

U.S. Department of Energy
Office of River Protection
Mr. Michael K. Barrett
Contracting Officer
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

CCN: 023770

Dear Mr. Barrett:

**CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL FOR APPROVAL –
AUTHORIZATION BASIS CHANGE NOTICE ABCN-24590-01-00004, REVISION 1,
*IDENTIFICATION OF SAFETY ANALYSIS REPORT FORMAT AND CONTENT***

Reference: CCN 023459, Letter, A. R. Veirup, BNI, to M. K. Barrett, ORP, “Transmittal of Authorization Basis Change Notice ABCN-24590-01-00004, Revision 0, Selection of DOE-STD-3009 As the Safety Analysis Report Implementing Standard,” dated September 18, 2001.

Bechtel National, Inc. (BNI) is submitting Authorization Basis Change Notice (ABCN), ABCN-24590-01-00004, Revision 1, to the U.S. Department of Energy (DOE), Office of River Protection (ORP), and the Office of Safety Regulation (OSR) for approval (Attachment). With this submittal, BNI withdraws the previous submittal of ABCN-24590-01-00004, Revision 0 (referenced letter). Please note that the title on ABCN-24590-01-00004, Revision 1, was also revised.

The original scope of ABCN-24590-01-00004, Revision 0, identified DOE-STD-3009-94 (tailored) as the implementing standard for the Safety Analysis Reports (SAR). In a meeting between BNI and the DOE/OSR on September 26, 2001, both parties agreed that even though tailoring was provided and DOE-STD-3009-94 was acceptable for format, the ABCN needed to be revised to make it clear that U.S. Nuclear Regulatory Commission Regulatory Guide 3.52 will be used as the SAR content guide.

Revised ABCN-24590-01-00004 identifies a new ad hoc implementing standard for the SARs, removes sections from the ISMP that contain redundant information, provides a crosswalk of Regulatory Guide 3.52 requirements vs. the SAR, and provides a crosswalk of DOE/RL-96-0003 requirements vs. the SAR.

An electronic copy of ABCN-24590-01-00004, Revision 1, is provided for the OSR’s information and use.



Authorization Basis Change Notice

ABCN Number ABCN-24590-01-00004 Revision 1

ABCN Title Identification of Safety Analysis Reports Format and Content

I. ABCN Review and Approval Signatures

A. ABCN Preparation

Preparer: K Gibson _____
Print/Type Name *Signature* *Date*

Reviewer: R Dickey _____
Print/Type Name *Signature* *Date*

B. Required Reviewers

Review Required? *For each person checked Yes, that signature block must be completed.*

<input checked="" type="checkbox"/>	ES&H Manager	<u>F Beranek</u> _____ <i>Print/Type Name</i> <i>Signature</i> <i>Date</i>
<input checked="" type="checkbox"/>	QA Manager	<u>G Shell</u> _____ <i>Print/Type Name</i> <i>Signature</i> <i>Date</i>
<input checked="" type="checkbox"/>	PSC Chair	<u>W Poulson</u> _____ <i>Print/Type Name</i> <i>Signature</i> <i>Date</i>
<input checked="" type="checkbox"/>	Operations Manager	<u>N Brosee</u> _____ <i>Print/Type Name</i> <i>Signature</i> <i>Date</i>
<input checked="" type="checkbox"/>	Engineering Manager	<u>F Marsh</u> _____ <i>Print/Type Name</i> <i>Signature</i> <i>Date</i>
<input type="checkbox"/>	Pretreatment APM	_____ <i>Print/Type Name</i> <i>Signature</i> <i>Date</i>
<input checked="" type="checkbox"/>	LAW APM	<u>R Lawrence</u> _____ <i>Print/Type Name</i> <i>Signature</i> <i>Date</i>
<input type="checkbox"/>	HLW APM	_____ <i>Print/Type Name</i> <i>Signature</i> <i>Date</i>
<input type="checkbox"/>	BOF APM	_____ <i>Print/Type Name</i> <i>Signature</i> <i>Date</i>
<input type="checkbox"/>	Construction Manager	_____ <i>Print/Type Name</i> <i>Signature</i> <i>Date</i>
<input type="checkbox"/>	Business/Project Controls Manager	_____ <i>Print/Type Name</i> <i>Signature</i> <i>Date</i>
<input type="checkbox"/>	ALARA PSC Subcommittee Chair	_____ <i>Print/Type Name</i> <i>Signature</i> <i>Date</i>
<input checked="" type="checkbox"/>	Other	_____ <i>Print/Type Name</i> <i>Signature</i> <i>Date</i>



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ABCN Number ABCN-24590-01-00004 Revision 01

ABCN Title ~~Selection Identification of DOE-STD-3009 as the Safety Analysis Report Implementing Standard~~ [Format and Content](#)

C. ABCN Approval

WTP Project Manager R Naventi _____
Print/Type Name *Signature* *Date*

II. Description of the Proposed Change to the Authorization Basis

D. Affected AB Documents:

Title	Document Number	Revision
Safety Requirements Document, Vol. II	BNFL-5193-24590-WTP-SRD-ESH- 01-001-02	40
Integrated Safety Management Plan	BNFL-5193-24590-WTP--ISMP-ESH- 01-001	06

Decision to Deviate Yes No

If yes, DTD Number _____ Deficiency Report Number _____

Initiating Document Number _____ Revision _____

E. Describe the proposed changes to the Authorization Basis Documents:

- For SRD Safety Criteria 9.1-1, 9.1-2 and 9.1-3: Replace reference to sections of the ISMP as the implementing standard for the preparation of safety analysis reports (SARs) with reference to ~~a tailored version of DOE-STD-3009-94, Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis Reports~~ SRD Volume II, Appendix *, "Ad Hoc Implementing Standard for Safety Analysis Reports".
- For SRD Safety Criterion 9.1-1: Add as an implementing standard SRD Appendix A, "Implementing Standard for Safety Standards and Requirements Identification".
- For SRD Safety Criterion 9.1-2: Add initial surveillance, in-service testing, and maintenance as topics to be address in the SAR. Also add the requirement to provide an executive summary in the SAR.
- For SRD Safety Criteria 9.1-3 and 9.1-4: Correct editorial errors.
- For SRD Safety Criterion 9.1-7: Delete the requirement that the hazard analysis be submitted as part of the SAR. This will delete the entire safety criterion, as the other portion is deleted by ABCN 24590-01-00006.
- For ISMP Section 3.3.1.3: Delete the chapter number and chapter title from the FSAR discussion of the Deactivation and Decommissioning chapter.
- For ISMP Section 4.2.3.1: Replace reference to NRC Reg. Guide 3.52, *Standard Format and Content for the Health and Safety Section of License Application for Fuel Cycle Facilities* with reference to SRD Volume II, Section 9.1 for the format and content of the SARs. Replace reference to NUREG-1520, *Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility* with reference to review guidance developed by DOE with specific reference to RL/REG-99-05 for the PSAR. Delete ISMP Tables 4-1 and 4-2, the text that references these two tables, and the example of how Table 4-1 was developed. ISMP Chapter 4 will have pagination changes to accommodate these additions and deletions. (ISMP Table 4-1 moves to the proposed ad hoc implementing standard)
- For ISMP Chapter 13: Add a reference for RL/REG-99-05 and delete references to Regulatory Guide 3.52 and NUREG-1520 (NRC 1995a and 1995b).

F. List associated ABCNs and AB documents:

There are no associated ABCNs. The draft revision to Regulatory Guide 3.52 is referenced in the Initial Safety Analysis Report (ISAR)(BNFL-5193-ISAR-01, Revision 1) and the ISAR is written to the format of Regulatory Guide 3.52. However, draft Regulatory Guide 3.52 is not identified in ISAR Appendix A, "Fundamental Aspects of Design" as a fundamental aspect of design.



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G. Explain why the change is needed:

1. SRD Safety Criteria 9.1-1, 9.1-2 and 9.1-3 designate ISMP Sections 4.2.3 and 3.3.1.3 and Chapter 9.0 as the implementing standards for the preparation of Safety Analysis Reports (SARs). An Integrated Safety Management (ISM) team was convened to determine if these sections should remain or if another standard should be selected. The ISM team selected DOE-STD-3009-94, tailored, as the new implementing standard for the RPP-WTP project [for format](#). By adoption of an [tailored DOE-STD-3009-94 ad hoc implementing standard](#) the WTP Project will be able to use the existing RPP-WTP project experience with [the DOE-STD-3009-94 format](#) to support timely submittal of the construction authorization request. In addition, regulators, stakeholders and the future plant operators will be more familiar with SARs written to DOE standard format of DOE-STD-3009-94 than they would be to SARs written to format of the draft revision to NRC Regulatory Guide 3.52 that has not been, nor is expected to be issued as a final document. Additional detail of the basis for the proposed change is provided below in response to Item III.K.
2. The addition of the reference to SRD Appendix A for SRD Safety Criterion 9.1-1 is to provide an implementation standard for the first sentence of the safety criterion concerning the performance of safety analyses.
3. Initial surveillance, in-service testing, and maintenance are topics of equal importance to those already listed in Safety Criterion 9.1-2. An executive summary will be added for assistance to the users of the SARs.
4. To correct editorial errors.
5. With an [ad hoc implementing standard that follows the format of tailored DOE-STD-3009](#) adopted, ~~as an implementing standard~~ there is no need for the first sentence of the Safety Criterion 9.1-7 requiring that the hazard analysis be submitted as part of the SAR. Section 3.3, "Hazardous Analysis" of DOE-STD-3009 requires that the hazard analysis be documented in the SAR.
6. With the selection of a new standard, the chapter numbers ~~have not been finalized. Also the chapter number is do need to be identified in not an important detail for~~ the ISMP.
7. The ISMP needs to reference SRD Section 9.1 and the implementing standards referenced there as providing guidance for the preparation of the SARs. Also, the ISMP needs to reference DOE documents as providing standard review plan type material that should be used to facilitate review of the SARs. ISMP Table ~~4.1-2~~ (which identifies difference between the PSAR and FSAR) is removed as ~~the tailored DOE-STD-3009~~ [the ad hoc implementing standard that](#) provides guidance on the differences between the PSAR and FSAR and it is expected the DOE will issue a guidance document similar to RL/REG-99-05 for the review of the operating authorization request [that will include the FSAR](#). Table ~~4.1-2~~ ~~was~~ originally included in the ISMP as draft Regulatory Guide 3.52 was to support the review of a materials license (under the provisions of 10CFR70) ~~and not the granting of a construction permit and the subsequent issuance of an operating license.~~ [is moved to the new proposed ad hoc implementing standard.](#)
8. Changes to the list of references are to support document citations in the text.

H. List the implementation activities and the projected completion dates:

<u>Activity</u>	<u>Date</u>
Inform DOE that AB has been revised	<u>30 days after DOE approval</u>
Distribute revised pages	<u>30 days after DOE approval</u>
Provide updated electronic version of AB to DOE	<u>30 days after DOE approval</u>
Revise the following implementing documents:	
<u>Documents</u>	<u>Describe extent of revisions</u>
1 <u>K72P504, Preparation of PSAR</u>	complete revision
	<u>30 days after DOE approval</u>



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<u>Describe other activities:</u>	<u>Date</u>
1 N/A	

III. Evaluation of the Proposed Change

I. Is DOE prior approval required?

- 1 Does the revision involve the deletion or modification of a standard previously identified or established in the SRD? Yes No

Explain

This change involves the deletion of ISMP sections as SRD implementing standards for the development of SARs.

- 2 Does the revision result in the reduction in commitment currently described in the AB? Yes No

Explain

The newly selected standard, ~~DOE-STD-3009-94 as tailored~~ [Appendix *, "Ad Hoc Implementing Standard for Safety Analysis Reports"](#), complies with top-level principles, applicable laws and regulations, and the contract, and provides adequate safety. As such, the new standard will not result in a reduction in commitment

Deleting the requirement of SRD Safety Criterion 9.1-7 that the hazard analysis be submitted as part of the SAR is not a reduction in a commitment as the project is still committed to submit the results of a hazard analysis [as part of the SAR, in accordance with the ad hoc implementing standard](#) (e.g., by contract Table S7-1).

- 3 Does the revision result in a reduction in the effectiveness of any procedure, program, plan, or management process described in the AB? Yes No

Explain

The change in the selected standard does not reduce the programmatic requirements contained in the contract or the authorization basis. The requirements for programmatic process are not deleted and retain the current level of effectiveness.

Deleting the requirement of SRD Safety Criterion 9.1-7 that the hazard analysis be submitted as part of the SAR is not a reduction in the effectiveness of a program as the project is still required to perform a hazard analysis (e.g., by SRD Volume II, Appendix A, Section 4.0, "Hazard Evaluation.").

J. Complete the safety evaluation by describing how the revision to the AB:

- 1 will continue to comply with all applicable laws and regulations, conform to top-level safety standards, and provide adequate safety

The use of DOE-STD-3009-94 provides a recognized standard for the format of safety analysis reports for DOE owned and contractor operated facilities. The adoption of ~~a tailored DOE-STD-3009-94~~ [SRD Volume II, Appendix *, "Ad Hoc Implementing Standard for Safety Analysis Reports"](#) will implement the applicable laws and regulations, top-level safety standards and the SRD relative to the content of the PSAR and FSAR. In addition, as SRD Appendix A, "Implementing Standard for Safety Standards and Requirements Identification" and a commitment to implement DOE/RL-96-0004 are both retained and none of the ~~tailored DOE-STD-3009-94~~ [proposed ad hoc implementing standard](#) conflicts with SRD Appendix A or the commitment to implement DOE/RL-96-0004, the requirements for the identification of hazards, performance of safety analyses, the selection of standards, or the classification of SSCs is unchanged by the adoption of ~~a tailored DOE-STD-3009-94~~ [the proposed ad hoc implementing standard](#).



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~~Attachment 4-5 contains a detailed evaluation of the proposed adoption of a tailored DOE-STD-3009-94 to applicable laws and regulations, conformance to top-level safety standards, and the provision for adequate safety.~~

[Attachments 3 and 4 provide crosswalks between the proposed SAR format and Reg Guide 3.52 and DOE/RL-96-0003, respectively.](#)

[Attachment 5 contains a detailed evaluation of the proposed adoption of a DOE-STD-3009-94 format to applicable laws and regulations, conformance to top-level safety standards, and the provision for adequate safety.](#)

The deletion of the requirement of SRD Safety Criterion 9.1-7 that the hazard analysis be submitted as part of the SAR does not remove the requirement to include a hazard analysis in the SAR. It simply removes unnecessary repetition of the requirement.

- 2 will continue to conform to the original submittal requirements associated with the AB documents being revised

The proposed change in format for the safety analysis reports does not change the safety analysis methodology or the safety criteria documented in the SRD. The safety analysis documented in the new format will continue to comply with SRD Appendix A and DOE/RL-96-0004 as addressed above for Item J.1.

The deletion of the requirement of SRD Safety Criterion 9.1-7 that the hazard analysis be included as part of the SAR does not remove the requirements of contract Table S7-1 that the CAR and OAR include submittal of hazard analysis.

