



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

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

SEP 01 2006

06-WTP-093

Mr. W. S. Elkins, Project Director  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Dear Mr. Elkins:

CONTRACT NO. DE-AC27-01RV14136 – U.S. DEPARTMENT OF ENERGY (DOE),  
NOTICE TO PROCEED WITH WASTE TREATMENT AND IMMOBILIZATION PLANT  
(WTP) CONSTRUCTION ACTIVITIES

References: See Attachment 1

Bechtel National, Inc. (BNI) is authorized to continue with construction of the Hanford WTP. Following detailed review of the updated Preliminary Safety Analysis Report provided to the DOE Office of River Protection (ORP) in References 1 and 2, ORP has determined that BNI has the programs and processes in place for successful project execution of these activities, as summarized in Reference 3. 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. BNI is reminded that several of the Conditions of Approval (COA) in the Construction Authorization Agreement (CAA) (attached) are particularly significant in their potential to affect the cost or schedule of the final design. These COAs are Preliminary Safety Analysis Report Update Items 5, 6, 16, 18, 22, 26, 28, 34, 43, and 45c, as well as open Authorization Basis Amendment Request (ABAR) Items for ABARs 03-1144 (#3) and 04-90. The specific scope of work associated with this construction has been agreed to by BNI and ORP and is described in the attached CAA. 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 3, dated July 31, 2006.

All construction activities previously authorized in References 4 through 8 for the WTP Low-Activity Waste, High-Level Waste, Pretreatment, Analytical Laboratory, and the Balance of Facilities structures and systems continue to be authorized.

Mr. W. S. Elkins  
06-WTP-093

-2-

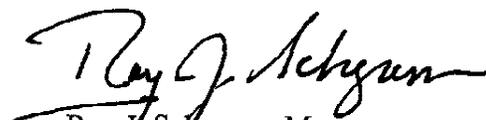
SEP 01 2006

A COA has been added to the CAA that requires each of the COA hazard and accident analyses to be completed by the Contractor and submitted to and approved by ORP before construction or procurement of the affected important to safety systems, structures, and components, or the schedule date, whichever comes first. To avoid undue impacts to the WTP project, a period of 30 days from issuance of this CAA is allowed for BNI to either place any affected procurement or construction activities on hold, or to issue a Decision to Deviate, as allowed by RL/REG-97-13.

Construction work shall be performed in accordance with Contract DE-AC27-01RV14136. The authorization basis for the construction phase remains as described in the attached CAA, 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 11.

If you have any questions, please contact me, or your staff may call Lewis F. Miller, Jr., WTP Safety Authorization Basis Team Leader, (509) 376-6817.

Sincerely,



Roy J. Schepens, Manager  
Office of River Protection

WTP:LFM

Attachment

cc w/attach:  
BNI Correspondence

**ATTACHMENT**

**Reference List**

**06-WTP-093**

WTP:LFM  
July 12, 2006

Attachment 1  
06-WTP-093

### Reference List

1. BNI letter from J. P. Henschel to R. J. Schepens, ORP, "2005 Preliminary Safety Analysis Report Volume I, General Information Update," CCN: 135326, dated March 27, 2006.
2. BNI letter from J. P. Henschel to R. J. Schepens, ORP, "2005 Preliminary Safety Analysis Report Volume II Through VI Update," CCN: 135323, dated March 31, 2006.
3. ORP letter from R. J. Schepens to W. W. Elkins, BNI, "Safety Evaluation Report (SER) for the Hanford Waste Treatment and Immobilization Plant (WTP) Preliminary Safety Analysis Report (PSAR) Update," 06-WTP-091, dated August 16, 2006.
4. ORP letter from R. J. Schepens to J. P. Henschel, BNI, "U.S. Department of Energy (DOE) Notice to Proceed with Analytical Laboratory Construction Activities," 04-WTP-171, dated July 29, 2004.
5. ORP letter from R. J. Schepens to R. F. Naventi, BNI, "U.S. Department of Energy (DOE) Notice to Proceed with Pretreatment Construction Activities," 03-OSR-0021, dated March 17, 2003.
6. 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.
7. 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.
8. 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.

06-WTP-093  
ORP/OSR-2003-01  
Revision 3

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



July 31, 2006

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

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

*Roy J. Schepens*  
Roy J. Schepens

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

*9/1/06*

## 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 and Immobilization 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 WTP project.

A key element of the WTP is DOE regulation of safety. 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 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.

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, ORP.

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.



**Table of Contents**

1.0 PURPOSE.....1  
2.0 SCOPE OF THE AUTHORIZATION AGREEMENT.....1  
3.0 DOE BASIS FOR APPROVAL.....2  
4.0 AUTHORIZATION BASIS .....4  
5.0 TERMS AND CONDITIONS .....5  
6.0 CONTRACTOR QUALIFICATION .....6  
7.0 AGREEMENT.....7

**Appendix**

APPENDIX – CONDITIONS OF ACCEPTANCE.....8

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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
- Full facility construction of the Balance of Facility (BOF) systems and structures:
- Full facility construction of the Analytical Laboratory

In addition, the activities currently authorized by Revision 1 (March 17, 2003) and Revision 2 (July 29, 2004) of the Construction Authorization Agreement, 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) and Authorization Basis Amendment Requests (ABARs) that have been approved.
  - 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.*
- 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 and Immobilization Plant (WTP) Construction Authorization, Revision 3*, dated March 17, 2003. The approval of the CARs was subject to the conditions described in Appendix B of ORP/OSR-2002-18.

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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.

- Review and approval of updates to Volumes I through V of the *Preliminary Safety Analysis Reports to Support Construction Authorization*, as documented in ORP/OSR-2003-22, *Safety Evaluation Report for Waste Treatment Plant (WTP) Preliminary Safety Analysis Report (PSAR) Update*, Revision 0, dated January 29, 2004. The approval of the PSAR update was subject to the conditions described in Appendix B of ORP/OSR-2003-22.
  - Review and approval of 24590-WTP-PSAR-ESH-01-002-06, *Preliminary Safety Analysis Report to Support Construction Authorization: Lab Facility Specific Information*, Revision C, as documented in ORP/WTP-2004-02, *Safety Evaluation Report for Waste Treatment and Immobilization Plant (WTP) Analytical Laboratory Construction Authorization*, Revision 0, dated July 29, 2004. The approval of the analytical laboratory construction authorization was subject to the conditions described in Appendix B of ORP/WTP-2004-02.
  - Review and approval of updates to Volumes I through VI of the *Preliminary Safety Analysis Reports to Support Construction Authorization*, as documented in ORP/WTP-2006-06, *Safety Evaluation Report for Waste Treatment Plant (WTP) Preliminary Safety Analysis Report (PSAR) 2006 Update*, Revision 0, dated July 31, 2006. The approval of the PSAR update was subject to the conditions described in Appendix B of ORP/WTP-2006-06, Revision 0.
- 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*.

