



PBS-SR-0012
**Spent Nuclear Fuels Stabilization and
Disposition/Storage Operations Awaiting
Geologic Repository**

Risk Management Plan

Document No. Y-RAR-L-00008
Revision 0

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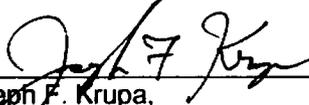


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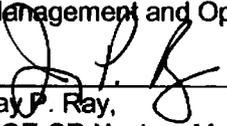
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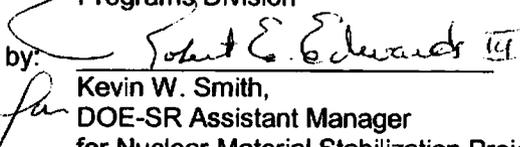
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ACRONYMS

B	Benefit
C	Consequence
CD	Critical Decision
DBT	Design Basis Threat
DOE	Department of Energy
DRR	Domestic Research Reactor
EIS	Environmental Impact Statement
EM	Environmental Management
FRR	Foreign Research Reactor
L	Likelihood
MC&A	Material Control and Accountability
OHS	Opportunity Handling Strategy
PBS	Project Baseline Summary
PMP	Program Management Plan
PSO	Program Secretarial Office
R&O	Risk & Opportunity
RHS	Risk Handling Strategy
ROD	Record of Decision
ROMP	Risk and Opportunity Management Plan
S&S	Safeguards and Security
SFP	Spent Fuel Project
SME	Subject Matter Expert
SNF	Spent Nuclear Fuels
SNM	Special Nuclear Materials
STAR	Site Tracking and Reporting System
STD	Standard
TSC	Treatment and Storage Capability
YMP	Yucca Mountain Project

1.0 EXECUTIVE SUMMARY

The Project Baseline Summary (PBS) Federal Risk Management Plan for PBS SR-0012, Spent Nuclear Fuels Stabilization and Disposition/Storage Operations Awaiting Geologic Repository, hereafter referred to as the SNF Project, documents the results of the risk and opportunity assessment conducted by Department of Energy (DOE) Savannah River Operations Office (SR) and Washington Savannah River Company (WSRC), communicates the risk handling strategies developed for identified risks, and provides a plan for monitoring risks throughout the life of the project. It establishes the basis of the amount to be used as a contingency estimate for this PBS. Project and programmatic risks for the entire project (both near-term—FY 2007 through FY 2012—and the balance of the lifecycle baseline—FY 2013 through FY 2031) are considered and contingency estimated. The contingency estimate for this PBS, other Savannah River Site (SRS) PBS, and crosscutting project and programmatic risks are documented in SRS Risk Summary and Integrated Contingency Estimate (Document No. Y-RAR-B-00003, Revision 0). The integrated contingency data establishes the SRS portion of the DOE unfunded contingency amount used to determine the EM liability that must be added to the EM performance baseline.

The purpose of utilizing the Risk and Opportunity management process is to increase the overall effectiveness of the Department of Energy (DOE) Environmental Management (EM) work associated with the nuclear material stabilization effort such that risks are managed to acceptable levels and opportunities can be taken advantage of to enhance Project Baseline Summary (PBS) scope completion. This Risk and Opportunity Analysis Report documents the risk assessment conducted by DOE-SR and WSRC personnel on PBS-SR-0012 and HQ-SNF-0012X, Spent Nuclear Fuels Stabilization and Disposition/ Storage Operations Awaiting Geologic Repository. The scope of this PBS includes L-Area Operations, which provides safe receipt, storage and disposition of legacy and non-legacy SNF and Heavy Water storage and surveillance, and Prepare SNF for Final Disposition, which is the stabilization through H Canyon for Al-clad fuels, and transport to INL for preparation for final disposition in Yucca Mountain for Zr/SS clad fuels.

Risk Identification and Assessment

Risks were identified based on the previous ROAR and changes due to the decision to process Al-clad fuel in H Canyon in lieu of building the TSC (Treatment and Storage Capability) Facility, and swapping SS/Zr-clad fuel for Al-clad fuel with INL.

This PBS Risk Assessment is based on Operational and Capital budgets being available to support the PBS milestones. This PBS Risk Assessment also does not reflect any schedule impacts caused by Acquisition Strategy changes over the PBS Lifecycle.

A total of 13 risks and 1 opportunity were identified. Of those 13 risks, before mitigation, 3 were *High*, 9 were *Moderate* and 1 was *Low*. After mitigation one high risk was reduced to low. These 13 PBS level risks group around 4 underlying Risk Events; 1) Changing Security Requirements, 2) Unplanned SNF (types and quantities)/SNF Issues, 3) Heavy Water is declared Waste and 4) Changing Facility Conditions. The two remaining *High* risks and their associated Risk Events they are:

1. 003-Increased S&S Requirements (DBT) (Changing Security Requirements Risk Event)
2. 015-INL/SRS SNF SWAP Cask Availability (Unplanned SNF/SNF Issues Risk Event)

Table ES-1 shows the allocation of the 13 risks to the 4 Risk Events. Two of the Risk Events are associated with a single PBS level risk. The Risk Event “Unplanned SNF/SNF Issues” encompasses 8 PBS level risks.

Table ES-1 Allocation of PBS Risks to Risk Events

Risk Event	# of Risks	PBS 12/12X Scope	
		L-Area Operations	Prepare SNF for Final Disposition
Changing Security Requirements	1	ID 003-Increased S&S (DBT) Requirements (H)	None identified
Unplanned SNF (types and quantities)/SNF Issues	8	ID 002-New materials (GTRI) (M) ID 005-SNF exceeds Cat II Facility requirements (M) ID 018-L Area Receives Late FRR Shipments ID 004-TRIGA receipts (L)	ID 015 INL/SRS SNF Swap Cask Availability (H) ID 013-INL/SRS SNF Swap (M) ID 016-INL/SRS SNF Swap Damaged Fuel Shipping Requirements(M) ID 017-L Basin Receives Fuel After H Canyon Shutdown(M)
Heavy Water is declared Waste	1	ID 007-Heavy Water is declared waste (H)	Not applicable
Changing Facility Conditions	3	ID 012-Utility Service Changes (H) ID 006-Basin Structure (M) ID 014-DNFSB Recommendation 2004-2 Confinement System	None identified

(H)= High Risk, (M) = Moderate Risk, (L) = Low Risk

Ten of the 13 risks have handling strategies of "Accept" due to following reasons:

1. The source of the risk event is outside the direct control of the DOE-SR and WSRC.
 (Applies to 11 risks: ID 002, 003, 004, 006, 008, 013, 014, 015, 016, 017 and 018)
 - Risks ID 002, 004, 005, 006, 008, 013, 014, 015, 016, 017 and 018. These 3 risks are associated with the Risk Event "Unplanned SNF/SNF Issues", the handling strategy is Accept because the mission of L-basin is to receive and store legacy and non-legacy SNF. L-Basin provides a unique capability for DOE.
 - Risk ID 003. This risk is associated with the Risk Event "Changing Security Requirements" the decision to incorporate DBT will not be made at the WSRC and DOE-SR level.
2. There are already funded plans in place to perform risk reduction actions, and no new, additional actions were identified by this PBS Risk Assessment.
 (Applies to one risks: ID 006)
 - Risk ID 006. The Structural Integrity Program provides basin condition monitoring and surveillance with maintenance performed as warranted to ensure L-Basin capability.

The team identified mitigation strategies for 3 of the risks; which reduced 1 *High* risk to *Low*, but did not reduce the other 2 *Moderate* risks; the likelihood of occurrence was reduced but not the *Critical* consequence. A summary of the risks and their handling strategies is presented in Table ES-2.

Three risks were deleted and four risks were added as a result of changes brought about by the 2005 PEP.

One opportunity was identified and graded as *High* (Purify Water to make more marketable), the handling strategy is to Exploit this opportunity; this strategy is already being pursued by SFP.

Risk Handling Strategies and Contingency Estimates

After identifying, assessing, and classifying risks and opportunities, handling strategies were developed. A summary of the risks and opportunities and their handling strategies is presented in Table ES-1. Risks for which no mitigation strategy was identified were accepted, classified as residual risk, and contingency estimates developed. Contingency estimates generated for PBS residual risks were not included in the PBS cost baseline, but were used to identify the amount to be used for this PBS toward an 80%

confidence level estimate for DOE unfunded contingency used in the annual EM environmental liability review. Unfunded contingency will only be added to the lifecycle costs for this PBS when the estimates associated with a specific risk or mitigation strategy are converted to funds appropriated to deal with that particular risk event or execution of a particular mitigation strategy.

Risk Monitoring

As risk management is an ongoing process, the risk assessment elements of identification, grading, handling, impact determination and integration (risk status and reporting to closure) will be conducted as warranted by the Federal Project Director but at least annually over the lifecycle of this PBS to assess the impact of changes to programs and assumptions on risk determinations and handling strategies.

In summary, the Team identified 13 PBS level risks and 1 opportunity. Although there are limited new risk reduction strategies identified in this assessment, this PBS Risk Assessment provides a:

1. Continuing joint forum for WSRC and DOE-SR to identify and understand potential cost and schedule impacts to the PBS lifecycle,
2. Documented WSRC and DOE-SR understanding of the PBS level risks and opportunities, and
3. Documented PBS level risks and opportunities communication tool to provide decision makers with the bases to understand the PBS level impacts associated with:
 - Changing Security Requirements,
 - Unplanned SNF (types and quantities)/SNF Issues,
 - Heavy Water is declared Waste and
 - Changing Facility Conditions.

As Risk Management is an ongoing process, the risk assessment elements of *Identification, Grading, Handling and Impact Determination, and Integration (risk status and reporting to closure)* should be conducted over the lifecycle of this PBS to: understand changes to PBS level risks, determine if there are risk reduction strategies that can be implemented and continue to have risk assessment status results serve as a communication tool for decision makers to understand impacts by possible decisions.

In January and March 2006, DOE-SR and WSRC management discussed the risks identified in the second risk assessment for PBS 12/12X. During these discussions, additional risks were identified as having the potential for impacting PBS 12/12X Scope, the INL/SRS SNF Swap and DNFSB Recommendation 2004-2. These risks are incorporated into this Risk Management Plan.

