Implementation of Recommendations from the One System Comparative Evaluation of the Hanford Tank Farms and Waste Treatment Plant Safety Bases – 14137

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ABSTRACT

The One System Integrated Project Team (IPT) was formed at the Hanford Site in late 2011 as a way to improve coordination and integration between the Hanford Tank Waste Treatment and Immobilization Plant (WTP) and the Tank Operations Contractor (i.e., Tank Farms) on interfaces between the two projects, and to eliminate duplication and exploit opportunities for synergy. Paper 14214 "One System Project Team Progress in Coordinating Hanford Tank Farms and the Waste Treatment Plant" authored by Garth Duncan, Ray Skwarek and Ben Harp provides additional information about the IPT and progress made over the last year. This paper describes specific activities performed in the area of Nuclear Safety integration, one of the primary focuses of the IPT.

A Comparative Evaluation was conducted by an Expert Review Team for the One System IPT to compare the safety bases for the WTP and the Tank Farms. The evaluation had an overarching purpose to facilitate effective integration between WTP and Tank Farms safety bases. It provided One System management with an objective evaluation of identified differences in safety basis process requirements, guidance, direction, procedures, and products (including safety controls, key safety basis inputs and assumptions, and consequence calculation methodologies) between WTP and Tank Farms. The evaluation identified 25 recommendations (Opportunities for Integration). The resolution of these recommendations resulted in 16 implementation plans. The completion of these implementation plans will help ensure consistent safety bases for WTP and Tank Farms along with consistent safety basis processes, procedures, and analyses, and should increase the likelihood of a successful startup of the WTP. This early integration will result in long-term cost savings and significant operational improvements. In addition, the implementation plans lead to the development of eight new safety analysis methodologies that can be used at other U.S. Department of Energy (US DOE) complex sites where URS Corporation is involved.

INTRODUCTION

Implementation of the recommendations from RPP-RPT-53222, *One System Comparative Evaluation of Safety Bases for Hanford Waste Treatment and Immobilization Plant Project and Tank Operations Contract* (hereafter referred to as the Comparative Evaluation Report) which will help ensure consistent safety bases for WTP and Tank Farms[1]. The implementation of the recommendations is limited to the WTP and Tank Farms safety bases, the process requirements, guidance, direction, procedures, and products (including safety controls, key safety basis inputs

and assumptions, and consequence calculation methodologies) as explained below. The objective of the implementation of the recommendations is to have consistent safety bases for WTP and Tank Farms.

DESCRIPTION

Background

The Hanford Site Tank Farms contain approximately 56 million gallons of radioactive and mixed waste in 177 aging underground storage tanks. This radioactive and mixed waste is the result of more than four decades of reactor operations and plutonium production for the primary purpose of national defense. The waste systems and infrastructure that provide storage are aging and pose a threat to the environment.

The US DOE established the River Protection Project (RPP) to safely store, retrieve, and treat Hanford's tank waste and close the Tank Farms to protect the Columbia River. The RPP is composed of two contracts: the Hanford Tank Operations Contract and the Hanford Waste Treatment and Immobilization Plant Project. The Tank Farms contract provides for safe storage and retrieval of tank wastes, storage, and disposal of treated waste, decontamination and decommissioning of tanks, and initiation of post-closure monitoring of the Tank Farms [2]. The WTP contract provides for the design, construction, and commissioning of a chemical processing plant that will treat high-level and low-activity liquid waste and immobilize by vitrification for final disposal, and support the transition of the plant into full operation [3].

In a November 2010 Construction Project Review (CPR), the CPR team identified a need for an integrated US DOE, WTP, and Tank Farms team to facilitate an optimum approach to startup, commissioning, and turnover of WTP facilities from construction to operations.

In October 2011, an approach called "2020 Vision One System" (One System) was developed [4]. The One System strategy is to assure successful completion of all activities necessary to achieve WTP initial plant operations, lower costs and risks, and accelerate completion of the RPP mission. The overall objective of this strategy is to increase the combined focus on accelerating completion of key supporting work scope elements and to instill accountability for jointly delivering the One System.

