Approach to Managing Risk

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Discussion Topics

- Waste Treatment Plant Risk Program
- Bechtel Commercial Project Risk Programs

WTP Mission - Enhanced Risk Management

Improve the effectiveness of the risk management program

- Aligned with the project's MR recovery strategy
- Maximize the probability and consequence of positive events
- Minimize the probability and consequence of adverse events,

While proactively managing, more reliably predicting and controlling cost and schedule performance

Process Changes Made

- Executing risk and opportunity management program with DOE-ORP through a Joint Risk Management Team (JRMT)
- More direct involvement and accountability from the WTP senior management team through JRMT membership
- Risk coordinators assigned from each major group as focal points
- Risk integration and improved ownership within the Integrated Project Teams (IPTs)
- Implemented a more rigorous method for identifying, tracking, communicating, and deliberating risks
- Opportunities now identified and documented with realization strategies and actions, and visibly monitored for a successful closure

Risk Assessment Sheet (1)

Waste Treatment Plant Project

EPCC Risk Assessment Sheet

RISK IDENTIFICATION

Risk ID: ENG-048 | Old ID: | Type: EPCC Technical/Regulatory | Status = Open

Title: Capital and Schedule Risk for DOE Standard 1066 Compliance

Resp Org: Design Engineering | WTP Lead: M. Wentink | ORP POC: E. Diaz

WBS Code: 1.00 | WTP EPCC Multiple Accounts

Affected Facilities: ☑ PTF ☑ LAW ☑ HLW ☐ BOF ☑ LAB ☑ SS ☐ Project | Lead IPT: HLW

Event Description

The Project submitted an ABAR on January 31, 2008 to tailor Standard 1066. Subsequent to receiving comments from the DNFSB expressing concerns about the ABAR, ORP rejected the ABAR and requested that WTP resubmit the ABAR with proposed alternate protection that provides equivalent features to those required by Standard 1066. This necessitates additional engineered controls beyond those proposed by the previous ABAR, which was based on achieving a comparable level of safety to what is required by Standard 1066, but not necessarily equivalent features. The scope of the additional engineered controls is dependent on the definition used for equivalent features and the outcome of planned analyses and confirmatory testing. Based on technical expert reviews, DOE-ORP is re-evaluating the need for equivalent features and in January, 2009, asked BNI to develop an ABAR and technical details that provide comparable safety and mission protection as allowed by DOE-STD-1066, Section 14.

UNMITIGATED RISK ASSESSMENT

Probability Level	Likely	Based on a history of conservative positions and requiring rigorous proofs, it is considered likely that DNFSB and ultimately the DOE will not accept anything less than most conservative fire protection features required by Standard 1066
Percent Likelihood	70%	
Consequence Level	Crisis	Implementation of the most conservative fire protection features, including mist systems, water spray systems or water deluge systems in ducts and filter housings of LAW, LAB, HLW, and PTF will result in estimated cost impacts in excess of $500 M and an 18 month delay in the WTP schedule (schedule delay is not included in the cost impact).
Cost Impact	$500,000,000	

Overall Risk Level: High | Milestone At Risk: LAB Substantially Complete Construction | 31-Dec-12 | Unmitigated Year of Impact: 2009 - 2019

HANDLING PLAN

Risk Handling Strategy	Fcst Completion	RHS Complete	Point of No Return
Mitigate	23-Oct-09		N/A

Risk Response Plan (RRP) Scope Description

Develop an ABAR and technical details that provide comparable safety and mission protection as allowed by DOE-STD-1066, Section 14. The alternate approach does not provide all of the fire protection features prescribed in Section 14 of DOE-STD-1066, but does provide multiple levels of fire protection features that adequately protect final HEPA filters from fires. A gap analysis will be provided that supports the alternate design. Refer to Technical Issue 2008-0002: DOE Standard 1066 Compliance for more detail on activities for issue resolution.

Action ID and Description	Action Lead / Hold Point?	PLAN / FORECAST	ACTUAL FINISH
01 Issue ABAR to ORP for approval	D. Klein	21-Jan-08 / 21-Jan-08	31-Jan-08
02 ORP to approve ABAR (rejected by ORP, CCN 180690. Additional actions have been added and a revised ABAR will be submitted as a part Action 4)	DOE-ORP	04-Jul-08 / 04-Jul-08	05-Jun-08
03 BNI issue a revised plan for revised ABAR submission (completed with CCN 192375)	D. Klein	19-Feb-09 / 19-Feb-09	13-Feb-09
04 ORP review and approve revised plan (completed with CCN 190344).	DOE-ORP	27-Feb-09 / 27-Feb-09	13-Mar-09
05 BNI issue Draft ABAR (completed via email)	D. Klein	01-Apr-09 / 01-Apr-09	01-Apr-09
06 BNI issue 2004-02 gap analysis	D. Busche	29-May-09 / 29-May-09	28-May-09