Before issuing the Construction Authorization Agreements for the LAW, HLW, PT, and BOF, ORP conducted the following readiness inspections of the Contractor:

- Construction Authorization Request Readiness Inspection (A-03-OSR-RPPWTP-002) performed November 4-7, 2002. This readiness review covered LAW and HLW full facility construction, PT facility pits, tunnels, and basemat, and selected portions of the BOF.
- Pretreatment Facility Construction Authorization Readiness Inspection Report (A-01-OSR-RPPWTP-011) performed March 3-13, 2003. This readiness review covered PT full construction.

Both readiness inspections assessed completion of corrective actions that had been identified during earlier ORP inspections and concluded that implementation of the corrective actions was adequate to support construction authorization for these portions of the WTP.

The following construction authorization request readiness inspection was also conducted prior to issuing this Construction Authorization Agreement for construction of the analytical laboratory to verify readiness for construction:

- Inspection Notes (A04AMWTP-RPPWTP-003-10) performed March 1 - June 30, 2004. This inspection covered the BNI Management Assessment of Lab Construction Readiness.

The reviewers observed selected aspects of the BNI management assessment of readiness to commence laboratory construction. The observations included preparatory meetings prior to the management assessment to determine the assessment scope, attendance at meetings during the assessment to understand developing issues, thorough critique of the draft report, and review of the final report. No concerns were identified with the assessment, which had adequate scope to ensure that BNI was ready to commence construction of the facility. Based on these observations, the reviewers concluded that BNI was ready to commence analytical laboratory construction, once a construction authorization was issued.

#### **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 form 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 July 19, 2006 using the authorization basis amendment process.
- b. Integrated Safety Management Plan (ISMP), 24590-WTP-ISMP-ESH-01-001, Rev. 3. (The ISMP was substantially revised by ABAR 24590-WTP-SE-ENS-02-001, which incorporated its substantive provisions into Volume I of the PSAR. This ABAR was approved by ORP on May 28, 2003 [ORP approval letter 03-OSR-0178]).
- c. Quality Assurance Manual (QAM), 24590-WTP-QAM-QA-01-001, Rev. 6, dated August 1, 2005.
- d. Radiation Protection Program for Design and Construction (RPP), 24590-WTP-RPP-ESH-01-001, Rev. 0, dated December 11, 2001.
- 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. 2, dated March 23, 2006. (Volume I)
  - 24590-WTP-PSAR-ESH-01-002-02, *Preliminary Safety Analysis Report to Support Construction Authorization; PT Facility Specific Information*, Rev. 2, dated March 31, 2006. (Volume II)

- 24590-WTP-PSAR-ESH-01-002-03, *Preliminary Safety Analysis Report to Support Construction Authorization; LAW Facility Specific Information*, Rev. 2, dated March 31, 2006. (Volume III)
- 24590-WTP-PSAR-ESH-01-002-04, *Preliminary Safety Analysis Report to Support Construction Authorization; HLW Facility Specific Information*, Rev. 2, dated March 31, 2006. (Volume IV)
- 24590-WTP-PSAR-ESH-01-002-05, *Preliminary Safety Analysis Report to Support Construction Authorization; Balance of Facility Specific Information*, Rev. 2, dated March 31, 2006. (Volume V)
- 24590-WTP-PSAR-ESH-01-002-06, *Preliminary Safety Analysis Report to Support Construction Authorization; Lab Facility Specific Information*, Rev. 1, dated March 31, 2006. (Volume VI)

## 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 PSAR Volume I, Section 17.5.3.1, "External Interfaces," which describes BNI's implementation of the DOE corrective actions and enforcement actions program.
- 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 complete the conditions of acceptance identified in the Appendix to this Agreement on the schedule therein.

- g. 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) updated Conditions of Acceptance (COAs) during review of the updated PSARs and of the status of open ABAR COAs. Open COAs following review of the PSAR updates were shown in Appendix B of the Safety Evaluation Report, ORP/WTP-2006-06, *Safety Evaluation Report for Waste Treatment and Immobilization Plant (WTP) Preliminary Safety Analysis Report (PSAR) 2006 Update*, issued July 31, 2006. Open ABAR COs following review of the PSAR updates were shown in Appendix D of the same report. All of the open COAs are part of the Construction Authorization Agreement and must be completed by the Contractor as part of the construction authorization process. Following review of Revision 2 of the PSAR update, 37 COAs remained open while 13 new COAs were generated during the review. All 50 open PSAR update COAs have been renumbered sequentially to simplify tracking. The open ABAR COAs retain their ABAR numbers.

As noted in the SER, the basis for approval of these schedule changes typically was that the incomplete hazard evaluation or accident analysis can still be completed by the Contractor and submitted to ORP and approved before the commencement of construction or procurement of the affected ITS SSCs. (A few COAs have a different basis for extension, which was described in the SER.) To ensure that construction or procurement does not commence without an acceptable preliminary hazard and accident analysis for the preliminary design of the affected SSCs, the following COA applies to this CAA:

1. Each of the COA hazard and accident analyses must be completed by the Contractor and submitted to and approved by ORP before construction or procurement of the affected ITS SSCs, or the schedule date, whichever comes first. The schedule for these submittals and approvals, if different than indicated in the text, must be formally changed using the change process described in the Construction Authorization Agreement.<sup>4</sup>

### General Open COA

During review of this PSAR update, the reviewers focused on determining whether the Contractor had acceptably updated Chapter 2, Facility Description, of the PSAR to describe the ITS SSCs identified in Chapters 3, 4, and 5 of the PSAR. Deficiencies were noted for four of the five facility specific volumes of the PSAR. As such, the following COA was generated to track this deficiency:

2. By December 31, 2006, the Contractor will add the following descriptions to Chapter 2 of missing SC, SS, APC SSCs and design features listed in Chapters 3, 4, and 5 and described in Appendix A of the respective PSARs.
  - (a) PT Facility – No SC, SS, or APC SSCs were identified as missing.

