

**Department of Energy**

Washington, DC 20585

April 22, 1999

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DNF SAFETY BOARD

The Honorable John T. Conway  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, N.W.  
Suite 700  
Washington, D.C. 20004

Dear Mr. Chairman:

Enclosed is the Department's quarterly progress report on implementation of your Recommendation 94-3 which addresses seismic and safety upgrades to Rocky Flats Building 371. Also, enclosed is the report of corrective actions and status for deficiencies associated with safety upgrade work packages. This status is provided as discussed in my last quarterly progress report of December 7, 1998.

Fifteen of the twenty-one upgrades required for full compliance with the Basis of Interim Operation for Building 371 were completed February 4, 1999, when the enclosure was prepared. Three were completed within this quarter. The last of these upgrades was finished on March 8, 1999.

Sincerely,

A handwritten signature in cursive script that reads "James M. Owendoff".

James M. Owendoff  
Acting Assistant Secretary for  
Environmental Management

Enclosures

cc: Mark Whitaker, S-3.1



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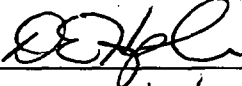

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**U. S. DEPARTMENT OF ENERGY**

**DEFENSE NUCLEAR FACILITIES SAFETY BOARD  
RECOMMENDATION 94-3  
INTEGRATED PROGRAM PLAN**

**NINTH QUARTERLY REPORT**

Reviewed for Classification/UCNI By

Date: 2/3/99

## EXECUTIVE SUMMARY

This periodic report provides an update on progress with implementation of the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 94-3. Recommendation 94-3 involves seismic and safety upgrades to the Rocky Flats plutonium storage facility. The Department of Energy formally submitted in June a revised Integrated Program Plan (IPP, designated "Revision 1, April 28, 1998") which made commitments for actions and decisions. Progress on those actions and results of decisions are reported in this ninth quarterly report.

During the quarter, Joe Majestic assumed responsibility as the 94-3 Program Manager, reporting to the Kaiser-Hill Vice President, Nuclear Operations. Additionally, Steve Additon has been selected as the Building 371 Nuclear Engineering Manager reporting to the Safe Sites of Colorado Building 371/374 Project Manager.

Building 371 has completed six successful months of operation in accordance with its updated Authorization Basis, the Building 371/374 Complex Basis for Interim Operation (BIO). In addition to the single Technical Safety Requirements (TSR) violation described in the last Report involving performance of a required LCO surveillance, a second violation occurred during the past quarter due to an inadequate return to service following a tertiary confinement barrier modification. The resultant facility condition resulted in a Unreviewed Safety Question, and an Administrative Control (AC) violation was declared against the Configuration Management and Work Control AC's. Facility management continues to report a high degree of satisfaction with operations in accordance with the BIO, citing significantly improved understanding and tracking of maintenance priorities and less than twelve hours of shutdown time (facility unavailability for risk reduction work) due to AB considerations in six months.

Substantial progress was made in this quarter toward closure of the BIO Implementation issues that are open in the Justification for Continued Operations (JCO). Completed activities include construction of the final life safety code upgrade, fire damper testing, and closure of three JCO issues. All remaining BIO-driven upgrades, fire damper repairs, and the implementation of BIO changes needed to close the JCO on March 1, 1999 are being tracked and integrated to assure completion by the end of February 1999.

Overall, the facility continues to realize a substantial and steadily increasing fraction of the intended safety benefit from the authorization basis update. Completion of the few remaining upgrades and experience with operation under the BIO is expected to ensure continuing improvement throughout 1999.

As previously reported, construction of all Building 371 priority safety upgrades specified in Table 3-1 of the IPP was completed in August 1998. Of the twenty-one BIO-required upgrades presented in Table 3-1 of this report, six remain to be completed. In the current quarter, the final life safety upgrades were completed. The last six BIO-required upgrades are scheduled for completion during February 1999.

Following up on the DNFSB Staff questions from their June review of the operability confirmation for the plenum deluge upgrade and HVAC seismic support packages, DOE-RFFO convened an evaluation team to assess safety function operability assurance afforded by the entire upgrade design and construction program. The final report identified a number of specific issues to be addressed. The contractor has transmitted to RFFO corrective action

plans for all of the report's observations and issues. Completion of all tasks is expected by April 1999.

The Site is continuing to evaluate alternatives to accelerate successful completion of integrated Pu consolidation and management scheduled for 2002. Work is underway to prepare Room 3701 in Building 371 for installation of the packaging portion of the prototype plutonium stabilization and packaging system (PuSPS). Repackaging of materials for "pipe-and-go" is underway for selected residue types. Numerous decisions regarding residue programs remain pending, dependent upon the ongoing environmental review of the Residue Environmental Impact Statement (EIS) for shipments to the Waste Isolation Pilot Plant (WIPP). These activities are more fully reported as addressing DNFSB Recommendation 94-1.