The strategy and objectives championed by the One System organization will provide the direction to ensure consistency and integration considerations are incorporated into the WTP and Tank Farms institutional programs. Consistency and alignment of institutional level programs and their implementation will enable a safe, efficient, and effective commissioning program and transition to operations in preparation for a future single operating contractor.

One System Nuclear Safety was tasked with performing a comparison of the safety bases for the Tank Farms and WTP with the goal of identifying opportunities for improvement to facilitate better integration between WTP and Tank Farms safety bases and providing consistency on process requirements, guidance, direction, procedures, and products.

Review of Safety Bases

In January 2012, One System Nuclear Safety formed a working team to develop a plan for performing a Comparative Evaluation of the Tank Farms and WTP Safety Bases. Team members were selected based on their significant relevant experience in nuclear operations management and oversight; nuclear facility and system engineering; and chemical process, nuclear, and criticality safety.

The Comparative Evaluation was conducted in accordance with RPP-PLAN-51739, *One System Comparative Evaluation of Safety Bases for Hanford Waste Treatment and Immobilization Plant Project and Tank Operations Contract Plan* (hereafter referred to as the Evaluation Plan) [5]. The evaluation had an overarching purpose to facilitate effective integration between WTP and Tank Farms safety bases. The scope of the rewiew was to provide One System management with an objective evaluation of identified differences in safety basis process requirements, guidance, direction, procedures and products (including safety controls, key safety basis inputs and assumptions, and consequence calculation methodologies) between WTP and Tank Farms. Further, it provided analysis of those differences for associated disposition recommendations.

The evaluation focused on the following areas:

- Hazard Analysis
- Control Selection and Classification
- Accident Analysis Methodology
- Accident Analysis Event Evaluation
- Control Qualification
- Unreviewed Safety Question Program
- Site Description
- Input and Assumption Programmatic Requirements
- Safety Management Programs
- General Considerations

The evaluation not only identified differences in safety basis documents and products; it also identified differences in drivers (including program and process requirements, guidance, direction, and procedures). These identified differences present and document a complete picture, and provide a basis for disposition recommendations. It was recognized that the review of these safety bases must consider that the WTP is a new facility and the Tank Farms Tank Farms are aged facilities; this consideration may, in and of itself, result in the need for accepting differences between the safety bases. The Evaluation Plan was structured to compare those portions of the overall safety bases that have a direct Tank Farms to WTP interface. In this context, the interface could be operational as well as physical.

Safety bases products considered to be in scope for this evaluation were those associated with Tank Farms safety basis for Tank Farms, Tank Farms Conceptual Design Report for Supplemental Treatment of Tank Farm Waste, and WTP Safety Basis for General Information Volume; Low Activity Waste (LAW), and Pretreatment Facility. The Tank Farms 222-S

Laboratory and the 242-A Evaporator and the WTP Laboratory, Balance of Facility (BOF), and High-Level Waste (HLW) were considered to be outside of scope for this review.

For the hazard analysis evaluation, the WTP LAW and Pretreatment Facility hazard analysis events associated with waste transfer and storage activities were compared with the Tank Farms Process Hazard Analysis (PrHA) for the Tank C-112 retrieval project hazard analysis events associated with waste transfer and storage activities.

The Expert Review Team members conducted their reviews in accordance with the nine Review Objectives and associated Approach Documents of the Evaluation Plan. The team reviewed approximately 90 documents to accomplish the evaluation. In addition, several interviews and meetings supplemented the review and Hanford Tank Farms and Savannah River Remediation LLC (SRR) Safety Basis Control Comparison Team was consulted for disposition recommendations associated with selected key Objectives to better coordinate these efforts. In-process identification of issues believed to impact ongoing WTP and/or Tank Farms safety basis development and upgrade activities were documented and brought to the attention of One System management in a timely manner.