- 3 will not result in inconsistencies with other commitments and descriptions contained in the AB or an authorization agreement

The documentation changes (deletion of chapter call-outs and detailed tailoring) in the ISMP will prevent potential inconsistencies within the AB documents that would result from the proposed change to the SRD. The ISAR format is to draft Regulatory Guide 3.52 and it will not be changed to comply with that in ~~DOE-STD-3009~~ [the proposed ad hoc implementing standard](#). However, the SAR format itself is not identified in Appendix A, "Fundamental Aspects of Design" of the ISAR as a fundamental aspect of design. Upon issuance of the construction authorization the PSAR will replace the ISAR.

K. Justification of the Proposed Change

Provide a justification that demonstrates that the proposed change is safe

The use of ~~DOE-STD-3009-94~~ [the proposed ad hoc implementing standard](#) provides a recognized standard for the format [and content](#) of safety analysis reports for DOE owned and contractor operated [WTP](#) facilities. This will be of benefit to the reviewers and operators of the RPP-WTP that have experience with other DOE facilities. The current implementing standard for the documentation of the safety analyses, as called out in the ISMP in Rev 6, is draft Regulatory Guide 3.52 prepared by the NRC staff. The draft guide was never issued as a final document by the NRC and the NRC staff has decided that the draft will be abandoned in favor of the issuance of a standard review plan (SRP) only; NUREG-1520, *Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility*. This SRP however, is directed at the hazards unique to fuel cycle facilities (e.g., toxicological hazards associated with UF₆ and hydrofluoric acid and criticality concerns for facilities containing a large amount of fissile material). The SRP also adopts a process for safety analyses and the classification of SSCs that is much different from that required of the RPP-WTP and it does not give emphasis to the selection of standards.

The adoption of ~~a tailored~~ [the DOE-STD-3009-94 format with the Reg Guide 3.52 content](#) will implement the applicable laws and regulations, top-level safety standards and the SRD relative to the content of the PSAR and FSAR. In addition, as SRD Appendix A, "Implementing Standard for Safety Standards and Requirements Identification" and a commitment to implement DOE/RL-96-0004 are both retained and



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Provide a justification that demonstrates that the proposed change is safe none of the ~~tailored-DOE-STD-3009-94~~ [proposed format and content](#) conflicts with Appendix A or DOE/RL-96-0004, the requirements for the identification of hazards, performance of safety analyses, the selection of standards, or the classification of SSCs is unchanged by the adoption of a ~~tailored-DOE-STD-3009-94~~ [format SAR](#). Thus, it is concluded that the proposed change is safe.

The submittal of the PSAR to the DOE will address the acceptance criteria stated in RL/REG-99-05. The submittal of the FSAR to the DOE will address similar acceptance criteria should they be developed by DOE for the operating authorization request.

Attachment [45](#) contains additional discussion of these safety principles and a summary of the justification that the ~~proposed-DOE-STD-3009-94, as tailored, format~~ is safe, does not adversely impact the environment, conforms to applicable laws, regulations, the Contract, the Top-Level Standards, and does not conflict with other parts of the authorization bases.

The deletion of the requirement of SRD Safety Criterion 9.1-7 that the hazard analysis be included as part of the SAR does not remove the requirement to perform a hazard analysis that would be used to implement integrated safety management and SRD Volume II, Appendix A for the facility.

Note: Regarding NRC Regulatory Guide 3.52, there is a version of the regulatory guide dated November 1986 that is not a draft. It has a different title and is for a slightly different purpose. The title is *Standard Format and Content for the Health and Safety Section of License Renewal Applications for Uranium Processing and Fuel Fabrication*. The “draft Regulatory Guide 3.52” referred to on the RPP-WTP is a draft that was provided by the NRC staff at a meeting held on May 2, 1995 to solicit comments from licensees on proposed changes to 10 CFR 70 licensing. This draft was not formally issued by the NRC for comment. BNFL Inc. was provided a copy of the draft regulatory guide by the DOE Regulatory Unit on December 18, 1996 and was asked to consider use of the guide at this meeting and a second meeting held on January 16, 1997.

- L. List of Attachments
 - 1. Proposed changes to Safety Requirements Document, Volume II
 - 2. Proposed changes to ISMP
 - 3. ~~RPP-WTP specific tailoring of DOE-STD-3009-94~~ [Reg Guide 3.52 vs SAR Table of Contents Crosswalk](#)
 - 4. [DOE/RL-96-0003 vs SAR Table of Contents Crosswalk](#)
 - 45. Identification of Implementing Standard for the RPP-WTP Safety Analysis Report

**River Protection Project - Waste Treatment Plant
Safety Requirements Document Volume II
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9.0 Documentation and Submittals

9.1 Safety Analysis Reports

Safety Criterion: 9.1 - 1

Safety analyses shall be performed using a tailored approach to develop and evaluate the adequacy of the authorization basis for the facility. Preliminary and Final Safety Analysis Reports shall be prepared to document the safety analyses.

Implementing Codes and Standards

~~BNFL-5193-ISP-01 Integrated Safety Management Plan~~

~~Section: 3.3.1.3 Safety Analysis Reports~~

~~Section: 4.2.3 Tailoring of Safety Related Documentation~~

[BNFL-5193-SRD-01, Safety Requirements Document](#)

[Appendix A, Implementing Standard for Safety Standards and Requirements Identification](#)

[Appendix *, Ad Hoc Implementing Standard for Safety Analysis Reports](#)

Regulatory Basis

DOE/RL-96-0006 4.1.3.1 Authorization Basis-Authorization Basis

DOE/RL-96-0006 4.2.1.3 Design-Safety Analysis

Safety Criterion: 9.1 - 2

A SAR shall contain sections that address the following topics:

- (1) Site Description
- (2) Facility and Process Description
- (3) Integrated Safety Analysis
- (4) Nuclear Criticality Safety
- (5) Technical Safety Requirements
- (6) Radiation Safety
- (7) Chemical Safety
- (8) Fire Safety
- (9) Human Factors
- (10) Emergency Preparedness
- (11) Management Organization
- (12) Conduct of Operations
- (13) Procedures
- (14) Training and Qualification
- (15) Deactivation and Decommissioning
- (16) Incident Investigations
- (17) Records Management
- (18) Audits and Assessments
- (19) Quality Assurance
- [\(20\) Initial Surveillance and In-Service Testing](#)
- [\(21\) Maintenance](#)

[The SAR should also contain an Executive Summary that provides an overview of the facility safety basis and presents information sufficient to establish a top-level understanding of the facility, its operation, and the results of the safety analysis.](#)

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9.0 Documentation and Submittals

Implementing Codes and Standards

[BNFL-5193-SRD-01, Safety Requirements Document](#)

[Appendix *, Ad Hoc Implementing Standard for Safety Analysis Reports](#)

~~BNFL-5193-ISP-01 Integrated Safety Management Plan~~

~~Section: 4.2.3 Tailoring of Safety Related Documentation~~

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9.0 Documentation and Submittals

Safety Criterion: 9.1 - 3

A Preliminary Safety Analysis Report (PSAR) shall be submitted to the regulator only after all major safety issues have been resolved and other safety issues scheduled for completion. The PSAR shall document the facility design and plans for construction and demonstrate adequate planning for the operational phase.

A Final Safety Analysis Report (FSAR) shall be submitted to the regulator for approval prior to authorization to operate ~~a~~ the facility. The FSAR shall document the completed design and construction and provide details on the plans for operation. The FSAR shall include facility and process drawings and fabrication and construction specifications important to the safety analysis of the facility. The FSAR shall identify significant changes made in the facility design and plans for operation from what was presented in the PSAR.

Implementing Codes and Standards

[BNFL-5193-SRD-01, Safety Requirements Document](#)
[Appendix *, Ad Hoc Implementing Standard for Safety Analysis Reports](#)
~~[BNFL-5193-ISP-01 Integrated Safety Management Plan](#)~~
~~[Section: 4.2.3 Tailoring of Safety-Related Documentation](#)~~
~~[Chapter: 9.0 Scheduling of Safety-Related Activities](#)~~

Safety Criterion: 9.1 - 4

The FSAR shall be reviewed annually and updated as necessary to ensure that the information is current, remains applicable, and reflects all changes implemented up to 3 months prior to the filing of the updated FSAR. The regulatory approval of any Unreviewed Safety Questions, and the material submitted ~~by~~ to the regulator in support of that approval, shall be considered an addendum to the FSAR until the information is incorporated into the FSAR as part of the next periodic update.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 3.3.3 Changes to Safety Documentation

Regulatory Basis

DOE/RL-96-0006 4.1.3.1 Authorization Basis-Authorization Basis

Safety Criterion: 9.1 - 5

The SAR shall be maintained as a controlled document.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Chapter: 8.0 Document Control and Maintenance

Regulatory Basis

DOE/RL-96-0006 4.1.3.1 Authorization Basis-Authorization Basis

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9.0 Documentation and Submittals

Safety Criterion: 9.1 - 6

All responsibilities concerning the facility as identified in the approved SAR shall be carried out.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 3.2 Safety Responsibilities

Safety Criterion: 9.1 - 7

~~The hazard analysis shall be submitted for approval as part of the SAR. Hazard analysis data shall also be submitted as part of the Risk Management Plan, as discussed in Safety Criterion 9.3-1.~~

Implementing Codes and Standards

~~BNFL-5193-ISP-01 Integrated Safety Management Plan
Chapter: 9.0 Scheduling of Safety Related Activities~~

Regulatory Basis

~~40 CFR 68 — Chemical Accident Prevention Provisions — Location: 175~~

[This safety criterion has been deleted.](#)

Appendix *: Ad Hoc Implementing Standard for Safety Analysis Reports

Appendix *

Ad Hoc Implementing Standard for Safety Analysis Reports **

* Next available appendix letter when incorporated into SRD

** This section is all new; therefore, no redline/strikeout is used.

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Appendix *: Ad Hoc Implementing Standard for Safety Analysis Reports

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1.0 Introduction

The purpose of this Implementing Standard is to define the format and content for RPP-WTP safety analysis reports (SARs).

Section 2.0 provides the definitions important to this Implementing Standard. Section 3.0 defines the process for development, review, and approval.

2.0 Definitions

For the definitions of the following terms, see the reference provided.

Safety Analysis Report (SAR) (DOE/RL-96-0006 [DOE-RL 1998b])

3.0 Process

3.1 Safety Analysis Report Preparation

The River Protection Project Waste Treatment Plant (RPP-WTP) SARs document the safety analyses for the facility to demonstrate that it can be safely operated, maintained, and shut down.

The SARs shall be prepared in accordance with the requirements of:

- 1) DOE/RL-96-0003, *DOE Regulatory Process for Radiological, Nuclear, and Process Safety for TWRS Privatization Contractors* (DOE-RL 1998a), Sections 4.3.2 and 4.3.3, both titled "Contractor Input"
- 2) Contract Table S7-1, "Radiological, Nuclear, and Process Safety Deliverables"
- 3) *Safety Requirements Document Volume II* (SRD) (BNI 2001), Safety Criterion 9.1-2

The content of the Preliminary Safety Analysis Report (PSAR) and the Final Safety Analysis Report (FSAR) are developed using the guidance provided in the Nuclear Regulatory Commission's 1995 draft revision to Regulatory Guide 3.52, *Standard Format and Content for Health and Safety Sections of License Applications for Fuel Cycle Facilities* (NRC 1995). The content of the SARs is tailored to the nature of the RPP-WTP relative to the hazards and hazardous situations identified by the process hazards analysis. Planned deviations from the content guidance of draft Regulatory Guide 3.52 are identified in Table *-1.

The Table of Contents for the safety analysis reports follows Table *-1. The safety analysis report will not be submitted to the regulator until all major safety issues have been resolved and other safety issues have been scheduled for completion. The FSAR should identify significant changes made in the facility design and plans for operation from what was presented in the PSAR. The FSAR, in addition to including facility and process drawings, should also include fabrication and construction specifications important to the safety analysis of the facility.

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Appendix *: Ad Hoc Implementing Standard for Safety Analysis Reports

Table *-1 Deviations from the Safety Analysis Report Content Guidance of Regulatory Guide 3.52¹

Chapters	Addition or Subtraction	Basis
1.3 Site Description	Regulatory Guide (RG 3.52) suggests that Section 1.3 summarize information used in preparing the Environmental Report. Specific information is referenced, but not duplicated in the safety analysis report (SAR).	The Environmental Report provides this information.
1.3.2 Demography and Land Use	The population distribution as a function of distance and direction is not to be provided. The distances to nearby population centers are provided.	There are no residences on the Hanford Site and the nearby population is low.
3.5 Human Factors	RG 3.52 states that a formal human factors program is not required if the facility has no requirement for safety-class actions. Human factors are considered in the Preliminary Safety Analysis Report (PSAR) independent of whether or not human actions are required for protection of the public or workers.	The requirements of DOE/RL-96-0006 (DOE-RL 1998a), Section 4.2.6, "Human Factors", extend beyond consideration of human factors as related to actions taken to protect the public. Final Safety Analysis Report (FSAR) Section 3.5 documents how compliance to contract Section 4.2.6 is achieved.
3.10 Testing Program and Preoperational Safety Review	This section is added to address the initial and commissioning testing programs.	Addition of this section facilitates documentation of compliance to DOE/RL-96-0006 (DOE-RL 1998b), Section 4.2.8, "Pre-Operational Testing", and Section 5.2.6, "Pre-Startup Safety Review", and DOE/RL-96-0003 (DOE-RL 1998a), Section 4.3.2, "Contractor Input", item 13.

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Appendix *: Ad Hoc Implementing Standard for Safety Analysis Reports

Table *-1 Deviations from the Safety Analysis Report Content Guidance of Regulatory Guide 3.52¹

Chapters	Addition or Subtraction	Basis
3.11 Operational Practices	This section is to added to address such conduct of operations considerations as shift routine and turnover, control area activities, communications, control of on-shift training, control of equipment and system status, lockout and tagout, independent verification of equipment status, logkeeping, and operational aids postings.	These items are discussed to address what is normally considered conduct of operations.
4.7 Results of the Integrated Safety Assessment	<p>The results for unmitigated accidents are compared to the radiological standards discussed in Integrated Safety Management Plan (ISMP) Section 1.2, “Detailed Description of the Safety Approach” rather than to 10 CFR 20, “Standards for Protection Against Radiation”.</p> <p>A full assessment of the hazardous situations that might present themselves during facility operation is provided. This includes estimates of radiological and chemical releases for this range of events.</p> <p>Additional details are provided on the methodology used for consequence analysis, bounding conditions, input assumptions, and accident sequences.</p>	<p>The standards provided in RG 3.52 were derived from 10 CFR 20, “Standards for Protection Against Radiation”, which is applicable to normal operation.</p> <p>The nature of the accidents for the RPP-WTP requires more discussion of consequence analysis than that required of fuel fabrication facilities.</p>
4.8 Controls for Prevention and Mitigation of Accidents	This section identifies the specific safeguards selected for protection of the facility workers, as well as safeguards selected for protection of the public and collocated workers.	The nature of the accidents for the RPP-WTP requires more discussion of consequence analysis than that required for fuel fabrication facilities.