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<sup>4</sup> Section 5.0, Item (b), ORP/OSR-2003-01, *Construction Authorization Agreement Between the U. S. Department of Energy Office of River Protection and Bechtel National, Inc.*

(b) LAW Facility

(1) The Contractor will add the following SS, APC, design features, and NFPA 13 descriptions to Chapter 2:

- SS
  - The Contractor will add the following text after the first sentence of Section 2.5.4.2.2, “Exhausters”: “Each exhauster train has a backflow prevention damper to prevent recirculation loops within the system.”
  - The Contractor will list the following additional interlocks in Section 2.5.3.3, “Melter Feed”:
    - Low level in the associated submerged bed scrubber (SBS) vessel
    - High SBS condensate temperature
    - Low differential temperature from the offgas/vessel vent and the filter train inlet.
  - The Contractor will modify the second bullet in the list of interlocks in Section 2.5.4.1.2, “Submerged Bed Scrubbers,” to the following: “interlocks activated by low liquid levels in the SBS. One interlock will stop the SBS purge pumps, while another will isolate the plant service air supply to the ADS pumps that feed the melter from the LFP system, stopping feed to the melter.”
  - The Contractor will add a bullet to Section 2.5.4.2.4, “Catalytic Oxidizer and Selective Catalytic Reduction,” that states the following: “An interlock activated by high melter plenum pressure. This interlock will isolate the ammonia and C3 air feeds.”
- APC
  - The Contractor will add the following text to the second paragraph in Section 2.8.2, “Uninterruptible Power”:  
“Each UPS includes a battery charger, an inverter, a static output transfer switch, and a bypass circuit. The batteries are sized to provide 2 hours of service, to eliminate the need to sequence the exhausters. The battery type is valve regulated lead acid, due to its low maintenance requirement and low amount of gas evolution.”
  - The Contractor will add following text after the first sentence of the second paragraph in Section 2.6.5, “C5

Ventilation System (C5 V)": "Architectural doors, shield doors, and shield windows that are installed along the C5 confinement boundary are considered to form part of that confinement boundary."

- The Contractor will add the following text to the second paragraph in Section 2.6.5, "C5 Ventilation System (C5 V)": "It is also noted that CDG ductwork and fan/filter housings that are not enclosed in a C5 area also form part of the C5 confinement boundary."
- The Contractor will add the crane designations to the bulleted list in Section 2.5.6, "LAW Melter Equipment Support Handling System (LSH)."
- The Contractor will add the following text to the end of the first sentence of Section 2.5.8, "Radioactive Solid Waste Handling System (RWH)": "... using a process area bridge crane (RWH-CRN-00008)."
- In Section 2.5.2, "LAW Concentrate Receipt Process System (LCP), Glass Formers Reagent System (GFR), and LAW Melter Feed Process System (LFP)," the Contractor will replace the text, "The radiological source inventory for LAW is controlled at the PT, as described in Section 3.3.2.1.1 of this volume" of the LAW PSAR with "The radiological source inventory for LAW concentrate transferred to LAW is controlled at the PT. Transfer of out-of-specification LAW concentrate from the PT treated LAW concentrate vessel in the PT facility to the LAW facility is prevented by a gamma monitor activated isolation valve in the transfer line. In addition, transfer of high dose rate material to the treated LAW Collection Vessels in the PT which feeds into the treated LAW concentrate vessel is prevented by a gamma monitor interlocked to an isolation valve and the cesium ion exchange column feed pumps at the PT facility. See the PT facility volume for additional descriptive information."
- Design Features
  - The Contractor will add the following text after the third sentence of Section 2.4.2, "Categorization of Structures, Systems, and Components": "The LAW facility structural element NPH requirements are based on safeguarding an overall safety function relative to chemical hazards (a melter offgas release), while some specific structural

elements, namely the steel I beam structure above the LOP piping and vertical posts above the process and effluent cells, are relied upon to provide protection of specific portions of the melter offgas system from impact hazards.”

- The Contractor will add the following text to the end of Section 2.5.4.2.3, “Mercury Adsorbers,” of the LAW PSAR: “The design and configuration of the mercury abatement skid minimizes the potential backflow of oxygen into the carbon adsorbers from the secondary offgas header when the adsorber inlets are isolated.”
- The Contractor will insert the following text before the last sentence of the second paragraph of Section 2.5.9, “Liquid Effluent System (RLD and NLD)”: “The routing of the SBS water purge lines from the SBS vessels to the SBS condensate collection vessel is designed to preclude potential siphoning of the SBS liquid contents in the event of purge line failure.”
- The Contractor will add the following text to the end of Section 2.5.3.3, “Melter Feed”: “The melter feed system is configured to prevent a sustained siphoning of feed slurry into the melters. This configuration includes line sizing, the use of elevated routing, and the configuration of the feed pumps.”
- The Contractor will add the following text to the end of the 5th paragraph of Section 2.5.4.2.4, “Catalytic Oxidizer and Selective Catalytic Reduction” (following “...maintained below a predetermined setpoint by the orifice size for the pressure regulator on the ammonia supply”): “to ensure releases to the stack will not exceed applicable limits.”
- The Contractor will add the following text to the end of Section 2.9.4, “High Pressure Steam System (HPS)”: “The HPS system enters the building in a 6 in. diameter pipe at the +48 ft. elevation in the southwest corner. The main supply line runs east through the length of the building in the corridor between the secondary offgas room and the ITS battery rooms to room L-0305, which houses the C2V supply air handling units. In room L-0305, the HPS enters a letdown station, which forms the transition from HPS to LPS. Temperature and pressure instrumentation in room L-0305 is associated with an interlock that can isolate the HPS steam supply in the event that a significant steam release is detected.”

- NFPA 13
    - The Contractor will replace the text in Section 2.7.4.3, “Automatic Fire Suppression Systems,” with the following text: “The automatic fire suppression systems in the LAW building are primarily wet-pipe sprinkler systems designed in accordance with NFPA 13, with the exception of specific facility areas which will not have these systems, as described in Appendix K of SRD Volume II.”
- (c) HLW Facility
- (1) The Contractor will add the following SS, APC, design features, and NFPA 13 descriptions to Chapter 2:
- SS
    - Melter overpacks (discussed in Section 5.6.13; add to Section 2.5.7.1)
    - Ammonia piping (discussed in Section 5.6.26; add to Section 2.5.3.2)
    - Carbon monoxide monitoring in Section 2.5.3.2. Section 2.5, “Process Description,” discusses level monitoring for some systems to clarify that vessel normally have high level monitoring.
    - High level interlocks. Section 2.5 discusses level monitoring for some systems to clarify that vessel normally have high level monitoring. The following statement will be added as Section 2.4.18.1.11, “High Level Interlocks”: “Vessel typically has level monitoring which may be interlocked to the control systems to prevent overfilling the vessel. In many cases there is a high level and a high-high level detection/alarm point to facilitate operational control.”
    - Canister cask and waste drum cask, Sections 2.4.11.9, “Container Storage Transfer Tunnel and Future Canister Storage Link Tunnel, H-B037B, H-B037C”; 2.4.11.10, “Cask (Canister) Handling Tunnel, H-B033B”; 2.4.11.11, “Drum Transfer Tunnel, H-B015, and Bogie Maintenance, H-B029A”; 2.4.11.12, “Cask (Drum) Transfer Tunnel and Import/Export Area, H-B028, H-B028A”; 2.4.12.7, “Canister Export Truck Bay, H-0127”; 2.5.4.4, “Canister Storage and Export”; and 2.5.7, “Solid Waste Handling Systems.”