The Comparative Evaluation was completed in four month period and resulted in the identification of 25 recommendations (Opportunities for Integration) [1]. The details of the recommendations are shown in the following sections.

RECOMMENDATIONS

Hazards Analysis Recommendations

Recommendation HA1-R-001: One System should propose consistent methodology regarding chemical hazard analysis especially with respect to stand-alone chemicals (e.g., chemical storage tank). The Evaluation Team notes that there are differences in interpretation in how this applies to stand-alone chemicals that have consequences other than nuclear. One such interpretation allows that public and worker exposure to a chemical that is not part of the waste is a standard industrial hazard addressed through Process Safety Management rules. Another interpretation allows that public and worker exposure to a chemical that is not part of the waste should be analyzed in the accident analysis similar to radiological hazards. For both interpretations, it is noted that release of chemicals that could cause loss of safety function (including operator action) must be evaluated in the Documented Safety Analysis (DSA).

Recommendation HA1-R-002: One System should propose consistent methodology regarding use of frequency as a basis for screening hazards to workers. The Evaluation Team notes that there are differences in interpretation in how this is applied. One such interpretation allows for facility worker screening at < 1E-4 and another interpretation allows screening at < 1E-6.

If screening criteria is applied, it should be identified in the DSA consistent with US DOE Directives and Standards.

Recommendation HA1-R-003: One System should propose a consistent process for identification and control of non-Technical Safety Requirement (TSR)-Defense In Depth (DID) features. The DID features should be identified in the hazard analysis and included in Chapter 3 of the DSA consistent with DOE-STD-3009 [6]. The Evaluation Team notes that there are differences in interpretation in how non-TSR-DID features are treated in the DSA and how the Unreviewed Safety Question (USQ) process is used to control those non-TSR defense-in depth features. One such interpretation requires US DOE approval of a change to non-TSR-DID features in all cases and another interpretation relies on the USQ process for determining when a change to non-TSR-DID features requires US DOE approval or when a change can be contractor approved.

Recommendation HA1-R-004: In addition to the recommendations related to the findings, One System should also address the following:

- Need for a common structured evaluation process to determine radiological and toxicological facility worker consequences.
- Need for a common configuration control mechanism to map individual hazards analyses to the DSA Hazard Analysis.

Control Selection Recommendations

Recommendation CS1-R-001: One System should propose a consistent set of evaluation guidelines for use in hazard screening and control selection for both WTP and Tank Farms:

- Public
  - >0.25 Sv (25 rem) [safety-class]; > 0.05 Sv (5 rem) [evaluate for safety class]
  - > Protective Action Criteria (PAC)-2
- Workers (co-located and facility)
  - > 1 Sv (100 rem)
  - > PAC-3

Recommendation CS1-R-002: One System should propose a consistent process for the selection and classification of Administrative Controls (ACs). The Evaluation Team notes that there are differences in interpretation in how this is applied. One such interpretation allows for the following provisions:

- A Specific Administrative Control (SAC) is only selected when a Structure, System, and Component (SSC) is not available or not practical (e.g., inventory control).
- An AC is classified as a SAC if it is credited to prevent or mitigate the consequence to the public or to a co-located worker in a hazard and accident analysis.
- Administrative Controls credited to prevent or mitigate consequence to a facility worker and ACs that provide a significant contribution to DID are TSR-level controls, but are not required to be classified as SACs. These TSR level controls could be part of a safety management program or could be a Key Element of an AC Program.

Another interpretation follows the first two bullets above but also requires that AC credited for facility workers and ACs that provide a significant contribution to-DID to be treated as a SAC.

Recommendation CS1-R-003: One System should propose a consistent process for the classification of support and interface SSCs. The Evaluation Team notes that there are differences in interpretation in how this is applied and one such interpretation allows for the following provisions:

- Unless otherwise justified in the DSA, SSCs that support or interface with Safety Class (SC) or Safety Significant (SS) SSCs or SACs for public or co-located worker protection shall be classified as SC or SS if their failure would cause loss of safety function.
- SSCs that support or interface with SS SSCs, SACs, Key Elements, or Safety Management Programs (SMPs) for facility worker protection are not required to be classified as SS.
- The exception to safety classification of instrumentation used to monitor initial conditions allowed by DOE directives should be incorporated.