Table ES-2 PBS SR-0012/HQ-SNF-0012X Risks

PBS Element	Risk Identifier and Title	Source of Risk	PBS Impact Cost Schedule Performance	Likelihood	Consequence (\$M months)	Risk Level	Risk Handling Strategy (RHS)	Risk Level after RHS
High Risks								
12.1	003-Increased S&S Requirements (DBT) for L-Area Operation	External	Cost	Unlikely	Critical >\$4M range \$4M-\$8M	H	Accept	H
12.1	0012-Utility Service Changes	Internal	Cost	Very Unlikely	Critical >\$5M range \$4.8M-\$5.3M	H	Mitigate	L
12.1	0015-INL/SRS SNF SWAP Cask Availability	External	Cost Schedule	Likely	Critical >\$10M range \$8.3M-\$12.9M >24 months	H	Accept	H
Moderate Risks								
12.1	002-New materials received at L-Basin – GTRI SNF	External	Cost	Likely	Marginal <\$0.5M	M	Accept	M
12.1	005-SNF received exceeds Category II Facility	External	Cost	Very Unlikely	Very Unlikely >\$4M range \$3.3M-\$5.2M	M	Mitigate	M
12.1	006-Facility condition – L-Area Basin Structure	Internal	Cost	Likely	Significant \$2M	M	Accept	M
12.2	007-New Disposition—Heavy Water is declared waste	External	Cost Schedule	Very Unlikely	Critical >\$4M <4 months	M	Mitigate	M
12.1	013-INL/SRS SNF SWAP	External	Cost	Likely	Significant \$2M	M	Accept	M
12.1	014-DNFSB Recommendation 2004-2 Confinement System	External	Cost	Unlikely	Significant >\$5M	M	Accept	M
12.1	016-INL/SRS SWAP Damaged Fuel Shipping required	External	Cost Schedule	Likely	Significant \$500M	M	Accept	M
12.2	017-L Basin Receives Fuel after H-Canyon shutdown	External	Cost Schedule	Unlikely	Critical \$20M	M	Accept	M
12.2	018-L Area Receives Late FRR Shipments	External	Cost	Unlikely	Significant	M	Accept	M

					\$1M			
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Table ES-2 PBS SR-0012/HQ-SNF-0012X Risks--Continued

PBS Element	Risk Identifier and Title	Source of Risk	PBS Impact Cost Schedule Performance	Likelihood	Consequence (\$M months)	Risk Level	Risk Handling Strategy (RHS)	Risk Level after RHS
Low Risk								
12.1	004-TRIGA receipts at L-Basin	External	Cost	Unlikely	Marginal <\$.5M	L	Accept	L

2.0 BACKGROUND

2.1 Risk/Opportunity Assessment Scope

As defined below, the scope of PBS-SR-0012 and HQ-SNF-0012X was divided into two assessable elements:

12.1 L-Area Operation

Scope:

Provide for the safe receipt, storage, and disposition of legacy and non-legacy SNF and heavy water in L-Area. It includes all programmatic and physical support efforts related to safe receipt and storage of SNF in L Basin and the final disposition of all SNF at SRS. Heavy water will continue to be stored in L Area pending disposition via sale or other approved method. This PBS also covers deactivation and surveillance and maintenance until turnover to decommissioning.

Assumptions:

- § FRR receipts will continue through 2019
- § DRR receipts will continue through 2019
- § Al-clad spent fuel will be processed in H Canyon through 2019.
- § INL will ship Al-clad SNF to SRS for processing in H Canyon.
- § Deinventory basin by FY 2020
- § All heavy water will be transferred offsite at no net cost prior to L-Area deactivation
- § The SNF project and program activities are conducted in a single SRS facility (L Area). Funding is provided from three sources based on SNF origin and receipts in the 'Work for Others' account. The total of the three sources is required to fully support program activities
- § FRR from Canada is not included in this submission per guidance received from DOE. Addition of the Canadian SNF receipts will require significant resource adjustments
- § Critical site infrastructure will remain available to support continued operations through the identified program life or suitable replacements will be secured and on-line before existing services are discontinued
- § This estimate assumes continuation of the current Safeguards and Security posture in L-Basin.

Agreements

The following agreements are drivers for this project:

- § DNFSB Recommendation 2000-1
- § SRS SNF Management EIS Record of Decision.

12.2 Prepare SNF for Final Disposition

Scope:

All programmatic and physical support efforts related to the final disposition of all SNF at SRS. This includes preparing SS/Zr-clad SNF for shipment to INL.

Assumptions:

- § SS/Zr-clad spent fuel, including damaged fuel will be shipped to INL to prepare for disposition in Yucca Mountain by 2019.

The bases for the PBS Scope were that funding would be available to support the PBS milestones and that the Acquisition strategy (i.e. contracts) would not impact PBS milestones.

For this assessment the PBS budget profile for the lifecycle is presented in Figure ES-1, \$48M/year for L-Area operations from now until 2019. This profile provides the basis for the PBS cost consequences in Appendix B.

2.2 Risk/Opportunity Assessment Goals

The primary goal of this assessment was to identify risks to the successful completions of the mission defined in PBS-SR-0012 and HQ-SNF-0012X within the planned cost budgets and schedule. A secondary goal of the assessment was to capture opportunities that may exploit to reduce cost and schedules and/or provide cost effective performance improvements. To support these goals, the focus of this assessment was limited to the identification of risks and opportunities that had potential impacts at the PBS level rather than lower risk levels, such as individual facilities.

2.3 Risk/Opportunity Assessment Team

In accordance with the ROMP, a team of WSRC and DOE-SR personnel served as the Risk and Opportunity Assessment Team. A WSRC, Systems Engineer facilitated the assessment process. The Team assembled for two meetings to identify and draft the Risk/Opportunity Forms. Offline discussions were held with Team members to finalize the Risk/Opportunity Forms i.e. reviews, and comment incorporation. The completed Risk/Opportunity Forms provide the basis for this Risk Report.

Table 2.3-1 Risk/Opportunity Assessment Team

Name	Organization
Bill Swift	WSRC, SFP Business Manager
Randy Ponik	DOE-SR,
Mike Dunsmuir	WSRC, SFP Fuel Integration
Tim Speiker	WSRC, SFP Engineering
Jane Carter	WSRC, Systems Engineering

- Define the Opportunity Likelihood and Benefit Criteria definitions(Appendix B, Tables B3 and B4) to be used for the PBS (s) assessments
- Select key Operations, Engineering and other Subject Matter Experts (participants documented in Section 4)
- Determine the Schedule to perform Assessment
- Determine frequency of assessments
- Determine method for tracking and reporting progress on handling strategy actions

3.2 Identification

Identification is an organized approach for determining which events are likely to affect the PBS scope and for documenting the characteristics of those events through a description of the event that may happen, how it could affect the task under consideration, and a basis explaining why this event is considered a “risk” or an “opportunity”. A risk is the outcome of an event that might happen with detrimental impacts to an activity, such as failure for a program to achieve mission objectives, exceeding cost and schedule constraints or negative impacts to environment and personnel safety. An opportunity is the outcome of an event that has the potential to improve performance, cost, or schedule of an activity or process.

Risks and opportunities were identified by considering risks and opportunities identified in previous applicable assessments, open STAR items, brainstorming, and by using the Risk/Opportunity Category Form to elicit Team discussion to provide consistent risk identification among the assessable elements.

The team identified and document new risks and/or opportunities by answering the following questions:

- What is the baseline? – the normal situation for the element containing the risk or opportunities (e.g. assumption, design basis)
- What is the event? – The incident, occurrence, circumstance, etc. which may happen that is different from the normal situation.
- What is the impact? – a statement of what affect or result the event will or could have on the normal situation (including performance, cost, and schedule impact)

This information is documented on Risk and Opportunity Assessment Forms shown in Appendix A. This information creates the PBS R&O database and will provide the basis for managing R&O. Each risk and opportunity is assigned a unique number for tracking purposes. Previous PBS R&O management activities will also be reviewed to determine if they should be incorporated into this assessment database.

3.3 Grading

Grading involves a determination of the likelihood of the occurrence, and the consequences of occurrence in the absence of any handling strategy to identify the “Risk or Opportunity Level”. Following team discussion and reaching consensus, likelihood and consequence values with their accompanying bases were documented on the Risk and Opportunity Assessment Form. This level represents a judgment as to the relative risk or opportunity to the scope as a whole and is categorized as Low, Moderate or High.

As discussed in Section 4.1, the likelihood and consequence criteria are unique to each PBS assessment scope and were determined during the Assessment Planning Phase. Tables B-1 and B-2 criteria determine "Risk" levels. Tables B-3 and B-4 criteria determine "Opportunity" levels.

3.4 Risk and Opportunity Handling Strategies

3.4.1 Risk Handling Strategies

Risk handling strategies (RHS) are developed for the purpose of eliminating or at least reducing, the likelihood and/or consequences of a risk. Risks with risk levels of “Moderate” or “High” normally will have strategies that reduce, transfer, mitigate, or avoid the risk. The Team considered ease and effectiveness of implementation (cost and schedule impacts) when selecting a handling strategy. Low risks were evaluated for simple and cost effective handling strategies. Low risks may be accepted with no further action. Figure 3.4.1-1 shows the risk handling strategies grouped in the order of preference to eliminate/minimize the risk.

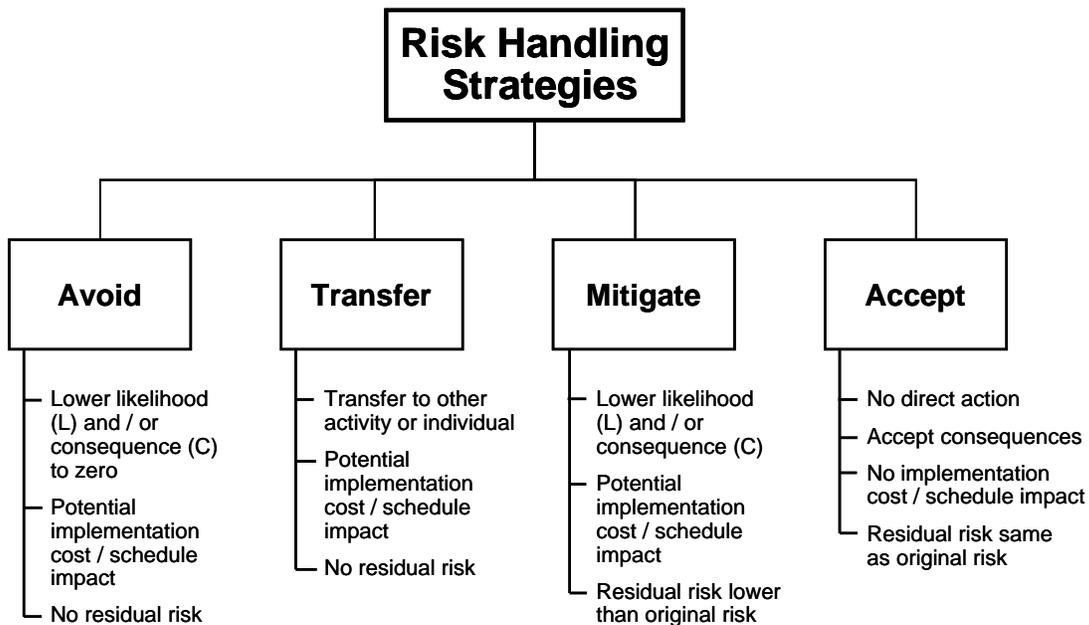


Figure 3.4.1-1 Risk Handling Strategies

Based on the RHS, the likelihood and consequences are re-evaluated to determine “how much” the risk level is anticipated to be lowered, e.g., from a high to moderate level by taking credit for the defined risk handling strategy. If the risk is not completely eliminated through implementation of the RHS, the residual or remaining likelihood, consequence(s), associated uncertainties (in terms of cost or schedule impacts), and the risk level is documented on the Risk and Opportunity Assessment Form. The effectiveness of the risk handling strategy is determined with the grading of the residual risk level. The estimated cost and schedule for implementing the strategy is also documented on the R&O Assessment Form.