Progress was made across the DOE complex in preparing for timely off-Site shipment of RFETS SNM and emerging issues are being addressed, including:

- Progress continues to be made on preparing the K-area at the Savannah River Site (SRS) as the Department's preferred alternative to the Actinide Processing and Storage Facility (APSF) for receipt and storage of Rocky Flats SNM. Phase I modifications are now underway for storage in the Process Room and for NDA installation in the Crane Wash Room. Overall design and construction efforts are on schedule to support initial shipments and material receipt in January of 2000.
- Rocky Flats pit shipments to Pantex continued in this quarter with over 80% of the pit shipments now completed. Most remaining pit shipments will be completed in the coming quarter.
- The residue EIS Record of Decision was issued in December and commercial shipments of repackaged sand, slag and crucible (SS&C) residues to Savannah River were initiated. This shipping campaign will continue until the SS&C inventory transfer is complete. Future use of SSTs for some shipments is anticipated, dependent upon shipment plutonium content.
- APSF construction has been delayed to accommodate other priorities for Savannah River funding. A new strategy for storage of the IAEA-material from RFETS will be developed, since K-area has not been designed to permit the extractions from the shipping containers that would be required by the current IAEA storage protocol.

Overall, the Department believes progress is being made to support timely off-site shipment of RFETS SNM.

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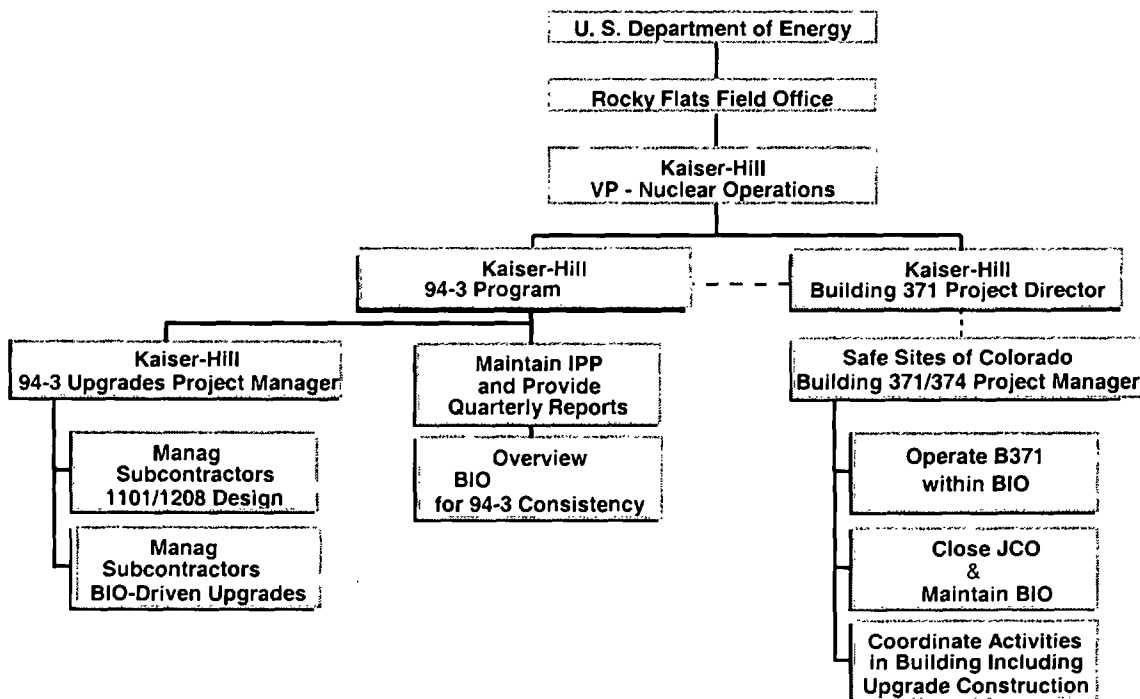
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## 1.0 PROGRAM ORGANIZATION

This section corresponds to section one of the IPP. It addresses key changes to the organization identified in that section. During the quarter, Joe Majestic assumed responsibility as the 94-3 Program Manager, a position that continues to report to the Kaiser-Hill Vice President, Nuclear Operations. Additionally, Steve Additon has been selected as the Building 371 Nuclear Safety Manager reporting to the Safe Sites of Colorado Building 371/374 Project Manager.

As BIO implementation and upgrades approach completion, organizational changes have been made that reflect the lower level of resources needed to support project completion. Figure 1 modifies the organization chart contained in Revision 1 of the IPP. The organization will be further consolidated, and resources reassigned to support closure mission work following completion of the remaining upgrades and JCO closure in March 1999.