- APC
  - Section 2.4.20.7, “Drum Equipment”
  - A HEPA filtered vent on the melter overpack
  - Deflector plate and bogie seismic restraints, Section 2.4.20.4, “Bogie”
  - Purpose of cable troughs is to prevent the spread of contamination, Section 2.4.20.1, “Cranes and Hoists.”
- Design Features
  - Clarification of transfer piping design (discussed in Section 5.6.7, “Concentrate Transfer Piping”; add to Section 2.4.11.1, “Wet Process Cell, H-B014 and H-B013”)
  - Melter overpacks (discussed in Section 5.6.13, “Melter Overpack and the Motive Force to Load the Overpack onto the Transporter”; add to Section 2.5.7.1, “Waste Container Packaging”)
  - Filter vents in waste container (discussed in Section 5.6.22, “Filtered Vent in Waste Containers”; add to Section 2.5.7.1)
  - Melter cave steel form deck (discussed in Section 5.6.24, “Melter Cave Steel Form Deck”; add to Section 2.4.3, “Design Loads”)
  - Ammonia piping (discussed in Section 5.6.26, Ammonia Supply Piping”; add to Section 2.5.3.2, “High Level Interlocks”).
- NFPA 13
  - Discussion of areas where fire sprinklers are not included.

(d) BOF

- (1) The Contractor will add the following SC description of the ITS cable system to Section 2.8.4, “Emergency Power, ITS” under the subsection, “Electrical Duct Bank”: “ITS electrical cable is used to connect the ITS power supply systems and associated ITS loads. Electrical cable is run underground within ductbanks from the EDGs to the ITS switchgear buildings, and from the ITS switchgear buildings to the PT and HLW facilities.”

- (2) The Contractor will add discussion of two SS systems – vaporizer overpressure-prevention components and ammonia vessels’ high-pressure interlocks – to Section 2.9.17, “Anhydrous Ammonia Facility,” to include features consistent with Table 3A-5, “Balance of Facility Additional Protective Class Systems,” Tables 4A-2, “Summary of Safety Significant SSCs,” and Table 5A-2, “Passive Design Features,” as follows: “Safety features of the ammonia system include emergency shutoff valves, ammonia overflow-prevention components, fittings, bleed device orifice, pressure relief valves, piping anchorage for the ammonia-fill-hose coupling, vaporizer overpressure prevention components, vessel high level interlocks, and vehicle impact barriers.”
  - (3) The Contractor will add discussion of the following APC systems to Chapter 2: (1) normal power components that prevent internal power failures from activating the ITS emergency power system, (2) ammonia vessel pressure relief devices, (3) the concrete retaining wall associated with the earthen berm around the ammonia tanks, (4) ITS switchgear facility fire sprinkler piping heads located near ITS equipment that is vulnerable to failure due to wetting, and (5) post- accident monitoring.
  - (4) The Contractor will add discussion of the passive design feature, physical separation between ITS switchgear trains, to Section 2.8.4, “Emergency Power, ITS” and will add discussion of the following passive design features to Section 2.9.17, “Anhydrous Ammonia Facility”: (1) orifice in ammonia feed-line bleed device, (2) pressure valve relief lines (for ammonia), (3) ammonia fill and return line fittings incompatible with each other, (4) truck unloading area grading to prevent a fuel spill from reaching ammonia storage vessels, and (5) concrete retaining wall associated with earthen berm.
- (e) Analytical Laboratory
- (1) The Contractor will add discussion of the following APC systems to Chapter 2: (1) light fixtures in hotcell bay corridor (A-0141), the C5 HEPA filter room (A-0166), and the C5 pump maintenance area (A-167); (2) C3 duct supports in hotcell bay (A-0141) and C5 pump maintenance area (A-0167); (3) C2 ductwork supports in the C5 filter room (A-0166); (4) electrical power distribution SSCs, including UPS, that serve APC loads; and (5) PT control room controls and indications.

## **Facility Specific COAs**

### **Volume I – General Information Open COAs**

### **Section 3.1 – Site Characterization**

3. (a) By December 31, 2006, the Contractor will change the safety designations for SSCs to SC, SS, or APC in Section 4.4, “Safety Significant SSCs,” Section 8.6, “‘Hazardous Material Exposure Control,’ Table 17-1, ‘Key Activities Related to Safety – Design Phase,’ and Table 17-2, ‘Key Activities Related to Safety – Fabrication and Construction Phase’; and (b) by the next PSAR update, the Contractor will change the safety designations for SSCs in Table 1-8, ‘WTP Seismic Categorization,’ and Section 3.3.8, ‘Classification of SSCs,’ to SC, SS, or APC.” (new COA resulting from review of Revision 2 of the PSAR)

### **Section 3.2 – Facility Description**

4. By December 31, 2006, the Contractor must revise Volume I, 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 SC-III and -IV piping and pipe supports carrying nonchemical fluid (was COA #3 in ORP/OSR-2002-18, Rev. 3, Appendix B).