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Appendix *: Ad Hoc Implementing Standard for Safety Analysis Reports

Table *-1 Deviations from the Safety Analysis Report Content Guidance of Regulatory Guide 3.52¹

Chapters	Addition or Subtraction	Basis
5.0 Radiation Safety	<p>Chapter 5.0 provides the upper-level statutory standards and program policies that ensure the radiological safety of employees, visitors, and onsite members of the public. Deviations from RG 3.52 are as follows:</p> <ol style="list-style-type: none"> 1) As an U.S. Nuclear Regulatory Commission (NRC) document, RG 3.52 references and specifies applicable portions of 10 CFR 20. Because 10 CFR 835 is the radiation safety regulation for the RPP-WTP, the focus of this section is on 10 CFR 835. 2) The implementation-level standards and guidance documents referenced in RG 3.52 is being incorporated into the Radiation Protection Plan (RPP). 	<p>Compliance with 10 CFR 835 is a requirement of the contract.</p> <p>The RPP required by 10 CFR 835 is required to include some of the information required of RG 3.52. There is no need to present this information in two documents.</p>
5.1 As Low As Reasonably Achievable (ALARA) Policy and Program	<p>RG 3.52 states that Regulatory Guide 8.10, Revision 1R (<i>Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As Reasonably Achievable</i>) should be used in the development of the ALARA program. DOE guidance such as DOE G 441.1-2, <i>Occupational ALARA Program Guide</i> will also be used to develop the RPP-WTP ALARA program for normal operation.</p>	<p>DOE practices have proven to be successful for facilities similar to the RPP-WTP.</p>
5.3 Radiological Safety Standards	<p>Section 5.3 is added to provide the radiation standards by which the program operates. The standards specifically identify regulatory exposure standards, administrative exposure control levels, and other key standards of the radiation protection program.</p>	<p>The contract requires compliance to the 10 CFR 800 series of nuclear safety requirements. This includes compliance to 10 CFR 835, "Occupational Radiation Protection". Section 5.3 documents the compliance to the exposure standards of those regulations that have been promulgated.</p>
5.8 External Exposure (renumbered 5.9 from RG 3.52)	<p>By RG 3.52, the applicant is expected to participated in the National Voluntary Laboratory Accreditation Program (NVLAP) external dosimetry. Section 5.8 allows for participation in either the NVLAP or U.S. Department of Energy (DOE) Laboratory Accreditation Program (DOELAP) accreditation programs.</p>	<p>The option of participating in either the NVLAP or the DOELAP provides maximum flexibility and equivalent dosimetry program quality</p>

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Appendix *: Ad Hoc Implementing Standard for Safety Analysis Reports

Table *-1 Deviations from the Safety Analysis Report Content Guidance of Regulatory Guide 3.52¹

Chapters	Addition or Subtraction	Basis
5.14 Radioactive Waste Management	RG 3.52 does not require a discussion of waste management systems.	Section 5.14 is added to the SARs as the Process Hazards Analysis (PHA) completed for the RPP-WTP have identified hazards and hazardous situations with the waste management features of the facility. It is a requirement of DOE/RL-96-0003 (DOE-RL 1998a), Section 4.1.2, "Contractor Input", that deliverables be tailored to the nature and level of hazards associated with its waste processing activities.
Appendix 5A Radiation Protection Program Outline	This appendix is added to address compliance to 10 CFR 835.	The contract requires compliance to the 10 CFR 800 series of nuclear safety requirements. This includes compliance to 10 CFR 835, "Occupational Radiation Protection".
Appendix 5B Environmental Radiation Protection Program Outline	This appendix is added to address compliance to the requirements of the Environmental Protection Agency (EPA) and Washington State laws and regulations.	The contract requires submittal of an outline for the environmental radiological protection plan.
Chapter 6.0 Nuclear Criticality Safety	The methodology for criticality analyses is provided in the SARs to the extent the need to perform criticality calculation is found to be appropriate. The RPP-WTP SARs provide fewer details and commitments compared to fuel fabrication facilities relative to: <ul style="list-style-type: none"> 1) Nuclear criticality safety organization (Section 6.2.1) 2) Criticality training (Section 6.2.5) 3) Specific maintenance and quality assurance provisions for criticality prevention (Sections 6.2.3 and 6.2.4) 4) Audits and inspection (Section 6.2.6) 	RG 3.52 focuses heavily on accidental criticality which is a more significant concern for fuel fabrication facilities which have a much higher inventory and concentrations of fissile material than the RPP-WTP. See ISMP Section 3.8, "Criticality Safety", for additional information.

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Appendix *: Ad Hoc Implementing Standard for Safety Analysis Reports

Table *-1 Deviations from the Safety Analysis Report Content Guidance of Regulatory Guide 3.52¹

Chapters	Addition or Subtraction	Basis
7.4 “Hazardous Waste Management”	Section 7.4 of the RPP-WTP SARs address all chemical inventories that are identified by the PHA as representing a significant hazard.	By Section 4.2.2, “Contractor Input”, of DOE/RL-96-0003 (DOE-RL 1998a), the Initial Safety Analysis Report (ISAR) is to address process safety as well as radiological and nuclear safety. The need to address all aspects of chemical safety is also a NRC requirement of RG 3.52, Section 7.4, and NUREG-1513, “Integrated Safety Analysis Guidance Document”, (draft) (NRC 1994). The NUREG-1513 definition of “integrated” provided in Section 2.1, “Definition”, makes reference to chemical safety. Specific guidance for chemical safety is provided in Section 2.6.2, “Process Safety Information”, of the NUREG-1513.
10.0 Environmental Protection	This chapter references the Environmental Report	Protection of the environment is addressed in a separate document.
11.0 Deactivation and Decommissioning	This chapter addresses design and operational provisions considered to facilitate deactivation and decommissioning. It does not address the financial considerations for decommissioning.	The scope of the contract (DOE-ORP 2000) is limited to design support for deactivation.

1. Standard Format and Content for the Health and Safety Sections of License Applications for Fuel Cycle Facilities, Regulatory Guide 3.52, Revision 2, draft, U.S. Nuclear Regulatory Commission, Washington D.C. (NRC 1995).

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Appendix *: Ad Hoc Implementing Standard for Safety Analysis Reports

The SARs should include multiple volumes. Volume I should provide information that is applicable to more than one of the facilities (e.g., Pretreatment, Low-Activity Waste Vitrification, High-Level Waste Vitrification, and Balance of Facilities). Other volumes should be facility specific and contain, at a minimum, chapters 2, 3, 4, and 5.

Executive Summary

- E.1 Facility Background and Mission**
- E.2 Facility Overview**
- E.3 Facility Hazard Classification**
- E.4 Safety Analysis Overview**
- E.5 Organization**
- E.6 Safety Analysis Conclusions**
- E.7 SAR Organization**
- E.8 Summary of Significant Changes from the Preliminary Safety Analysis Report (FSAR stage)**

1 Site Characteristics

- 1.1 Introduction**
- 1.2 Requirements**
- 1.3 Site Description**
- 1.4 Environmental Description**
- 1.5 Natural Phenomena Hazards**
- 1.6 External Man-Made Threats**
- 1.7 Nearby Facilities**

2 Facility Description

- 2.1 Introduction**
- 2.2 Requirements**
- 2.3 Facility Overview**
- 2.4 Facility Structures**
- 2.5 Process Description**
- 2.6 Confinement Systems**
- 2.7 Safety Support Systems**
- 2.8 Utility Distribution Systems**
- 2.9 Auxilliary Systems and Support Facilities**

Appendix *: Ad Hoc Implementing Standard for Safety Analysis Reports

- 3 Hazard and Accident Analyses**
 - 3.1 Introduction**
 - 3.2 Requirements**
 - 3.3 Hazard Analysis**
 - 3.4 Accident Analysis**
 - 3.5 Hazard Classification**
 - 3.6 Common Cause and Common Mode Design Basis Events**
 - 3.7 Seismic Probabilistic Risk Assessment**
 - 3.8 Adherence to Risk Goals and Results**

- 4 Important to Safety Structures, Systems, and Components**
 - 4.1 Introduction**
 - 4.2 Requirements**
 - 4.3 Safety Design Class Systems, Structures, and Components**
 - 4.4 Safety Design Significant Systems, Structures, and Components**

- 5 Derivation of Technical Safety Requirements**
 - 5.1 Introduction**
 - 5.2 Requirements**
 - 5.3 TSR Coverage**
 - 5.4 Derivation of Facility Modes**
 - 5.5 TSR Derivation**
 - 5.6 Design Features**
 - 5.7 Interface with TSRs from Other Facilities**

- 6 Criticality Safety Program**
 - 6.1 Introduction**
 - 6.2 Requirements**
 - 6.3 Criticality Concerns**
 - 6.4 Criticality Controls**
 - 6.5 Criticality Protection Program**
 - 6.6 Criticality Instrumentation**

Appendix *: Ad Hoc Implementing Standard for Safety Analysis Reports

- 7 Radiation Protection**
 - 7.1 Introduction**
 - 7.2 Requirements**
 - 7.3 Radiation Protection Program and Organization**
 - 7.4 ALARA Policy and Program**
 - 7.5 Radiological Protection Training**
 - 7.6 Radiation Exposure Control**
 - 7.7 Radiological Monitoring**
 - 7.8 Radiological Protection Instrumentation**
 - 7.9 Radiological Protection Record Keeping**
 - 7.10 Occupational Radiation Exposures**

- 8 Hazardous Material Protection**
 - 8.1 Introduction**
 - 8.2 Requirements**
 - 8.3 Hazardous Material Protection Program and Organization**
 - 8.4 Hazardous Material Training**
 - 8.5 Hazardous Material Exposure Control**
 - 8.6 Hazardous Material Monitoring**
 - 8.7 Hazardous Material Protection Instrumentation**
 - 8.8 Hazardous Material Protection Record Keeping**
 - 8.9 Hazard Communication Program**
 - 8.10 Occupation Chemical Exposures**

- 9 Waste Management**
 - 9.1 Introduction**
 - 9.2 Requirements**
 - 9.3 Radioactive and Hazardous Waste Management Program and Organization**
 - 9.4 Radioactive and Hazardous Waste Streams or Sources**
 - 9.5 Environmental Radiation Protection Program**

- 10 Initial Testing, In-Service Surveillance, and Maintenance**
 - 10.1 Introduction**
 - 10.2 Requirements**
 - 10.3 Initial Testing Program**
 - 10.4 In-Service Surveillance Program**
 - 10.5 Maintenance Program**

Appendix *: Ad Hoc Implementing Standard for Safety Analysis Reports

- 11 Operational Safety**
 - 11.1 Introduction**
 - 11.2 Requirements**
 - 11.3 Conduct of Operations**

- 12 Procedures and Training**
 - 12.1 Introduction**
 - 12.2 Requirements**
 - 12.3 Procedures Program**
 - 12.4 Training Program**

- 13 Human Factors**
 - 13.1 Introduction**
 - 13.2 Requirements**
 - 13.3 Human Factors Process**
 - 13.4 Identification of Human-Machine Interfaces**
 - 13.5 Optimization of Human-Machine Interfaces**

- 14 Quality Assurance**
 - 14.1 Introduction**

- 15 Emergency Preparedness**
 - 15.1 Introduction**
 - 15.2 Requirements**
 - 15.3 Scope of Emergency Preparedness**
 - 15.4 Emergency Preparedness Planning**

- 16 Deactivation and Decommissioning**
 - 16.1 Introduction**
 - 16.2 Requirements**
 - 16.3 Design and Operational Features**
 - 16.4 Deactivation Requirements**
 - 16.5 Transition Readiness**
 - 16.6 Turning Over WTP Facilities to DOE**

Appendix *: Ad Hoc Implementing Standard for Safety Analysis Reports

- 17 Management, Organization, and Institutional Safety Provisions**
 - 17.1 Introduction**
 - 17.2 Requirements**
 - 17.3 Organizational Structures, Responsibilities, and Interfaces**
 - 17.4 Safety Management Policies and Programs**

- 18 Fire Safety Program**
 - 18.1 Introduction**
 - 18.2 Requirements**
 - 18.3 Fire Hazards**
 - 18.4 Fire Protection Program and Organization**
 - 18.5 Combustible Loading Control**
 - 18.6 Fire Fighting Capabilities**
 - 18.7 Fire Fighting Readiness Assurance**

4.0 References

BNI, 2001. *Safety Requirements Document Volume II*, 24590-WTP-SRD-ESH-01-001-02. Bechtel National, Inc., Richland, Washington.

DOE-ORP, 2000. Contract No. DE-AC27-01RV14136, December 2000. US Department of Energy, Office of River Protection, Richland, Washington.

DOE-RL, 1998a. *DOE Regulatory Process for Radiological, Nuclear, and Process Safety for TWRS Privatization Contractors*, DOE/RL-96-0003, Revision 1. US Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 1998b. *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for TWRS Privatization Contractors*, DOE/RL-96-0006, Revision 1. US Department of Energy, Richland Operations Office, Richland, Washington.

NRC, 1994. *Integrated Safety Analysis Guidance Document*, draft NUREG-1513, distributed August, 8, 1994, US Nuclear Regulatory Commission, Washington, DC.

NRC, 1995. *Regulatory Guide 3.52, Standard Format and Content for the Health and Safety Sections of License Applications for Fuel Cycle Facilities*, draft Revision 2, US Nuclear Regulatory Commission, Washington, DC.

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4-3	SRD Change Process	4-7
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9-1	Key Safety-Related Activities – Design Phase	9-5
9-2	Key Safety-Related Activities – Fabrication and Construction Phase	9-7
9-3	Key Safety-Related Activities – Commissioning Phase	9-8
9-4	Key Safety-Related Activities – Operations Phase	9-9
9-5	Key Safety-Related Activities – Deactivation Phase	9-10

3.0 Conformance to Top-Level Safety Standards and Principles

3.3.1.2 Safety Requirements Document

The Safety Requirements Documents (SRD) defines the radiological, nuclear, and process safety objectives and standards ensuring the RPP-WTP is designed, constructed, operated, and deactivated in a manner that protects the health and safety of the public and workers and protection of the environment. These safety objectives and standards (SRD Safety Criteria), are included as a part of the RPP-WTP authorization basis to establish a formal agreement with the regulator on the necessary facility design features and management processes and the expectations on the features and processes required to safely achieve the defined work of processing Hanford tank waste. The “Radiological Exposure Standards for the Project” is included in the SRD.

Additional information on the SRD is provided in ISMP Section 4.1, “Safety Management Processes”.

3.3.1.3 Safety Analysis Reports

The Safety Analysis Reports (SAR) document the safety analysis for the facility to demonstrate that it can be safely operated, maintained, and shut down. The Initial Safety Analysis Report (ISAR) was developed during Part A based upon a conceptual design of the facility. Those portions of the ISAR that relate to the fundamental aspects of design are considered to be part of the authorization basis. The Preliminary Safety Analysis Report (PSAR) is based on the facility design and plans for construction and demonstrates adequate planning for the operational phase. The Final Safety Analysis Report (FSAR) documents the completed design and construction and provides details on the plans for operation. The FSAR includes facility and process drawings and fabrication and construction specifications important to the safety analysis of the facility. Specifications and drawings not submitted to the regulator are not part of the authorization basis. The FSAR identifies significant changes made in the facility design and plans for operation from what was presented in the PSAR. Near the end of waste processing activities, [the FSAR Chapter 11.0, “Deactivation and Decommissioning”](#), [is will be](#) expanded as necessary to discuss the RPP-WTP operating history as it affects deactivation, the hazards associated with deactivation, and the condition of the facility when it is turned over to DOE for decontamination and decommissioning.