RHS can be implemented via one or several action items. These RHS action items are also documented on the Assessment Form.

3.4.4.2 Opportunity Handling Strategies

Opportunity handling strategies (OHS) are often developed for the “Moderate” or “High” opportunity levels in an attempt to exploit, enhance or share the opportunity. “Low” opportunities were evaluated for simple and cost effective handling strategies. Figure 3.4.2-1 shows the handling strategies grouped in the order of preference to maximize the benefit to the contract scope. The OHS and actions are documented on the R&O Assessment Form.

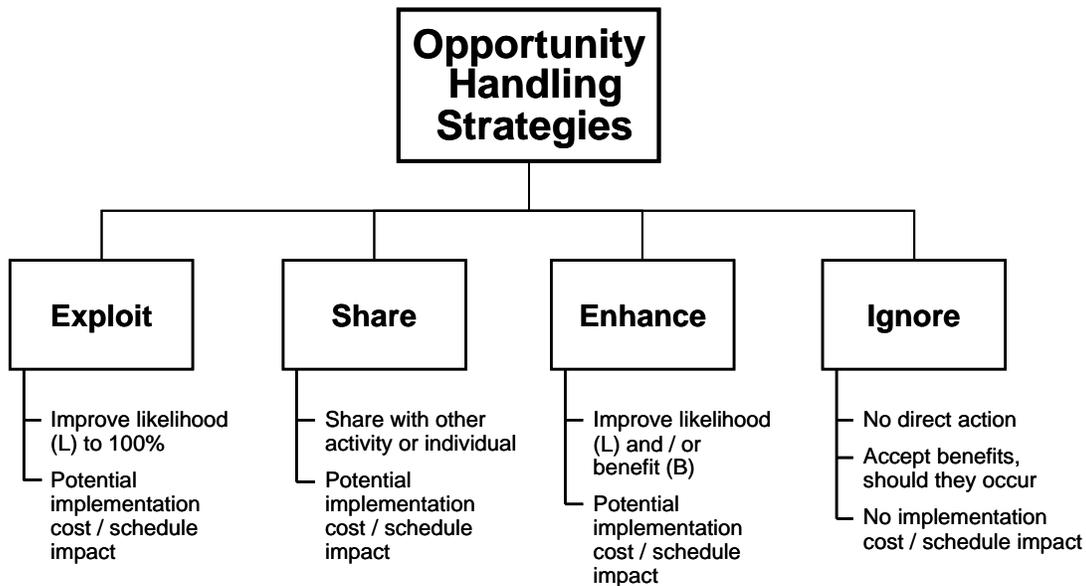


Figure 3.4.2-1 Opportunity Handling Strategies

3.5 Impact Determination

Risk and opportunity impact determination is the evaluation of the cost and schedule impacts of the risks and/or opportunities on the PBS (s) scope completion. It includes the cost to implement the handling strategies and any technical and programmatic uncertainties associated with the successful completion of the risk handling strategies that remain, i.e. residual risk levels.

To facilitate this process, the Team provided estimates for the cost and schedule impacts of implementing the recommended handling strategies for each risk and/or opportunity assessed. Each handling strategy impact was reviewed by the responsible PBS Manager, or designee, and the Cost Estimator, against the existing PBS cost and schedule baselines to ensure that the uncertainty associated with the risk has not already been factored into the cost estimate range and schedule. If the risk/opportunity was not already integrated into the PBS cost baseline, then handling strategy costs were added. If the risk/opportunity handling strategy schedule impacts are not already integrated into the PBS schedule, then the impacts were factored in that schedule as well.

In addition, the Team provided estimates for the cost and schedule impacts of the residual risks (best, most likely, and worst) to facilitate the generation of a risk-based cost exposure estimate if requested by the PBS Manager in planning future year PBS budgets. Cost distribution shapes were estimated by a standard technique (Reference 6.3), then verified by the team

3.6 Integration

Integration is the incorporation of the R&O actions into the PBS baseline. This involves the documentation of the steps identified in Sections 4.1 through 4.5 and managing the risk and/or opportunity handling actions to closure. It includes the elements of

- Making decisions on the course of actions to pursue,
- Adding necessary funding to the PBS budgets,
- Adding required time to the PBS schedules,
- Reporting Results,
 - Documenting the PBS assessment in this Risk Management Plan,
 - Periodic re-assessment, revisions to the Risk Management Plan, and
 - On-going status of risk and opportunities handling actions via periodic DOE-SR and WSRC meetings
- Developing handling strategy actions items, if not already identified,
- Tracking the implementation of the risks and opportunity handling actions, and
- Trending to ensure existing risk levels are decreasing and opportunities are being realized.

3.7 Reporting

The results of the assessments are documented in this PBS Risk Management Plan following the general guidelines provided in Appendix B of the Systems Engineering Methodology Guidance Manual³. Follow up assessments may be documented in a revision to the initial report or may be documented in separate reports, at the discretion of the DOE-SR Assistant Manager for Nuclear Materials Stabilization Project.

3.8 Tracking and Trending

Tracking is a management function necessary to ensure that the risk and opportunity handling strategies are effectively implemented, thereby providing closure. The current risk and opportunity status and status of the handling actions will be reported at regularly scheduled meetings with DOE-SR and WSRC. The actions for the Risk and Opportunity Handling Strategies will be placed into the work schedule or commitment tracking database such as the Site Tracking and Reporting System (STARS), as appropriate, dependent on whether the action is the responsibility of DOE or WSRC.

4.0 RESULTS OF THE ANALYSIS

4.1 Assessment Results

The team identified risks and opportunities using the PBS 12/12X assessable elements as defined in the Section 2.1. The team reviewed the 2005 ROAR risks (Reference 6.2) to determine whether they were still applicable, and to determine whether any new risks had emerged.

A total of 13 risks and 1 opportunity were identified and documented in Risk/Opportunity Forms found in Appendix C. Using the *Likelihood* and *Consequence/Benefit* criteria defined in the ROMP (see Appendix B), three of the risks were graded as *High*, nine as *Moderate* and one was graded as *Low*. Since several of the risks had the potential for addressing multiple individual risks, grading was accomplished based on the worst case impact to the PBS. The statements of event for each of the three *High* risks are provided below:

1. ID 003-Increased S&S Requirements (DBT) Currently Design Basis Threat (DBT) requirements are not applicable to L-area. There is a risk that L-area will be required to meet DBT requirements. This will cause increased Safeguards and Security Upgrades and complicate Operations. The S&S upgrades will include large physical modifications (Design/Construction), increased S&S personnel, and changes in Operating procedures to meet DBT. (Changing Security Requirements Risk Event)
2. D 015-INL/SRS SNF SWAP Cask Availability Zr/SS clad SNF resides in L-Basin and Al-clad SNF resides at INL. With the recent guidance to process the SNF, an SNF swap will occur between the two sites. Cask availability for shipments between the two site may become an issue, as the world cask inventory is limited. (Unplanned SNF (types and quantities)/SNF Issues Risk Event)
3. ID 0012-Utility Service Changes L-Basin Operations relies on utilities, e.g., steam, water, electrical, etc., provided by the existing Structures, Systems and Components (SSC) operated and maintained by the Infrastructure Services Division (ISD). L-Area is currently responsible for utility operation and maintenance within the L Area. There is a risk that as site utility needs are reduced, ISD may no longer provide these services and that L-area may have to provide these services or take on increased responsibilities to ensure service. (Changing Facility Conditions Risk Event)

The 13 risks are associated with 4 Risk Events. The table showing the allocation of these 13 risks to the Risk Events is presented in Table ES-1.

One opportunity was identified and graded as *High*. The statement of the event is provided below:

1. ID 008-Purify water to make more marketable The Excess Heavy Water or Moderator currently has Tritium levels that limits it's attractiveness for uses within the DOE Complex and commercially, i.e. pharmaceutical industry. If the Moderator could be cleaned up, it would become marketable. Profits from the sale to commercial markets could fund D&D projects.

4.2 Analysis by Assessable Element

The analysis by assessable element presented in Figure 4.2-1 shows that the L-Area Operations has the greater number and severity of risks.

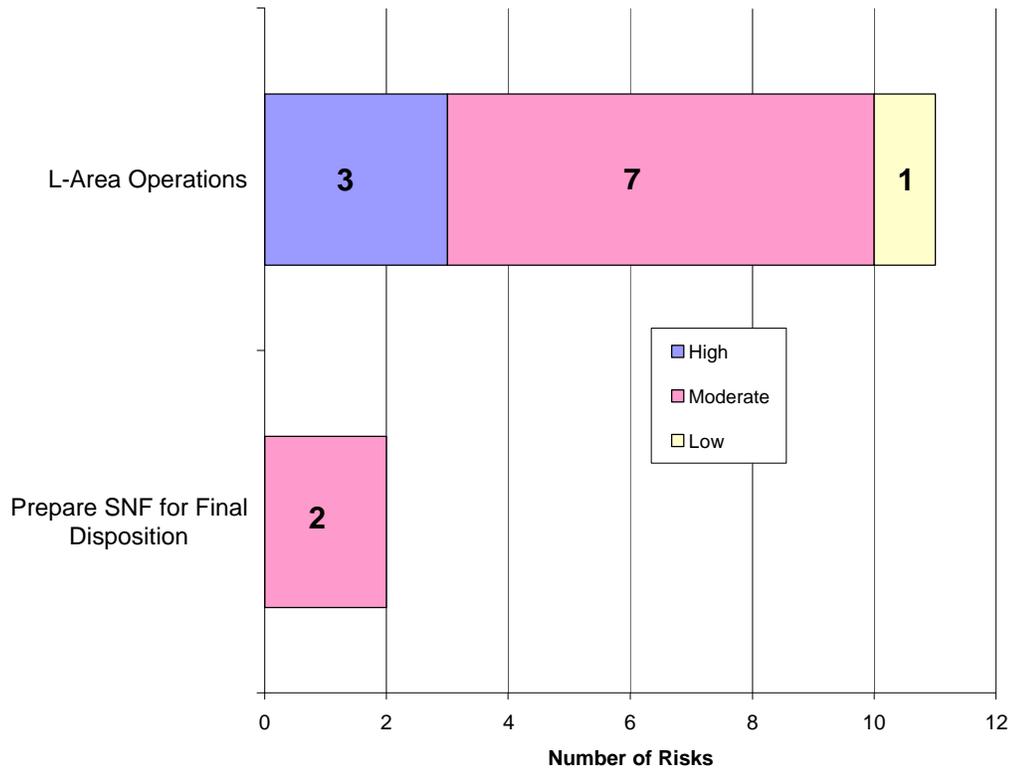


Figure 4.2-1 Distribution of Risks by Assessable Element

4.3 Analysis of Handling Strategy Effectiveness

The Team recommended the handling strategy of “Accept” for 10 of the risks and “Mitigate” for three of the 13 risks. The mitigation handling strategy reduced the likelihood of occurrence but did not reduce the *Crisis Consequence* for the two *High* risks. One *High* risk was reduced to a *Low* risk. A summary of the handling strategies chosen per Risk Event are presented in Table 4.3-1. The overall PBS Risk Level is High/Moderate.

