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# Uranium Processing Facility Project Risk Management Lessons Learned

DOE Risk Management Workshop

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&

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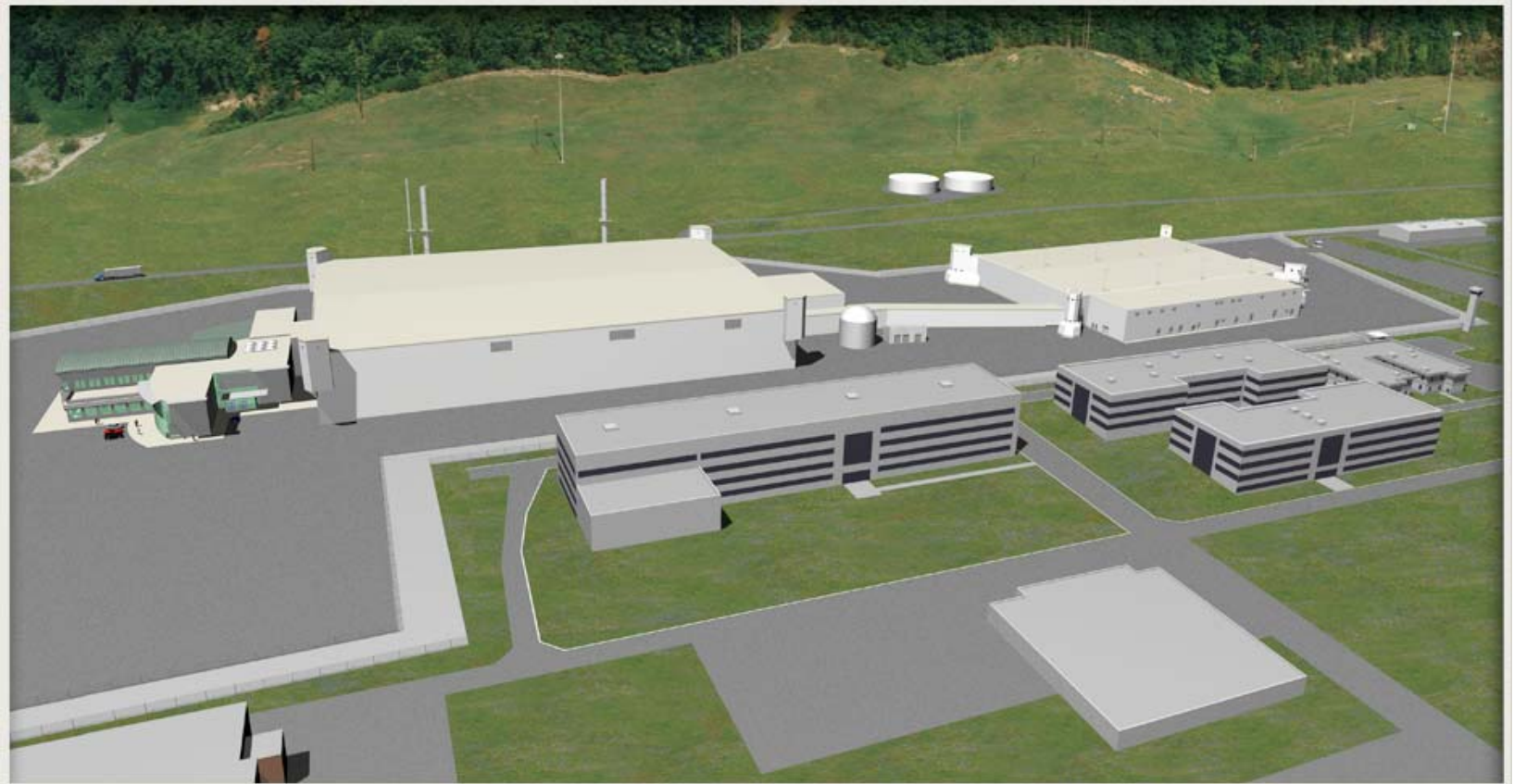
*November 5, 2009*