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Risk Identification

- Risk ID, risk type (EPCC-Technical, EPCC-Execution, DOE-Technical / Programmatic / Regulatory, risk status (open, closed, cancelled, watch list), WBS & title
- Risk title, responsible organization, Risk Sponsor (risk owner), DOE Point of Contact
- Affected facilities; Integrated Project Team (IPT)
- Event Description

Unmitigated Risk Assessment

- Probability (very unlikely, unlikely, likely, very likely), percent probability. basis
- Consequence (negligible, marginal, significant, critical, crisis), and order of magnitude $ impact, basis
- Risk level (low, moderate, high)

- Project milestone-at-risk
- Period of impact

Risk Handling Plan

- Strategic approach
- Trigger date, point of no return date, hold points (for management decisions)
- Mitigating actions, responsibilities, plan, forecast, and actual dates

Risk Assessment Sheet (2)

Waste Treatment Plant Project

EPCC Risk Assessment Sheet

07	BNI issue Safety Evaluation Part 1 (completed by 24590-WTP-SE-ENS-09-0019, issued 9/30/09)	D. Busche	24-Sep-09 24-Sep-09	30-Sep-09
08	BNI issue PFHA showing mission protection objectives are met	D. Busche	23-Oct-09 23-Oct-09	

RESIDUAL FORECAST

Residual Description

On Sept 01, 2009, DOE provided direction to BNI in letter 09-NSD-051 (CCN 204789) to implement the approved alternative design approach provided in the DNFSB Recommendation 2004-4

BNI Trend 06-04078 (resolved BCP on 5/21/09) provides a cost estimate for design changes of the proposed Safety Evaluation Part 1, and is consistent with the DOE direction. Trend 06-04078 includes the changes listed below to address mission risks and DOE asset protection.

1. Fire screens upstream of HLW and PTF secondary HEPA filter systems.
2. Fire screens upstream of LAW HEPA filter systems (already present in LAB)
3. Relocate and redesign HLW C5V second stage HEPA filtration
4. Add bypass ductwork around the first stage C5V HEPA filters in HLW and PTF
5. Add isolation of HOP exhaust trains into separate fire areas
6. Add crane recovery capability to HLW and PTF filter cave cranes
7. Add onboard fire suppression on the cranes.

Probability (Most-Likely)	Consequence (Most-Likely)	Residual Risk Level
Very Likely	Negligible	Low

PERCENT TIME PHASING OF MOST-LIKELY COST

Residual Year of Impact	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	Total
2009 - 2016	10%	35%	39%	14%	1%			1%				100%

	Best Case		Most Likely Case		Worst Case	
Cost	$0		$0		$3,200,000	
Sch Impact	0	Months	0	Months	0	Months
Description	Same as Most Likely		No residual Most Likely cost based on Trend 06-04078 having been resolved as a BCP on 5/21/09 for a Trend ROM Cost of $16,035,000		ROM Estimating contingency of 20% on the ROM Value of TN 06-04078	

NOTES

11/24/08 - This risk was rejected as a TPRA risk (CCN 190440)
2-29-08 Finalized the update to this risk per the February 2008 Project Risk Assessment
7-31-08 Updated risk assessment to reflect DOE rejection of initial ABAR on STD 1066 and addition of new mitigation activities (DDS)
9-17-08 General update to Risk Assessment. Cost impact revised to $300,000,000. Residual Risk Level raised to High. Added Action items and adjusted finish dates (DDS)
10-7-08 Minor editorial changes to descriptions. Worst Case Impacts raised to $600,000,000 and 18 months (DDS)
11-17-08 Deleted Actions 03 and 08 (flammability testing of crane cable and crane coating systems). These actions are no longer required for issue resolution. (DDS)
04-16-09 Updated BNI Lead, Description of Risk, Actions, and Residual Risk Description and Impacts, to be consistent with Technical Issue sheet 2008-0002: DOE Standard 1066 Compliance (DDS)
05-05-09 Revised date on Action 12 and updated Residual Risk section to reflect progress on this risk issue (DDS)
07-03-09 Revised date on Action 06 and 07 to reflect reprioritization of resources as reflected on Technical Issue 2008-0002 cut sheet July 2009 update (DDS)
07-22-09 Revised dates on Actions 06 and 07. The DNFSB 2004-2 gap analysis for 1066 was revised by BNI that provides additional supporting information for the ABAR. The gap analysis was approved by DOE-EM on July 9, 2009 and supports plans to obtain ABAR approval by mid August 2009. Approval of ABAR has been delayed due to BNI and DOE Safety personnel being dedicated to resolving MAR comments from the DNFSB. (DDS)
09-15-09 Revised Risk Handling Plan and Actions to incorporate information from Technical Issue 2008-0002. Revised Post Handling Residual to reflect approval of Trend 06-04078 and DOE direction to proceed. Revised Title to be consistent with Technical Issue (DDS)
10/13/09 Added Finish date for Action 07 (DDS)