Table 4.3-1 Handling Strategy Summary Table

Risk Event	Identified PBS Risks	Handling Strategy Discussion
Changing Security Requirements	ID 003-Increased S&S (DBT) Requirements (H)	Accept Handling Strategy for ID 003 The source of this risk, the decision to implement DBT in L-Basin will not be made at the WSRC and DOE-SR level. Because WSRC and DOE-SR does not have control to Avoid, Mitigate or Transfer this risk, this risk was Accepted. The Team noted that Security upgrades are being implemented that may better posture L-Area in lieu of DBT upgrades but were unable to quantify how much risk

Risk Event	Identified PBS Risks	Handling Strategy Discussion
		reduction.
Unplanned SNF (types and quantities)/SNF Issues	ID 015-INL/SRS SWAP Cask Availability (H) ID 002-New materials (GTRI) (M) ID 004-TRIGA receipts (L) ID 005-SNF exceeds Cat II Facility requirements (M) ID 013-INL/SRS SWAP (M) ID 016-INL/SRS SWAP Damaged Fuel (M) ID 017-L Basin Receives Fuel after H-Canyon Shutdown (M) ID 018-L Area Receives Late FRR Shipments	Accept Handling Strategy for ID 015. Plans are to purchase new casks, if availability is restricted due to large number of fuel movements. Accept Handling Strategy for ID 002, 004,005 L-Basin maintains a unique capability to receive and store SNF. SNF (type and quantity) may impact L-Basin Operation, the Security posture to remain a Category II Facility and/or cause issues related to fuel acceptance to the Geologic Repository. The decision to send additional SNF beyond the currently planned SNF will not be made at the DOE-SR level. Accept was chosen as the handling strategy because L-Basin must receive SNF as directed by DOE. Accept Handling Strategy for ID 013,016, 017, 018 Coordination is key to successful execution.
Heavy Water is declared Waste	ID 007-Heavy Water is declared waste (M)	Mitigation Handling Strategy for ID 007 A decision to change the disposition strategy for heavy water will be driven by external decisions, not WSRC and DOE-SR. A mitigation handling strategy was identified. The initial evaluation identified "Very Unlikely" as the likelihood of occurrence. The mitigation strategy identified also has a residual risk likelihood of "Very Unlikely", unfortunately the <i>Critical</i> consequence was not reduced and the risk level remains <i>Moderate</i> .
Changing Facility Conditions	ID 012-Utility Service Changes (H) ID 006-Facility Conditions Basin Structure (M) ID 014-DNFSB Recommendation 2004-2 Confinement System (M)	The risk impacts associated with Changing Facility Conditions are within WSRC and DOE-SR control. Accept Handling Strategy for ID 006 The Accept handling strategy was chosen because there are currently on-going risk reduction actions, the "Basin Structural Integrity Program, is performed to ensure basin capability to 2020. No <u>new</u> actions were identified during this PBS Assessment. Mitigate Handling Strategy for ID 012 The team identified <u>new</u> actions pertaining to alternate heating options that lower both the likelihood and consequences to a <i>Low</i> risk.

4.4 Analysis of Cost and Schedule Impact

All of the 13 identified risks have cost impacts at the PBS level, 3 of the 13 risks also have schedule impacts at the PBS level. Because the Accept handling strategies and Mitigation handling strategies

did not appreciably reduce risk impacts the initial cost and schedule impacts are essentially the same. The impacts are shown in Table ES-2.

4.5 Risk Timing for Contingency Analysis

Table 4.5-1 shows the time distribution (near term 2007-2012, out year past 2012, both, lifecycle from 2007-2031).

Table 4.5-1 Risk Timing

PBS Element	Risk Identifier and Risk Title	Time*	Comments
12.1	ID-003-Increased S&S Requirements (DBT) for L-Area Operations	B	Through 2019
12.1	ID-005-SNF received exceed Category II Facility for L-Area Operations	B	Through 2019
12.1	ID-007-New Disposition - Heavy Water is declared Waste	B	
12.1	ID-002-New materials Received at L-Basin--GTRI SNF	B	
12.1	ID-006-Facilty condition -L-Area Basin Structure	B	Through 2019
12.1	ID-012-Utility Service Changes	N	
12.1	ID-004-TRIGA receipts at L Basin	B	
12.1	ID-013-INL/SRS SNF Swap	B	Through 2018
12.1	ID-014-DNFSB Recommendation 2004-2 Confinement System Impacts	B	Through 2019
12.2	ID-015-INL/SRS SNF SWAP Cask Availability	B	Through 2019
12.2	ID-016-INL/SRS SNF Swap Damaged Fuel Shipping Requirements	B	Through 2019
12.2	ID-017-L Basin Receives Fuel After H-Canyon Shutdown	O	Post 2012
12.2	ID-019-L Area Receives Late FRR Shipments	O	Late in 2019
* N = 2007-2012, O = 2013-2031, B = 2007-2031			

5.0 CONCLUSIONS AND RECOMMENDATIONS

In summary, the Team identified 10 PBS level risks and 1 opportunity. Although there are limited new risk reduction strategies identified in this assessment, this PBS Risk Assessment provides a:

1. Continuing joint forum for WSRC and DOE-SR to identify and understand potential cost and schedule impacts to the PBS lifecycle,
2. Documented WSRC and DOE-SR understanding of the PBS level risks and opportunities, and
3. Documented PBS level risks and opportunities communication tool to provide decision makers with the bases to understand the PBS level impacts associated with:
 - Changing Security Requirements,
 - Unplanned SNF (types and quantities)/SNF Issues,
 - Heavy Water is declared Waste and
 - Changing Facility Conditions.

As Risk Management is an ongoing process, the risk assessment elements of *Identification, Grading, Handling and Impact Determination, and Integration (risk status and reporting to closure)* should be conducted over the lifecycle of this PBS to: understand changes to PBS level risks, determine if there are risk reduction strategies that can be implemented and continue to have risk assessment status results serve as a communication tool for decision makers to understand impacts by possible decisions.

6.0 REFERENCES

1. DOE-EM Project Baseline Summaries (PBSs): PBS-SR-0011B Nuclear Materials Stabilization and Disposition-2012, PBS-SR-0011C Nuclear Materials Stabilization and Disposition-2035, PBS-SR-0012 and HQ-SNF-0012X Spent Nuclear Fuels Stabilization and Disposition/Storage Operations Awaiting Geologic Repository Risk and Opportunity Management Plan, Y-RMP-G-00004, revision 1, September 26, 2005
2. Systems Engineering Methodology Manual Appendix B Risk Management,

7.0 APPENDICES

Appendix A Typical Program/Project Risk Categories

Appendix B Risk and Opportunity Grading Guidelines

Appendix C Risk and Opportunity Assessment Forms

Appendix A Typical Program/Project Risk Categories

Design

- Undefined, Incomplete, Unclear Functions or Requirements
- Complex Design Features
- Numerous or Unclear Assumptions or Bases
- Reliability
- Inspectability
- Maintainability
- Safety Class
- Availability
- Errors and Omissions in Design

Regulatory & Environmental

- Environmental Impact Statement Req'd. (EIS)
- Additional Releases
- Undefined Disposal Methods
- Permitting
- State Inspections
- Order Compliance
- Regulatory Oversight

Resource/Conditions

- Material/Equipment Availability
- Specialty Resources Required
- Existing Utilities Above and Underground
- Support Services Availability
- Geological Conditions
- Temporary Resources (Power, Lights, Water, etc.)
- Resources Not Available
- Construction Complexities
 - Transportation
 - Critical Lifts
 - Population Density
- Escorts
- Personnel Training & Qualifications
- Tools, Equipment Controls & Availability
- Experience with system/component (design, operations, maintenance)
- Work Force Logistics
- OPC Resources
 - Operations Support
 - Health Physics
 - Facility Support
 - Facility Maintenance Centralized Maintenance
 - Construction Support Post Modifications
- Training
- Research and Development Support
- Multiple Project/Facility Interface
- Facility Work Control Priorities
- Lockout Support

Safeguards & Security

- Category I nuclear materials
- Classified process / information

Technology

- New Technology
- Existing Technology Modified
- New Application of Existing Technology
- Unknown or Unclear Technology

Procurement

- Procurement Strategy
- First-use Subcontractor/Vendor
- Vendor Support

Construction Strategy

- Turnover/Start-up Strategy
- Direct Hire/Subcontract
- Construction/Maintenance Testing
- Design Change Package Issues

Testing

- Construction
- Maintenance
- Operability
- Facility Startup
- System Startup (Subcontractor or PE&CD)

Safety

- Criticality Potential
- Fire Watch
- Exposure Contamination Potential
- Authorization Basis Impact
- Hazardous Material Involved
- Emergency Preparedness
- Safeguards & Security
- Confinement Strategies

Interfaces

- Multiple Agencies, Contractors
- Special Work Control/Work Authorization Procedures
- Operating SSCs Including Testing
- Multiple Customers
- Co-Occupancy
- Outage Requirements
- Multiple systems
- Radiological Conditions (Current and Future)
 - Contamination
 - Radiation
- Multiple Projects
- Proximity to Safety Class Systems

Management

- Funding uncertainties
- Stakeholders Program Strategy Changes
- Errors and Omissions in Estimates
- Fast track/critical need
- Infrastructure influence

APPENDIX B Risk and Opportunity Grading Guidelines

This appendix documents the risk and opportunity grading guidelines used by the Team to determine risk and opportunity levels (i.e. *High, Moderate* or *Low*).

Tables B-1 and B-2 shown below and on the following page were used by the Team to define the likelihood and consequence of each risk identified in the assessment. These definitions were used to evaluate both the initial and residual risk levels. Risk levels (*High, Moderate, or Low*) were determined using the matrix shown in Figure B-1. Handling strategies for each of the risks were selected from the four strategies shown in Figure B-2.

From the risk likelihood and consequence values, the risk levels (*High, Moderate* or *Low*) are determined using the matrix shown in Figure B-1. Handling strategies for the risks were selected from the four strategies shown in Figure B-2.