# Uranium Processing Facility (UPF)

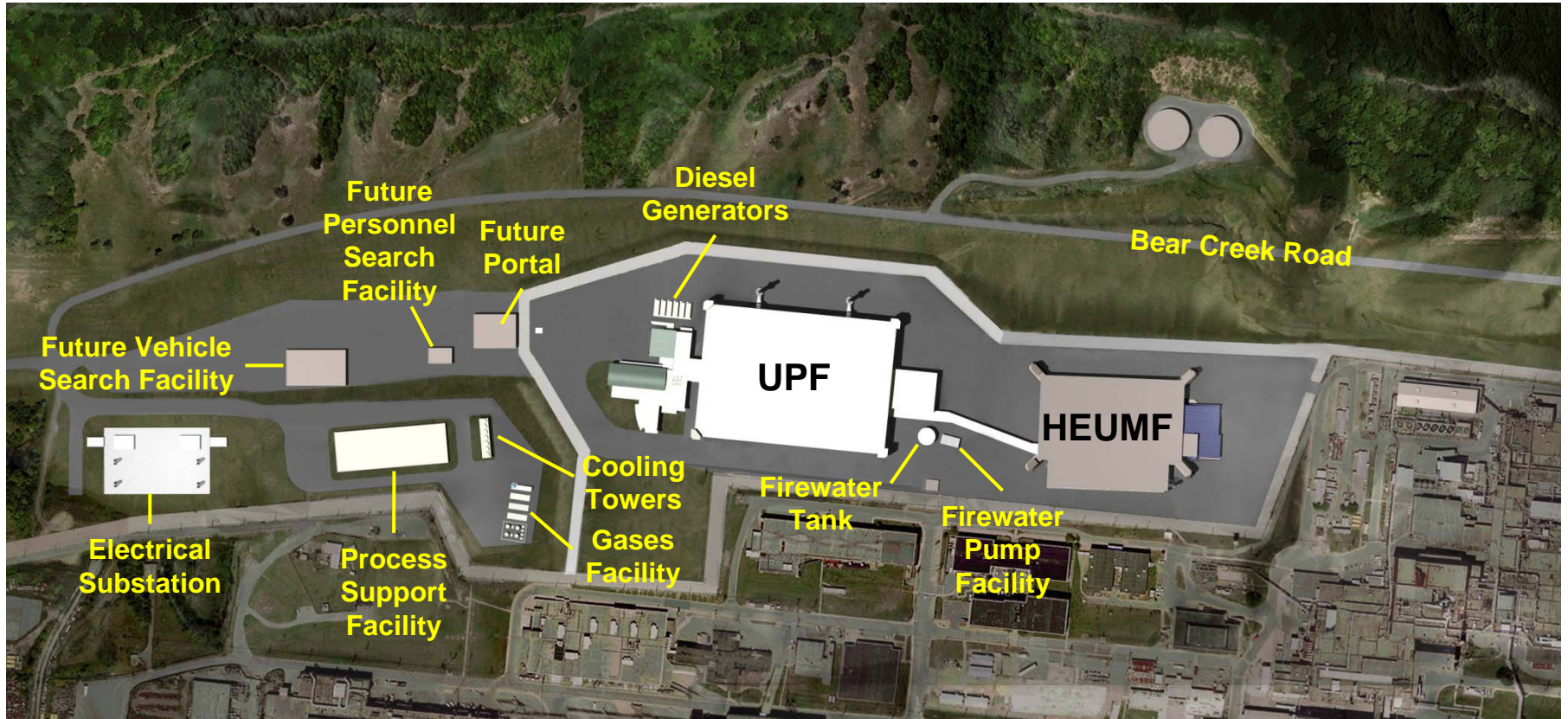
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- Replaces and consolidates existing enriched uranium manufacturing and processing capabilities into a single modern facility
- Improves reliability, security, safety, and operational efficiency
- Results in \$205 million in life cycle cost savings for Y-12 once operational and protected area can be reduced
- Reduces worker internal radiological exposures by 90%
- Reduces Y-12's security footprint by 90%

# Uranium Processing Facility



# UPF Site Layout



# UPF will .....



Weapons Surveillance

Disassembly/Dismantlement



Stockpile Refurbishments



Reactor Fuel for Medical Isotopes  
Nuclear Nonproliferation



Global Threat Reduction  
Nuclear Nonproliferation

Naval Reactor Material Supply

# Validation of Mission & Program Requirements

- Recent Dr. Beckner review concluded that
  - The UPF Facility is “Insensitive to number of weapon types and size of the stockpile”
  - “Considering its current condition, Bldg. 9212 should be vacated and demolished as soon as practical.”
  - Final report transmittal letter stated –

“As you are aware, I have been concerned about the sizing of UPF, especially in light of the changing weapon program requirements since the initial planning for this facility took place. In fact, the building has been reduced significantly since the decision to begin the project. Based upon our review, as will be demonstrated in the following report, I am now convinced that, given the requirements as defined, a substantial change of size of the facility is not warranted at this time and the project should move forward without further delay.”

