ITS electrical ductbank, as committed to in response to Question BOF-PSAR-006.
- (c) Provide a description of the system for starting EDGs, as committed to in response to Question BOF-PSAR-008.

### **Process Description**

**Conditions of Acceptance** – BNI must complete the following actions in the first PSAR revision following authorization for full facility construction:

- 1. Describe application of the single failure criterion to the nitric acid monitor as committed to in response to Question BOF-PSAR-005. (See Section 4.4.1.2, Process Description, Item 6.)
- 2. Delete the ITS sodium permanganate monitor as committed to in response to Question BOF-PSAR-005. (See Section 4.4.1.2, Process Description, Item 7.)

### **Section 4.4.2 BOF Hazard and Accident Analysis**

**Conditions of acceptance** – BNI must complete the following actions in the first PSAR revision following authorization for full facility construction:

- 1. Correct CSD and safety case requirement identification numbers in the PSAR and referenced documents, as committed to in response to Question BOF-PSAR-010. (See Section 4.4.2.2, Item 1.)
- 2. Analyze the potential effects of a design basis ashfall event and provide controls, as committed to in response to Question PT-PSAR-204. (See Section 4.4.2.2, Item 1.)

### **Section 4.4.3 BOF Important-to-Safety SSCs**

**Conditions of Acceptance** – BNI must complete the following action in the first PSAR revision following authorization for full facility construction:

- 1. Correct RRC SSC identification errors between Volume II, IV, and V of the PSAR, as committed to in response to Question BOF-PSAR-016. (See Section 4.4.3.2, Item 1.)

## Section 4.6 Safety Basis/Conformance with Facility Risk Goals

**Conditions of Acceptance** – BNI must complete the following actions by the date or milestone indicated:

1. Complete the seismic probabilistic risk analysis, demonstrating compliance to the risk goals of SRD Safety Criteria 1.0-3, 1.0-4, and 1.0-5 (excluding the Analytical Laboratory). This must be completed before authorization for full facility construction. (COMPLETE) (See Section 4.6.2, Item 1.)
2. Include in the first PSAR revision following authorization for full facility construction, a table of risk dominant events for the LAW facility, as committed to in response to Question LAW-PSAR-168. (COMPLETE) (See Section 4.6.2, Item 2.)
3. Update the operations risk assessment to document a fully integrated facility-wide analysis that would include LAW, HLW, and PT before full facility construction authorization, as committed to in response to Question HLW-PSAR-206. (COMPLETE) (See Section 4.6.2, Item 2)
4. Document the results from the integrated seismic probabilistic risk analysis and operations risk assessment in the PSAR in the first revision of the PSAR following authorization for full facility construction. (See Section 4.6.2, Items 1 and 2.)

## Section 6.3.2 SRD and ISMP Acceptability and Compliance

**Conditions of Acceptance** – BNI must complete the following by the date or milestone indicated:

1. BNI will implement the corrective actions specified in Attachment 2, "Assessment of the Effect of Design Process Implementation Issues on Construction Authorization Readiness," to the BNI letter dated October 30, 2002.<sup>8</sup> These corrective actions must be completed by the dates provided in the letter. (See Section 6.3.2, Item 1.)
2. BNI will perform a thorough assessment of the effectiveness of the engineering work performance improvement initiatives for all disciplines performing engineering design work, submit the assessment results, and identify any additional corrective actions deemed necessary before the first revision of the PSAR following authorization for full facility construction. (Section 6.3.2, Item 1.)
3. Update PSAR Volume I, *General Information*; Table 2-6, "Categorization of Piping"; Section 2.4.9, "Piping Design"; and Section 2.4.10, "Pipe Support Design," to be consistent with the SRD implementing standards for piping and pipe support design in

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<sup>8</sup> CCN: 042775, BNI letter from A. R. Veirup to R. J. Schepens, ORP, "Hanford Tank Waste Treatment and Immobilization Plant – Construction Authorization Readiness in Consideration of Recent Assessments and Inspections of Engineering Activities," dated October 30, 2002.

the first revision of the PSAR after full facility construction authorization, as committed to in response to Question PT-PSAR-339. (See Section 6.3.2, Item 3[b].)

4. As a condition on the construction, BNI must retain the option to design and install automatic fire suppression for the affected areas and is not authorized to construct SSCs that implement control strategies that are inconsistent with meeting the current SRD requirements. This condition of acceptance excludes nine rooms in the HLW building, (per revised SRD Safety Criterion 4.5-4 and 24590-WTP-ABAR-ESN-03-008, *Modification of SRD Safety Criterion 4.5-4 to Allow Omission of Automatic Fire Suppression Systems from High Radiation Areas*. (See Section 6.3.2, Item 3[h].)