Another interpretation requires that all SSCs that support SC or SS SSCs or SACs be classified at the same level as the supported control.

Recommendation CS1-R-004: One System should propose consistent methodology for demonstrating the adequacy of preventive controls. The Evaluation Team notes that there are differences in interpretation regarding demonstration of preventive control adequacy and one such interpretation allows for the following provisions:

- Preventive control set for public and co-located worker is demonstrated to be adequate by:
  - Use of a deterministic approach when the engineered control set meets code and standard requirements identified in DOE-G 420.1-1 or when a SAC meets the requirements of DOE-STD-1186 [7, 8], or
  - Use of final frequency determination to demonstrate evaluation guidelines are met, or
  - Justification of the adequacy of selected preventive controls in the DSA
- For facility workers, qualitative evaluation of preventive controls may be used.

Another interpretation requires that the adequacy of controls be demonstrated in the same manner for public, co-located worker and facility worker control.

Recommendation CS1-R-005: One System should ensure that an interface hazard analysis is performed and the results are incorporated into the appropriate WTP and Tank Farms DSAs.

Accident Analysis Recommendations

Recommendation AA1-R-001: One system should propose a consistent site boundary description to be used by both WTP and Tank Farms. In this regard, the Evaluation Team believes the boundary established by WTP is most conservative and should be evaluated for use.

Recommendation AA1-R-002: One System should propose consistent methodology regarding dispersion analysis. The proposed methodology should consider using the version of MACCS2 that US DOE Health, Safety, and Security (HSS) deems acceptable. This proposed methodology should also take advantage of lessons learned at SRS regarding current dispersion modeling improvement activities. One System should request usage of DOE-STD-1189 specified χ/Q for the 100 meter worker for all Tank Farms radiological events which are currently only used in conjunction with major modifications [9].

Recommendation AA1-R-003: One System should provide consistent guidance on the average concentration or Time Weighted Average (TWA) time length for chemical releases and the χ/Q for chemical consequences.

Recommendation AA1-R-004: One System should propose consistent methodology regarding where the worker analysis is documented in Preliminary Documented Safety Analyses (PDSAs) and DSAs.

Recommendation AA2-R-001: One System should propose methodology to provide for consistent identification of event duration and exposure times.

Recommendation AA2-R-002: One System should propose methodology to provide reasonably conservative evaluation of events, including those impacting multiple locations and/or systems (e.g., seismic, hydrogen events, loss of offsite power).

Recommendation AA2-R-003: WTP is currently supporting work related to the basis for spray leak characteristics. The Tank Farms should remain cognizant and involved in this effort.

Recommendation AA2-R-004: The Tank Farms and WTP should review hazards associated with Cesium Ion Exchange Events for consistency:

- Flashing Spray Release
- Resin (column) overheating including events resulting from loss of liquid in column.
- REDOX (Oxidation-Reduction) events

Control Qualifications Recommendations

Recommendation CQ1-R-001: WTP should reconsider and evaluate the need for TSR control of SC active fire dampers.

Recommendation CQ1-R-002: One System should establish consistent guidance on the content and appropriate level of detail to be included in Chapter 4 of the DSA for active and passive engineered controls and SACs. This guidance should take advantage of DOE Complex experience regarding identification and control of system boundaries and interfaces in accordance with DOE-STD-3009 and design feature in-service inspection requirements in the DOE directives [6]. One System should also reconcile design feature in-service inspection implementation differences with SRR.

Unresolved Safety Question Recommendations

Recommendation USQ1-R-001: Consistent with the WTP Tank Farms Program Integration Concept in Support of One System presented in RPP-RPT-53085, *One System Program Integration Council Charter* [10], Tank Farms USQ Program should be considered as the basis for a common USQ Program and adjusted based on any WTP identified differences.