Table B-1 Risk Likelihood Criteria

Likelihood of Occurrence (L)	Criteria
Non-Credible*	Determined (through formal probability calculations) to have a probability of occurrence of $\bullet 10^{-6}$ (or other non-credible probability defined for the activity)
Very Unlikely	<ul style="list-style-type: none"> • Will not likely occur anytime in the life cycle of the facilities/PBS ; or • Estimated recurrence frequency < 1 (i.e., event not expected to recur); or • $0 < \text{Likelihood of single event occurrence} < 0.15$.
Unlikely	<ul style="list-style-type: none"> • Will not likely occur in the life cycle of the facility/PBS; or • $1 \bullet$ Estimated recurrence frequency < 2 (i.e., event expected to recur but not more than once); or • $0.15 \bullet$ Likelihood of single event occurrence < 0.45.
Likely	<ul style="list-style-type: none"> • May occur sometime during the life cycle/PBS; or • $2 \bullet$ Estimated recurrence frequency < 5 (i.e., event expected to recur from 2 to 4 times); or • $0.45 \bullet$ Likelihood of single event occurrence < 0.75.
Very Likely	<ul style="list-style-type: none"> • Will likely occur sometime during the life cycle/PBS; or • Estimated recurrence frequency $\bullet 5$ (i.e., event expected to recur more than five times); or • $0.75 \bullet$ Likelihood of single event occurrence < 1.

*This category is normally reserved for the evaluation of residual risks associated with *Crisis* consequences.

Table B-2 Risk Consequences Criteria for PBS 12/12X

Consequence of Occurrence (C)	Criteria for PBS-SR-0012 and HQ-SNF-0012X
Negligible	<ul style="list-style-type: none"> • Minimal consequences; unimportant. • Some potential transfer of money (• \$50K), but budget estimates not exceeded. • Negligible impact on program; slight potential for schedule change (< 3 months of lifecycle schedule); compensated by available schedule float.
Marginal	<ul style="list-style-type: none"> • Small reduction in modification/work task technical performance. • Moderate threat to facility mission, environment, or people; may require minor facility redesign or repair, minor environmental remediation, or first aid/minor medical intervention. • Cost estimates marginally exceed budget (> \$50K, but • \$.5M). • Minor slip in schedule (3-6 months of lifecycle schedule) with some potential adjustment to milestones required. • Loss of capability for 0 to 2 weeks.
Significant	<ul style="list-style-type: none"> • Significant degradation in modification/project/contract technical performance. • Significant threat to facility mission, environment, or people; requires some facility redesign or repair, significant environmental remediation, or causes injuring requiring medical treatment • Cost estimates significantly exceed budget (5-10% of Annual PBS Budget). • Significant slip in schedule (6 months – 1 year of lifecycle schedule) with resulting milestones changes that may affect facility mission. • Loss of capability for 2 to 4 weeks.
Critical	<ul style="list-style-type: none"> • Technical goals of work task cannot be achieved. • Serious threat to facility mission, environment, or people; possibly completing only portions of the mission or requiring major facility redesign or rebuilding; extensive environmental remediation, or intensive medical care for life-threatening injury. • Cost estimates seriously exceed budget (>10% of Annual PBS Budget) • Excessive schedule slip (>1 year of lifecycle schedule) unacceptably affecting overall mission of facility/site/DOE objectives, etc. • Loss of capability for 4 to 12 weeks
Crisis	<ul style="list-style-type: none"> • Modification/Project cannot be completed • Catastrophic threat to facility mission, environment, or people; possibly causing loss of mission, long term environmental abandonment, and death.

Note: First-of-a-Kind (FOAK) Risks will receive special attention because they are often associated with project failure. FOAK risks should receive a Critical or Crisis consequence estimate unless there is a compelling argument for lesser consequence.

Likelihood (L)	Very Likely	Low	Moderate	High	High	High
	Likely	Low	Moderate	Moderate	High	High
	Unlikely	Low	Low	Moderate	Moderate	High
	Very Unlikely	Low	Low	Low	Moderate	High
	*Non-Credible	Low				
		Negligible	Marginal	Significant	Critical	Crisis
		Consequence (C)				

* Normally limited to assessing residual risks with Crisis consequences

Figure B-1 Risk Level Matrix

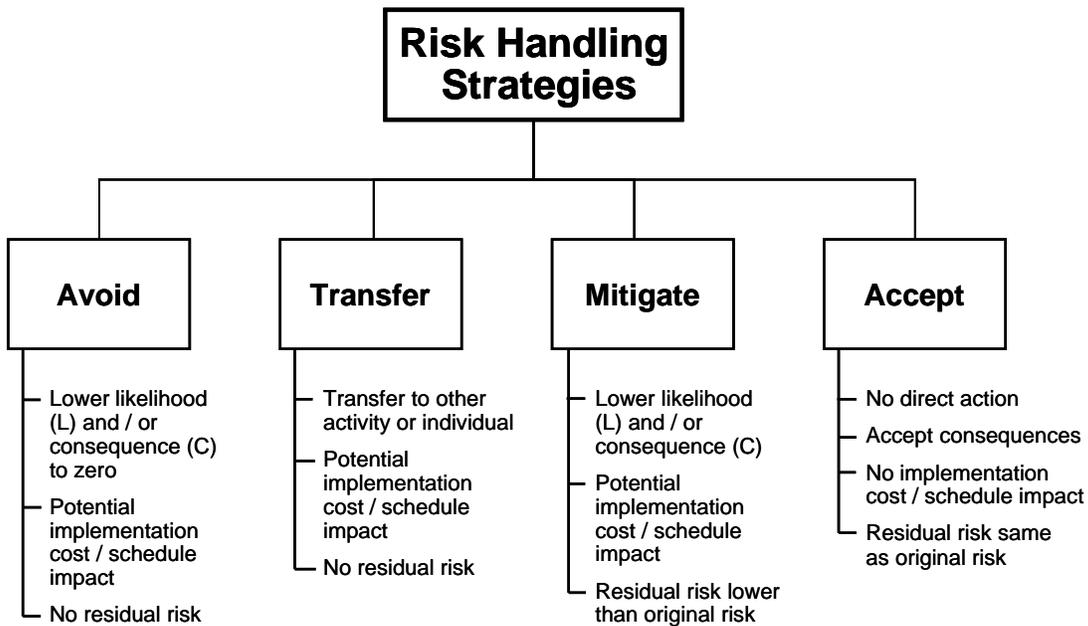


Figure B-2 Risk Handling Strategies

Tables B-3 and B-4 shown below were used by the Team to define the likelihood and benefit of each opportunity identified during the assessment. Opportunity levels (*High, Moderate* or *Low*) were identified using the matrix shown in Figure B-3. Handling strategies for the opportunities were selected from the four strategies shown in Figure B-4.

Table B-3 Opportunity Likelihood Criteria

Likelihood of Realization (L)	Criteria
Very Likely	• $0.75 > \text{Likelihood of benefit realization} < 1$.
Likely	• $0.45 \leq \text{Likelihood of benefit realization} < 0.75$.
Unlikely	• $0.15 \leq \text{Likelihood of benefit realization} < 0.45$.
Very Unlikely	• $0.15 > \text{Likelihood of benefit realization} > 0$.

From the opportunity likelihood and consequence values, the opportunity level is determined as shown in Figure 4.3-2.

	Very Likely	Low	Moderate	High	High
Likelihood (L)	Likely	Low	Moderate	Moderate	High
	Unlikely	Low	Low	Moderate	Moderate
	Very Unlikely	Low	Low	Low	Moderate
		Negligible	Marginal	Significant	Exceptional
		Benefit (B)			

Figure B-3 Opportunity Level Matrix

Table B-4 Opportunity Benefits Criteria

Benefit of Implementation (B)	Criteria
Negligible	<ul style="list-style-type: none"> • Minimal benefit; unimportant. • Some potential transfer of money, but budget estimates not changed. • Negligible impact on program; slight potential for reduction in schedule.
Marginal	<ul style="list-style-type: none"> • Small improvement in technical performance. • Moderate improvement to the mission, environment, or people. • Cost estimates reduced by up to \$.5M per year. • Minor reduction in schedule with some potential adjustment to level 1 milestone.
Significant	<ul style="list-style-type: none"> • Significant improvement in technical performance. • Significant improvement to the mission, environment, or people. • Cost estimates reduced between \$.5M and \$1M. • Significant reduction in schedule with resulting level 1 milestone changes.
Exceptional	<ul style="list-style-type: none"> • Technical goals of the program improved. • Exceptional improvement to the mission, environment, or people. • Cost estimates reduced over \$1M. • Exceptional reduction in schedule with resulting level 1 milestone changes.

*Any one or more of the criteria in the four levels of benefits may apply to a single opportunity. The overall benefit level for the opportunity being evaluated must be based upon the highest level for which a criterion applies.

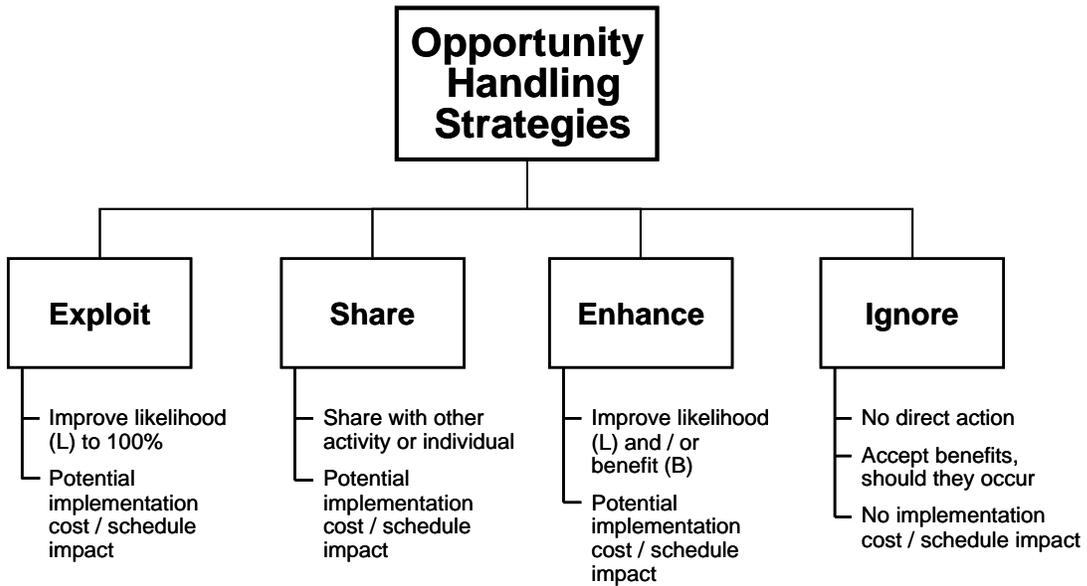


Figure B-4 Opportunity Handling Strategies

APPENDIX C Risk and Opportunity Assessment Forms

This Appendix provides a copy of all Risk/Opportunity Assessment Forms completed during the risk and opportunity assessment process. All of the information presented on these forms is contained in the PBS-SR-0012 Risk Assessment Database that was developed for this effort.