3.3.1.4 Technical Safety Requirements (TSR)

The TSRs are based on the accident analyses included in the FSAR as related to protection of the public and workers from chemical and radiological exposures. The TSRs are maintained current so that they reflect the RPP-WTP as it is analyzed in the FSAR. It includes items in the following categories:

- 1) Safety limits
- 2) Limiting conditions for operation
- 3) Surveillance requirements

4.0 Standards-Based Management

4.2.1 Engineered Features

Engineered features include SSCs that provide for public and worker safety. The design, fabrication, construction, installation, testing, operation, maintenance, and quality assurance requirements for engineered features are tailored by the classification process discussed in ISMP Section 1.3.10, “Classification of Structures, Systems, and Components”.

4.2.2 Training and Procedures

Operator training and procedures ensure that the facility is operated safely. The development of the training and procedures during facility design and commissioning takes account of the differing safety requirements. Procedures support the safe operation of the facility in varying ways. A hierarchy of procedures is developed that reflects the level of safety importance. Factors that determine the level of safety importance for training and procedures include support they provide for maintaining compliance to the Technical Safety Requirements (TSR) and maintenance of Safety Design Class and Safety Design Significant SSCs. Those at the highest level are subject to increased rigor with respect to their development and implementation. Increased rigor means independent review and endorsement by suitably qualified and experienced personnel or safety committees. All procedures that have an impact on the safe operation of the facility are developed and implemented with a suitable degree of rigor commensurate with their safety importance.

Operator training and qualification requirements are tailored to operator requirements. Facility area operators are trained and qualified in their specific areas of operation, radiological and chemical hazards, and necessary emergency requirements (facility recovery and facility and site evacuation). Facility supervisors and operators with increased responsibility receive additional training (e.g., in specific operations, resetting of facility items required for safety, and emergency response). Training ensures that operators receive the necessary knowledge and experience to conduct operations with due regard for safety. Training of maintenance and technical personnel is tailored to the involvement of these personnel in the establishment and maintenance of administrative and engineered controls. More in-depth and frequent training is provided for those individuals involved with Safety Design Class and Safety Design Significant engineered features.

4.2.3 Tailoring of Safety-Related Documentation

The following sections describe how the safety analysis reports (SAR), Integrated Safety Management Plan (ISMP), Safety Requirements Document (SRD), TSRs, and emergency plan are tailored to the phases, hazards and hazardous situations of the RPP-WTP.

4.2.3.1 Safety Analysis Reports. The format and content of the Preliminary Safety Analysis Report (PSAR) and Final Safety Analysis Report (FSAR) are in accordance with ~~the guidance provided in U.S. Nuclear Regulatory Commission (NRC) Regulatory Guide 3.52, Standard Format and Content for the Health and Safety Sections of License Applications for Fuel Cycle Facilities, draft (NRC 1995a).~~ [SRD Volume II, Section 9.1, “Safety Analysis Reports” and the implementing standards referenced in Section 9.1.](#) To facilitate the review of the SARs by the regulator, the SAR content also gives consideration to the review guidance [developed by DOE. For the PSAR this guidance is provided in Review Guidance for the Construction Authorization Request \(CAR\)\(DOE-RL 1999\)Standard Review](#)

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4.0 Standards-Based Management

Plan for the Review of a License Application for a Fuel Cycle Facility, NUREG-1520, draft (NRC 1995b).

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4.0 Standards-Based Management

The format and content of the SARs are tailored to the nature of the RPP-WTP relative to the hazards and hazardous situations identified by the PHA. ~~Table 4-1 lists the planned deviations from the format and content guidance of Regulatory Guide 3.52 in this regard. These deviations include both format changes in terms of added SAR sections and content changes for several of the SAR sections.~~

Table 4-1 Deviations from the Safety Analysis Report Content Guidance of Regulatory Guide 3.52
[\(this table has been deleted\)](#)

Chapters	Addition or Subtraction	Basis
1.3 Site Description	Regulatory Guide (RG 3.52) suggests that Section 1.3 summarize information used in preparing the Environmental Report. Specific information is referenced, but not duplicated in the safety analysis report (SAR).	The Environmental R
1.3.2 Demography and Land Use	The population distribution as a function of distance and direction is not to be provided. The distances to nearby population centers are provided.	There are no residen
3.3 Quality Assurance	Section 3.3.4, "Quality Program Description", addresses the 10 criteria of 10 CFR 830.120, "Quality Assurance Requirements" in lieu of the 18 criteria listed in RG 3.52. By contract compliance to the 10 CFR 800 series of nuclear safety requirements is required. This includes compliance to 10 CFR 830.120, "Quality Assurance Requirements". The differences in the criteria to be addressed are not significant because the quality assurance programs are based on consensus standards.	
3.5 Human Factors	RG 3.52 states that a formal human factors program is not required if the facility has no requirement for safety class actions. Human factors are considered in the Preliminary Safety Analysis Report (PSAR) independent of whether or not human actions are required for protection of the public or workers. The requirements of DOE/RL 96-0006 (DOE RL 1996a), Section 4.2.6, "Human Factors", extend beyond consideration of human factors as related to actions taken to protect the public. Final Safety Analysis Report (FSAR) Section 3.5 documents how compliance to contract Section 4.2.6 is achieved.	
3.10 Testing Program and Preoperational Safety Review	This section is added to address the initial and commissioning testing programs. Addition of this section facilitates documentation of compliance to DOE/RL 96-0006 (DOE RL 1996b), Section 4.2.8, "Pre Operational Testing", and Section 5.2.6, "Pre Startup Safety Review", and DOE/RL 96-0003 (DOE RL 1996a), Section 4.3.2, "Contractor Input", item 13.	
3.11 Operational Practices	This section is to added to address such conduct of operations considerations as shift routine and turnover, control area activities, communications, control of on-shift training, control of equipment and system status, lockout and tagout, independent verification of equipment status, logkeeping, and operational aids postings.	These items are disc

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4.0 Standards-Based Management

~~Table 4-1 – Deviations from the Safety Analysis Report Content
Guidance of Regulatory Guide 3.52¹ (Sheet 2)~~

~~**Chapters – Addition or Subtraction – Basis**~~

~~4.7 Results of the Integrated Safety Assessment – The results for unmitigated accidents are compared to the radiological standards discussed in Integrated Safety Management Plan (ISMP) Section 1.2, “Detailed Description of the Safety Approach” rather than to 10 CFR 20, “Standards for Protection Against Radiation”.~~

~~A full assessment of the hazardous situations that might present themselves during facility operation is provided. This includes estimates of radiological and chemical releases for this range of events.~~

~~Additional details are provided on the methodology used for consequence analysis, bounding conditions, input assumptions, and accident sequences. The standards provided in RG 3.52 were derived from 10 CFR 20, “Standards for Protection Against Radiation”, which is applicable to normal operation.~~

~~The nature of the accidents for the RPP WTP requires more discussion of consequence analysis than that required of fuel fabrication facilities.~~

~~4.8 Controls for Prevention and Mitigation of Accidents – This section identifies the specific safeguards selected for protection of the facility workers, as well as safeguards selected for protection of the public and collocated workers.~~

The nature of the acc

~~5.0 Radiation Safety Chapter 5.0 provides the upper-level statutory standards and program policies that ensure the radiological safety of employees, visitors, and onsite members of the public. Deviations from RG 3.52 are as follows:~~

~~1) As an U.S. Nuclear Regulatory Commission (NRC) document, RG 3.52 references and specifies applicable portions of 10 CFR 20. Because 10 CFR 835 is the radiation safety regulation for the RPP WTP, the focus of this section is on 10 CFR 835. Chapter 5.0 also addresses 10 CFR 20 to facilitate potential transition to the NRC as the regulator.~~

~~2) The implementation level standards and guidance documents referenced in RG 3.52 is being incorporated into the Radiation Protection Plan (RPP). Compliance with 10 CFR 835 is a requirement of the contract.~~

~~The RPP required by 10 CFR 835 is required to include some of the information required of RG 3.52. There is no need to present this information in two documents.~~

~~5.1 As Low As Reasonably Achievable (ALARA) Policy and Program – RG 3.52 states that Regulatory Guide 8-10, Revision 1R (*Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As Reasonably Achievable*) should be used in the development of the ALARA program. A modified version of the existing BNFL corporate ALARA program will be used to develop the RPP WTP ALARA program for normal operation. Section 5.1 discusses the experience with that program including the radiation exposure histories. The BNI program has proven to be successful for facilities similar to the RPP WTP.~~

[All text on this page has been deleted.](#)

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4.0 Standards-Based Management

**Table 4-1 – Deviations from the Safety Analysis Report Content
Guidance of Regulatory Guide 3.52¹ (Sheet 3)**

Chapters	Addition or Subtraction	Basis
5.3 Radiological Safety Standards	The standards specifically identify regulatory exposure standards, administrative exposure control levels, and other key standards of the radiation protection program.	Section 5.3 is added to provide the radiation exposure standards, administrative exposure control levels, and other key standards of the radiation protection program. The contract requires compliance to the 10 CFR 800 series of nuclear safety requirements. This includes compliance to 10 CFR 835, "Occupational Radiation Protection". Section 5.3 documents the compliance to the exposure standards of those regulations that have been promulgated.
5.8 External Exposure (renumbered 5.9 from RG 3.52)	By RG 3.52, the applicant is expected to participated in the National Voluntary Laboratory Accreditation Program (NVLAP) external dosimetry. Section 5.8 allows for participation in either the NVLAP or U.S. Department of Energy (DOE) Laboratory Accreditation Program (DOELAP) accreditation programs.	The option of participating in either the NVLAP or the DOELAP provides maximum flexibility and equivalent dosimetry program quality
5.14 Radioactive Waste Management	Section 5.14 is added to the SARs as the Process Hazards Analysis (PHA) completed for the RPP WTP have identified hazards and hazardous situations with the waste management features of the facility. It is a requirement of DOE/RL 96-0003 (DOE RL 1996a), Section 4.1.2, "Contractor Input", that deliverables be tailored to the nature and level of hazards associated with its waste processing activities.	RG 3.52 does not require a discussion of waste management systems.
Appendix 5A Radiation Protection Program Outline	The contract requires compliance to the 10 CFR 800 series of nuclear safety requirements. This includes compliance to 10 CFR 835, "Occupational Radiation Protection".	This appendix is added to address compliance to 10 CFR 835.
Appendix 5B Environmental Radiation Protection Program Outline	This appendix is added to address compliance to the requirements of the Environmental Protection Agency (EPA) and Washington State laws and regulations.	The contract requires
Chapter 6.0 Nuclear Criticality Safety	The methodology for criticality analyses is provided in the SARs to the extent the need to perform criticality calculation is found to be appropriate. The RPP WTP SARs provide fewer details and commitments compared to fuel fabrication facilities relative to:	
1) Nuclear criticality safety organization (Section 6.2.1)		
2) Criticality training (Section 6.2.5)		
3) Specific maintenance and quality assurance provisions for criticality prevention (Sections 6.2.3 and 6.2.4)		
4) Audits and inspection (Section 6.2.6)	RG 3.52 focuses heavily on accidental criticality which is a more significant concern for fuel fabrication facilities which have a much higher inventory and concentrations of fissile material than the RPP WTP. See ISMP Section 3.8, "Criticality Safety", for additional information.	

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4.0 Standards-Based Management

Chapters Addition or Subtraction Basis

~~7.4 “Hazardous Waste Management” Section 7.4 of the RPP-WTP SARs address all chemical inventories that are identified by the PHA as representing a significant hazard. Safety Analysis Guidance Document”, (draft) (NRC 1994). The NUREG-1513 definition of “integrated” provided in Section 2.1; “Definition”, makes reference to chemical safety. Specific guidance for chemical safety is provided in Section 2.6.2, “Process Safety Information”, of the NUREG-1513.~~

By Section 4.2.2, “C

~~10.0 Environmental Protection This chapter references the Environmental Report Protection of the environment is addressed in a separate document.~~

~~11.0 Deactivation and Decommissioning This chapter addresses design and operational provisions considered to facilitate deactivation and decommissioning. It does not address the financial considerations for decommissioning. The scope of the contract (DOE-ORP-2000) of Part B is limited to design support for deactivation.~~

~~1. Standard Format and Content for the Health and Safety Sections of License Applications for Fuel Cycle Facilities, Regulatory Guide 3.52, Revision 2, draft, U.S. Nuclear Regulatory Commission, Washington D.C. (NRC 1995a).~~

~~For example, the results of criticality calculations summarized in the ISMP Section 3.8, “Criticality Safety”, indicated that criticality is not a significant hazard for the RPP-WTP. Therefore, the content of SAR Chapter 6.0, “Nuclear Criticality Safety”, is reduced. However, because accident consequence analyses are important to the Project safety approach, the content of Initial Safety Analysis Report (ISAR) Section 4.7, “Results of the Integrated Safety Assessment”, will be strengthened, in the PSAR, in terms of the discussion of the methodologies used, boundary conditions, input assumptions, and the descriptions of the accident sequences.~~

The content of the PSAR and FSAR is tailored to the purpose of these two documents. The PSAR supports the request for the construction authorization by documenting the safety criteria, the principal design and construction requirements, and the initial safety analysis. The FSAR documents application of these criteria to the completed RPP-WTP, documents the final safety analysis, and establishes the facility can be operated safely. The PSAR places greater emphasis on design criteria and construction practices than conduct of operations. The FSAR places emphasis on conduct of operations. ~~Table 4-2 lists the planned differences between the content of the PSAR and FSAR to achieve this focus.~~

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4.0 Standards-Based Management

Table 4-2 Planned Differences Between PSAR and FSAR Content [\(this table has been deleted\)](#)

Title	PSAR	FSAR
1.0 General Information		
1.1.1 Facility Description	A description of the facility design is provided in sufficient detail to demonstrate the facility design and construction requirements of the Safety Requirements Document (SRD). The details are also sufficient to support an understanding of the safety analysis provided in Section 4.2, "Facility Description".	This section updates the general description of the facility design.
1.1.2 Process Description	This section describes the process design in sufficient detail to demonstrate the system and component design and fabrication requirements of the SRD are satisfied. Details on the process design sufficient to support an understanding of the safety analysis are provided in Section 4.3, "Process Description".	This section updates the general description of the process design.
1.2 Institutional Information	This section provides the information required by RG 3.52, draft (NRC 1995a).	This section updates any changes in the institutional information provided in the Preliminary Safety Analysis Report (PSAR).
1.3 Site Description	A description of the site land use, meteorology, hydrology, geology, and seismology is provided.	This section addresses any existing or planned changes in land use from that provided in the PSAR. The Final Safety Analysis Report (FSAR) provides any new meteorology, hydrology, geology, and seismology data made available. However, the level of detail provided for these subject areas is not significantly different between the two SARs. The FSAR summarizes data obtained during the Facility excavation that confirms the adequacy of design. This includes the results of field and laboratory investigation of soil properties.