Sincerely,



Everet H. Beckner, Chair

# UPF Risk Management Approach at CD-1

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- Procedure in place to conduct Risk Assessments
- Met guidelines and requirements
- Worked well with small and non-complex projects
- However:
  - Lacked ownership for program and risk
  - Lacked formality
  - Project team members were not trained
  - Was viewed as a step to meeting needs for critical decisions and not a tool for management – not a continuous process
  - Did not establish or consider overall level of project risk
  - Lacked risk monitoring and effective/timely reporting
  - Lacked adequate details to support inclusion in estimates and schedules
- Did not provide management with the right set of information to make timely and effective decisions

# Change in Approach

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- System must address shortcomings and needs for:
  - A very large and complex project
  - Needed an active on line system
  - Ownership and accountability must be established
  - Training must be completed and maintained
  - Information must be useful, realistic, timely, and updated
- Establish an on line system and process that
  - Meets weaknesses for the UPF
  - Applies best practices from the commercial heavy construction industry
  - Provides project management with the right information for effective and timely decision making



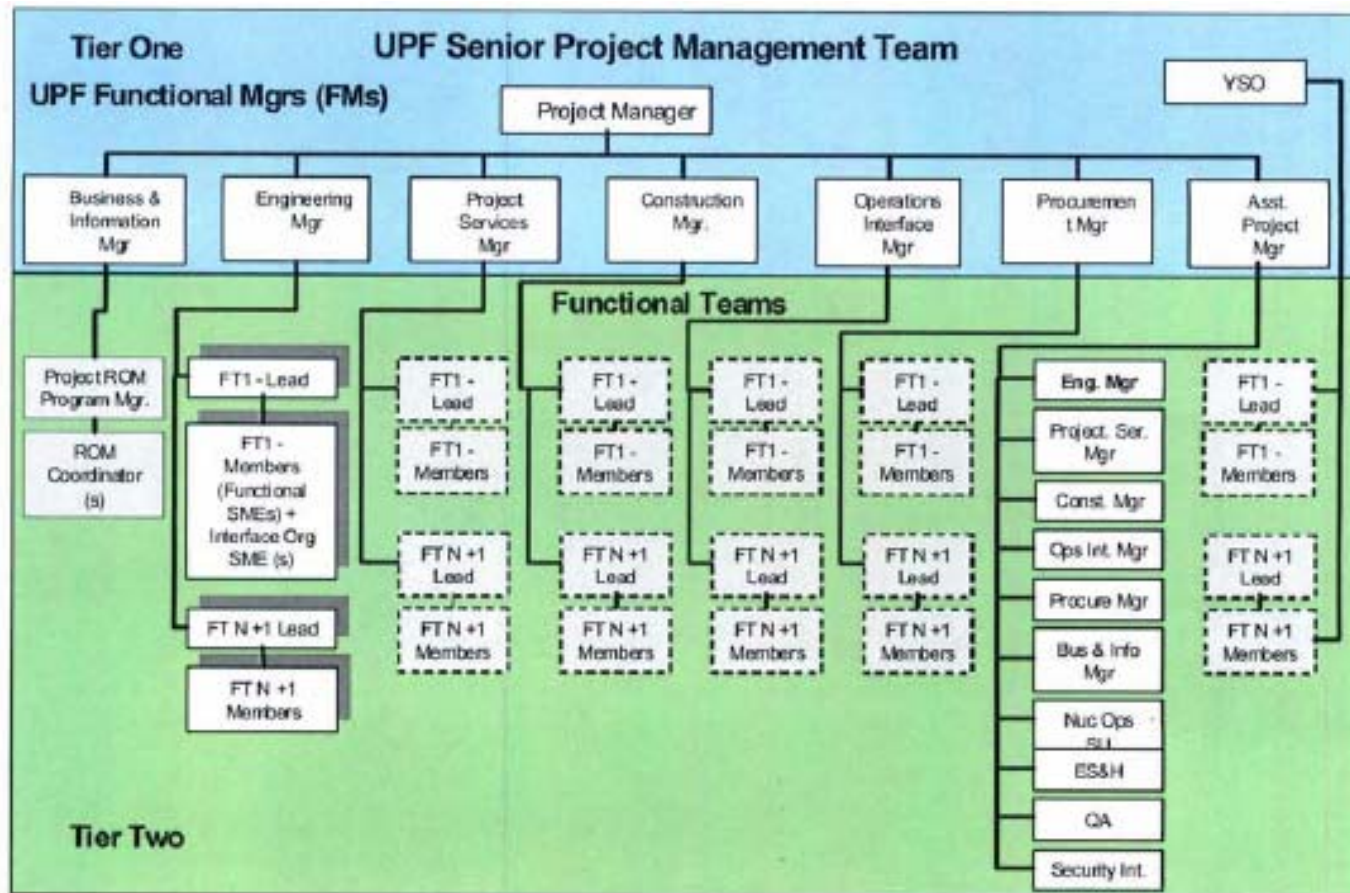
# Multi-User Access Database

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- The UPF project currently uses a Multi-User Access database, referred to as the ROM Register, to assist in managing risks/opportunities.
  - The database is password protected
  - Access to the database is granted only after the user has received the required training
  - All risks are viewable to people who have access to the database
  - Users can only modify risks that are assigned to them or to their team
  - The ROM Register is a living database and potential risks can be entered into a brainstorming session at any time
  - Potential risks will only become a risk after the Team Lead reviews it and determines that it is real