Risk / Opportunity Assessment Form					
ID Number: 002		Revision: 00			
		Last Date Evaluated: 29-Aug-05			
Status: Active					
Event Title: New materials Received at L-Basin- GTRI SNF					
Type: Risk External		Category: Res/Cond Resources and Conditions			
Assess. Element: 12.1		Title: L-Area Operation			
Responsible Org: -		Contact:	Date Identified: 29-Aug-05		
Statement of Event: The schedule, quantity and type of FRR and DRR SNF to be received and stored in L-Basin thru 2019 is fairly known. There is a risk that the Global Threat Reductions Initiatives (GTRI) will introduce new SNF types to be received and stored in L-Basin. These new SNF types will require storage space, new material storage configurations and cause security modifications.					
Likelihood:	Likely	Basis: Currenty the State Department is planning for the ability to remove SNF from sensitive countries, if necessary. Although L-Basin is not the only option for this SNF, there are few options available for receiving and storing irradiated fuels.			
Consequence / Benefit:	Marginal	Basis: SFP's response would be to quickly provide a receipt capability. Due to the limited SNF information available (i.e. in-complete Appendix A data) Engineering and Operations would perform timely and focused reviews and write special procedures to ensure safe receipt and storage in L-Basin. SNF would be put into temporary bucket storage until the new storage configuration is ready; compensatory security measures, if required, would be put in place.			
Most Significant Cost Impact (\$k): <\$500k		Most Significant Schedule Impact (Wks): N/A			
Level:	Moderate	Event Trigger: NNSA-HQ notification to receive and store GTRI SNF.			
Handling Strategy:	Accept	Description:			
HS Implementation Cost (\$K):	N/A	Basis: N/A for Accept handling strategy.			
HS Implementation Schedule (Wks):	N/A	Basis: N/A for Accept handling strategy.			
Other Handling Strategies:					
Statement of Residual Risk: Same as initial evaluation for Accept handling strategy.					
Residual Likelihood:	Likely	Basis: Same as initial evaluation for Accept handling strategy.			
Residual Consequence:	Marginal	Basis: Same as initial evaluation for Accept handling strategy.			
Residual Risk Level:	Moderate	Residual Impact Basis:			
Residual Cost Impact (\$K):	<u>Best Case</u> 403			<u>Most Likely</u> 440	<u>Worst Case</u> 500
Residual Schedule Impact (Wks):					
Impacted Scope of Work: Basin Operations.					
Evaluation Comments:					
Event Comments:					

Risk / Opportunity Assessment Form						
ID Number: 003		Revision: 00		Last Date Evaluated: 29-Aug-05		
Status: Active						
Event Title: Increased S&S Requirements (DBT)						
Type: Risk External			Category: S&S Safeguards & Security			
Assess. Element: 12.1		Title: L-Area Operation				
Responsible Org: -			Contact:	Date Identified: 29-Aug-05		
Statement of Event: Currently Design Basis Threat (DBT) requirements are not applicable to L-area. There is a risk that L-area will be required to meet DBT requirements. This will cause increased Safeguards and Security Upgrades and complicate Operations. The S&S upgrades will include large physical modifications (Design/Construction), increased S&S personnel, and changes in Operating procedures to meet DBT.						
Likelihood:	Unlikely	Basis: Currently DBT was not applicable for Category II Facility. L-Area is a Category II Facility. There has been discussion on RadSabatoge Threats though not DBT. There is neither baseline planning nor outyear planning for implementing DBT in Category II Facilities.				
Consequence / Benefit:	Crisis	Basis: Would expect L-Area DBT costs to be similar to K-area DBT upgrade costs. Cost range is \$4M-\$8M for this PBS Risk Assessment.				
Most Significant Cost Impact (\$k): >\$4,000k			Most Significant Schedule Impact (Wks): N/A			
Level:	High	Event Trigger: When notified to meet DBT requirements.				
Handling Strategy:	Accept	Description: L-Area is continuing with existing security upgrades, these upgrades are believed to better posture SFP for potential application of DBT requirements versus meeting the level of DBT requirements as experienced in a Category I Facility, i.e. K-area.				
HS Implementation Cost (\$K):	N/A	Basis: N/A for Accept handling strategy.				
HS Implementation Schedule (Wks):	N/A	Basis: N/A for Accept handling strategy.				
Other Handling Strategies:						
Statement of Residual Risk: Same as initial evaluation for Accept handling strategy.						
Residual Likelihood:	Unlikely	Basis: Same as initial evaluation for Accept handling strategy.				
Residual Consequence:	Crisis	Basis: Same as initial evaluation for Accept handling strategy.				
Residual Risk Level:	High	Residual Impact Basis:				
Residual Cost Impact (\$K):	<u>Best Case</u> 4000				<u>Most Likely</u> 6000	<u>Worst Case</u> 8000
Residual Schedule Impact (Wks):						
Impacted Scope of Work: Basin Operations and TSC.						
Evaluation Comments:						
Event Comments:						

Risk / Opportunity Assessment Form			
ID Number: 004		Revision: 00	Last Date Evaluated: 29-Aug-05
Status: Active			
Event Title: TRIGA receipts at L-Basin			
Type: Risk External		Category: Res/Cond Resources and Conditions	
Assess. Element: 12.1		Title: L-Area Operation	
Responsible Org: -		Contact:	Date Identified: 29-Aug-05
Statement of Event: Foreign Research Reactor (FRR) and Domestic Research Reactor (DRR) TRIGA SNF is currently received and stored at INEEL. There is a risk is that FRR TRIGA will be received and stored in L-basin. The receipt of FRR TRIGA will require modifications for storage configuration.			
Likelihood:	Very Unlikely	Basis: Unlikely, due to the current agreements and approvals to receive TRIGA at INEEL and the current political atmosphere, i.e. concern about the state of South Carolina accepting additional SNF to SRS.	
Consequence / Benefit:	Marginal	Basis: The L-Area impact would be approximately 10 shipments. Small storage configuration modifications would be required for TRIGA storage.	
Most Significant Cost Impact (\$k): <\$500k		Most Significant Schedule Impact (Wks): N/A	
Level:	Low	Event Trigger: A decision is made to send TRIGA to SRS.	
Handling Strategy:	Accept	Description:	
HS Implementation Cost (\$K):	N/A	Basis: N/A for Accept handling strategy.	
HS Implementation Schedule (Wks):	N/A	Basis: N/A for Accept handling strategy.	
Other Handling Strategies:			
Statement of Residual Risk: Same as initial evaluation for Accept handling strategy.			
Residual Likelihood:	Very Unlikely	Basis: Same as initial evaluation for Accept handling strategy.	
Residual Consequence:	Marginal	Basis: Same as initial evaluation for Accept handling strategy.	
Residual Risk Level:	Low	Residual Impact Basis:	
Residual Cost Impact (\$K):	<u>Best Case</u>	<u>Most Likely</u>	<u>Worst Case</u>
Residual Schedule Impact (Wks):	455	473	500
Impacted Scope of Work: Basin Operations.			
Evaluation Comments:			
Event Comments:			

Risk / Opportunity Assessment Form					
ID Number: 005		Revision: 00	Last Date Evaluated: 29-Aug-05		
Status: Active					
Event Title: SNF received Exceeds Category II Facility					
Type: Risk External		Category: S&S Safeguards & Security			
Assess. Element: 12.1	Title: L-Area Operation				
Responsible Org: -		Contact:	Date Identified: 29-Aug-05		
Statement of Event: The L-Area is classified as a Category II Facility with all the incumbent S&S systems to support storage of this material. There is a risk that SNF may be received and it increases the L-Area to a Category I Facility. A Category I Facility will require additional and/or new S&S systems and security resources.					
Likelihood:	Very Unlikely	Basis: For each cask shipment, the Appendix A data is reviewed to confirm that the Category II material limits will not be exceeded for each shipment. Also L-Area Facility MC&A records are reviewed and checked to confirm that facility material limits are not exceeded with each shipment, this review/check is performed by SFP and Site MC&A personnel.			
Consequence / Benefit:	Critical	Basis: S&S upgrades greater will be greater than \$4M. (Range is \$4M-\$8M for this PBS Risk Assessment) If shipment must be accepted prior to upgrades installed and operated may require compensatory measures.			
Most Significant Cost Impact (\$k): >\$4,000k		Most Significant Schedule Impact (Wks):			
Level:	Moderate	Event Trigger: As directed by DOE to receive and store SNF.			
Handling Strategy:	Mitigate	Description: Send some of the fuel to K-area Drum Storage to reduce the material roll-up and keep L-Area a Category II Facility.			
HS Implementation Cost (\$K):	\$500k	Basis: SNF will no longer be stored in Drum Storage by FY06. WSMS safety analysis would be required to confirm it is safe to resume SNF receipt, handling and storage capability.			
HS Implementation Schedule (Wks):	N/A	Basis:			
Other Handling Strategies:					
Statement of Residual Risk: K-Area Drum Storage is not available or the storage space is not large enough to accommodate SNF. Following DBT03 upgrades, storage in the K-Area "soft structure" will not be viable.					
Residual Likelihood:	Very Unlikely	Basis: The limited amount of SNF that would be required to send to K-area should be able to fit into Drum Storage.			
Residual Consequence:	Critical	Basis: Consequence is the same as initial evaluation if materials cannot be stored in K, 100-L would be required to become a Category I Facility.			
Residual Risk Level:	Moderate	Residual Impact Basis:			
Residual Cost Impact (\$K):	<u>Best Case</u>			<u>Most Likely</u>	<u>Worst Case</u>
Residual Schedule Impact (Wks):	3690			4000	4670
Impacted Scope of Work: Basin Operations.					
Evaluation Comments:					
Event Comments:					

Risk / Opportunity Assessment Form					
ID Number: 006		Revision: 00	Last Date Evaluated: 31-Aug-05		
Status: Active					
Event Title: Facility condition - Basin Structure					
Type: Risk Internal		Category: Res/Cond Resources and Conditions			
Assess. Element: 12.1	Title: L-Area Operation				
Responsible Org: -		Contact:	Date Identified: 31-Aug-05		
Statement of Event: This risk addresses minor basin issues. The basin provides for the SNF water storage and shielding. There is a risk that basin maintenance issues will grow.					
Note: Catastrophic failure of the basin i.e. rapid loss of water is not a credible scenario. The basin is a PC-3 structure. Any water loss would be over a timeframe that would allow a response to refill to water levels to maintain shielding.					
Likelihood:	Likely	Basis: The on-going Structural Integrity Program has identified the need for grouting the suction well piping, some basin coating has failed.			
Consequence / Benefit:	Significant	Basis: As issued are identified, repairs are made. Cumulative costs of repairs over approximately 15 year period.			
Most Significant Cost Impact (\$k): \$2,000k		Most Significant Schedule Impact (Wks): N/A			
Level:	Moderate	Event Trigger: Elevated Monitoring Well Sample results.			
Handling Strategy:	Accept	Description: Continue with the Structural Integrity Program to monitor basin conditions. Perform maintenance and repairs as needed.			
HS Implementation Cost (\$K):	N/A	Basis: Program is funded in PBS.			
HS Implementation Schedule (Wks):	N/A	Basis:			
Other Handling Strategies:					
Statement of Residual Risk: Same as initial evaluation for Accept handling strategy.					
Residual Likelihood:	Likely	Basis: Same as initial evaluation for Accept handling strategy.			
Residual Consequence:	Significant	Basis: Same as initial evaluation for Accept handling strategy.			
Residual Risk Level:	Moderate	Residual Impact Basis:			
Residual Cost Impact (\$K):	<u>Best Case</u> 1613			<u>Most Likely</u> 1758	<u>Worst Case</u> 2000
Residual Schedule Impact (Wks):					
Impacted Scope of Work: Basin Operations and TSC (uses Basin for SNF input and preparation).					
Evaluation Comments:					
Event Comments:					