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4.0 Standards-Based Management

~~Table 4-2 Planned Differences Between PSAR and FSAR Content (Sheet 2)~~

Title	PSAR	FSAR
2.1 Organization and Administration	The Project organizational charts with a focus on the design and construction management organizations are provided. An organization chart for the operational phase is also presented. More definitive information on the roles, responsibilities, and interfaces for project management, engineering, construction management, inspections, procurement, quality assurance, records management, and nuclear safety functions is included. Section 2.1 also provides the criteria to determine minimum staffing requirements.	The section contains an update to the organizational structure of Project with a focus on operational and operational support organizations. This section also includes:
	1) Title of each position that is important to public and worker safety and reporting relationship	
	2) Description defining qualifications, responsibilities and authorities for each position related to safety	
	3) Organizational charts of the line organization and safety organization	
	4) Title of the individual delegated overall responsibility for the safety programs who has the authority to shut down operations if they appear to be unsafe, including independence of this authority from operational constraints	
	5) Lines of responsibility and authority for safety	
	6) Lines of communication and interfaces between organizations inside the facility	
	7) Availability of personnel within the safety organization to carry out the assigned function.	
	Specific information on procedure development and minimum staffing requirements is provided.	
2.2 Safety Committees	Information on responsibilities, authorities, and proposed charters of safety committees, and oversight groups is provided. This section updates information on safety committees, and oversight groups that are established following issuance of the PSAR and addresses any new safety committees that have been established.	

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4.0 Standards-Based Management

~~Table 4-2 Planned Differences Between PSAR and FSAR Content (Sheet 3)~~

Title	PSAR	FSAR
3.1 Configuration Management	This section contains specific information on	
1)	Content and reference to procedures used to maintain effective configuration management of the RPP-WTP	
2)	Scope of identified systems, structures, and components (SSCs) and their relationship to the contents of Chapter 4.0, "Integrated Safety Analysis"	
3)	Description of the design information package contents to be provided to the safety analysts	
4)	Change control system specifics, including identification, technical and management reviews, documentation, and implementation	
5)	Specific physical configuration assessment, and periodic equipment performance monitoring	
6)	Design, installation, and testing of facility modifications	
7)	Revision of operating, test, calibration, surveillance, and maintenance procedures and drawings	
8)	Selection and control of replacement parts	
9)	Description of how the RPP-WTP design requirements and design basis were established and documented.	
	A summary of procedures developed to implement the regulatory requirements addressed in this Section 3.1 is presented.	
	This section also includes a draft of the unreviewed safety question process. Specific information on the content of procedures and training developed is provided.	
	The final unreviewed safety question process is provided.	
3.2 Maintenance	A list of Safety Design Class and Safety Design Significant SSCs is provided. The maintenance implementation plan is described to such a level that maintenance philosophy and approach are evident.	
	The FSAR may modify the list of SSCs actions to be addressed based on safety analysis of the final design. Specific information on procedures and training developed to implement the requirements of Section 3.2 is provided. In addition, the elements of the finalized maintenance implementation plan is described. Also discussed is the application of information obtained from demonstration testing and commissioning programs to the maintenance program (the latter by FSAR amendment after initial submittal.)	
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4.0 Standards-Based Management

~~Table 4-2 Planned Differences Between PSAR and FSAR Content (Sheet 4)~~

Title	PSAR	FSAR
3.3 Quality Assurance	Information related to the roles, responsibilities, and interfaces for project management, engineering, construction management, inspections, procurement, quality assurance, records management, and nuclear and process safety functions is provided. Included is the organizational structures of the quality assurance organization.	The PSAR describes the quality assurance requirements of SSCs. Requirements for procedures to implement the regulatory requirements is presented. For the FSAR, this section focus on the quality assurance program for the operating RPP-WTP. Specific information on procedures and training developed to implement the requirements of Section 3.3 is provided.
3.4 Training and Qualification	A description of the performance based training program for operational and support personnel, including a detailed description of the training development process, is provided. The administrative process, to be applied to training activities is described to a level such that the elements of the program and management's commitment to training is evident.	Details on the training and qualification program are provided. Also discussed is the application of information obtained from demonstration testing and commissioning programs (the latter by FSAR amendment after initial submittal.)
3.5 Human Factors	This section documents the criteria by which human factors are considered in the facility design and operation. This section states how human error in facility operations was taken into account in the design by facilitating correct decisions by operators and inhibiting wrong decisions. Consideration given in the design to detecting and correcting or compensating for errors is discussed.	
3.6 Audits and Assessments	Information on the performance of audits and assessments is incorporated into this section.	This section is focused on audits and assessments performed during RPP-WTP operation. Specific information on procedures and training developed to implement the requirements of this section is provided.
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4.0 Standards-Based Management

~~Table 4-2 Planned Differences Between PSAR and FSAR Content (Sheet 5)~~

Title	PSAR	FSAR
3.7 Incident Investigation	This section includes the following:	
	1)Provisions for establishing investigating teams	
	2)Functions, responsibilities, and scope of authority of investigating teams	
	3)Qualifications of internal and/or external investigators on investigating teams	
	4)A description of the procedures to ensure prompt investigation of an incident	
	5)Policy directives that the investigative process and the investigating team be independent of line management and that participants be assured of no retribution from participating in investigations	
	6)The approach proposed to determine the root cause(s) of incidents to ensure that the process is reasonable, systematic, and structured	
	7)Methods to ensure that corrective actions to resolve findings from incident investigations are tracked to completion	
	8)Identification and application of lessons learned	
	9)Specific reporting criteria for incident reporting during the construction phase.	
	A summary of procedures developed to implement the regulatory requirements addressed in Section 3.7 is presented.	
	Specific information on procedures and training developed to implement the requirements is provided.	
	Included are specific reporting criteria for incident reporting during the operations phase.	
3.8 Records Management	This section contains the organization structure and a description of the records management system, including authorities, responsibilities, and qualifications of personnel managing Environmental Safety and Health (ES&H) records.	
	A summary of procedures developed to implement the regulatory requirements contained in Section 3.8 is presented.	
	Specific information on procedures and training developed to implement the requirements is provided.	
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4.0 Standards-Based Management

~~Table 4.2 Planned Differences Between PSAR and FSAR Content (Sheet 6)~~

Title	PSAR	FSAR
3.9 Procedures	A description of the administrative controls to ensure that work is performed in accordance with established technical standards and using approved instructions and procedures is provided.	This section describes the detailed processes of selecting activities requiring operating, emergency, and support procedures; preparing procedures; verifying and validating procedures; and reviewing and approving procedures. In addition, the program to administratively control procedures and their use is described in detail.
3.10 Testing Program and Preoperational Safety Review	This section describes the analysis used to identify and define pre-operational and commissioning tests and describes tests required to ensure compliance to safety specifications. The testing program and controls are described to a level such that the testing philosophy and approach are evident. The prestart safety review approach is described to a level such that the areas to be evaluated and the evaluation approach are evident.	This section may modify the list of required safety improvement program and commissioning tests based on safety analysis of the final design. In addition, the administrative and program controls applicable to the test program are described in full.
3.11 Operational Practices	A description is provided of operational practices influenced by design details, (i.e., communications systems, operational hazards associated with systems and hardware, and control area arrangements).	A description is provided of the operational practices influenced by the final design. In addition, final descriptions are provided on controls and administration of operational practices.
4.0 Integrated Safety Analysis	The methodology for hazards identification and accident analyses is described. The accident consequence analyses include margins in assumptions, boundary conditions, modeling and comparisons to acceptance criteria, as appropriate, to account for uncertainties in the design and plans for operation. Section 4.7 addresses the relationship of these uncertainties to the need to provide sufficient information in the construction authorization package to allow for issuance of the construction authorization.	Assumptions used in the PSAR to account for uncertainties in the design and plans for operations are removed from the FSAR analysis to the extent that these uncertainties have been resolved.

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4.0 Standards-Based Management

~~Table 4-2 Planned Differences Between PSAR and FSAR Content (Sheet 7)~~

Title	PSAR	FSAR
4.2 Facility Description	In addition to providing a general description of the facility, this section discusses the basic civil/structural criteria to be applied to the design. For those structures classified as Safety Design Class, this includes the following:	 <ol style="list-style-type: none"> 1) Design codes, standards, and specifications 2) Loading criteria and load combinations 3) Design and analysis methodology 4) Structural acceptance criteria 5) Criteria for identifying testing and in service inspection requirements 6) Material specifications 7) Special construction features. <p>This section also discusses</p> <ol style="list-style-type: none"> 1) Assumed soil properties 2) Excavation, backfill, and recompaction criteria 3) Assumed bearing capacity of the soil and the safety factor applied to this capacity 4) Expected static and dynamic building total and differential settlements. Less detail is provided for Safety Design Significant structures. <p>Section 4.2 gives specific attention to those structures classified in Section 4.8 as Safety Design Class. Structures located away from the buildings containing significant hazards and that have no relationship to nuclear or process safety are briefly described (e.g., structural design, and the contents and functions of the building) and identified on a plot plan. The FSAR updates the facility description and basic civil/structural criteria provided in the PSAR. It follows with discussions of the results of the application of these criteria to specific features of the facility. Examples are as follows:</p> <ol style="list-style-type: none"> 1) The confirmation of soil properties obtained during excavation 2) A table providing the building total and differential settlement data obtained 3) Derived soil damping values 4) The results of the soil/structure analysis 5) Developed floor response spectra and time histories 6) A list of moderate and high energy systems 7) A list of specific missile and jet impingement sources, targets, and barriers provided. <p>Also provided are updated plan and section drawings for structures classified as Important to Safety. These drawings show the basic floor arrangements, location of major systems and equipment, and basic building dimensions.</p> <p>For those structures classified as Safety Design Class, the drawings also show key structural elements, such as panel and floor reinforcements, cell liners, leak chases, major equipment anchors, and the use of masonry walls.</p> <p>All text on this page has been deleted.</p>

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4.0 Standards-Based Management

Table 4-2 Planned Differences Between PSAR and FSAR Content (Sheet 8)

Title	PSAR	FSAR
4.3 Process Description	The description of process systems includes process flow diagrams for the major systems with instrumentation, sample points, and control features noted to the extent they have been developed. Heat loads are provided for heat transfer systems important to the safety analysis. Design features and parameters important to Section 4.7, "Results of the Integrated Safety Assessment", are provided. This section contains the following additional detail for each system classified as Safety Design Class:	<ol style="list-style-type: none"> 1) The specified safety function(s) with reference to PSAR Section 4.7 for the basis 2) The design basis to be applied in the development of the system design 3) Design margins to be applied 4) The criteria to be used for the development of material specifications 5) Criteria to be used to determine design limits (such as pressure and temperature) 6) Criteria to be used to identify the need for instrumentation to monitor process conditions and the design criteria for such instrumentation (e.g., application of the single failure criterion, and testability). <p>For many cases, the design criteria provided are those included in the Safety Requirements Document (SRD). This section updates the PSAR description of process systems. Process and instrumentation diagrams are provided for major systems. In addition, for those systems classified as Safety Design Class, the FSAR describes how the design requirements provided in the PSAR are reflected in the final design. For each system classified as Safety Design Class, the following are provided:</p> <ol style="list-style-type: none"> 1) The specified safety function(s) with reference to Section 4.7 for the basis 2) The design basis 3) The design safety margins provided by the final design 4) Important quantitative design parameters met by the system design with their basis (e.g., heating, ventilation, and air conditioning flow, and what established the minimum and maximum flow limits) 5) Material specifications 6) Established design limits and their basis (e.g., maximum pressure and temperature limits and what established these limits) 7) Instrumentation provided with attributes, including redundancy, diversity, in situ testability, environmental qualification, failure mode on loss of power, and the surveillance requirements as defined in Section 4.8, "Controls for Prevention and Mitigation of Accidents". <p>The means by which the monitoring requirements established in Section 4.8 are also to be discussed in the FSAR. Potential adverse system interactions between systems of various design classification are addressed.</p> <p>4.7 Results of the Integrated Safety Analysis (ISA) In addition to providing the results of the Process Hazards Analysis (PHA) and accident analysis, this section discusses the uncertainties of the PHA and accident analysis and relates these uncertainties to the required content of the construction authorization package. Section 4.7 provides the basis for the conclusion that resolution of the uncertainties will not have a significant impact on the construction authorization request. This discussion includes the following:</p> <ol style="list-style-type: none"> 1) Characterization of the specific technical information that must be obtained to demonstrate acceptable resolution of the uncertainties 2) An outline and schedule of the program to resolve uncertainties 3) A discussion of the design and/or operational alternatives to resolve the uncertainties. <p>Section 4.7 of the PSAR also describes the preliminary Fire Hazard Analysis (FHA) and the consequence of each design basis fire scenario, including the consequences in the area of origin and adjacent areas. This section documents the resolution of any uncertainties identified in the PSAR.</p> <p>The FSAR describes the final FHA and all resolved uncertainties previously included in the PSAR and additional fire protection measures and equipment design.</p>
4.8 Controls for Prevention and Mitigation of Accidents	Draft Technical Safety Requirements are included.	Final Technical Safety Requirements are included.
5.0 Radiation Safety	This chapter identifies the radiological exposure standards by which the radiation safety program is developed and the facility is operated to ensure the radiological safety of the public and workers. This chapter identifies the radiation protection criteria to be implemented in the facility design.	This chapter reflects the final facility design developed to the radiation protection criteria. It also describes the facility organization and plans for the conduct of operations. This chapter includes detail on facility operation within the radiological protection program exposure standards and other radiological protection requirements.
6.0 Criticality	The methodology for criticality analyses is provided to the extent the need to perform criticality calculation is found to be appropriate. The analyses may include margins in assumptions, bounding conditions, modeling and comparisons to the acceptance criterion, as appropriate, to account for uncertainties in the design and plans for operation.	Assumptions used in the PSAR to account for uncertainties in the design and plans for operations are removed from the FSAR criticality analysis to the extent that these uncertainties have been resolved. The FSAR describes the remaining criticality controls appropriate for the RPP-WTP.
7.0 Chemical Safety	The chapter identifies the program standards by which the chemical safety program is developed and operated to protect the public and workers against chemical hazards and hazardous situations. This chapter identifies criteria to be used for the development of chemical safety controls.	The chapter reflects the final facility design and facility

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~~organization and the developed plans for conduct of operations as related to chemical safety. This section also identifies the specific chemical safety controls to be implemented for protection of the public and workers.~~

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4.0 Standards-Based Management

~~Table 4-2 Planned Differences Between PSAR and FSAR Content (Sheet 9)~~

Title	PSAR	FSAR
8.0 Fire Safety	This chapter describes automatic and manual fire protection features and administrative controls of the fire safety program. Also described are features of the ventilation system, building layout, and emergency egress routes important to fire safety.	Administrative controls to be implemented for the fire safety program are described, including final responsibilities of response forces, and the pre-fire plan used by firefighting personnel to suppress fires safely and effectively.
9.0 Emergency Management	This chapter identifies the applicable requirements and criteria to which the RPP WTP Emergency Management Program are developed. A general outline of the program is presented and the relationship to the Hanford Site and local emergency management programs is discussed. Information is presented to demonstrate that the RPP WTP staff will be able to attain an acceptable state of emergency preparedness by the time the facility becomes operational.	The FSAR discusses and references the specific emergency plan and implementing documentation prepared for the RPP WTP. Specific aspects of all elements of the emergency preparedness program are discussed. Information is presented demonstrating the developed emergency preparedness program is compliant with applicable requirements, regulations, criteria and guidance, and capable of responding to any operational emergency at the facility.
10.0 Environmental Protection	This chapter references the RPP WTP Environmental Report submitted in Part A. This chapter references the RPP WTP Environmental Report as a new or revised Environmental Report and is not required to support the operating authorization request.	This chapter references the RPP WTP Environmental Report submitted in Part A. This chapter references the RPP WTP Environmental Report as a new or revised Environmental Report and is not required to support the operating authorization request.
11.0 Deactivation and Decommissioning	This chapter identifies design considerations given to facilitate deactivation and decommissioning. It also discusses in general terms, the planning, safety analysis, and regulatory considerations to be given to deactivation.	This chapter identifies design considerations given to facilitate deactivation and decommissioning. The chapter describes the specific design features included to facilitate deactivation and decommissioning. The level of detail for planning, safety analysis, and regulatory considerations to be given to deactivation is about the same as that provided in the PSAR. The FSAR is amended near the end of waste processing operation to provide more specific information regarding deactivation. (See Integrated Safety Management Plan [ISMP] Table 9-5).