# Risk Management Team Structure

- The UPF project uses a team approach to manage risks



# Risk Categorization

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- In an effort to focus attention on the 'very important' risks, all risks are categorized as either Tier 1 or Tier 2
  - Tier 1 = >\$25M, >26 weeks, and/or health, safety or political impacts
- All Tier 1 risks are reviewed by the Management Team
- Tier 2 risks are reviewed at the functional level and overall Tier 2 status is reported to the Management Team

# Risk Management Training

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- The UPF Project ensures all risk owners understand the risk management process
  - All risk owners are required to attend a 2-hr training session that discusses the UPF Risk Management process and demonstrates how to use the database.
  - All risk owners are required to read the UPF Risk and Opportunity Management Plan, the UPF Risk and Opportunity Management Procedure, and the UPF Risk and Opportunity Management Users Guide

# Frequent Status Meetings and Reports

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- Since the Risk and Opportunity Register is a ‘living’ database, frequent meetings are held and reports are generated identify new risks and to ensure the existing risks are being reviewed
  - Functional Management Team meetings are held on a bi-weekly basis.
  - Tier 1 status reports are submitted in each FMT meeting
  - 3-month look ahead Action Item reports are submitted bi-weekly
  - The projects highest priority risks are presented in the Monthly Progress Report to NNSA
  - All risk owners can view the database generated reports at any time

# ROM Register Snapshot

**EVENT ID - 0001** Risk/Opportunity  Type  ogrammatic Ri  Date Identified

*ALL*

Record  of 286

**Title**

Brainstorm ID

Watch List Event  Include in MPR

Assessed Element  Category

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Rev. No.  Status  Owner

Number of Evaluations 11 Rev. Date  Classification  Team Lead

**Evaluation**

**Statement of Event**

Probability  Tier Level  Project Phase Impacted

**Basis**

Consequence  Most Significant Cost Impact (\$K)  Most Significant Schedule Impact (Weeks)