Recommendation USQ1-R-002: There is a planned US DOE-ORP review of the Tank Farms USQ Program. It is recommended that a joint WTP, Tank Farms, and One System response be provided to the US DOE-ORP assessment to ensure consistency of the USQ Programs.

Site Description and Inputs and Assumptions Recommendations

Recommendation SD1-R-001: One System should propose a process for updating a single Site Description supporting Tank Farms and WTP as well as other Hanford Site contractor DSAs.

Recommendation IA1-R-001: One System should consider application of experience at other US DOE Complex facilities (e.g., cognizant system engineering involvement, and formal documentation of approved input and assumption parameters with configuration control) in development of a process for consistent identification, use, and control of inputs and assumptions in design and safety analysis. This also has the additional benefit of better enabling cognizant system engineering ownership of the safety basis; appropriate and positive participation and involvement of contractor line management and DOE in establishing early agreement of the accident analysis inputs, methodologies, scenarios, and controls; and consistent identification, classification, and qualification of safety related controls.

Safety Management Programs and General Recommendations

Recommendation SMP1-R-001: The concept provided to the Evaluation Team on the WTP Tank Farms Program Integration Concept in Support of One System was judged to be an appropriate concept for integration and a major step in the right direction [10]. The Evaluation Team believes that this approach can minimize impact to either project, optimize consistency in implementation across both projects, provide for improved safety focus across both projects, and result in reduced costs through increased efficiency in program development and implementation.

Recommendation General-R-001: One System should request revisions to DOE-STD-1186, DOE-STD-1189, and DOE-STD-3009 to address the actual disposition of Recommendations HA1-R-001and 002; CS1-R-002, 003, and 004; and AA1-R-003 and 004 [8, 9, 6].

EVALUATION OF RECOMMENDATIONS

Cross Functional Team Structure, Over Site, and Objectives

One System Nuclear Safety developed an overall implementation plan for the recommendations [11]. The plan suggested that One System Nuclear Safety form cross-functional teams and a Leadership Team to determine the resolution of each of the Comparative Evaluation Report recommendations and present those resolutions to the One System Nuclear Safety Steering Committee (NSSC). Leadership was provided by URS-PS subject matter experts (SMEs) from Aiken, SC and LLNL in California.

The cross-functional teams have a member from the Leadership Team and SMEs from WTP and Tank Farms. Team members were selected based on their technical expertise in the subject area and knowledge of the facilities and processes, and are authorized to speak for their organizations on these matters. The Leadership Team members also provide an independent, non-partial US DOE complex-wide perspective.

In making their determinations, these teams examined the Comparative Evaluation Report, formed consensus relative to the recommendations, and develop specific implementation plans for the consensus.

This was accomplished by:

- Identifying, listing, and evaluating boundaries and interfaces (e.g., physical, human, control) and the impact of the recommended actions on them. (Prerequisite to Option Analysis and common to all recommendations.)
- Reviewing the Comparative Evaluation Report and determining the pros and cons for the specified approaches through an Options Analysis (to include value of change, backfit considerations, regulatory impact, need for consistency, sustainability considerations, future US DOE directives consideration, US DOE complex-wide considerations).
- Building consensus through evaluation of the options analysis, documenting the consensus, and presenting consensus to Steering Committee for concurrence.
- Developing, documenting, and presenting to the Steering Committee for concurrence specific implementation plans for the consensus opinions (scope, level of effort and schedule).