4.2.3.2 Integrated Safety Management Plan

The ISMP is tailored to the various phases of the Project. It is currently focused on design and construction. However, ISMP Sections 1.3.14, “Commissioning” through 1.3.19, “Deactivation” address integrated safety management for the Project throughout the life cycle of the project (i.e., from commissioning through deactivation). In addition, the administrative controls developed for design and construction (such as training and procedures, configuration management, incident investigation, and quality assurance), are applicable to the operations and deactivation phases. As the project nears operation, the ISMP is revised to give greater attention to the conduct of operations, operational assessments, incident reporting, and maintaining the authorization basis for the facility. Near the end of waste-processing operations, the ISMP is revised again to address the hazards associated with deactivation. This ISMP revision also discusses the integration between the various deactivation activities, such as preparation of the deactivation management plan; development of the deactivation baseline, end point criteria, and surveillance and maintenance requirements; updating of the PHA; and proposed revisions to TSRs.

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WAC 173-460, "Controls for New Sources of Toxic Air Pollutants", *Washington Administrative Code*, as amended.

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
	Introduction				Executive Summary
1.0	General Information				
1.1	Facility and Process Description				
1.1.1	Facility Description			2.3 2.4	Facility Overview Facility Structures
1.1.2	Process Description			2.5	Process Description
1.2	Institutional Information				
1.2.1	Identity and Address			1.1	Introduction
1.2.2	Activity				
1.2.3	Site Location			1.3.1	Geography
1.2.4	Type, Quantity, and Form of Licensed Material			3.3.2	Hazard Identification (Vol II-V)
1.3	Site Description	Regulatory Guide (RG 3.52) suggests that Section 1.3 summarize information used in preparing the Environmental Report. Specific information is referenced, but not duplicated in the safety analysis report (SAR).	The Environmental Report provides this information.	1.3	Site Description
1.3.1	Geography			1.3.1	Geography
1.3.2	Demography and Land Use	The population distribution as a function of distance and direction is not to be provided. The distances to nearby population centers are provided.	There are no residences on the Hanford Site and the nearby population is low.	1.3.2	Demography and Land Use
1.3.3	Meteorology			1.4.1	Meteorology
1.3.4	Hydrology			1.4.2	Hydrology
1.3.5	Geology and Seismicity			1.4.3	Geology

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
2.0	Management Organization			17	Management, Organization, and Institutional Safety Provisions
2.1	Organization and Administration			17.3	Organizational Structures, Responsibilities, and Interfaces
2.1.1	Organizational Commitments, Relationships, Responsibilities, and Authorities			17.3	Organizational Structures, Responsibilities and Interface
2.1.2	Management Controls			17.4	Safety Management Policies and Programs
2.2	Safety Committees				
3.0	Conduct of Operations			11	Operational Safety
3.1	Configuration Management			17.4.3	Configuration Management
3.10	Testing Program and Preoperational Safety Review	This section is added to address the initial and commissioning testing programs.	Addition of this section facilitates documentation of compliance to DOE/RL-96-0006 (DOE-RL 1996b), Section 4.2.8, "Pre-Operational Testing", and Section 5.2.6, "Pre-Startup Safety Review", and DOE/RL-96-0003 (DOE-RL 1996a), Section 4.3.2, "Contractor Input", item 13.	10.3	Commissioning
3.11	Operational Practices	This section is added to address such conduct of operations considerations as shift routine and turnover, control area activities, communications, control of on-shift training, control of equipment and system status, lockout and tagout, independent verification of equipment status, logkeeping, and operational aids postings.	These items are discussed to address what is normally considered conduct of operations.	11	Operational Safety
3.2	Maintenance			10.5	Maintenance

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
3.3	Quality Assurance			14, QAM	Quality Assurance
3.3.1	Management Commitment for QA Program			14, QAM	Quality Assurance
3.3.2	Scope of QA Program			14, QAM	Quality Assurance
3.3.3	Organizational Responsibility			14, QAM	Quality Assurance
3.3.4	QA Program Description			14, QAM	Quality Assurance
3.3.5	Graded QA Approach			14, QAM	Quality Assurance
3.3.6	Application of Graded QA to SSCs and Activities			14, QAM	Quality Assurance
3.4	Training and Qualification			12	Procedures and Training
3.4.1	Organization and Management of the Training System			12.4	Training Program
3.4.2	Trainee Selection			12.4	Training Program
3.4.3	Conduct of Needs/Job Analysis and Identification of Tasks for Training			12.3	Procedures Program
3.4.4	Development of Learning Objectives as the Basis for Training			12.3	Procedures Program
3.4.5	Organization of Instruction Using Lesson Plans and Other Training Guides			12.3	Procedures Program
3.4.6	Evaluation of Trainee Mastery of Learning Objectives			12.3	Procedures Program
3.4.7	Conduct of ON-The-Job Training			12.3	Procedures Program
3.4.8	Systematic Evaluation of Training Effectiveness			12.3	Procedures Program

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
3.5	Human Factors	RG 3.52 states that a formal human factors program is not required if the facility has no requirement for safety-class actions. Human factors are considered in the Preliminary Safety Analysis Report (PSAR) independent of whether or not human actions are required for protection of the public or workers.	The requirements of DOE/RL-96-0006 (DOE-RL 1996a), Section 4.2.6, "Human Factors", extend beyond consideration of human factors as related to actions taken to protect the public. Final Safety Analysis Report (FSAR) Section 3.5 documents how compliance to contract Section 4.2.6 is achieved.	13	Human Factors
3.5.1	Organization and Administration			13.3	Human Factors Process
3.5.2	Human Factors and Assessment of the Correction of Deficiencies			13.4	Identification of Human Machine Interfaces
3.6	Audits and Assessments			17.4.2 QAM	Safety Review and Performance Assessment
3.7	Incident Investigations			13.4	Identification of Human Machine Interfaces
3.8	Records Management			17.4.4	Document Control and Records Management
3.8.1	Organization and Administration			QAM	QAM Policies Q-05.1 and Q-06.1
3.8.2	Types of Records			17.4.4	Document Control and Records Management
3.8.3	Record Handling Procedures			QAM	QAM Policies Q-17.1
3.8.4	Record Storage and Protection			QAM	QAM Policies Q-17.1
3.9	Procedures			12.3	Procedures Program

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
3.10	Testing Program and Preoperational Safety Review	This section is added to address the initial and commissioning testing programs.	Addition of this section facilitates documentation of compliance to DOE/RL-96-0006 (DOE-RL 1996b), Section 4.2.8, "Pre-Operational Testing", and Section 5.2.6, "Pre-Startup Safety Review", and DOE/RL-96-0003 (DOE-RL 1996a), Section 4.3.2, "Contractor Input", item 13.	10.3	Commissioning
3.11	Operational Practices	This section is added to address such conduct of operations considerations as shift routine and turnover, control area activities, communications, control of on-shift training, control of equipment and system status, lockout and tagout, independent verification of equipment status, logkeeping, and operational aids postings.	These items are discussed to address what is normally considered conduct of operations.	11.3	Conduct of Operations
4.0	Integrated Safety Analysis			3	Hazard and Accident Analysis
4.1	Site Description			1.3	Site Description
4.2	Facility Description			2.3 2.4	Facility Overview Facility Structures
4.3	Process Description			2.5	Process Description
4.4	Process Safety Information			3.3.3.X 8.6.1	Hazard Evaluation Hazardous Material Identification
4.5	Training and Qualifications of ISA Team			3.3.1	Identification of Work
4.6	ISA Methods			3.X	Hazard and Accident Analysis

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
4.7	Results of the Integrated Safety Assessment	<p>The results for unmitigated accidents are compared to the radiological standards discussed in Integrated Safety Management Plan (ISMP) Section 1.2, "Detailed Description of the Safety Approach" rather than to 10 CFR 20, "Standards for Protection Against Radiation".</p> <p>A full assessment of the hazardous situations that might present themselves during facility operation is provided. This includes estimates of radiological and chemical releases for this range of events.</p> <p>Additional details are provided on the methodology used for consequence analysis, bounding conditions, input assumptions, and accident sequences.</p>	<p>The standards provided in RG 3.52 were derived from 10 CFR 20, "Standards for Protection Against Radiation", which is applicable to normal operation.</p> <p>The nature of the accidents for the RPP-WTP requires more discussion of consequence analysis than that required of fuel fabrication facilities.</p>	3.3.3 (Vol II-V)	Development of Control Strategies
4.8	Controls for Prevention and Mitigation of Accidents	This section identifies the specific safeguards selected for protection of the facility workers, as well as safeguards selected for protection of the public and collocated workers.	The nature of the accidents for the RPP-WTP requires more discussion of consequence analysis than that required for fuel fabrication facilities.	3.4 (Vol II-V)	Accident Analysis Methodology
4.9	Administrative Control of the ISA			ISMP 3.3.3	Changes to the Authorization Basis
5.0	Radiation Safety			7	Radiation Protection
5.1	As Low As Reasonably Achievable (ALARA) Policy and Program	RG 3.52 states that Regulatory Guide 8.10, Revision 1R (<i>Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As Reasonably Achievable</i>) should be used in the development of the ALARA program. DOE guidance such as DOE G 441.1-2, <i>Occupational ALARA Program Guide</i> will also be used to develop the RPP-WTP ALARA program for normal operation.	DOE practices have proven to be successful for facilities similar to the RPP-WTP.	7.3 7.4	Radiation Protection Program and Organization ALARA Policy and Program
5.2	Organizational Relationships and Personnel Qualifications			7.3	Radiation Protection Program and Organization

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
5.3	Radiological Safety Standards	Section 5.3 is added to provide the radiation standards by which the program operates. The standards specifically identify regulatory exposure standards, administrative exposure control levels, and other key standards of the radiation protection program.	The contract requires compliance to the 10 CFR 800 series of nuclear safety requirements. This includes compliance to 10 CFR 835, "Occupational Radiation Protection". Section 5.3 documents the compliance to the exposure standards of those regulations that have been promulgated.	7.4	ALARA Policy and Program
5.4	Training			7.5	Radiological Protection Training
5.5	Ventilation Systems			2.6	Confinement Systems
5.6	Air Sampling			7.7	Radiological Monitoring
5.7	Contamination Control			7.7	Radiological Monitoring
5.8	External Exposure (renumbered 5.9 from RG 3.52)	By RG 3.52, the applicant is expected to participated in the National Voluntary Laboratory Accreditation Program (NVLAP) external dosimetry. Section 5.8 allows for participation in either the NVLAP or U.S. Department of Energy (DOE) Laboratory Accreditation Program (DOELAP) accreditation programs.	The option of participating in either the NVLAP or the DOELAP provides maximum flexibility and equivalent dosimetry program quality	7.10	Occupational Radiation Exposures
5.9	Internal Exposure			7.7 7.10	Radiological Monitoring Occupational Radiation Exposures
5.10	Summing Internal and External Exposure			7.10	Occupational Radiation Exposures
5.11	Respiratory Protection			7.6.4	Respiratory Protection
5.12	Instrumentation			7.5 7.8	Radiological Protection Training Radiological Protection Record Keeping
5.13	Integrated Safety Analysis			3.4	Accident Analysis Methodology

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
5.14	Radioactive Waste Management	RG 3.52 does not require a discussion of waste management systems.	Section 5.14 is added to the SARs as the Process Hazards Analysis (PHA) completed for the RPP-WTP have identified hazards and hazardous situations with the waste management features of the facility. It is a requirement of DOE/RL-96-0003 (DOE-RL 1996a), Section 4.1.2, "Contractor Input", that deliverables be tailored to the nature and level of hazards associated with its waste processing activities.	8.0	Hazardous Material Protection and Chemical Safety
6.0	Nuclear Criticality Safety	The methodology for criticality analyses is provided in the SARs to the extent the need to perform criticality calculation is found to be appropriate. The RPP-WTP SARs provide fewer details and commitments compared to fuel fabrication facilities relative to: 1) Nuclear criticality safety organization (Section 6.2.1) 2) Criticality training (Section 6.2.5) 3) Specific maintenance and quality assurance provisions for criticality prevention (Sections 6.2.3 and 6.2.4) 4) Audits and inspection (Section 6.2.6)	RG 3.52 focuses heavily on accidental criticality which is a more significant concern for fuel fabrication facilities which have a much higher inventory and concentrations of fissile material than the RPP-WTP. See ISMP Section 3.8, "Criticality Safety", for additional information.	6	Criticality Safety Program
6.1	NCS Technical Practices			6.3 6.4	Criticality Concerns Criticality Limits and Controls
6.1.1	Process Analysis from the Integrated Safety			6.4.6	Application of Double Contingency Principle
6.1.2	NCS Evaluations			6.4.6	Application of Double Contingency Principle
6.1.3	NCS Limits			6.4.3	Administrative Controls

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
6.1.4	Validation and Use of Analytical Methods			6.4.4 CSER 4	Methodology for Determining Nuclear Criticality Limits
6.1.5	NCS Control Methods			6.4.3	Administrative Controls
6.1.6	Criticality Accident Alarm System			6.6	Criticality Instrumentation
6.2	Administrative Practices			6.5	Criticality Safety Program
6.2.1	NCS Organizational Responsibilities			6.5	Criticality Safety Program
6.2.2	Configuration Management			17.4.3.2	Configuration Management Process
6.2.3	Maintenance			6.4.3	Administrative Controls
6.2.4	Quality Assurance			6.4.3 QAM	Administrative Controls
6.2.5	Training			6.5.4	Criticality Safety Training and Qualifications
6.2.6	Operational Inspections, Audits, Assessments, and Investigations			6.5.5	Criticality Safety Inspections and Audits
6.2.7	Written Operating Procedures			6.5.3	Administrative Controls
6.2.8	Materials Control for NCS			N/A	
6.2.9	Emergency Preparedness			6.6	Criticality Instrumentation
7.0	Chemical Safety			8	Hazardous Material Protection: Chemical Safety
7.1	Chemical Safety Program			8.6	Hazardous Material Exposure Control
7.2	Chemical Safety Controls			8.6	Hazardous Material Exposure Control