**Basis**

Evaluation Complete

Event Level  Event Trigger

**Event Comments**

# Tier 1 Report

Event ID	Risk/ Opp	Status	Contact	Rev Date	Event Statement	Event Cost Impact (\$K)	Event Sched Impact (wks)	Event Level	Project Phase	Event Cat Title	Handling Strategy	HS Imp Cost (\$K)	HS Imp Sched (wks)	RR Level	RR Rating	Worst Cost (\$K)	Worst Sched (wks)	
0113	Risk	Open	Penny Cunningham	4/29/09	The Campaigns funded Technology Development Plan for UPF was completed at the end of FY 07 by defining the baseline new technologies. However, development support to process improvements for existing technologies were not included and funded in the Techno	50000	52	Moderate	CD2	Technology Development	Mitigate	0	0	Moderate	8	5000	12	
0203	Risk	Open	Dave Anderson	10/18/09	IF the NEPA process results in the preferred site within Y 12 not being selected DUE TO other alternatives providing more favorable impacts, THEN all site-related investigation and site designs will have to be redone.									Moderate	8	100000	52	
0301	Risk	Open	Don Owen	8/13/09	Several NNSA studies performed 200	100000	52	Moderate	CD2	Programmatic	Mitigate	0	0	Moderate	8	100000	52	
0301	Risk	Open	Don Owen	8/13/09	This project requires a significant volume of nuclear class equipment. The number of qualified vendors that can or will supply nuclear class equipment is limited. There is a risk that acquisition of nuclear-class materials or equipment for safety-signif	10000	52	High	CD3	Procurement	Mitigate	10000	0	0	Moderate	8	10000	26
0308	Risk	Open	Kerry Grooms	4/9/09	IF sufficient Procurement Quality resources can not be obtained to support procurement activities DUE TO competition from other nuclear construction activities or hiring restrictions, THEN procurement activities could be delayed.	0	26	Moderate	ALL	Procurement	Mitigate	0	0	Moderate	8	0	12	
0412	Risk	Open	Don Owen	9/22/08	IF a vendor of specialty equipment is unable to supply support services for the installation and start-up of the equipment DUE TO the vendor going out of business, foreign vendors not being able to access the site, etc., THEN the equipment installation, t	1000	26	Moderate	CD2	Construction	Mitigate	0	0	Moderate	8	1000	26	
0420	Risk	Open	Gary Hagan	5/28/09	All contractors will be required to have health and safety plans. Construction management will provide oversight of the implementation of the plan. The risk is the project has an inadequate implementation plan. IF serious accidents, environmental impact	17700	52	High	CD3	Construction	Mitigate	0	0	Moderate	8	17700	26	
0421	Risk	Open	Gary Hagan	5/28/09	All contractors will be required to have health and safety plans approved by Y-12 prior to work start that will include requirements for handling and storage of combustible materials and performance of "hot" work. IF a significant fire occurs during cons	10000	52	High	CD3	Construction	Mitigate	0	0	Low	4	10000	26	
0423	Risk	Open	Gary Hagan	10/15/09	IF a nonpermitted explosive source is inadvertently brought onto the construction site DUE TO inadequate enforcement of regulations, human error, or sabotage, THEN an explosion could result, which could cause injuries (including fatalities) and equipment	1000	52	Moderate	CD3	Construction	Avoid	0	0	Low	4	1000	52	
0425	Risk	Open	Lynn Nolan	4/13/09	IF claims by the construction contractor cannot be avoided and/or resolved in a timely manner DUE TO errors, omissions, or scheduling conflicts, THEN litigation could occur.	100000	52	High	CD3	Construction	Mitigate	2000	0	Moderate	8	100000	52	
0430	Risk	Open	Don Owen	9/22/08	Y12 is a superfund site, for subcontractors to perform work on this site they either provide a bond, or Y12/NNSA provides indemnification to the contractor. IF construction bidders cannot obtain bonding to meet site requirements DUE to the inability or d	1000	26	Moderate	CD2	Construction	Mitigate	0	0	Moderate	8	0	4	
0501	Risk	Open	Harry Peters	8/18/09	IF project funding is interrupted DUE TO changing NNSA priorities or other congressional actions, THEN the project execution will be impacted.	500000	156	High	CD2	Programmatic	Transfer	0	0	High	32	500000	156	
0509	Risk	Open	Lynn Nolan	4/13/09	At this time the plan is to use the direct hire Q cleared construction people that presently work under the B&W building trades. There is a risk this source goes away or too busy to cover UPF for critical path construction then this risk become real. IF t	0	26	Moderate	CD3	Project Management	Mitigate	0	0	Moderate	8	0	26	
0517	Risk	Open	Pat Fortune	5/6/09	This project is assuming the UPF operating envelope is compatible with the HEUMF operating envelope. There is a risk that there are incompatible scope assumptions for an operational interface between HEUMF project scope and the UPF current project scope.	10000	26	High	CD2	Project Management	Mitigate	0	0	Moderate	8	5000	12	
0518	Risk	Open	Dave Anderson	4/1/09	IF the UPF project performance is less than adequate DUE TO Y-12's lack of recent experience with large capital construction projects, THEN the risk of project cost and schedule overruns could be increased.	100000	52	High	ALL	Project Management	Mitigate	11000	0	Moderate	16	50000	52	
0623	Risk	Open	Dave Anderson	5/20/09	IF the transition of operations from the existing facilities to UPF cannot be completed as planned DUE TO the lack of planning and/or adequate numbers of qualified and trained, startup, operations and support personnel to support this transition, THEN ext	5000	26	High	CD3	Readiness Process	Mitigate	0	0	Moderate	8	5000	26	
1060	Risk	Open	Kerry Grooms	4/9/09	IF construction quality failures occur DUE TO inadequate oversight of the construction activities, THEN the construction progress could be adversely impacted, final quality could be compromised, and the completion of the project could be delayed.	5000	26	Moderate	CD3	Project Management	Mitigate	0	0	Moderate	8	5000	12	
1077	Risk	Open	Lynn Nolan	4/29/09	Construction quantities, man-hours and schedules are based on design at a specified time in project life cycle. These elements have been estimated and integrated into the baseline schedule. There is a risk that as design matures further, the facility s	0	156	High	CD2	Programmatic	Mitigate	0	0	High	64	0	104	