### **Section 3.3 – Hazard and Accident Analyses**

5. The Contractor must revise the analytical laboratory ORA as follows:
  - (a) [Closed in SER ORP/WTP-2006-06, Rev. 0]
  - (b) As a result of the known and anticipated changes in the WTP that have occurred or will occur prior to the next PSAR update, requantify the ORA and submit the results of the requantification prior to the next revision of the laboratory PSAR in December, 2005. If, after development of the process in Item 1, an assessment determines that requantification is not likely to conclude that the risk goals for the WTP may be exceeded, BNI may request a delay in the requantification. This COA was rewritten as follows:

“Complete requantification of the ORA for all facilities by June 1, 2007, to reflect changes to the design implemented prior to December 31, 2006.”
  - (c) [Closed in SER ORP/WTP-2006-06, Rev. 0]

### **Section 3.6 – Criticality**

6. The Contractor must complete the following by the date indicated (new COA resulting from review of Revision 2 of the PSAR):

- (a) By August 31, 2006, the Contractor will provide a letter to ORP with additional information explaining why sampling of waste feed before processing is needed to address the effects of washing and caustic leaching.
- (b) By December 31, 2006, the Contractor must complete the following in the revision of the CSER:
- Provide an explanation of how the wash/leach sampling analysis is performed
  - Provide an explanation of why wash/leach sampling analysis is reliable and operationally feasible
  - Include an analysis of the subcritical limits for fissile material accumulation in the IX columns and CNP evaporator
  - Include an analysis of the maximum fissile material accumulation under hazardous conditions in the IX columns and CNP evaporator
  - Include additional explanation of the sampling control strategy for limiting fissile material accumulations in the Cs removal system
  - Include additional information on the range of moderation and neutron absorption in the IX columns and CNP evaporator
  - Include additional information on the probability that waste feed will not be acceptable for processing
  - Include additional information on the need for a fission gas detection system
  - Revise CSL 8.1.2 so that it satisfies SRD Safety Criterion 3.3-2
- (c) By the next PSAR update, the Contractor must include a formal criticality safety hazard evaluation to support the contingency analysis in Section 7.0.

### **Section 3.7 – Radiation Protection**

The Contractor must include the following provisions in the radiological control program. These provisions must be provided with the FSAR, except for item #8:

7. The Contractor must provide a detailed organizational chart that shows the radiation safety organization and its relationship to senior plant personnel and other line managers; also, the Contractor must provide job descriptions defining specific authorities and responsibilities of radiation safety personnel (was COA #1 in ORP/OSR-2002-18, Rev. 3, Appendix B).

8. The Contractor must specify the review and revision cycle of procedures and provide that information to ORP before the start of the preoperational testing phase (was COA #2 in ORP/OSR-2002-18, Rev. 3, Appendix B).
9. The Contractor must describe the mechanism for ensuring that RWPs are not used past their termination dates (was COA #3 in ORP/OSR-2002-18, Rev. 3, Appendix B).
10. The Contractor must 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 enunciators and alarms (was COA #4 in ORP/OSR-2002-18, Rev. 3, Appendix B).
11. The Contractor must identify the types and quantities of contamination monitoring equipment and the methods and types of instruments used in the radiation surveys (was COA #5 in ORP/OSR-2002-18, Rev. 3, Appendix B).
12. The Contractor must identify the locations of the facility's respiratory equipment (was COA #6 in ORP/OSR-2002-18, Rev. 3, Appendix B).
13. The Contractor must describe the radiation measurement selection criteria for performing radiation and contamination surveys, sampling airborne radioactivity, monitoring area radiation, and performing radioactive analyses. The Contractor also must list the types and quantities of instruments that were available, as well as their ranges, counting mode, sensitivity, alarm setpoints, and planned use. In addition, the Contractor must describe the instrument storage, calibration, and maintenance facilities and laboratory facilities used for radiological analyses (was COA #7 in ORP/OSR-2002-18, Rev. 3, Appendix B).

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

14. The Contractor must 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 ORP (was COA #2 in ORP/OSR-2002-18, Rev. 3, Appendix B).
15. The Contractor must revise the occurrence reporting procedure for cold commissioning before the start of the preoperational testing phase (was COA #4 in ORP/OSR-2002-18, Rev. 3, Appendix B).

### **Section 3.18 – Fire Protection**

16. By the next PSAR update, the Contractor will revise the preliminary fire hazards analyses (PFHAs) to incorporate analytical techniques, within the limits of fire modeling software, to quantitatively characterize and evaluate moderate to severe hazard areas/scenarios as defined in the PFHA, including the resulting impact to fire barriers, suppressions system and other potentially important safety systems. The analytical methods utilized in the revised PFHA documents will consider room geometry, ventilation, rate of heat released, types and arrangement of combustibles to predict fire duration, fire severity, flashover potential, upper gas layer temperature and resulting effects to key fire protection features including but not limited to, suppression systems, fire barriers, and protection of critical process/safety equipment. (new COA resulting from review of Revision 2 of the PSAR and the PFHAs)
17. By next PSAR update, the Contractor will describe the control strategy in the PT PFHA consistent with the PT PSAR, and ORP approval of ABAR 04-0181. The PT PFHA revision will describe over current protection for crane power to preclude cable reel fires and evaluation of the cable reels located away from accumulation of combustible materials to preclude cable reel fires. (new COA resulting from review of Revision 2 of the PSAR and the PFHAs)

## **Volume II – Pretreatment Facility Open COAs**

### **Section 4.1 – PT Facility Description**

18. By December 31, 2006, the Contractor must submit the internal flooding event hazard evaluation (for the preliminary design) to ORP for approval, and receive DOE approval, before the start of construction of the nonstructural aspects of the PT design expected to be credited as SC or SS SSCs for the internal flooding event, on a schedule mutually agreed to by ORP and BNI (was COA #1 in ORP/OSR-2002-18, Rev. 3, Appendix B)
19. By December 31, 2006, the Contractor must assess tank waste characterization data and internal WTP process streams and re-assess requirements selected for erosion/corrosion based on this assessment (was COA #1 in ORP/OSR-2002-18, Rev. 3, Appendix B).
20. By December 31, 2006, the Contractor must complete additional laboratory tests to establish a safe upper limit for nitric acid concentration with new and degraded resin (was COA #2 in ORP/OSR-2002-18, Rev. 3, Appendix B).
21. By December 31, 2006, the Contractor must incorporate the following description of the safety function for level interlocks in PT PSAR Section 4.3.4.2, “System Description”: “The Non-Newtonian vessels use a two-tier overflow protection strategy. The first tier consists of APC designated level monitor with automatic

interlock for each of Non-Newtonian vessels. These interlocks will shut all incoming flows to whichever vessel is experiencing the overflow condition. In the event the APC interlock fails to correct the overflow condition, the SC designated interlock will shut the discharge isolation valves on all Non-Newtonian vessels except the vessel that has tripped the interlock. The isolation valve from that particular vessel will remain open to enable lowering the vessel level without disabling the SC interlock. In this way, all Non-Newtonian vessels would not be automatically isolated simply because one of them has overflow condition. This provides adequate safety against Non-Newtonian overflows while minimizing the impact on operations at the same time.’ (new COA resulting from review of Revision 2 of the PSAR)

#### **Section 4.2 – PT Facility Hazard and Accident Analyses**

22. By December 31, 2006, the Contractor must 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 incorporate the results in the next PSAR update (was COA #1 in ORP/OSR-2002-18, Rev. 3, Appendix B).
23. The Contractor must complete the analysis of the release rate and ammonia concentration by March 31, 2004 (was COA #2 in ORP/OSR-2002-18, Rev. 3, Appendix B). This COA has been revised as follows:

“The analysis of ammonia release rate and concentration will be closed when ORP approves ABAR 24590-WTP-SE-ENS-05-0084, *Implementation of Hydrogen Controls for Pretreatment Facility Vessels*. Also, by December 31, 2006, the Contractor must develop an administrative control program to ensure that ammonia concentration from the waste feed to the WTP site will not exceed 0.04 molar.”
24. Prior to cold commissioning, the Contractor must 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 (was COA #3 in ORP/OSR-2002-18, Rev. 3, Appendix B).
25. By December 31, 2006, the Contractor must test degraded resin with 3 molar nitric acid to determine whether degraded resin is more reactive than fresh resin. If this test demonstrates that the degraded resin is more reactive, then the viability of testing with sodium permanganate must be evaluated. Results of the testing will be documented in a report and incorporated in the next PSAR update. (was COA #5 in ORP/OSR-2002-18, Rev. 3, Appendix B.)
26. By the dates shown below, the Contractor must revise hydrogen generation rates and severity level analysis and complete the following (was COA #8 in ORP/OSR-2002-18, Rev. 3, Appendix B):

- (a) [Closed in SER ORP/WTP-2006-06, Rev. 0]
  - (b) By February 28, 2004, the Contractor must 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), following revision of the Hu 2000 hydrogen generation correlation for applicability to the WTP. This COA was revised as follows:
    - “(1) The acceptance of the revised hydrogen generation calculations is contingent on ORP’s approval of ABAR 24590-WTP-SE-ENS-05-0084, *Implementation of Hydrogen Controls for Pretreatment Facility Vessels*, and ABAR 24590-WTP-SE-ENS-05-0074, *Implementation of Hydrogen Controls in High-Level Waste Vessels*, which will be completed by December 31, 2006; (2) by December 31, 2006, the Contractor must provide justification for treating dissolved ion exchange resin as total organic carbon (TOC) in the revised hydrogen generation calculation, and (3) by December 31, 2006, the Contractor must develop a draft SAC as described in DOE-STD-1186-2004 to monitor the feed vector in Section 5.5.21.1 to ensure that the hydrogen generation rate will not exceed the Contractor’s current design basis for hydrogen generation estimation as specified in the Calculation Note 24590-WTP-M4C-V11T-00004, Revision B.”
  - (c) [Closed in SER ORP/OSR-2003-22, Rev.0.]
  - (d) By December 31, 2006, the Contractor must evaluate the potential for piping systems and ancillary equipment to accumulate hydrogen and the potential control strategies. The potential for piping systems and ancillary equipment to accumulate hydrogen must be incorporated into the DBE calculations and the PSAR as applicable.
  - (e) [Closed in SER ORP/WTP-2006-06, Rev. 0]
27. The Contractor must 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 (was COA #9 in ORP/OSR-2002-18, Rev. 3, Appendix B).
28. By December 19, 2008, the Contractor must evaluate the flooding hazard for ITS equipment (both electrical and mechanical) as part of the hazard topography evaluation scheduled during ISM Cycle III and document the results in the next PSAR update (was COA #13 in ORP/OSR-2002-18, Rev. 3, Appendix B).
29. By December 31, 2006, the Contractor must develop a separate tank bump DBE analysis (was COA #15 in ORP/OSR-2002-18, Rev. 3, Appendix B).

30. By December 31, 2006, the Contractor must change the severity level for the public consequence from a worst-case spray leak of waste material from SL-2 to SL-1 in Section 3.4.1.4.3.8, "Conclusions." (was a new COA in ORP/WTP-2003-22)

### **Section 4.3 – PT Facility Important-to-Safety SSCs**

31. By December 31, 2006, the Contractor must 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 (was COA #4 in ORP/OSR-2002-18, Rev. 3, Appendix B).

## **Volume III – LAW Facility Open COAs**

### **Section 5.1 – LAW Facility Description**

32. By September 30, 2006, the Contractor must submit a document that supports the justification for accepting higher allowances permitted by ASME-III for design of the SC-III and -IV piping and pipe supports carrying nonchemical fluids (was COA #4 in ORP/OSR-2002-18, Rev. 3, Appendix B).

### **Section 5.2 – LAW Facility Hazard and Accident Analyses**

33. By September 30, 2006, the Contractor must include 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 (was COA #4 in ORP/OSR-2002-18, Rev. 3, Appendix B).
34. By December 31, 2006, the Contractor must submit the hazard evaluation of the internal flooding event (for preliminary design) sequentially for each floor, beginning with the bottom floor, to ORP for approval and receive approval before the start of construction of the nonstructural aspects of the LAW design expected to be credited as SC or SS SSCs for the internal flooding event, on a schedule mutually agreed to by ORP and the Contractor (was COA #5 in ORP/OSR-2002-18, Rev. 3, Appendix B).
35. By December 28, 2006, the Contractor must include the results of the offgas system evaluation for ammonium nitrate deposition potential, including any control strategies that will be implemented to address concerns identified through this evaluation (was COA #6 in ORP/OSR-2002-18, Rev. 3, Appendix B).
36. By December 31, 2006, the Contractor will modify the text in Section 3.4.1.1.2.6, "Requirements for Selected Control Strategy," to state that "at least one set of offgas treatment system exhausters must operate continuously, during normal

operation, whenever a cold cap is present on the glass melt. (new COA resulting from review of Revision 2 of the PSAR)

### **Section 5.3 – LAW Facility Important-to-Safety SSCs**

37. By December 31, 2006, the Contractor will revise Table 4A-1, “Safety Significant Structures, Systems, and Components Summary for LAW,” as follows: (new COA resulting from review of Revision 2 of the PSAR)
- Under the “Controls” heading for the melter offgas exhauster backflow prevention dampers, the current reference to a design feature will be replaced with the following text: ‘Melter offgas exhauster backflow prevention dampers shall be operable whenever any melter is operating.’
  - Under the “Controls” heading for the melter offgas exhauster isolation damper, the current reference to a design feature will be replaced with the following text: ‘Melter offgas exhauster isolation dampers shall fail in the ‘open’ position if control signal or motive power is lost, whenever any melter is operating.’
  - Under the “Controls” heading for the non-manual isolation valves within the melter offgas system, the current reference to a design feature will be replaced with the following text: ‘Non-manual isolation valves shall fail in the ‘open’ position if control signal or motive power is lost, whenever any melter is operating.’