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
7.3	Reliability of Controls			8.6	Hazardous Material Exposure Control
7.4	“Hazardous Waste Management”	Section 7.4 of the RPP-WTP SARs address all chemical inventories that are identified by the PHA as representing a significant hazard.	By Section 4.2.2, “Contractor Input”, of DOE/RL-96-0003 (DOE-RL 1996a), the Initial Safety Analysis Report (ISAR) is to address process safety as well as radiological and nuclear safety. The need to address all aspects of chemical safety is also an NRC requirement of RG 3.52, Section 7.4, and NUREG-1513, “Integrated Safety Analysis Guidance Document”, (draft) (NRC 1994). The NUREG-1513 definition of “integrated” provided in Section 2.1, “Definition”, makes reference to chemical safety. Specific guidance for chemical safety is provided in Section 2.6.2, “Process Safety Information”, of the NUREG-1513.	8.6	Hazardous Material Exposure Control
7.4	Consequence Estimates			8.6	Hazardous Material Exposure Control
8.0	Fire Safety			18	Fire Safety Program
8.1	Organization and Conduct of Operations			18.3	Organization and Management Control Systems
8.1.1	Organization and Management			18.3	Organization and Management Control Systems
8.1.2	Training and Qualifications			12.0 18.4	Procedures and Training Training and Qualifications
8.1.3	Fire Prevention Program			18.5	Fire Protection Program
8.2	Fire Protection Features and Systems			2.7.2	Fire Protection
8.3	Manual Fire-Fighting Capability			18.7	Manual Fire-Fighting Capability

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
8.4	Fire Hazard Analysis			18.8	Fire Hazard Analysis Summary
8.5	References				
9.0	Emergency Management			15	Emergency Management Program
9.1	Description of On-site and Off-site Emergency Facilities			15.4.4	Emergency Facilities and Equipment
9.2	Types of Accidents			15.X 3.3.3	Development of Control Strategies
9.3	Classification of Accidents			15.X 3.3.3	Development of Control Strategies
9.4	Detection of Accidents			15.4	Emergency Preparedness Planning
9.5	Mitigation of Consequences			15.4	Emergency Preparedness Planning
9.6	Assessment of Releases			15.4	Emergency Preparedness Planning
9.7	Responsibilities of Licensee and Other Organizational Personnel			15.4	Emergency Preparedness Planning
9.8	Notification and Coordination			15.4	Emergency Preparedness Planning
9.9	Description of the Emergency Operational Center			15.4	Emergency Preparedness Planning
9.10	Information to be Communicated and the Parties to be Contacted			15.4	Emergency Preparedness Planning

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
9.11	Public Notification			15.4	Emergency Preparedness Planning
9.12	Training			15.4	Emergency Preparedness Planning
9.13	Procedures for Safe Shutdown and Recovery			15.3	Scope of Emergency Preparedness Program
				15.4	Emergency Preparedness Planning
9.14	Drills and Exercises			15.4	Emergency Preparedness Planning
9.15	Procedures for Identifying, Locating, and Controlling Hazardous Chemicals			15.3	Scope of Emergency Preparedness Program
				15.4	Emergency Preparedness Planning
9.16	Responsibilities for Developing and Maintaining Current the Emergency Program and Its Procedures			15.3	Scope of Emergency Preparedness Program
				15.4	Emergency Preparedness Planning
10.0	Environmental Protection	This chapter references the Environmental Report	Protection of the environment is addressed in a separate document.	9	Radioactive and Hazardous Waste Management
10.0	Environmental Protection			9.1	Introduction
10.1	Environmental Report			N/A	
10.1.1	Description of Proposed Action			N/A	
10.1.2	Purpose of Proposed Action			N/A	
10.1.3	Description of Affected Environment			N/A	
10.1.4	Discussion of Considerations			N/A	

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
10.1.5	Analysis of Environmental Effects of Proposed Action and Alternatives			N/A	
10.1.6	Federal and State Environmental Requirements			9.1.1 9.4	Permit Overview Radioactive and Hazardous Waste Streams and Sources (Solids, Liquids, and Gases)
10.2	Environmental Safety Program			9.3	Radioactive and Hazardous Waste Management Program and Organization
10.2.1	Features for Contamination Control.			2.3	Facility Overview
10.2.10	Bibliography				
10.2.2	Environmental Monitoring Program			9.1 9.4	Introduction Radioactive and Hazardous Waste Streams and Sources (Solids, Liquids, and Gases)
10.2.3	Emergency Plan			15.X	
10.2.4	Maintenance and Surveillance			9.3	Radioactive and Hazardous Waste Management Program and Organization
10.2.5	Configuration Management			17.4.3.2	Configuration Management Process
10.2.6	Organization and Management			9.3.1 17	Program Summary Management, Organization and Institutional Safety Provisions
10.2.7	Quality Assurance			QAM	

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
10.2.8	training			9.3	Radioactive and Hazardous Waste Management Program and Organization
				9.5 (ERPP)	Environmental Radiological Protection Plan (ERPP)
10.2.9	Event Notification and Reporting			9.1.1	Permit Overview
11.0	Deactivation and Decommissioning	This chapter addresses design and operational provisions considered to facilitate deactivation and decommissioning. It does not address the financial considerations for decommissioning.	The scope of the contract (DOE-ORP 2000) of Part B is limited to design support for deactivation.	16	Deactivation and Decommissioning
11.1	Conceptual Decommissioning Plan			16.1	Introduction
11.1.1	Information for Conceptual Decommissioning Plan			16.4	Administrative
11.1.2	Information for Total or Partial Cessation of Operations			16.5	Transition Readiness
11.1.3	Bibliography			N/A	
11.1.4	Appendix A: Cost Estimating Tables			N/A	
11.2	Decommissioning Funding Plan and Financial Assurance Mechanisms			N/A	
11.2.1	Decommissioning Cost Estimate			N/A	
11.2.2	Financial Assurance Mechanism(s)			N/A	

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RG 3.52 Chapter		ISMP Addition or Subtraction	Basis	WTP New Location	
Section	Title			Section	Title
11.2.3	Updating the Cost Estimate and Funding Level			N/A	
11.2.4	Bibliography			N/A	
11.2.5	Appendix A: Sample Sight Draft			N/A	
Appendix A	Radiation Protection Program Outline	This appendix is added to address compliance to 10 CFR 835.	The contract requires compliance to the 10 CFR 800 series of nuclear safety requirements. This includes compliance to 10 CFR 835, "Occupational Radiation Protection".	7 RPP	Radiation Protection
Appendix B	Environmental Radiation Protection Program Outline	This appendix is added to address compliance to the requirements of the Environmental Protection Agency (EPA) and Washington State laws and regulations.	The contract requires submittal of an outline for the environmental radiological protection plan.	9.5 ERPP	Environmental Radiation Protection Plan (ERPP)

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DOE/RL-96-0003 vs SAR Table of Contents Crosswalk**

DOE/RL-96-0003		SAR Location	
Section	Description	Volume/Chapter	Title
4.3.2 A (1)	Description of the Contractor's site and its location within the Hanford Site.	I/1	Site Characteristics
4.3.2 A (2)	Description of natural-phenomena and man-made external hazards at the Contractor's site, the selected design-basis external events, and the rationale for their selection.	I/1	Site Characteristics
4.3.2 A (3)	Description of high-level radioactive waste handling and treatment processes	I,II,III,IV,V/2	Facility Description
4.3.2 A (4)	Description of planned facility operations	I,II,III,IV,V/2	Facility Description
4.3.2 A (5)	Description of facility structures, systems and components including those designated as important to safety	I,II,III,IV,V/2	Facility Description
4.3.2 A (6)	Description of the D&D features provided in the design and draft deactivation plan	I/16	Deactivation and Decommissioning
4.3.2 A (7)	Design data and design drawings to support description in 5, above	II,III,IV,V/4	Important to Safety Structures, Systems, and Components ¹
4.3.2 A (8)	Analysis of radiological, nuclear, and process hazards for the design	I,II,III,IV,V/3	Hazard and Accident Analysis
4.3.2 A (9)	Description of facility features and functions provided to control the radiological, nuclear, and process hazards	I,II,III,IV,V/4	Important to Safety Structures, Systems, and Components
4.3.2 A (10)	Description of the range of off-normal events and postulated accidents that could initiate internal to the Contractor's facility, the selected design-basis internal events, and the rationale for their selection	I,II,III,IV,V/3	Hazard and Accident Analysis
4.3.2 A (11)	Analysis of hazards-control features during all expected facility operating modes, off-normal conditions, and design basis internal and external events	I,II,III,IV,V/3	Hazard and Accident Analysis
4.3.2 A (12)	Potential safety limits and justification for their selection	II,III,IV,V/5	Derivation of Technical Safety Requirements
4.3.2 A (13)	Description of planned safety-related testing to be performed, including the purpose of each test, expected data, and a description of the test and associated equipment	I/10	Initial Testing, In-Service Surveillance, and Maintenance

¹ Additional data and engineering drawing will be submitted with the CAR.

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DOE/RL-96-0003		SAR Location	
Section	Description	Volume/Chapter	Title
4.3.2 A (14)	Description of quality assurance program employed during the design, and to be employed during construction, safety-related testing, and pre-operational testing	I/14	Quality Assurance
4.3.2 A (15)	An analysis of the safety basis for the facility (safety envelope) in terms of physical design, structures with prescribed safety functions, systems with prescribed safety functions, equipment with prescribed safety functions, operating modes, operating conditions, off-normal internal events considered, assumptions made, uncertainties in data and analyses, safety limits, and operating limits	I,II,III,IV,V/3 I,II,III,IV,V/4	Hazard and Accident Analysis ITS SSCs
4.3.2 A (16)	A demonstration that the facility should perform such that the radiological, nuclear, and process safety requirements in the SRD and in applicable regulations should be met	I,II,III,IV,V/3	Hazard and Accident Analysis
4.3.2 A (17)	A demonstration that adequate protection of the public, the workers, and the environment should be achieved	I,II,III,IV,V/3	Hazard and Accident Analysis
4.3.2 A (18)	Drafts of the: a) Unreviewed Safety Question Plan; b) Conduct of Operations Plan; c) Technical Safety Requirements; d) Training and Qualification Plan; e) Maintenance Implementation Plan; f) Occurrence Reporting Procedures; g) Environmental Radiological Protection Program	a) I/17.4.6 b) I/11 c) I,II,III,IV,V/ Appendices d) I/12 e) I/10 f) I/17.4.7 g) I/9.5	

IDENTIFICATION OF IMPLEMENTING STANDARD FOR THE RPP-WTP SAFETY ANALYSIS REPORTS

1 Purpose

The River Protection Project Waste Treatment Plant (RPP-WTP) project contract with the Department of Energy (DOE) [Ref. 1] and the project Safety Requirements Document (SRD) [Ref. 2] require that the RPP-WTP contractor prepare and submit an Initial Safety Analysis Report (ISAR), a Preliminary Safety Analysis Report (PSAR), and a Final Safety Analysis Report (FSAR). The contract also requires compliance with the SRD; DOE/RL-96-0003, 0004, 0005, and 0006; 10 CFR 830 and other laws and regulations. With the transition of the RPP-WTP project to the Bechtel National, Inc (BNI) design, construction, and commissioning (DC&C) contract, the standard selected for the implementing standard for the project PSAR and FSAR was evaluated to determine if a new standard should be selected. The ISAR was submitted by the BNFL Inc. team in Part A. The decision to evaluate the selected standard was influenced by the transition from the prior project privatization contract to the DC&C contract and the desire to have the format of the PSAR and FSAR more consistent with that of other DOE owned and contractor operated facilities. This attachment to ABCN-24590-01-00004 documents this evaluation of the selection of a new implementing standard for the preparation of SARs under the DC&C contract.

2 Scope

This attachment documents the results of a specially constituted Integrated Safety Management (ISM) team for evaluation and identification of an implementing standard for preparation of SARs. The attachment to ABCN-24590-01-00004 furnishes a summary of an integrated safety management process for identification of these standards; rationale for the evaluation and identification of the standard, and documentation to demonstrate the standard meets the ISM standards selection process acceptance criteria. The standards selection process, using the project ISM process, was undertaken in compliance with the DOE/RL-96-0004 [Ref. 3] regulatory process. The project-specific implementing standard for this regulatory process is detailed in Appendix A of the SRD, "Implementing Standard for Safety Standards and Requirements Identification."

The identification of SAR implementing codes and standards was performed in compliance with the procedural requirements specified in project procedure K70P568 [Ref. 4]. This procedure requires that identification of standards, other than engineering/design, manufacture/fabrication, and construction standards (e.g., standards for quality assurance, safety documentation, and conduct of operations), be performed by specially constituted teams formed by the Process Management Team (PMT).

3 Discussion

Upon confirmation of the ISM process-selected implementing standard for the preparation of SARs by the Project Safety Committee (PSC) and approval by the Project Manager, based on the PSC recommendation, the implementing standard will be proposed for DOE approval of an SRD update, via the project process for controlling the Authorization Basis.

Following approval of the Authorization Bases Change Notice (ABCN) by the DOE Office of Safety Regulation (OSR), the results of the standards selection ISM process will be documented in the applicable SRD safety criteria for the SAR.

3.1 ISM Team Composition

A multi-discipline ISM team provided a recommendation for the RPP-WTP implementing standard for preparation of SARs. This team¹ consisted of the following individuals:

Name	Title	Department
Marsha Eades, team chairperson	Safety and Licensing Engineer	ES&H/Regulatory Safety
George Crawford	Systems Engineer	Engineering
John Hinckley	ISM Lead	ES&H
Cynthia Beaumier	Operations Lead Specialist	Operations
Richard Garrett (advisor)	Safety Analysis Manager	ES&H

Note 1: The need to establish this team, selection of appropriate chairperson, and determination of scope of discipline involvement was confirmed at the PMT meeting held on April 18, 2001

3.2 Implementing Standards Selection Criteria

When properly implemented, the set of standards for production of the SARs will:

- 1 Provide adequate safety
- 2 Comply with applicable laws and regulations
- 3 Conform with the Top-Level Safety Standards and Principles

At a minimum, the assessment team also considered the following contractual [Ref. 1] requirements for the radiological, nuclear, and process safety as excerpted from the contract Statement of Work, Section C, Standard 7, Item (2):

- (i) *The Contractor shall develop and implement an integrated standards-based safety management program to ensure that radiological, nuclear, and process safety requirements are defined, implemented, and maintained. Radiological, nuclear, and process safety requirements shall be adapted to the specific hazards associated with the Contractor's WTP activities.*
- (ii) *The Contractor's integrated standards-based safety management program shall be developed to comply with the specific nuclear safety regulations defined in the effective rules of the 10 CFR 800 series of nuclear safety requirements and with the regulatory program established in the following four documents:*
 - (A) *DOE/RL-96-0003, DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor;*
 - (B) *DOE/RL-96-0004, Process for Establishing a Set of Radiological, Nuclear, and Process Safety Standards and Requirements for the RPP Waste Treatment Plant Contractor;*
 - (C) *DOE/RL-96-0005, Concept of the DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor; and*

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

Changes to the four documents will be analyzed under RL/REG-98-14, Regulatory Unit Position on New Safety Information and Back-fits, and, if implemented, dispositioned in accordance with the Section I Clause entitled, Changes.

The integrated standards-based safety management program shall integrate the appropriate planning and practices elements specified in 29 CFR 1910.119, Occupational Safety and Health Act of 1970, Process Safety Management of Highly Hazardous Chemicals, to the extent that highly hazardous chemicals are present in quantities covered by 29 CFR 1910.119.