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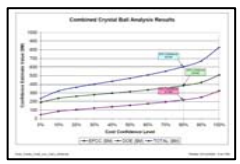
Risk Handling Plan (mitigating actions continued)

Mitigating Actions Exception Report

Residual Forecast (after completion of handling actions)

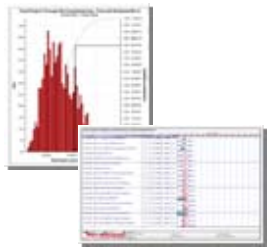
- Description of risk with handling actions implemented
- Residual probability, consequence and risk level
- Residual year of impact, time-phasing the most-likely cost impact
- Residual best case$, most-likely$ and worst case$ and documentation of basis
- Schedule impact to milestone-at-risk (input to Schedule Risk Analysis)

Confidence Level



Risk Realization $

Schedule Risk Analysis



Notes

- List of risk assessment sheet updates and status notes

Revision Control Date

JRMT Agenda

River Protection Project
Waste Treatment Plant
2435 Stevens Center Place
Richland, WA 99354
Tel: 509 371 2000

Joint Risk Management Team - Meeting #9

Agenda

Date: July 31, 2009
Time: 9:00a - 10:50a
Location: PO.01.1005
Group Chair/Prepared By: Rick Bradford / Scott Hajner
Goals/Objectives: Reference JRMT Charter - Objectives 1-10

Agenda Item [Discussion Leader(s)]	Allocated Time
1. Provide overview of Risk Register, threats & opportunities [Hajner]	10m
2. Review monthly change in residual risk values (from August 31 plan deliverable)	Future Agenda Item
3. Review status of developing the Confidence Level Determination [Hajner & Rocha]	15m
4. Review status of "Proposed TPRA" to "TPRA"	10m
5. Review JRMT action items [Responsible Managers] (*)	15m
6. Review past due risk mitigating actions [Responsible Managers] (*)	10m
7. Review risk closures - R-PEQ-021; Melter transport begin [Ashley/Reth]; incorporate into EAC forecast update	5m
8. Review risk and opportunity assessments (**)	45m
- R-SAF-008; Site event that may require a Type A or B investigation [Gergely] (**)	
- O-ENG-122; Application of Ashfall Criteria for Diesel Generator Facility [Ashley] (**)	
- R-PROC-001; Heavy lift / over-dimension equipment freight (**)	
- R-CON-045; Penetration seals quantity growth [Leeth]	
- R-PEQ-016; Fabrication for off-site vessels with Northwest Copper (NWC) [Ashley/Reth]	
- R-CON-034; Erosion of HLW civil installation unit rates due to more piece bar being installed than planned [Leeth]	
- R-PEQ-017; TCO Procurement Strategy Change [Ashley/Reth]	
- R-PEQ-034; Seismic qualification budget for FY10-FY15 [Ashley/Reth]	
- R-CON-016; Schedule Conduit - 2" and less above (AG) unit rate [Leeth]	
- R-PROC-006; Plant Material engineering labor cost [Harrison]	
- R-CON-023; Vacuum truck [Leeth]	
- R-CON-035; Erosion of piping installation unit rates caused by out of budget rework [Leeth]	
- R-ENG-113; Equipment NRTL issues [Ashley]	
- R-PEQ-009; Water cooled ITS compressors and the ash fall requirement [Ashley/Reth] (**)	
- R-ENG-110; LAW Offgas design issues including pressurized system and exhauster temperature [Ashley]	

(*) Information cutoff as of July 29. (**) Added to preliminary agenda after July 29 risk database update