**Figure 1: Organization for DNFSB 94-3 Program Completion**



## 2.0 COMPLETION OF DNFSB 94-3 SUB-RECOMMENDATIONS

The corresponding section of the IPP commits to: further updating of the facility Safety Analysis Report should the interim storage mission revert to Building 371 (Sub-Recommendation 2); supplemental actions addressing those risk-dominant accident scenarios which exceed the public Evaluation Guideline of 5 rem (Sub-Recommendation 6); and validation of interim storage upgrades to complete final definition of required upgrades (Sub-Recommendation 8).

Supplemental actions to address risk-dominant accident scenarios are in progress for completion in conjunction with the annual update to the BIO. To reduce dock fire risks, a BIO change requiring that drums with more than 200 g of Pu be continuously attended has been issued. This change reduces the risk-dominant scenario frequency to *extremely unlikely*, thereby reducing the Risk Class from I to II. Further a new calculation of potential fires on the dock (either Rooms 3187A and 3187B or the new dock 21T) has now been completed showing that actual suppression system response will limit the number of impacted drums to at most three, sufficient to reduce the potential public dose below the 5 Rem guideline value for all but the highest content drums on Site even when the higher dose consequence from soluble salts is modeled. A second BIO change to reduce the risk of hydrogen explosion occurring in a drum staged on the dock is being prepared, adding an Administrative Control for sampling-based functional testing of the installed drum vents. This change will eliminate the prior risk dominant drum explosion scenarios. Seismic walkdowns were performed to identify areas where the potential releases within the facility might practically be reduced (e.g., by preventing drum failure caused by impact from unqualified, ceiling-mounted equipment) and the identified issues ("capable sources") are being evaluated for practical mitigation. Seismic risk reduction is being focussed on the Support Facility which contributes 3.4 of the 8.6 Rem public dose in the NPH-2 (EBE) BIO scenario. Efforts to determine the as-built seismic capacity of the Room 3189 storage racks and effective strategies for upgrading them are nearing completion. The racks were discovered to have a lower seismic capacity than had been assumed in the BIO, but the discovery condition was not a positive Unreviewed Safety Question. A letter summarizing the overall contractor recommendations will be submitted to RFFO for their consideration by the end of February.

The validation activity is addressed in Section 6 of this report.

## 3.0 BUILDING 371

The corresponding section of the IPP focuses on "Goal 1: Establish safe operation of Building 371 in conformance with an updated Authorization Basis (AB)." The following Goal 1 Objectives are specifically addressed: "Provide an updated Building 371 AB, complete definition and implementation of necessary upgrades in Building 371, and establish building operations in conformance with the updated AB."

### **3.1 Accomplishments and Status Summary**

#### 3.1.1 Building 371 Authorization Basis (AB)

Building 371 has completed a successful six months of operation in accordance with its updated Authorization Basis, the Building 371/374 Complex Basis for Interim Operation (BIO). A single TSR violation occurred during the past quarter due to an inadequate return to service following a tertiary confinement barrier modification to establish access for the new dock. The error in roll-up door installation was determined to be a positive a Unreviewed Safety Question, and an AC violation was declared against the Configuration Management and Work Control AC's. Facility management continues to report a high degree of satisfaction with operations in accordance with the BIO, citing significantly improved understanding and tracking of maintenance priorities and less than twelve hours of shutdown time (facility unavailability for risk reduction work) due to AB considerations since the BIO was implemented.

Substantial progress was made in this quarter toward closure of the BIO Implementation issues that are open in the Justification for Continued Operations (JCO). The current status of each of the seven original and one new JCO issues includes:

- Issue 2.1, Non-Compliant Storage of Combustible Materials – The proposed change to the BIO and TSRs was not approved by RFFO since exceptions from combustible control program limits would have been allowed for unspecified periods of time. The page change is being revised in accordance with RFFO technical direction and is being resubmitted for approval in January 1999.
- Issue 2.2, Fire Barrier Deficiencies – 95% of the identified deficiencies have been closed. Of the remaining deficiencies involving more complex procurement and construction, installation of fire curtains on the Central Storage Vault windows is complete and fire door replacements and modifications are in progress and scheduled for completion in February 1999.
- Issue 2.3, HVAC Supply Fan Interlock – This issue has been closed with the implementation of the RFFO-approved LCO revision. The hardware upgrades had previously been completed.
- Issue 2.4, Rooms 3189/3187 and 3187/18T Roll-up Door Interlock – This issue has been closed with the implementation of the RFFO-approved AC revision.
- Issue 2.5, SNM Storage Racks Seismic Capacity – Work in the last of the three vault rooms is being completed in early February 1999 to close this issue.
- Issue 2.6, Tertiary Boundary Confinement Deficiencies – Repairs to correct all six of the identified deficiencies have been completed and this issue is closed.
- Issue 2.7, HVAC Supply Isolation Valves and Backdraft Dampers – This issue has been closed with the implementation of the RFFO approved revision to the BIO and TSRs incorporating the recently installed inlet HEPA filters.
- Issue 2.8, Active Design Features to Prevent Unsafe Failures – The installation of the seismic isolation valve for the nitrogen supply is complete and it will be placed into service in February 1999 closing this issue.