## **Volume IV – HLW Facility Open COAs**

### **Section 6.1 – HLW Facility Description**

38. By December 31, 2006, the Contractor must provide initial information (from ISM Cycle III) and full information when the FSAR is submitted, for the following (was COA #4 in ORP/OSR-2002-18, Rev. 3, Appendix B):
- (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 facility can be placed and maintained in a safe state following any DBEs.
39. By December 31, 2006, the Contractor must include information on monitoring vessel vent and overflow lines to ensure their functionality and to establish the

required frequencies of monitoring prior to cold commissioning (was COA #1 in ORP/OSR-2002-18, Rev. 3, Appendix B).

## Section 6.2 – HLW Facility Hazard and Accident Analyses

40. By December 31, 2006, as detailed in Section 6.2 in this SER, the Contractor must provide the following: (new COA resulting from review of Revision 2 of the PSAR)
- (a) Improve the description of how the Conduct of Operations program provides its identified safety function
  - (b) Include in Table 3A-9 the APC SSCs described in the text
  - (c) Indicate that active systems associated with physical barriers will not be designated as physical barriers but as performing a support function
  - (d) State for active SS systems that the single-failure criteria were considered and required or not required
  - (e) Include items approved in SERs to ABARs 24590-WTP-SE-ENS-04-0146, *Incorporation of DOE-STD-3009 for Explosion and Miscellaneous Events*, and 04-080, *Incorporation of ISM 3009 Change to Loss of Contamination*
  - (f) Add a discussion of configuration features to the General Information Volume of the PSAR and add information to the HLW and PTF PSAR Volumes to address configuration features.
  - (g) Eliminate identified inconsistencies between the HLW PSAR and SL calculations
  - (h) Resolve the inconsistencies in the documented transfer limits between the PT and HLW facilities by removing the information in Table 4A-2 since the insulation is SC and is identified as such in Table 4A-1 and Section 4.3.1 and by removing references to insulation from Chapter 4, Sections 4.4.8.3, 4.4.8.4, and 4.4.8.6.
  - (i) Reconcile the identified DBE calculations presented in the PSAR with the Contractor's latest supporting DBE calculation. Correct discrepancies in the PSAR or in the supporting DBE calculation as appropriate.
  - (j) Correct identified errors in the PSAR: errors in tables or table headings, incorrect references, omitted references, minor text changes for clarification, and revising the designation of consequences to workers from the old system (severity level) to the new system (high, medium, low).
41. By the next PSAR update, as detailed in Section 6.2 of the PSAR Rev 2. SER, the Contractor must identify and discuss any 'dependent failures' for each DBE in the HLW, PT and LAW PSARs. For each DBE the Contractor is to identify

‘dependent failures’ in the text of the PSARs, and provide a basis in the PSAR for the conclusions reached. (new COA resulting from review of Revision 2 of the PSAR)

42. By the next PSAR update, as detailed in Section 6.2 of the PSAR Rev 2. SER, the Contractor must classify safety significant (SS) and safety class (SC) administrative controls for all facilities consistent with the PSAR hazard analysis in the next PSAR update. (new COA resulting from review of Revision 2 of the PSAR)
43. By December 31, 2006, the Contractor must submit the internal flooding event hazard evaluation (for the preliminary design) to ORP for approval, and receive DOE approval, before the start of construction of the nonstructural aspects of the HLW design expected to be credited as SC or SS SSCs for the internal flooding event, on a schedule mutually agreed to by ORP and BNI (was COA #5 in ORP/OSR-2002-18, Rev. 3, Appendix B).
44. By December 31, 2006, the Contractor must perform a sensitivity study to compare respirable releases from a crack with an orifice and revise the calculations and PSAR, as necessary (was COA #7 in ORP/OSR-2002-18, Rev. 3, Appendix B).

## **Volume V – Balance of Facility Open COAs**

### **Section 7.1 – BOF Facility Description**

45. By the dates shown below, the Contractor must complete the following (was COA #1 in ORP/OSR-2002-18, Rev. 3, Appendix B):
  - (a) [Closed in SER ORP/OSR-2003-22, Rev.0]
  - (b) [Closed in SER ORP/WTP-2006-06, Rev. 0]
  - (c) By the 2008 PSAR update, the Contractor must describe the system for starting EDGs.

### **Section 7.2 – BOF Facility Hazard and Accident Analyses**

46. By March 31, 2008, and prior to fabrication and construction for the tanks and berms for the nitric acid spill and nitric acid-sodium nitrite mistransfer accidents at the wet chemical storage facility, the Contractor must provide DBE calculations that demonstrate adequate safety margin from SRD Safety Criterion 2.0-2 limits. (was a new COA in Section 7.2 of ORP/WTP-2003-22)

## Volume VI – LAB Open COAs

### Section 8.2 – LAB Hazard and Accident Analyses

47. By December 31, 2006, include an evaluation of interfacility sample transfer events, including transfers from all facilities using the appropriate facility-specific waste streams, in the PT facility-specific PSAR. (was COA #1 in Section 3.2 of ORP/WTP-2004-02)
48. Revise the PSARs as follows (was COA #3 in Section 3.2 of ORP/WTP-2004-02):
  - (a) For the general information PSAR, revise Chapter 7, “Radiation Protection,” to provide sufficient detail on administrative radiological controls to clearly demonstrate that the controls are adequate to limit potential worker exposure as credited. This will be done with the FSAR, consistent with completion of the seven existing radiation protection COAs from the Volume I PSAR review (ORP/OSR-2002-18).
  - (b) [Closed in SER ORP/WTP-2006-06, Rev. 0]
  - (c) By December 31, 2006, for the HLW, LAW, and PT PSARs, the Contractor will remove references to the Radiation Protection Program as the basis for operational administrative radiological controls that do not explicitly appear in the Radiation Protection Program. Also, in the FSAR, the Contractor will remove all other Radiation Protection Program references that do not reference a specific control.
49. By December 31, 2006, the Contractor will provide additional text in the PSAR that demonstrates BEU determinations have a frequency of occurrence of less than  $10^{-6}$  per year. (new COA resulting from review of Revision 1 of the PSAR)

### Section 8.3 – LAB ITS SSCs

50. The Contractor must implement the fire protection system impairment procedure prior to commissioning of the analytical laboratory. (was COA #3 from Section 3.3 of ORP/WTP-2004-02)

## Open ABAR COAs

### Section 3.1 Site Characteristics

1. ABAR 03-051 COA: “By the next PSAR update, the Contractor is required to modify the analysis provided in 24590-BOF-Z0C-ARM-00001, *Design Basis Event: BOF*

*Ammonia Release*, to estimate the consequences of a release event involving 12,000 gallons of ammonia.” Extended to June 29, 2006 by 06-WTP-069.