Risk / Opportunity Assessment Form			
ID Number: 007		Revision: 00	Last Date Evaluated: 31-Aug-05
Status: Active			
Event Title: New Disposition - Heavy Water is declared Waste			
Type: Risk External		Category: Reg&Envi Regulatory and Environmental	
Assess. Element: 12.1	Title: L-Area Operation		
Responsible Org: -		Contact:	Date Identified: 31-Aug-05
Statement of Event: The current plan is to store Excess Heavy Water and eventually ship to a To Be Determined (TBD) vendor. There is a risk that no vendor is identified and DOE declares Excess Heavy Water a waste.			
Likelihood:	Very Unlikely	Basis: The needs for moderator across DOE complex are substantial. No other source for the production of new Heavy Water exists in US. The decision to disposition heavy water as waste would have to obtain waste disposal funds which are much higher as opposed to continued storage costs.	
Consequence / Benefit:	Critical	Basis: There is not a SRS disposal path. The SRS Low Level Waste WAC does not accept waste with the known quantities of tritium contained in moderator. An off-site disposal path would be required. Treatment would entail drumming off contents into another drum with an additive to solidify. Treatment would be performed manually and with plastic suit PPE. It would take over a year to ship drums off site after treatment and remove Moderator from tanks to drum and treat. There is no infrastructure in C Area, would either relocate drums to a treatment area or upgrade C Area infrastructure. There would be increased Personnel exposure with the treatment of approximately 9,000 drums. Cost Range of \$4M-\$8M for this PBS Risk Assessment.	
Most Significant Cost Impact (\$k): >\$4,000k		Most Significant Schedule Impact (Wks): >18	
Level:	Moderate	Event Trigger: Notification by DOE.	
Handling Strategy:	Mitigate	Description: If there should not a timing issue, i.e. must disposition waste in "x-timeframe", (not RCRA waste). Arrange for Canada to take Moderator. These costs would be approximately \$2M for drums and overpacks. This option would be less costly than the waste treatment and disposal alternative.	
HS Implementation Cost (\$K):	2,000k	Basis: Cost for drums and overpacks.	
HS Implementation Schedule (Wks):	12	Basis: Time to perform work.	
Other Handling Strategies:			
Statement of Residual Risk: Canada will not take Excess Heavy Water.			
Residual Likelihood:	Very Unlikely	Basis: Canada has a need for Heavy Water. SRS Heavy Water has less tritium contamination than their Heavy Water. Canada no longer has the capability to produce Heavy Water.	
Residual Consequence:	Critical	Basis: Contact other countries with Heavy Water Reactors, i.e. Argentina for possible use. If no countries will take Heavy Water, water must be treated as waste. Same consequence as initial evaluation.	
Residual Risk Level:	Moderate	Residual Impact Basis:	
Residual Cost Impact (\$K):	<u>Best Case</u> 3670	<u>Most Likely</u> 4000	<u>Worst Case</u> 4550
Residual Schedule Impact (Wks):			
Impacted Scope of Work: Heavy Water Surveillance and Monitoring.			
Evaluation Comments:			
Event Comments:			

Risk / Opportunity Assessment Form					
ID Number: 012		Revision: 00	Last Date Evaluated: 31-Aug-05		
Status: Active					
Event Title: Utility Service Changes					
Type: Risk External		Category: Interfac Interfaces			
Assess. Element: 12.1	Title: L-Area Operation				
Responsible Org: -		Contact:	Date Identified: 31-Aug-05		
Statement of Event: L-Basin Operations relies on utilities, e.g. steam, water, electrical, etc. provided by the existing Structures, Systems and Components (SSC) operated and maintained by the Site Utilities Department (SUD). L-Area is currently responsible for utility operation and maintenance within the L Area. There is a risk that as site utility needs are reduced, SUD may no longer provide these services and that L-area may have to provide these services or take on increased responsibilities to ensure service.					
Likelihood:	Likely	Basis: There is a proposed steam study investigating the use of individual electrical boilers to support L needs after 2006.			
Consequence / Benefit:	Critical	Basis: In 2005 a preliminary study estimate range of \$1.5-\$5M for capital costs and a greater than \$1M/year (without labor cost included) was the annual Operating cost for an electrical boiler.			
Most Significant Cost Impact (\$k): \$5,000k		Most Significant Schedule Impact (Wks): N/A			
Level:	High	Event Trigger: SUD no longer will provide steam with K-Area Oil Fired Boiler.			
Handling Strategy:	Mitigate	Description: SFP will become involved in this study and provide feedback to the proposed SUD steam study. As this steam study develops, SFP will review other steam alternatives such as electrical heaters, etc. Preliminary estimates indicate that electric heaters are less costly to install and operate. SFP would also review steam needs to determine possible reductions.			
HS Implementation Cost (\$K):	N/A	Basis: Work will be performed by existing Engineering staff, already included in budget.			
HS Implementation Schedule (Wks):	N/A	Basis:			
Other Handling Strategies:					
Statement of Residual Risk: Electrical heaters for L-Area heating is not viable.					
Residual Likelihood:	Very Unlikely	Basis: Electrical heaters have been used for similar personnel heating applications. Large on-site buildings rely on electrical heat.			
Residual Consequence:	Significant	Basis: There are other heating options available. Electrical heater preliminary cost range is \$1-3M, with less Operations and Maintenance costs than electrical boiler. With the reduced heat needs, heating option costs should be similar to the preliminary Electrical heater cost ranges.			
Residual Risk Level:	Low	Residual Impact Basis:			
Residual Cost Impact (\$K):	<u>Best Case</u> 4808			<u>Most Likely</u> 5000	<u>Worst Case</u> 5288
Residual Schedule Impact (Wks):					
Impacted Scope of Work: 100-L Heating.					
Evaluation Comments:					
Event Comments:					

Risk / Opportunity Assessment Form					
ID Number: 013		Revision: 00	Last Date Evaluated: 31-Aug-05		
Status: Active					
Event Title: INL/SRS SNF Swap					
Type: Risk Internal Technical		Category: Res/Cond Resources and Conditions			
Assess. Element: 12.1		Title: L-Area Operation			
Responsible Org: -		Contact:	Date Identified: 31-Aug-05		
Statement of Event: Zr/SST clad SNF resides in L-Basin and Al-clad SNF resides in INL. A swap of the SNF between the two sites is not currently planned. The L-Area Storage Rack (LASR) project that would have provided additional storage was cancelled. With the recent guidance to process SNF, a SNF swap may occur between the two sites. This swap would require additional storage in L-Basin to accommodate the swap.					
Likelihood:	Likely	Basis: Current DOE guidance is to process Al-clad SNF. The resumption of processing provides a disposition path for INL Al-clad SNF.			
Consequence / Benefit:	Significant	Basis: Due to the processing of on-site SNF that would be occurring prior to the INL Al-clad receipt (that would free-up storage space), a smaller "LASR-type" project would be required to provide additional Storage racks, approximately \$1-2M.			
Most Significant Cost Impact (\$k): \$2,000k		Most Significant Schedule Impact (Wks):			
Level:	Moderate	Event Trigger: DOE decision to process Al-clad SNF is made and Basin Management of the fuel processing schedule versus available space indicates that available L-Basin storage cannot accommodate swap.			
Handling Strategy:	Accept	Description: Accept for now, until event triggers occur.			
HS Implementation Cost (\$K):	N/A	Basis:			
HS Implementation Schedule (Wks):	N/A	Basis:			
Other Handling Strategies:					
Statement of Residual Risk: Same as initial evaluation for Accept handling strategy.					
Residual Likelihood:	Likely	Basis: Same as initial evaluation for Accept handling strategy.			
Residual Consequence:	Significant	Basis: Same as initial evaluation for Accept handling strategy.			
Residual Risk Level:	Moderate	Residual Impact Basis:			
Residual Cost Impact (\$K):	<u>Best Case</u> 1613			<u>Most Likely</u> 1753	<u>Worst Case</u> 2000
Residual Schedule Impact (Wks):					
Impacted Scope of Work: Basin Operations					
Evaluation Comments:					
Event Comments:					

Risk / Opportunity Assessment Form						
ID Number: 014		Revision: 00		Last Date Evaluated: 16-Feb-06		
Status: Active						
Event Title: DNFSB Recommendation 2004-2 Confinement System Impacts						
Type: Risk Internal Technical			Category: Res/Cond Resources and Conditions			
Assess. Element: 12.1		Title: L-Area Operation				
Responsible Org: -			Contact:	Date Identified: 16-Feb-06		
Statement of Event: The L-Basin DSA credits the basin water and concrete as providing SC controls to confine the source term. These controls do not easily relate to active and passive confinement systems. The recent DNFSB Recommendation 2004-2 addresses active and passive confinement systems. These DNFSB 2004-2 Guidelines will eventually be translated into confinement system requirements following the planned pilot study analysis. There is a risk that L-Basin as a Hazard Category 2 Facility will be required to install an active or passive confinement system beyond the current controls in place.						
Likelihood:	Unlikely	Basis: Although a Hazard Category 2 Facility, fuel pools are different from processes that required a confinement system and will be treated separately.				
Consequence / Benefit:	Critical	Basis: The Pilot Study results in Confinement requirements, that must be met with Safety Class HEPA Filters and active ventilation (Fans and Diesel Generators).				
Most Significant Cost Impact (\$k): >\$5,000k			Most Significant Schedule Impact (Wks):			
Level:	Moderate	Event Trigger: Pilot Study results.				
Handling Strategy:	Accept	Description: Accept for now. If fuel pools are impacted by the Pilot Study, perform additional analysis to exclude L-Basin fuel pools.				
HS Implementation Cost (\$K):		Basis: The cost of additional analysis will be developed based on Pilot Study Analysis results.				
HS Implementation Schedule (Wks):		Basis:				
Other Handling Strategies:						
Statement of Residual Risk: Accept, same as evaluation.						
Residual Likelihood:	Unlikely	Basis: Accept, same as evaluation.				
Residual Consequence:	Critical	Basis: Accept, same as evaluation.				
Residual Risk Level:	Moderate	Residual Impact Basis:				
Residual Cost Impact (\$K):	<u>Best Case</u> 4587				<u>Most Likely</u> 5000	<u>Worst Case</u> 5688
Residual Schedule Impact (Wks):						
Impacted Scope of Work:						
Evaluation Comments: This risk needs to be revisited if the TSC is authorized, due to SNF will be air-contact and may require additional controls.						
Event Comments:						