All remaining tasks required to close Issues 2.1, 2.2, 2.5, and 2.8 have been identified, and are being tracked and integrated to assure completion prior to the March 1, 1999 expiration date of the BIO implementation JCO.

Overall, the facility continues to realize a substantial and steadily increasing fraction of the intended safety benefit from the authorization basis update. Completion of the few remaining upgrades and experience with operation under the BIO are expected to ensure continuing improvement throughout 1999.

### 3.1.2 Building 371 Safety Upgrades

The last of the Building 371 priority safety upgrades specified in Table 3-1 of the IPP was completed in August 1998. Of the twenty-one BIO-required upgrades presented in Table 3-1 of this report, five remain to be completed. In this quarter, one of the BIO-driven upgrades and the final life safety upgrade were completed. As of the end of January:

1. The Special Nuclear Material (SNM) storage rack seismic upgrades will be completed in the last of the three vault storage rooms in early February.
2. The upgrade to reestablish code compliance for the lightning protection system will be completed in early February. Weather delays and field discovery of unplanned repair scope have extended the completion date. It has had a lower priority since the existing configuration is sufficient to ensure facility safety.
3. The last component of the life safety code upgrades to provide more complete suppression system coverage in one stairway is complete.
4. Installation of the seismic isolation for the main Building 371 nitrogen supply is complete and it will be placed into service in February.
5. The installation of redundant Zone III HVAC controllers will be completed in February. This upgrade is to enhance facility availability while ensuring the BIO LCO requirements are met; it is not required to ensure safety.
6. (and 7) Fire barrier upgrades for vaults and SC-3 interior barriers will be completed in February. These issues are included in the JCO.

Following up on the DNFSB Staff questions from their June review of the operability confirmation for the plenum deluge upgrade and HVAC seismic support packages, DOE-RFFO convened an evaluation team to assess safety function operability assurance afforded by the entire upgrade design and construction program. The final report identified several process improvement recommendations and a number of specific issues to be addressed. The contractor has transmitted to RFFO corrective action plans for all of the reports observations and issues. Completion of all tasks is expected by April 1999.

### **3.2 Deliverables**

IPP Milestone 3-2 Report completion of priority safety upgrades specified in Table 3-1 [IPP] by the end of 1997. **11 of 15 COMPLETED ON SCHEDULE**; remaining four will be completed by July 1998.

This milestone was completed in August 1998.

IPP Milestone 3-3 Establish and document operation of Building 371 in conformance with an updated Authorization Basis by August 1, 1998.

This milestone was completed on schedule.

IPP Milestone 3-4 Issue schedule (implementation plan) for further Building 371 upgrades identified during the initial AB development by November 1996. **COMPLETED AUGUST 1997**; upgrade completion no later than October 1998 being managed to a schedule coordinated with the BIO-IP.

This milestone was met for 14 of the 21 upgrades. The six that remain open are scheduled for completion by the end of February as discussed above and shown in Table 3-1.

### **3.3 Schedule of Activities**

#### **3.3.1 Building 371 Authorization Basis**

The BIO implementation JCO will be closed by March 1, 1999 with completion of the following tasks:

- Issue and implement, upon RFFO approval, the BIO combustible control change package.
- Close the remaining fire barrier deficiencies.
- Complete the SNM storage rack seismic upgrades.
- Place the nitrogen supply seismic isolation valve in service.

#### **3.3.2 Building 371 Safety Upgrades**

The six upgrades are scheduled for completion by the end of February 1999.