#### **Section 4.1 PT Facility Description**

2. ABAR 03-1144 COA: “Develop a plan for (1) evaluating the hazards and (2) identifying controls necessary for ensuring safe operation of the hydrogen mitigation collection system and the siphon break based on the following factors, completing all elements of the plan in time to support the current final safety analysis report (FSAR) schedule: (a) definition of a bounding bubble size considering all sources of releases into the collection system; (b) definition of the allowable time and conditions for a column to remain in standby; (c) definition of transitory hydrogen and oxygen concentrations in the siphon break as the collected gas and bounding gas bubble are simultaneously released; (d) definition of the impacts of differing flush-solution gas solubilities on the composition of the gases in the collection system.” Extended to next PSAR update.
3. ABAR 03-1144 COA: “By the next PSAR update, quantify the failure probability of power-operated valves in the purge system using component-specific (i.e., not generic) data from the manufacture or from industry databases. Also quantify the frequency that the hydrogen mitigation system will fail to perform its safety function of preventing flammable hydrogen gas accumulation due to component failure.” Extended to June 1, 2007.
4. ABAR 03-1144 COA: “By the next PSAR update, delete the entry in Table 3A-9 of the PSAR that states the frequency of CXP column explosions is beyond extremely unlikely (BEU).” Extended to June 1, 2007.
5. ABAR 03-1144 COA: “By the next PSAR update, correct the PSAR to accurately indicate those ITS components provided with uninterruptible power supply (UPS).” Extended to March 31, 2008.
6. ABAR 04-041 COA: “Each batch of waste received from the tank farm shall be sampled to measure median hardness, concentration, and particle size distribution prior to acceptance for processing in the facility. Waste particle characteristics for the waste batch shall be bounded by the WTP design basis (“WTP Waste Particle and Hardness Characteristics”, 24590-WTP-RPT-M-05-001, Revision 0, dated May 13, 2005). Waste batches that exceeds the WTP design basis particulate characteristics, must be evaluated for adequate safety, and a basis for processing of the waste determined, and approved by ORP prior to the acceptance of the waste.” (Also, see the discussion on the COA in Section 4.1, #1, under “Process Description.”) Extended to December 31, 2006.
7. ABAR 04-041 COA: “By the next PSAR update, describe TSRs to establish a set of bounding physical and rheological properties of waste: 30 Pa and 30 cP. This is required to ensure that the operation of PJMs and air spargers will effectively mitigate hydrogen in Non-Newtonian vessels. Key elements of this TSR should include the following: a) using tank farm grab samples, measure waste rheology prior to transferring to the PT

facility (Waste Feed Receipt Process System (FRP) vessels and HLW Lag Feed Blending Process System vessels); b) use the results of the Contract Specification 12 analyses to determine if washing and leaching will result in waste exceeding the limit.” Extended to December 31, 2006.

8. ABAR 04-041 COA: “By the next PSAR update, estimate the hydrogen generation rate caused by the use of anti-foam in a vessel continuously mixed with PJMs and air spargers, and the basis for that estimate. Confirm that anti-foam addition does not increase hydrogen generation rates beyond what has been used in the safety analysis for this ABAR.” Extended to December 31, 2006.
9. ABAR 04-041 COA: “By the next PSAR update, quantify the additional process service air (PSA) required to operate the PJMs and air spargers continuously (including accounting for the use of anti-foam), describe the changes to the PSA supply and distribution system necessary to accommodate the higher air requirements.” Extended to December 31, 2006.
10. ABAR 05-0046, COA: “An emergency response procedure to specify corrective actions to be taken by operators following an activation of the high differential pressure alarm must be developed prior to the start of facility operation. This emergency response procedure should be applicable to both PVV and C5 system HEPA filters installed with the high differential pressure alarm. The provisions of the procedure must be in compliance with the American National Standard Institute/American Nuclear Society (ANSI/ANS) Standard N 58.8-1994 (“Time Response Design Criteria for Safety-Related Operator Actions.”).” Extended to commencement of cold commissioning.
11. ABAR 05-0091, COA: “The Contractor shall submit an analysis or calculation by the 2008 PSAR update to demonstrate that the time response criteria of ANSI/ANS-58.8-1994, “Time Response Criteria for Safety-Related Operator Actions,” will be met for any credible high-pressure steam leak initiating event (including a seismic event) in the PT Facility.” Extended to 2008 PSAR Update.

### **Section 5.1 LAW Facility Description**

12. ABAR 03-1261 COA: “By the next PSAR update, test for and quantify the amounts and rate of accumulation of ammonium nitrate in the carbon beds under bounding conditions. Evaluate the hazards and identify controls to mitigate the hazards, if any.” Extended to August 1, 2006.

### **Section 6.1 HLW Facility Description**

13. New ABAR 03-033 COA: “By December 31, 2006, the Contractor is to modify the hazard evaluation and accident analysis to account for leaks of injection ammonia. This modification is to be provided to ORP by means of an ABAR.”

14. ABAR 03-731 COA: “The ABAR approval was subject to BNI correcting Calc #HLW-H01T-HOP-00001, Rev C, Sections 7.4.4.2 and 7.4.6 in the next revision of the calculation and revising HLW PSAR Sections 3.4.1.8.4.6, and 3.4.1 8.4 8, as discussed in Section 3 of the SER, and as committed to in CCNs 078310 and 072542.” Extended to December 31, 2006.
15. ABAR 04-090 COA: “The Contractor will identify the methods to detect agitator failure that will be used. The Contractor will demonstrate that the methods ensure all modes of agitator failure will be detected. The methods to detect agitator failure will be provided to DOE within three months of the date of this SER.” Extended to December 31, 2006.
16. ABAR 04-092 COA: “The Contractor must make NFPA 69, *Standard on Explosive Prevention Systems*, an implementing code and standard in the SRD for Safety Criteria affecting mechanical agitators. An ABAR is to be provided to ORP for review and approval within one month of the date of the letter transmitting this SER.” Extended to December 31, 2006.
17. ABAR 04-0127 COA: “The impact absorbers are located under hatches where the casks are lifted into or out of the tunnel. If during the lifting of the cask the cask falls, the impact absorber will protect the cask as well as the facility structure. The impact absorbers have to be SS to protect the cask and SC to protect the facility structure. In the referenced CCN, on page 3 of 5 the statement is made: ‘It has been determined that the impact absorber will protect the cask. This has also been entered as an unverified assumption.’ As a result, the Contractor is to verify this assumption within 24 months of the date of this letter.” Extended to next PSAR update.