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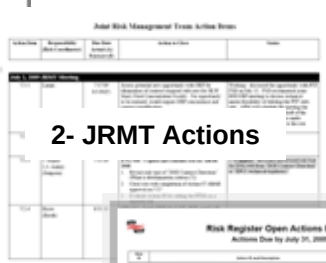
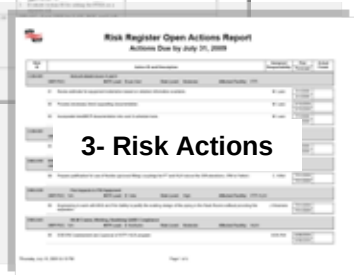
1- Overview of Risk Register

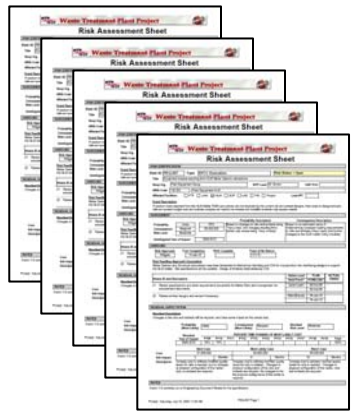
2- JRMT Actions



3- Risk Actions



4- Review Risk Assessments (New Risks, Risks for Closure)



5- Review Changes in Residual Risk Values

Monitoring Risk Mitigation Actions

RPP WTP

Risk Register Open Actions Report

Past Due and Lookahead through August 14

Risk ID	Action ID and Description	Assigned Responsibility	PLAN FORECAST	ACTUAL FINISH
Design Engineering				
ENG-113	**Equipment NRTL Issues** — Point of No Return Date:			
	ORP Lead: N/A — WTP Lead: Gary Lucke — Risk Level: Moderate — Affected Facility: PTF-LAW-HLW- — Lead IPT:			
	03 Identify equipment with potential NRTL issues that present a major risk to the project	Michelle Murphy (EE)	7/6/2009 8/9/2009	
TPRA-014 PRJ-040	**Inaccessible Area Integrity Assessment** — Point of No Return Date:			
	ORP Lead: J. Young — WTP Lead: B. Erlandson — Risk Level: Moderate — Affected Facility: PTF-HLW- — Lead IPT:			
	05 Prepare and issue final PT/HLW Integrity Assessment Plan	S Vail	8/18/2008 8/14/2009	
Plant Equipment Group				
PEQ-009	**Water Cooled ITS Air Compressors and the Ash Fall Requirement** — Point of No Return Date: 3/31/10			
	ORP Lead: — WTP Lead: J Platt — Risk Level: Moderate — Affected Facility: PTF- — Lead IPT:			
	01 Champion revisiting the ash fall requirements. This includes engaging all stakeholders in the discussion, capturing the change as required in upper-tier documents, and modifying the design as appropriate.	G Garcia	8/10/2009 8/10/2009	
PEQ-014	**Analysis and fabrication for Off-site vessels with Harris Thermal Transfer Products (HTTP)** — Point of No Return Date: 1/1/2010			
	ORP Lead: — WTP Lead: J Platt — Risk Level: Moderate — Affected Facility: PTF- — Lead IPT:			
	07 Complete the review of the analysis for UFP-27A, and release HTTP for the full remaining fabrication scope.	M Seed	8/6/2009 8/6/2009	
PEQ-015	**Evaporator analysis and potential future modification scope** — Point of No Return Date: 01-Nov-10			
	ORP Lead: — WTP Lead: J Platt — Risk Level: Moderate — Affected Facility: PTF- — Lead IPT:			
	03 Minimize Engineering changes to the Evaporator design through closure of all outstanding design issues. Includes resolution of all external reviewers comments (FEP/TLP).	B Voke J Monahan	8/7/2009 8/7/2009	
	06 Perform a detailed evaluation of potential future scope relative to items already captured in the purchase order and available budget. Goal is to validate estimated variance at completion.	J Platt	8/6/2009 8/6/2009	

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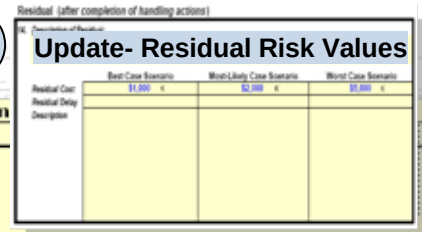
Risk Updates & Trending

1 Project Management

1. **New risks**
2. **Closed risks**
3. **Approved Trends (into EAC)**
2. **Approved BCPs (into EAC)**
3. **Change in Residual Impact**

(from Mitigation Strategy/Actions Updates)