# Action Items Report

AI Respon	Due Date	Act Desc	Act No	Closure Basis Doc	Event ID
Bates Eastabrooks	9/9/9999	Review of the hazards classification.	3	Hazard Evaluation Studies	1117
Bill Zulliger	8/31/2009	Provide realistic and defensible air emission estimates as early as possible.	3	Emission information provided to Clarence Hill (Y-12 Environmental Compliance Department)	1164
Bill Zulliger	9/30/2009	Revise UPF Procedures to align with items identified in the Y12 procurement quality initiative currently underway.	2	Revised Procedures impacted by Y12 quality initiative	1090
Bill Zulliger	10/30/2009	Finalize Integrated Engineering Final Design Schedule, Budget, and plan to include Facility Safety and Crit. Safety	4		1031
Blake VanHoy	12/31/2009	Resolve remaining set of lab comments on vault sizing report.	1		1104
Dave Anderson	9/1/2009	Identify all project functional group CD-2/3 "to go scope" for procedural revision or development to support large EPC project with intended automation tools and processes	1	Complete list potential new UPF procedures requiring development and issuance and listing of existing Y12 procedures requiring revision.	1087
Dave Anderson	10/1/2009	Identification of required schedule and resource to implement CD-2/3 scope required procedure development or revision.	2	Issuance required procedural schedule and resource listing	1087
Don Owen	10/22/2009	Award AIMS machine tool conceptual design contracts.	5	Vendor signed subcontract acknowledgement.	1157
Don Owen	9/9/9999	Regular vendor forums to inform the industry of the project's future requirements.	1	First forum held June 4 & 5, 2009	0307
Earl Stone	12/7/2009	Reevaluate results of analysis of the building due to the security redesign.	1	Get a report from the SSI Vendor	1117
Ed Ball	10/30/2009	Discuss and agree upon Test Engineering support roles and responsibilities for UPF	1	Identify and supply the required personnel.	0605
Gary Hagan	12/31/2009	Develop an Environmental Permitting Plan and schedule which includes time for early engagement with regulators.	1	Submittal of a Plan.	1164
Gary Hagan	12/31/2009	Develop an Air Permitting strategy addressing the New Source Review/PSD evaluation and subsequent application requirements.	2	Submittal of a strategy.	1164
Jim Rouse	10/1/2009	Publish a list of long lead items to be procured including the dates the completed procurement package will be issued.	9	Published list.	0301
Jim Rouse	12/30/2009	Complete all PD-2 and PD-3 Process Studies	5		1031
Kerry Grooms	12/1/2009	Establish for annual assessments of records.	1		0616



## Other Tools Used

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- Crystal Ball is used to calculate Cost Contingency
- Pertmaster is used to calculate Schedule Contingency

# Status

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The current risk management process has been in use for ~7 months. We are still struggling with Risk Management becoming ingrained in the mindset some of the functional teams.

- Although we have frequent meetings and reports are sent out regularly, we still have issues with some people not reviewing their risks and not performing their actions in a timely manner.
- Although each risk owner is required to attend training and read the risk documents, we still have issues with poor or incomplete assessments.
- Still need continued improvements

More management 'help' will be needed to ensure the program operates as planned.