**Table 3-1: BIO-Driven Upgrades and Schedule**

	<b>UPGRADE ITEM</b>	<b>SCOPE</b>	<b>COMPLETION SCHEDULE</b>
1	Install Emergency Lights	Provide seismically qualified egress emergency lighting (SC-3 function in Administrative Control [AC] 5.9)	Complete
2	Evaluate/Reinforce HVAC Ducting	Ensure ducts credited for tertiary confinement have adequate pressure capacity for tornado atmospheric pressure transient or abnormal ventilation lineups	Complete
3	Ensure Lightning Protection	Ensure that security systems to prevent helicopter intrusion do not compromise lightning protection for Building 371	FEB 99
4	Inspect/Repair SC-3 Fire Barriers	Apply lessons learned from Room 3206 evaluation as necessary to ensure one-hour capability of fire barriers that are SC-3 in AC 5.9	FEB 99
5	SNM Storage Rack Repairs	Ensure adequate seismic capacity for storage racks used in vault-type material storage rooms (SC-1/2 SNM Storage Racks in AC 5.9)	FEB 99
6	HVAC Interlock Modifications	Ensure safe failure mode (credited as Passive Design Feature in BIO) in EBE for the supply fan trip function and upgrade interlock to trip return fans as well as supply	Complete
7	Extend Roof Drains	Improve runoff during extreme weather conditions	Canceled <sup>1</sup>
8	N2 Failure Prevention Mods	Ensure nitrogen shutoff credited as Passive Design Feature in BIO to prevent Central Storage Vault pressurization after earthquake	FEB 99
9	Counterfeit Bolt Inspection	Review usage of counterfeit bolts and replace any whose capacity will not meet BIO requirements for SC-1/2 systems (94-3 low cost issue)	Complete
10	Redundant Zone 3 HVAC Controllers	Provide redundant $\Delta P$ controllers in Zone 3/Zone 4 areas for reliable implementation of LCO 3.1, item 6	FEB 99
11	Drain Chemical Storage Tanks	Reduce inventories of KOH and HNO <sub>3</sub> in outdoor storage tanks to meet requirements of AC 5.2.2, items e and f	Complete
12	Upgrade Vault Penetrations for Fire where Practical	Upgrade central storage vault boundaries to SC-1/2 (2-hour) fire barrier requirements where practical (BIO-IP will otherwise ensure that appropriate combustible control limits are established per AC 5.4.2, item 4c)	FEB 99
13	Repair Attic Beam	Compensate for omitted negative reinforcement at the junction of beams	Complete

<sup>1</sup> Existing foundation drains suffice to assure safety; the drain extensions were intended as a good practice to decrease water penetration near the foundation, but the proposed cost was judged to be too high for the low marginal benefit.

	UPGRADE ITEM	SCOPE	COMPLETION SCHEDULE
		B55 and B56	
14	Install Attic Leak Detection	Provide capability to detect and alarm if significant attic flooding occurs	Complete
15	Miscellaneous BIO Upgrades	a) Install Dock 18T Roll-up Door Interlock b) Verify Seismic Capacity of SC-1/2 HVAC ΔP Sensor Lines c) Provide Lab Propane Tank Seismic Supports d) Complete Any Additional SQUG Walkdowns e) Determine HVAC Scrubber Disposition f) Provide Seismic Restraint for Flammable Liquid Cabinets	Complete Complete Canceled <sup>1</sup> Complete <sup>2</sup> Complete Complete
16	Life safety Code Upgrades	Correct Deficiencies in B371 (Material Access Area) per Updated Facility Fire Hazards Analysis	Complete

1 Building 371 has determined that propane will not be used in the laboratory so restraints will not be required.

2 SQUG walkdowns supporting BIO implementation are complete; additional Room 3189 rack inspections are being performed to identify additional cost-effective measures to reduce the EBE public dose below 5 rem (see Section 2 of this report).

## 4.0 INTEGRATED Pu CONSOLIDATION AND MANAGEMENT

The corresponding section of the IPP states that, "The insights gained from the Recommendation 94-3 studies in Phases I and II needed to be integrated with the actions committed to the Board under Recommendation 94-1 to an integrated Site plan for safe plutonium and uranium management and storage. These insights included the contribution to overall Site risk from residues, the improved safety of Building 371 with Priority upgrades and a new BIO, and the commitment to provide an assured facility (on- or off-site) for interim storage of Site SNM. Systems engineering principles were applied to develop and select a strategic approach for residue storage and shipment that incorporates timely consideration of contingencies, such as possible delays in Waste Isolation Pilot Plant (WIPP) opening. The approach that was selected is being implemented through the Site's 94-1 Program. The 94-1 Program is also reducing the risk of SNM storage by stabilizing and repackaging the material; the DOE-STD-3013 compliant packages and the POCs [pipe overpack containers] afford defense-in-depth for current storage and enable the longer term storage plans to be realized."

### ***4.1 Accomplishments and Status Summary***

The Site is actively investigating options with varying reliance on support from other sites in the DOE complex to accelerate 94-1 commitments in a manner that would support Rocky Flats Site closure by 2006. Some of these options are noted as contingencies in the revised IPP. Any that are chosen for implementation will be incorporated in future revisions to the Site Integrated Stabilization and Management Plan (SISMP).

Following a previously reported study evaluating the impact of delayed delivery of the prototype PuSPS to the Site, the Department decided to install the packaging system in Building 371. The Room 3701 installation plans provide for oxide stabilization ovens to be used in conjunction with the packaging system. Detailed design is being completed in phases to support construction, which is scheduled to permit initial metal packaging no later than December 1999 and oxide packaging beginning no later than April of 2000. During this quarter, Kaiser-Hill continued efforts to install the packaging portion of the prototype PuSPS in Building 371. Room preparation, including penetration of the tertiary boundary to extend helium service to the system and area stripout is underway, as is the design of the stabilization gloveboxes. Some required modifications to the prototype are being made prior to disassembly for transfer to the Site. Options to improve reliability, accelerate startup of oxide packaging, and ensure timely container delivery are being pursued.