2 Update- Residual Risk Values



3 Update - Time-Phasing

Risk Distribution Over Time

FY09	FY10	FY11	FY12	FY13	FY14	Total
		25%	25%	50%		100%

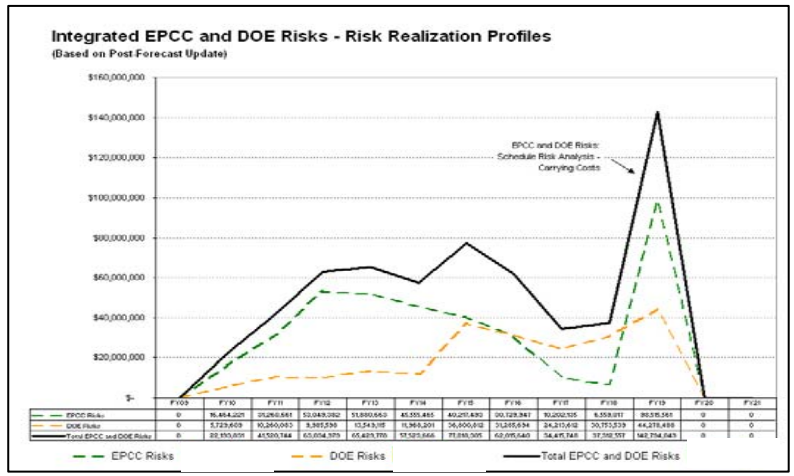
Risk Distribution Over Time - Dollars in Millions

FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	Total
		$ 0.68	$ 0.68	$ 1.35						$ 2.70

4 Details - Change in Risk from Last Period

Oct-09 **Sep-09** **Change**

5 Summary - Net Risk Trend



1. **Net Risk $**
2. **Threats $**
3. **Opportunities $**
4. **Change from Last Period $**

Most Important Objectives

- Continued involvement, ownership and accountability on risk management from the WTP senior management team (and IPTs)
  - Result - risks and opportunities proactively managed, handling strategies/actions monitored to completion, increased confidence in process
- Alignment of risk and opportunity management with the trend/BCP process
  - Result - trends/BCPs ≥ $1M, dispositioned at the CCB, also addressed / managed through risk/opportunity handling strategies and mitigation/realization actions
- More reliable predictions of actual MR utilization versus planned utilization
  - Result - risk planning better aligned with project planning and the EAC

Lessons Learned/Challenges

- Many more threats than opportunities, need creativity to find more than the obvious opportunities
- Integrating Contractor and Owner risks into one integrated Risk Management Program while managing Contract requirements presents challenges
- Content and clarity of basis-of-estimates for unmitigated and residual risk cost and schedule impacts
- Risks tend to be identified for near term risks, need an experience base to stimulate development of out year risks
- Realization of a risk does not necessarily coincide with funds expenditure
- Maintaining configuration control and alignment between residual risk forecasts and ETCs in a dynamic environment
- More reliable predictions of actual management reserve usage versus planned usage

Commercial Versus Government Project Risk Considerations

- Pre-Bid / Pre-Award
  - Insurance / Contracts Group Involvement
  - Management Approval Process
  - Unknown Unknowns
- Post Award
  - Risk approach is similar and our procedure is the same
    - Identifying risk is both difficult and important
    - Skill and discipline of the team critical to the outcome
    - Government implementation is more structured

Is the MR/Contingency enough to cover the measured risk?

Commercial Project Pre-Bid Risk Process

- Approval to Bid – Risk level determines approval level needed to bid
  - Technical
    - First of a kind technology?
  - Country/Political
    - Stable?
    - High risk area?
    - First presence in more than “X” years?
  - Customer
    - Reputation for working with contractors?
    - Similar project experience?
    - Ethical reputation?
  - Reputation Risk
    - Unusual risk created by project?
    - Customer relying on Bechtel to secure financing?

Commercial Execution Planning Risk Considerations

- Where will the work be performed?
- Structure of team (integrated/customer/JV partners/etc.)?
- Experience of key team members?
- Staffing issues?
- Procurement plan?
- Local conditions?
- Labor issues?
- Sustainable development
  - Environmental or human consequences?
  - Implementation or operational consequences?
  - Other issues such as a change in government policy?
- Contract type (lump sum, cost re, unit price, etc.)

Contract Provision Risk

- Consequential damages?
- Liability caps?
- Damage to project?
- Hazardous waste?
- Governing law?
- Dispute resolution and enforcement?
- Guarantees and warranties?
- Force majeure?
- Etc.

Commercial Versus Government Project Risk

Bottom line – Risk program differences are minor between commercial and government projects

But commercial projects will execute the work with a focus on the process/result and less on the administrative aspects of the process, thus cutting implementation cost