- (iii) (only applicable to the Integrated Safety Management Plan)
- (iv) *The Contractor shall prepare and submit to DOE for review and approval, the radiological, nuclear, and process safety deliverables defined in Table S7-1, Radiological, Nuclear, and Process Safety Deliverables. Each deliverable is structured around the following six activities:*
- (A) *Standards Approval;*
- (B) *Initial Safety Evaluation;*
- (C) *Authorization for Construction and Cold Commissioning;*
- (D) *Authorization for Hot Commissioning;*
- (E) *Oversight Process Determination; and*
- (F) *Deactivation Safety Assessment.*
- (v) *The Contractor shall submit a revised Standards Approval Package, including all necessary supporting documentation, sufficiently in advance of the submission (at least 14 weeks) of the Construction Authorization Request to support DOE review and approval. The required elements of the Standards Approval Package may be incrementally submitted for review. The scope and content of the submittal shall be in accordance with the requirements for a Construction Authorization Request as stipulated in Section 4.3.2, Contractor Input, Items 6) and 8) of DOE/RL-96-0003, DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor.*

The Contractor shall submit the Construction Authorization Request, with the exception of the Standards Approval Package submitted in paragraph (e)(2)(v) of this Standard, 7 months prior to the need for approval of the Authorization to Proceed with construction, for DOE review and approval.

3.3 Results of ISM Team SAR Standards Selection Process

The ISM team reviewed the contract-required standards and a candidate set of implementing standards. This set of standards provided acceptable methods for implementing many of the requirements of 10 CFR 830, the contract, and the SRD. No single standard fully meets the requirements for the RPP-WTP project. A listing of these candidate standards follows:

- NUREG-1320, *Nuclear Fuel Cycle Accident Analysis Handbook*, in revision, U.S. Nuclear Regulatory Commission, Washington, D.C.
- NUREG-1513, *Integrated Safety Analysis Guidance Document*, draft, distributed August 8, 1994, U.S. Nuclear Regulatory Commission, Washington, D.C.
- NUREG-1520, *Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility*, draft, U.S. Nuclear Regulatory Commission, Washington, D.C.
- Regulatory Guide 1.70, *Standard Format and Content of Safety Analysis Reports For Nuclear Power Plants, LWR Edition*, Revision 3, U.S. Nuclear Regulatory Commission, Washington, D.C.

- Regulatory Guide 3.52, *Standard Format and Content for the Health and Safety Sections of License Applications for Fuel Cycle Facilities*, Revision 2, draft, U.S. Nuclear Regulatory Commission, Washington, D.C.
- DOE-STD-3009-94, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis Reports*, January 2000, U.S. Department of Energy, Washington, D.C.

3.3.1 Summary of Selected Implementing Standard

The ISM Team determined that, from the set of candidate implementation standards for the SARs, DOE-STD-3009-94, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis Reports*, ~~if tailored~~, would provide an adequate standard for the preparation of SARs needed to support the mission of the RPP-WTP.

Confirmation of the adequacy of the project-implementing standard for the SARs, using the DOE-STD-3009-94, as tailored in an ad hoc standard, was provided by comparison to the standards acceptance criteria. The ISM Team made this confirmation through the application of the ISM standards selection process that implements DOE/RL-96-0004.

The ISM Team assessed the selected implementing standard to confirm that it provides adequate safety, complies with applicable laws and regulations, and conforms to the top-level safety standards and principles. A summary of how the selected standard meet these three criteria, as well as how the implementing standard is consistent with the applicable safety criteria of the SRD requirements specified in the SRD Chapter 9.0 is presented in the following sections.

3.3.2 Adequate Safety

Identification of a new implementing standard for the preparation of SARs impacts SRD Safety Criteria 9.1-1 through 9.1-3. Use of a ~~tailored~~ DOE-STD-3009-94 format as the implementing standard for SRD Safety Criteria 9.1-1 through 9.1-3 was reviewed by the ISM team to confirm that adequate safety is still provided by using the ~~tailored~~ standard for the SARs format. This review was conducted through assessment of the scope and content of the implementing standard to ensure it provided adequate guidance to meet existing SRD safety criteria for the SARs.

The DOE-STD-3009-94 as a comprehensive, recognized standard for the preparation of nonreactor nuclear facility safety analysis reports, provides guidance to support the SAR topical areas covered in the SRD safety criteria. The selection of the ~~tailored~~ standard does not reduce the requirements in place for the project. Thus, use of the ~~tailored~~ DOE-STD-3009-94 as described in the ad hoc implementing standard for SAR format and content demonstrates a continued commitment to adequate safety.

The adequacy of these SRD SAR safety criteria to support adequate safety is supported by prior DOE evaluation of the adequacy of these SRD safety criteria for the SARs. The evaluation by the DOE Regulatory Unit (RU), now known as the Office of Safety Regulation (OSR), supports the conclusion of adequacy of the SRD safety criteria. The RU reviewed the original SRD safety criteria and reported the results of the review in RL/REG-98-01. Additionally, the RU reviewed Revision 1A of the SRD safety criteria and reported the results in RL/REG-98-20, Revision 1. Use of the ad hoc standard ~~DOE-STD-3009~~ as the implementing standard is consistent with SAR related commitments in the ISMP.

3.3.3 Compliance with All Applicable Laws and Regulations

Selection of DOE-STD-3009-94 as [an](#) implementing standards [for SAR format](#) is compliant with the current 10 CFR 830 requirements, (including 10 CFR 830 Subpart B, effective April 10, 2001).

3.3.4 Conformance to Top-Level Safety Standards

Top-level safety standards for the SARs are provided in DOE/RL-96-0006 [Ref. 5]. The two top-level safety standards related to safety analyses documentation are identified below along with an assessment of how use of the selected implementing standard ensures conformance to the identified top-level safety standard.

DOE/RL-96-0006; Item 4.1.3.1 Authorization Basis

Material that is part of the authorization basis should be established, documented, and submitted to the Director of the Regulatory Unit for evaluation and in support of decisions and regulatory oversight. The Contractor should maintain the material current with respect to changes made to the facility design and administrative controls and in the light of significantly new safety information.

Evaluation: For the three SRD Safety Criteria impacted by the identification of a new standard for SAR preparation, this top-level safety standard is cited in Regulatory Basis for SRD Safety Criteria 9.1-1. Adoption of [the proposed ad hoc implementing standard](#)~~a tailored DOE-STD-3009~~ does not impact implementation of the first sentence of this top-level safety standard as the content of the SARs is unchanged by the proposed change in the SAR implementing standard. Only the format of the SARs is affected by the selection of [the proposed ad hoc implementing standard](#)~~a tailored DOE-STD-3009-94~~. The content of the PSAR relative to *Review Guidance for the Construction Authorization Request (CAR) (RL/REG-99-05)* [and draft Regulatory Guide 3.52](#) is unchanged by the application of [the proposed ad hoc implementing standard](#)~~a tailored DOE-STD-3009~~. The second sentence of this top-level safety standard concerns the maintenance of the SARs and not their format or content and thus this sentence is not impacted by the selection of a SAR implementing standard.

DOE/RL-96-0006; Item 4.2.1.3 Safety Analysis

A safety analysis should be carried out as required to evaluate the safety performance of the design and identify requirements for operations.

Evaluation: For the three SRD Safety Criteria impacted by the identification of a new standard for SAR preparation, this top-level safety standard is cited in Regulatory Basis for SRD Safety Criterion 9.1-1. [Use of the proposed ad hoc implementing standard](#)~~Tailoring of DOE-STD-3009~~ assures that the WTP-specific requirements for safety analyses (including the evaluation of the design and the identification of requirements for operations) contained in the authorization basis will be provided in the SARs. Specifically, the SARs will document a hazard identification, safety analysis, and standards identification process that complies with DOE/RL-96-0004. This process is unchanged by the selection of [the proposed ad hoc implementing standard](#)~~a tailored DOE-STD-3009-94~~ as the guide for preparation of the SARs.

The contractual safety analysis methodology for the RPP-WTP requires the completion of a preliminary safety analysis that includes the identification of important-to-safety SSCs. The method approved for the identification of important-to-safety SSCs for the RPP-WTP is similar in concept but more elaborate than the method defined in Appendix A to DOE-STD-3009 for safety SSC. The criteria for this process are detailed in SRD Appendix A, “Implementing Standard for Safety Standards and Requirements Identification.”

3.3.5 Evaluation Against Applicable SRD Safety Criteria

The SRD safety criteria for the project SARs are provided in the Safety Criteria in SRD Section 9.1. Safety Criteria 9.1-1, 9.1-2, and 9.1-3 address the development and documentation of the safety basis for the facility. Safety Criteria 9.1-4 through 9.1-6 relate to maintenance and implementation of the SAR and Safety Criterion 9.1-7 relates to the submittal of a hazard analysis. An evaluation summarized below demonstrates the adequacy of the selected implementing standard in meeting Safety Criteria 9.1-1, 9.1-2, and 9.1-3.

SRD Safety Criterion: 9.1-1

Safety analyses shall be performed using a tailored approach to develop and evaluate the adequacy of the authorization basis for the facility. Preliminary and Final Safety Analysis Reports shall be prepared to document the safety analyses.

Evaluation: The [proposed ad hoc implementing standard](#) ~~tailored DOE-STD-3009-94~~ provides adequate guidance to ensure appropriate safety analysis documentation requirements are met. The selection of [Appendix *, Ad Hoc Implementing Standard for Safety Analysis Reports](#) ~~DOE-STD-3009~~ as an implementing standard for documenting the performance of the safety analysis does not relieve the project of other contractual and regulatory requirements for performing the analysis that may exceed those contained in DOE-STD-3009. ~~Specifically, DOE-STD-3009-94 has been tailored to require that~~ [The](#) hazard and accident analyses [will](#) be performed in accordance with:

- *Process for Establishing a Set of Radiological, Nuclear, and Process Safety Standards and Requirements for TWRS Privatization, (DOE/RL-96-0004)*
- *Implementing Standard for Safety Standards and Requirements Identification, SRD Volume II, Appendix A.*

SRD Safety Criterion: 9.1-2

A SAR shall contain sections that address the following topics:

1. *Site Description*
2. *Facility and Process Description*
3. *Integrated Safety Analysis*
4. *Nuclear Criticality Safety*
5. *Technical Safety Requirements*
6. *Radiation Safety*
7. *Chemical Safety*
8. *Fire Safety*
9. *Human Factors*
10. *Emergency Preparedness*
11. *Management Organization*
12. *Conduct of Operations*
13. *Procedures*
14. *Training and Qualifications*

15. Deactivation and Decommission
16. Incident Investigations
17. Records Management
18. Audits and Assessments
19. Quality Assurance.

Evaluation: With one clarification, [the proposed ad hoc implementing standard DOE-STD-3009-94](#) ~~requires~~ includes that the topics listed above ~~be~~ are addressed.

The term “integrated safety analysis” does not appear in DOE-STD-3009-94. However, [the proposed ad hoc implementing standard DOE-STD-3009-94](#) has been tailored to ~~require~~ include documentation of the implementation of SRD Volume II, Appendix A. This documentation will provide a description of how integrated safety analysis has been applied to the RPP-WTP.

This change request also proposes the addition of the following items to the above listing.

20. Initial Surveillance and In-Service Testing
21. Maintenance

DOE-STD-3009-94 ~~requires~~ includes that these additional items ~~also be~~ are addressed.

The change request also proposes that the ~~requirement of the~~ SARs ~~to~~ provide an executive summary.

SRD Safety Criterion: 9.1-3

A Preliminary Safety Analysis Report (PSAR) shall be submitted to the regulator only after all major safety issues have been resolved and other safety issues scheduled for completion. The PSAR shall document the facility design and plans for construction and demonstrate adequate planning for the operational phase.

A Final Safety Analysis Report (FSAR) shall be submitted to the regulator for approval prior to authorization to operate a the facility. The FSAR shall document the completed design and construction and provide details on the plans for operation. The FSAR shall include facility and process drawings and fabrication and construction specifications important to the safety analysis of the facility. The FSAR shall identify significant changes made in the facility design and plans for operation from what was presented in the PSAR.

Evaluation:

[The proposed ad hoc implementing standard DOE-STD-3009-94](#) has been tailored for the RPP-WTP to require the following:

- The PSAR should not be submitted to the regulator until all major safety issues have been resolved and other safety issues have been scheduled for completion
- The FSAR should identify significant changes made in the facility design and plans for operation from what was presented in the PSAR.
- The FSAR, in addition to including facility and process drawings, should also include fabrication and construction specifications important to the safety analysis of the facility.

DOE-STD-3009-94 Chapter 2, “Facility Description” and Chapter 4, Safety Structures, Systems, and Components” require a description of the facility design and plans for construction. The following chapters of DOE-STD-3009-94 require a description of the plans for operation:

- Chapter 5, “Derivation of Technical Safety Requirements”
- Chapter 6, “Prevention of Inadvertent Criticality”
- Chapter 7, “Radiation Protection”
- Chapter 8, “Hazardous Material Protections”
- Chapter 9, “Radioactive and Hazardous Waste Management”
- Chapter 10, “Initial Testing, In-service Surveillance, and Maintenance”
- Chapter 11, “Operational Safety”
- Chapter 12, “procedures and training”
- Chapter 13, “Human Factors”
- Chapter 14, Quality Assurance”
- Chapter 15, “Emergency Preparedness Program”
- Chapter 17, “Management, Organization, and Institutional Safety”

4 Conclusions

The ISM Team determined that the [proposed ad hoc implementing standard tailored DOE-STD-3009-94, Appendix *, Ad Hoc Implementing Standard for Safety Analysis Reports](#) provides an adequate and appropriate implementing standard for the preparation of SARs for the RPP-WTP.

The ISM Team determined that the [ad hoc DOE](#) standard provides adequate safety, complies with applicable laws and regulations and conforms to the Top-Level Safety Standards and Principles. Use of this implementing standard was found by the ISM Team to be consistently reflected in the SAR related commitments contained within the ISMP.

5 Recommendations

The DOE-STD-3009-94, as tailored, [in an ad hoc implementing standard, SRD Volume II, Appendix *, Ad Hoc Implementing Standard for Safety Analysis Reports](#) should be recommended by the Process Management Team to the Project Safety Committee for confirmation as the implementing standard for SRD Safety Criteria 9.1-1, 9.1-2, and 9.1-3.

6 References

- 1 DOE Contract DE-AC27-01RV14136, December 2000, U.S. Department of Energy, Office of River Protection, Richland, Washington
- 2 *Safety Requirements Document*, BNFL-5193-SRD-01, Revision 4, Bechtel National, Inc., Richland, Washington. (Revision 4 issued April 2001).

- 3 *Process for Establishing a Set of Radiological, Nuclear, and Process Safety Standards, and Requirements for TWRS Privatization*, DOE/RL-96-0004, Revision 1, July 1998, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- 4 River Protection Project Waste Treatment Plant Project Procedure, K70P568, “Hazard Analysis, Development of Hazard Control Strategies, and Identification of Standards”, Rev. 0, 2/05/01
- 5 *Top-level Radiological, Nuclear, and Process Safety Standards and Principles for TWRS Privatization Contractors*, DOE/RL-96-0006, Revision 1, July 1998, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- 6 10 CFR 830 “Nuclear Safety Management”, *Code of Federal Regulations*, as amended.