### ***4.2 Deliverables***

All current activities related to this task are governed by the SISMP and 94-1. There are no near-term milestones for the 94-3 program.

## 5.0 INTEGRATION OF SITE PLANS WITH DOE COMPLEX PLANS

The corresponding section of the revised IPP provides the Department's baseline plan to prepare for and complete the shipment of the Site's uranium and plutonium metal and oxide beginning no later than 2002. The baseline plan is a commitment that will be executed as planned unless sufficient impediments to off-site shipment emerge to cause the Department to abandon this strategy. The Department would then rely on Building 371 for safe onsite interim storage (Section 6). Significant Departmental plans, which have the potential to impact Rocky Flats' implementation of this IPP, continue to evolve. They include the completed plan *Accelerating Cleanup: Path to Closure*, and the Surplus Plutonium Disposition EIS that remains in draft. The uncertainties associated with these interrelated plans are acknowledged, and are the subject of management actions by several managers outside the organization structure described in Section 1. This section of the IPP describes a mechanism for integrating and coordinating Departmental actions contributing to resolution of programmatic uncertainties, and shows the dependence of Site plans on the rest of the complex.

### 5.1 Accomplishments and Status Summary

Progress was made across the DOE complex in preparing for timely off-Site shipment of RFETS SNM and emerging issues are being addressed, including:

- Progress continues to be made on preparing the K-area at the Savannah River Site (SRS) as the Department's preferred alternative to the Actinide Processing and Storage Facility (APSF) for receipt and storage of Rocky Flats SNM. Phase I modifications are now underway for storage in the Process Room and for NDA installation in the Crane Wash Room. The ten-year package qualification for the 9975 container is on-track for completion in mid-February and the BIO is on schedule for completion by the end of March. Overall design and construction efforts are on schedule to support initial shipments and material receipt in January of 2000.
- Rocky Flats pit shipments to Pantex continued in this quarter with over 80% of the pit shipments now completed. Most remaining pit shipments will be completed in the coming quarter.
- The residue EIS Record of Decision was issued in December and commercial shipments of repackaged sand, slag and crucible (SS&C) residues to Savannah River were initiated. This shipping campaign will continue until the SS&C inventory transfer is complete. Efforts continue to obtain approval for use of the 9975 package for these shipments. Future use of SSTs for some shipments is anticipated, dependent upon the shipment plutonium content.
- APSF construction has been delayed to accommodate other priorities for Savannah River funding. A new strategy for storage of the IAEA-material from RFETS will be developed, since K-area has not been designed to permit the extractions from the shipping containers that would be required by the current IAEA storage protocol. Options may include negotiating a revised IAEA protocol, storage of IAEA material in the FB line at Savannah River, or exchange of material with Hanford to obtain unrestricted material for storage in K Area.

Overall, the Department believes progress is being made to support timely off-Site shipment of RFETS SNM.

## **5.2 Deliverables**

### IPP Milestone 5-1 Issue ROD selecting the plutonium immobilization site by February 1999.

The Surplus Plutonium Disposition EIS is now scheduled to support issuance of a Record of Decision (ROD) by June 1999. Public comments on the draft conclusions have been received, evaluated and issued. Even with the recent three-month delay in the final ROD (from March to June), the decision is scheduled well before PuSPS startup and is not expected to delay satisfaction of the criteria for off-Site shipment in Section 6.

### IPP Milestone 5-2 Prepare APSF, or alternate facility, at SRS for Rocky Flats SNM.

- a. Complete APSF design by August 1998.

APSF design has been completed, meeting this milestone.

- b. Initiate APSF construction in October 1998 with sufficient capacity to accommodate both SRS and Rocky Flats material, or begin modification of alternate facility to receive the RFETS plutonium.

Modification of the K-area as the preferred alternate facility at SRS to receive RFETS plutonium is continuing. With the delay of APSF, a new strategy for RFETS IAEA material will need to be developed and initiated to complete this milestone.

### IPP Milestone 5-3 Prepare for and transport SNM off-site.

- a. Complete off-site shipment of pits to Pantex by FY99.

Over 80% of RFETS pits have been shipped to Pantex and shipments are on schedule for completion in FY-99

- b. Ship plutonium-bearing materials (sand, slag and crucible) from Rocky Flats to SRS in SSTs in June 1998.

The residue EIS Record of Decision was issued in December and commercial shipments of repackaged sand, slag and crucible (SS&C) residues to Savannah River were initiated. This shipping campaign will continue until the SS&C inventory transfer is complete. The use of SSTs, for future shipments, will depend upon plutonium content. Completing a shipment of plutonium bearing materials in an SST is still anticipated in FY-99.