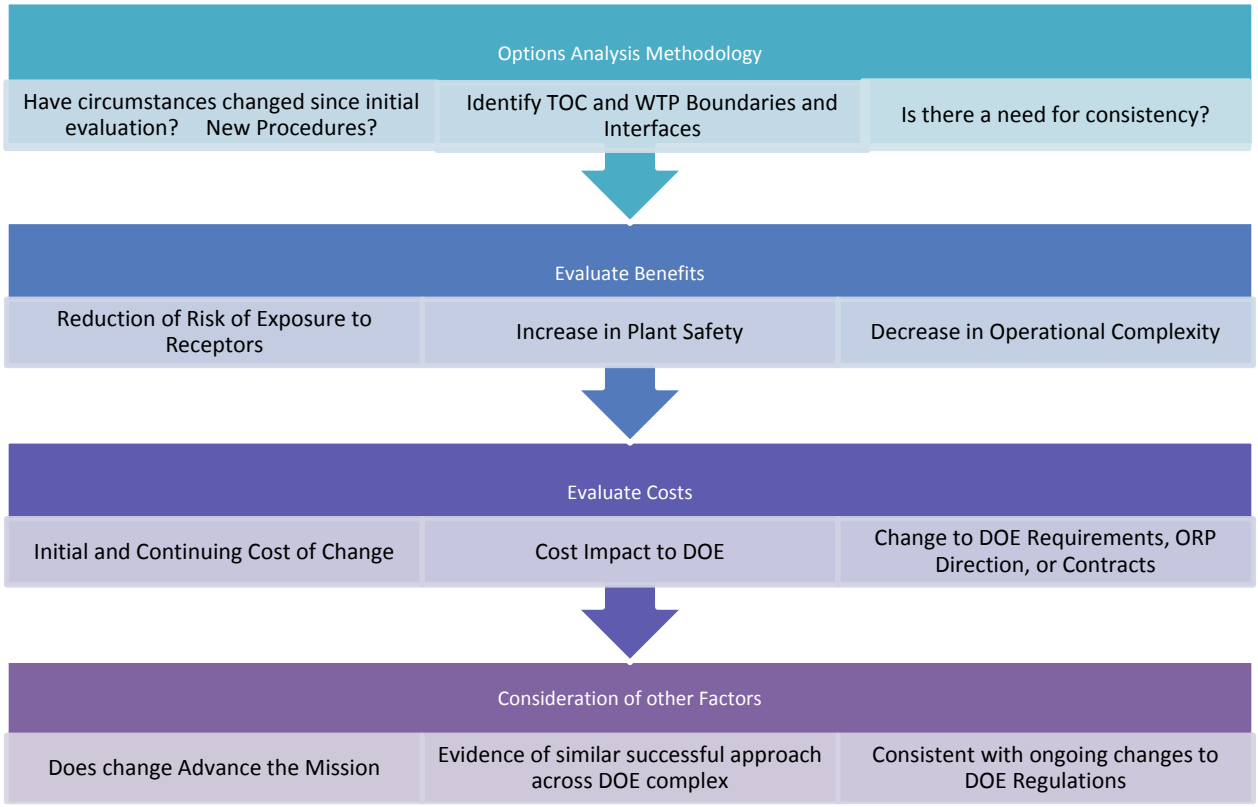
Success for this activity was defined as having presented for Steering Committee concurrence, each of the 25 consensus opinions and specific implementation plans for the Comparative Evaluation Report recommendations. The Steering Committee is expected to obtain US DOE-ORP concurrence for consensus and specific implementation plans, when needed.

Concurrently, the One System NSSC was chartered to provide a safety basis integration interface with the customer and oversight agencies. The NSSC also reviews and approves integration work identified and developed by the Integrated Nuclear Safety team. The NSSC is comprised of members from URS-PS, BNI/URS-WTP Nuclear Safety management, WRPS-Tank Farms Nuclear Safety management, and invited observers from US DOE and the Defense Nuclear

Facilities Safety Board (DNFSB). The charter for the One System NSSC is provided in RPP-53539, *One System Nuclear Safety Steering Committee Charter* [12].

In order to have a consistent process for evaluating each recommendation, the Leadership Team developed a process called an Option Analysis based on U.S. Nuclear Regulatory Commission (US NRC) Backfit Guidance which was documented in the Overall Implementation Plan. The following figure provides an overview of the Option Analysis process:

Figure I - Options Analysis



The above process resulted in ranking the value of the change using the below matrix and was used as guide to develop the consensus from the cross functional teams.