Risk / Opportunity Assessment Form						
ID Number: 015		Revision: 00		Last Date Evaluated: 22-Jun-06		
Status: Active						
Event Title: INL/SRS SNF SWAP Cask Availability						
Type: Risk Internal Technical			Category: Res/Cond Resources and Conditions			
Assess. Element: 12.1		Title: L-Area Operation				
Responsible Org: -			Contact:	Date Identified: 22-Jun-06		
Statement of Event: Zr/SS clad SNF resides in L-Basin and Al-clad SNF resides at INL. With the recent guidance to process the SNF, an SNF swap will occur between the two sites. Cask availability for shipments between the two site may become an issue, as the world cask inventory is limited.						
Likelihood:	Likely	Basis: Current DOE guidance is to process Al-clad SNF. The resumption of processing provides a disposition path for INL Al-clad SNF. Since there is no alternate disposition path for Zr/SS fuel at SRS, the swap with Idaho would be anticipated. With FRR/DRR receipts through the allowable return period, cask usage is expected to be high				
Consequence / Benefit:	Critical	Basis: Only a limited number of casks exist. Priority will likely be placed on FRR receipts. Without available casks for shipments between the facilities, deinventory of L-basin will be in jeopardy. Most significant cost represents purchase and licensing of two spent fuel casks.				
Most Significant Cost Impact (\$k): 10000			Most Significant Schedule Impact (Wks): 24			
Level:	High	Event Trigger: DOE decision to swap SNF is made and SRS and Idaho fuel processing schedules versus availability of casks indicates a resource conflict.				
Handling Strategy:	Accept	Description: Accept for now until even triggers occur.				
HS Implementation Cost (\$K):		Basis:				
HS Implementation Schedule (Wks):		Basis:				
Other Handling Strategies:						
Statement of Residual Risk: Same as above since accept.						
Residual Likelihood:	Likely	Basis: Accept, same as evaluation.				
Residual Consequence:	Critical	Basis: Accept, same as evaluation.				
Residual Risk Level:	High	Residual Impact Basis:				
Residual Cost Impact (\$K):	<u>Best Case</u> 8333				<u>Most Likely</u> 10000	<u>Worst Case</u> 12917
Residual Schedule Impact (Wks):	24				24	24
Impacted Scope of Work:						
Evaluation Comments:						
Event Comments:						

Risk / Opportunity Assessment Form						
ID Number: 016		Revision: 00		Last Date Evaluated: 22-Jun-06		
Status: Active						
Event Title: INL/SRS SNF Swap Damaged Fuel Shipping Requirements						
Type: Risk Internal Technical			Category: Res/Cond Resources and Conditions			
Assess. Element: 12.1		Title: L-Area Operation				
Responsible Org: -			Contact:	Date Identified: 22-Jun-06		
Statement of Event: Current DOE guidance is to process AI-clad SNF. The resumption of processing provides a disposition path for INL AI-clad SNF but no disposition path at SRS for Zr/SS clad fuels. Some of these fuels are damaged.						
Likelihood:	Likely	Basis: No criteria is currently established for shipment of some forms of damaged fuels. An agreement on final form for transport will need to be agreed upon by both facilities and outside regulatory organizations Equipment and processes will need to be set up to meet the established criteria. Delays will directly impact shipping schedules and deinventory dates.				
Consequence / Benefit:	Significant	Basis:				
Most Significant Cost Impact (\$k): 500			Most Significant Schedule Impact (Wks): 12			
Level:	Moderate	Event Trigger: DOE direction to begin swap of fuels between SRS and INL				
Handling Strategy:	Accept	Description: Accept for now until event triggers occur.				
HS Implementation Cost (\$K):		Basis:				
HS Implementation Schedule (Wks):		Basis:				
Other Handling Strategies:						
Statement of Residual Risk: Since Accept same as evaluation.						
Residual Likelihood:	Likely	Basis: Accept, same as evaluation.				
Residual Consequence:	Significant	Basis: Accept, same as evaluation.				
Residual Risk Level:	Moderate	Residual Impact Basis:				
Residual Cost Impact (\$K):	<u>Best Case</u> 403				<u>Most Likely</u> 440	<u>Worst Case</u> 500
Residual Schedule Impact (Wks):	12				12	12
Impacted Scope of Work:						
Evaluation Comments:						
Event Comments:						

Risk / Opportunity Assessment Form						
ID Number: 017		Revision: 00	Last Date Evaluated: 22-Jun-06	Status: Active		
Event Title: L Basin Receives Fuel After H-Canyon Shutdown						
Type: Risk External Programmatic		Category: Res/Cond Resources and Conditions				
Assess. Element: 12.2		Title: Prepare SNF for Final Disposition				
Responsible Org: -		Contact:	Date Identified: 22-Jun-06			
Statement of Event: If the H Canyon is not being fully utilized in later years, it is possible a decision will be made to shut down the canyon because of this limited use and large operating costs for the canyon. Shut down of the canyon prior to receipt of the last FRR shipment would result in fuel with no disposition path.						
Likelihood:	Unlikely	Basis: FRR participation is only somewhat predictable. Limited receipts during extended periods of time could result in Canyon early shut down.				
Consequence / Benefit:	Critical	Basis:				
Most Significant Cost Impact (\$K): 20000		Most Significant Schedule Impact (Wks): 12				
Level:	Moderate	Event Trigger: Direction to shut down canyon.				
Handling Strategy:	Accept	Description: Accept for now, until event triggers occur.				
HS Implementation Cost (\$K):		Basis:				
HS Implementation Schedule (Wks):		Basis:				
Other Handling Strategies:						
Statement of Residual Risk: Since accept, same as evaluation.						
Residual Likelihood:	Unlikely	Basis: Accept, same as evaluation.				
Residual Consequence:	Critical	Basis: Accept, same as evaluation.				
Residual Risk Level:	Moderate	Residual Impact Basis:				
Residual Cost Impact (\$K):	<u>Best Case</u> 16260				<u>Most Likely</u> 17724	<u>Worst Case</u> 20000
Residual Schedule Impact (Wks):	12				12	12
Impacted Scope of Work:						
Evaluation Comments:						
Event Comments:						

Risk / Opportunity Assessment Form					
ID Number: 018		Revision: 00	Last Date Evaluated: 22-Jun-06		
Status: Active					
Event Title: L Area Receives Late FRR Shipments					
Type: Risk External Programmatic		Category: Res/Cond Resources and Conditions			
Assess. Element: 12.2		Title: Prepare SNF for Final Disposition			
Responsible Org: -		Contact:	Date Identified: 22-Jun-06		
Statement of Event: With only three months between the last potential receipt in L area and the required de-inventory date, there is a potential for the de-inventory to be delayed due to late FRR receipts.					
Likelihood:	Unlikely	Basis: There is a good chance that either due to last minute interest in participation or delays, that L basin could receive right up until 9/30/2019. If there is no other approved receipt location, L basin			
Consequence / Benefit:	Significant	Basis: A large late shipment would not likely all be able to be unloaded, bundled, and sent to the canyon in the final 3 months before the scheduled deinventory date of 12/31/2019. This would delay the final de-inventory date of L basin by a few months.			
Most Significant Cost Impact (\$k): 1000		Most Significant Schedule Impact (Wks): 6			
Level:	Moderate	Event Trigger: FRR receipt schedule indicates late interest in participation or anticipated shipments are delayed.			
Handling Strategy:	Accept	Description: Accept for now, until even triggers occur.			
HS Implementation Cost (\$K):		Basis:			
HS Implementation Schedule (Wks):		Basis:			
Other Handling Strategies:					
Statement of Residual Risk: Accept, same as evaluation.					
Residual Likelihood:	Unlikely	Basis: Accept, same as evaluation.			
Residual Consequence:	Significant	Basis: Accept, same as evaluation.			
Residual Risk Level:	Moderate	Residual Impact Basis:			
Residual Cost Impact (\$K):	<u>Best Case</u> 806			<u>Most Likely</u> 879	<u>Worst Case</u> 1000
Residual Schedule Impact (Wks):					
Impacted Scope of Work:					
Evaluation Comments:					
Event Comments:					

Risk / Opportunity Assessment Form					
ID Number: 008		Revision: 00	Last Date Evaluated: 31-Aug-05		
Status: Active					
Event Title: Purify water to make more marketable					
Type: Opportunity External		Category: Res/Cond Resources and Conditions			
Assess. Element: 12.1		Title: L-Area Operation			
Responsible Org: -		Contact:	Date Identified: 31-Aug-05		
Statement of Event: The Excess Heavy Water or Moderator currently has Tritium levels that limits it's attractiveness for uses within the DOE Complex and commercially, i.e. pharmaceutical industry. If the Moderator could be cleaned up, it would become marketable. Profits from the sale to commercial markets could fund D&D projects.					
Likelihood:	Likely	Basis: Several moderator drums have been shipped to a vendor whose detritiation technology looks promising, should have some test results on technology performance in 9/05. Vendor's capacity is limited and would upgrade if test results good and customers identified. DOE has needs for heavy water, and has no way to make new heavy water. Complex needs have been identified Neutron Spaulation, National Ignition Facility, and NIST.			
Consequence / Benefit:	Exceptional	Basis: Supporting the Complex needs with clean Moderator would probably not make money for DOE. But there is available Moderator for the Commercial Pharmaceutical Industry. Profit could be realized if Moderator is sold to this industry possibly a \$200/kg return.			
Most Significant Cost Impact (\$k): >\$1,000k		Most Significant Schedule Impact (Wks): N/A			
Level:	High	Event Trigger: Following good test results and vendor upgrade capacity - Commercial Customer is identified.			
Handling Strategy:	Exploit	Description: Support detritiation vendor. Begin identification of potential industry customers, establish dialogue to determine their needs (purity limits) and interest. This is currently on-going.			
HS Implementation Cost (\$K):	N/A	Basis: Already in the PBS budget.			
HS Implementation Schedule (Wks):		Basis:			
Other Handling Strategies:					
Statement of Residual Risk:					
Residual Likelihood:		Basis:			
Residual Consequence:		Basis:			
Residual Risk Level:		Residual Impact Basis:			
Residual Cost Impact (\$K):	<u>Best Case</u>			<u>Most Likely</u>	<u>Worst Case</u>
Residual Schedule Impact (Wks):					
Impacted Scope of Work:					
Evaluation Comments:					
Event Comments:					