- c. Procure approved shipping containers (9975s) for metal and oxide shipment.

Just-in-time procurement of 9975's by SRS for transport of RFETS oxides to SRS for storage in K-area had been planned to begin in the spring of 1999. Responsibility for funding the procurement has been reassigned by the Department to RFETS, but the FY99 delivery schedule is expected to be maintained.

## **5.3 Schedule of Activities**

Kaiser-Hill has completed and begun to implement the plan for installation of the packaging portion of the prototype PuSPS in Building 371. The design of the stabilization gloveboxes is also underway. The Room 3701 installation plans provide for these oxide stabilization ovens to be used in conjunction with the packaging system. Detailed design is being completed in phases to support construction, which is scheduled to permit initial metal packaging no later than December 1999 and oxide packaging beginning no later than April of 2000.

## 6.0 INTERIM STORAGE MISSION CONTINGENCY – BUILDING 371

This section corresponds with Section 6 of the revised IPP and addresses the following mission need for the Building 371 contingency option: "provide safe and secure interim storage of the Site's non-pit plutonium metal and oxide inventory, including any oxide generated due to residue and solution stabilization activities, if off-site shipment is not realized in a timely manner. The interim storage mission is to begin in 2002 and continue until the inventory is finally shipped off-site (no later than 2015)." Chapter 6 focuses on plans to validate and define specific scopes for upgrades in FY-98 to prepare Building 371 for the interim storage mission, to design validated upgrades in FY-99, and to implement them in the facility no later than 2002.

### 6.1 Accomplishments and Status Summary

The Validation Study, completed in FY-98, recommended four additional upgrades to prepare Building 371 for storage of the Rocky Flats Environmental Technology Site's non-pit Pu metals and oxides from 2002 to 2015. The current status of each is as follows:

- The design of the Safety Margin upgrades in vault rooms 1101 and 1208 for relocating dispersible material (plutonium oxide) storage to the sub-basement was started in January 1999. The design and construction schedule to assure readiness by 2002 are expected to be complete in May 1999.
- Replacement of credited HEPA filter stages that have experienced uncertain loss of tensile strength from wetting during prior deluge system testing has been funded and is in planning. Replacement of all credited first-stage HEPA filters is expected to be complete in June 1999.
- Development of a Work Package for removal of combustible pall rings from inactive scrubber tanks in the Building 371 exhaust systems has been funded and is expected to be complete in September 1999. When the package is complete, removal of the pall rings will be integrated into the 2006 closure baseline plans for the facility.
- The evaluation of early holdup removal is being integrated into the development of 2006 baseline plans for the facility. The planning effort is underway and is expected to be complete in May 1999.

### 6.2 Deliverables

Milestone 6-1 Complete validation assessments for the Interim Storage upgrades (those that are not "Priority" in Appendix C), including a schedule for design engineering to be performed in FY99, documented, and reported by August 1998. Provide the plan for the validation effort to the Board by March 1998.

This milestone was completed in August 1998.

Milestone 6-2 Complete design of validated upgrades by September 1999, including a construction/implementation schedule which ensures completion by 2002.

The design contract for vault rooms 1101 and 1208 was awarded as scheduled in December 1998. Completion of the design and construction schedule is targeted for May 1999 for the vault room upgrades



Milestone 6-5 Assess the following "Go/No Go" criteria for assured success of off-site shipment in Section 5 and report when they are satisfied:

1. APSF construction is funded and underway with sufficient storage capacity committed to RFETS material or alternate acceptable storage off-site is authorized, funded, committed for storing RFETS material, and construction is underway.
2. The ROD for a plutonium disposition site is issued and identifies SRS as a disposition site or the MD PEIS ROD is amended to delete this condition as a requirement for receipt of RFETS material and any alternative NEPA requirements are fulfilled.
3. The PuSPS at Rocky Flats is operational and authorized to begin material stabilization and packaging or the Department has established firm plans for packaging to be performed off-site.
4. A shipment of plutonium-bearing materials from RFETS to SRS in SSTs has been successfully completed; specific plans are in place to provide for future shipments.
5. Adequate assurance is provided that off-site pit shipments are on schedule for completion by the end of FY99.

When the Go/No Go criteria are satisfied, all remaining work (including design, construction, or other implementation) on the validated upgrades and the SAR to establish the Building 371 interim storage option may be discontinued by the Department. The Department will formally notify the Board before the upgrades are discontinued.