TABLE I – Ranking of overall value of change

		Cost			
		Savings	Low	Medium	High
Benefit	High	1	1	2	2
	Medium	1	1	2	3
	Low	1	2	3	3

1. Change recommended or necessary
2. Acceptance or Rejection optional
3. Change rejected or unnecessary

The cross-functional teams held a series of meetings to perform the options analysis and form a consensus for selecting one of four options for resolution of the recommendations. As the evaluations were completed, they were presented to the One System NSSC for review and approval. Of the original 25 recommendations, 17 resulted in an option that required changes to the processes, procedures, or programs from either one project or both. Once a consensus report was approved, the cross-functional teams began development of an implementation plan for the consensus, if required. Some consensus concluded that no change was needed because other ongoing activities had resulted in resolution of the recommendation. This was accomplished in the normal work processes due to the staff awareness of the upcoming recommendation issues.

Those 17 consensus reports were then reviewed, and 16 individual implementation plans (as two were combined) were developed by the cross-functional teams for presentation to the One System NSSC for review, comment and approval. All of this work was completed within a 12-month period despite the absence of dedicated project staffing and funding. The key to this accomplishment was the willingness of the respective project's Nuclear Safety management organizations to cooperate with and provide resources to work with One System. Table III shows a summary of the options analysis results, by recommendation and if an Implementation Plan (IP) was required.

TABLE II Summary table

Recommendation	**Title**	**Option***	**IP Needed**
HA1-R-001	Chemical Hazards Screening	1	Yes
HA1-R-002	Use of Frequency Cut Off for Worker Control Selection – HA1-R-002 combined with CS1-R-001	N/A	No
HA1-R-003	Non-TSR Defense-in-Depth Features	4	Yes
HA1-R-004	Facility Worker Consequences	3	No

Recommendation	Title	Option*	IP Needed
CS1-R-001/ HA1-R-002	Use of EG's for Hazard Screening and Control Selection and HA1-R-002 - Use of Frequency Cut Off for Worker Control Selection	3	No
CS1-R-002	Selection and Classification of ACs	N/A	No
CS1-R-003	Classification of Support and Interface SSCs	4	Yes
CS1-R-004	Adequacy of Preventive Controls	4	Yes
CS1-R-005	Interface Hazard Analysis (Note: No Options Analysis Required)	4	Yes
AA1-R-001	Site Boundary	2	Yes
AA1-R-002	Dispersion Analysis	3	No
AA1-R-003	Time Weighted Average Concentration and χ/Q for Chemical Consequences	4	Yes
AA1-R-004	Location of Worker Consequence Documentation	3	No
AA2-R-001	Event Duration	2	Yes
AA2-R-002 (Ashfall)	Ashfall	4	Yes
AA2-R-002 (Chemical)	Chemical Analysis Methodology	4	Yes
AA2-R-002 (Hydrogen)	Hydrogen Event Methodology	4	Yes
AA2-R-002 (LOC)	Loss of Confinement Analysis Methodology	2	Yes
AA2-R-002 (Seismic)	Seismic Event Analysis Methodology	4	Yes
AA2-R-003	Spray Leak Methodology	4	Yes
AA2-R-004	Cesium Exchange Events	2	No
CQ1-R-001	TSR Controls for Active Safety Class Fire Dampers**	N/A	No
CQ1-R-002	Level of Detail in Chapter 4	4	Yes
USQ1-R-001	USQ at WTP	2	Yes***
USQ1-R-002	DOE Review of Tank Farms USQ Program	2	Yes***
SD1-R-001	Site Description (DSA Chapter 1)	4	No
IA1-R-001	Inputs and Assumptions	4	Yes
SMP1-R-001	Safety Management Programs	2	No
General-R-001	General Recommendation	N/A	No

* Option Definitions
1 – Tank Farms will change current practice to match WTP
2 – WTP will change current practice to match Tank Farms
3 – No change is required
4 – New practice or methodology is developed for use at both
WTP and Tank Farms

** WTP has a new Control Selection procedure that has
resolved this recommendation
*** Combined into one implementation plan

The consensus of the cross-functional team and Options Analysis was to select Option 3 (i.e., no change for either project) for recommendations HA1-R-004, CS1-R-001/HA1-R-002, AA1-R-002 and AA1-R-002 even though present approaches used by WTP and Tank Farms are different, they still comply with DOE regulations. The recommendation General-R-001 is for revision of DOE guidance for safety bases analysis. DOE is either revising (e.g., DOE-STD-3009) or plans to revise (e.g., DOE-STD-1189) the guidance for safety bases analysis; therefore, no implementation plan was developed [6, 9].

The completion of the implementation plans will help ensure consistent safety bases for WTP and Tank Farms along with consistent safety basis processes, procedures, and analyses, and should increase the likelihood of a successful startup of the WTP. This early integration may result in long-term cost savings and significant operational improvements.

Completion of the implementation plan will result in the development of eight new methodologies for analysis that could be adapted to other US DOE sites where URS Corporation is involved. The eight new methodologies are:

- Chemical analysis methodology
- Hydrogen analysis methodology
- Seismic analysis methodology
- Spray leak methodology
- Adequacy of preventive controls
- Level of detail in Chapter 4 of the DSA
- Classification of support and interface SSCs
- Non-TSR-DID methodology

Update on Ongoing Activities

Sixteen implementation plans were developed from the 25 recommendations made to ensure consistent safety bases of WTP and Tank Farms. Five implementation plan activities are complete and 11 of the implementation plans are in various stages of implementation at WTP and Tank Farms. Eight new methodologies are either in development stage or being implemented by WTP and Tank Farms.

CONCLUSIONS

A Comparative Evaluation was performed on the WTP and Tank Farms safety bases, the process requirements, guidance, direction, procedures, and products (including safety controls, key safety basis inputs and assumptions, and consequence calculation methodologies). The goal of the evaluation was to provide recommendations that would lead to more consistent safety bases between WTP and Tank Farms. The Comparative Evaluation resulted in 25 recommendations that were reviewed by cross-functional teams and resulted in consensus on the disposition of the recommendations which management concurred with through the One System NSSC. With One System NSSC concurrence on the consensus reports, implementation plans were required on 17 consensus reports. Sixteen Implementation Plans were developed (two were combined) and approved by the One System NSSC. Ongoing activities include completing the implementation activities for 11 remaining implementation plans with five implementation plan activities completed. Once the implementation plan activities are completed, the WTP and Tank Farms safety bases, processes, and procedures will be more consistent as a result of the Comparative Evaluation task. In addition, eight new methodologies for analysis were developed that could be adapted to other US DOE sites where URS Corporation is involved.

REFERENCES

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ACRONYMS

A

ACs Administrative Controls

B

BNI Bechtel National Inc.
BOF Balance of Facility

C

CPR Construction Project Review

D

DID Defense in Depth
DNFSB Defense Nuclear Facility Safety Board
DSA Documented Safety Analysis

H

HLW High-Level Waste
HSS Health, Safety, and Security

I

IPT Integrated Project Team

L

LAW Low-Activity Waste

N

NSSC Nuclear Safety Steering Committee

O

ORP Office of River Protection

P

PAC Protective Action Criteria
PDSA Preliminary Documented Safety Analyses
PrHA Process Hazard Analysis

R

REDOX Oxidation-Reduction
RPP River Protection Project

S

SAC Specific Administrative Control
SC Safety Class
SME Subject Matter Expert
SMP Safety Management Program
SRR Savannah River Remediation LLC
SS Safety Significant
SSC Structure, System and Component

T

TSR Technical Safety Requirement
TWA Time Weighted Average

U

USQ Unreviewed Safety Question
URS-PS URS Professional Solutions
US DOE U.S. Department of Energy
US NRC U.S. Nuclear Regulatory Commission

W

WRPS Washington River Protection Solutions LLC
WTP Hanford Waste Treatment and Immobilization Plant Project