Section 5.0 of this report addresses the status of complex-wide activities supporting fulfillment of these criteria. Based on the progress reported in Section 5, the Department concludes that criterion 5 above has been nearly satisfied and will soon be met resulting in a "Go" conclusion. Criterion 1 has nearly been satisfied for the K-Area option, but the impact of APSF delay on IAEA material remains to be resolved. Criterion 4 (demonstration shipment) was effectively met when commercial shipments began in December; an SST shipment may be made in the coming quarter. Criterion 2 (material disposition site ROD) is expected to be met in June. Thus, criterion 3 (PuSPS operational) is forecast to control the schedule for a final decision. Efforts are currently judged to be on track to support a favorable, "Go", judgment in calendar year 1999.

### **6.3 Schedule of Activities**

There are no intermediate milestones due in the coming quarter supporting the completion of Interim Storage Mission deliverables for FY-99.

## OBSERVATIONS AND PLANNED CORRECTIVE ACTIONS

### Observation #6:

*The team observed numerous documentation completion deficiencies during examination of work packages that still existed after the majority of physical work has been completed. These led the team to question the effectiveness of the criteria for the normal project milestone of Beneficial Occupancy to provide a sufficient measure of completeness for declaring operability under the requirements of the BIO/SER. The team concluded that Kaiser-Hill should confirm with its Building 371 facility operating contractor that documentation requirements in work packages fully support BIO administrative control requirements for declaration of SSC operability and also assure timely administrative closeout of completed work packages.*

### Response:

Kaiser-Hill has reviewed the procedures in place for Beneficial Occupancy (BO) determination and concluded that insufficient instructions are in place to adequately define Beneficial Occupancy purpose, expectations and responsibilities. The existing requirements for Beneficial Occupancy are limited to determining that the affected system is "available for its intended use

### Corrective Action

1. Modify 4-17-COEM-CMG-417, Construction Closeout, to clarify the purpose of BO, establish requirements for acceptance of BO for safety class SSC's, and define responsibilities for the signatories on the BO notice.

Responsibility: M. Witherspoon

Completion Date: March 31, 1999

The return to service process is independent of the Beneficial Occupancy process and includes follow on facility activity to ensure that necessary procedures are in place to maintain system configuration and operating condition. Work package documentation requirements do exist to support declaration of operability.

### Observation #7:

*Building 371 management needs to assure that subcontractor designers fully understand the functional requirements as expressed in the approved BIO/SER. The quality of Building 371 design reviews should be sufficient to confirm that that designs satisfy the applicable functional requirements. A self-assessment should be conducted to verify these competencies.*

Existing Site procedures include a landlord signature for the facility. The current site procedures specify that the "landlord" signature indicates "...that the major subcontractor representative responsible for the building or area for which the design package is applicable is cognizant of the design." Since the procedures lack the specificity to assure an appropriate level of review by landlords, Kaiser-Hill will strengthen the responsibilities of the landlord to explicitly require review of design for conformance to approved BIO/SER. This will assure that landlords are aware of their responsibilities for review of designs.

**ORIGINAL**

Kaiser-Hill believes that the purpose of the landlord signature is to ensure that the design fulfills the functional requirements set forth in the Authorization Basis as well as project Statements of Work. Therefore, the review must be sufficiently thorough to validate that appropriate standards are invoked, functional requirements are satisfied, and system operability testing validate critical attributes of the project. This review should not replicate the design check performed by the A/E firm nor does it absolve the A/E firm of its responsibilities.

#### Corrective Action

2. Modify 1-V51-COEM-DES-210, Design Process Requirements, and appropriate sections of MAN-027-SERM, Site Engineering Requirements Manual, to establish requirements for the maintenance of functional requirements of safety class SSC's, and define clear A/E firm and landlord responsibilities.

Responsibility: J. Gilmour

Completion Date: March 31, 1999

Another issue identified in the assessment concerns the level of knowledge of the facility engineers with respect to SERs. Since the review and approval of the 94-3 designs, Building 371 has successfully completed readiness reviews for implementation of the BIO and SERs. These reviews specifically addressed engineer's knowledge of the SERs under their purview. Coupled with revisions to the requirements or landlord signature, there will be improvements in the quality of landlord reviews.

#### *Observation 8)*

*Kaiser-Hill needs to ensure that suppliers of design and construction services are fully qualified in key procedures of site infrastructure (e.g. BIO, SER, DES 210, IWCP manual etc.) prior to contract performance or establish compensatory measures until site specific Authorization Basis proficiency is confirmed.*

Training has been conducted and will be continued for suppliers of design and construction services in key elements of the site infrastructure and Authorization Basis. Kaiser-Hill conducts periodic evaluations of all subcontractors to evaluate their performance.

However, the requirement for engineering training for Safety Class Structures Systems and Components (SSC) work is not contractually required.

#### Corrective Action

3. Modify the Statement of Work (SOW) Guideline to include a requirement for the establishment and inclusion of design engineer training and qualification requirements in the SOW whenever A/E firm work includes modification of safety class SSC's.

Responsibility: W. Franklin

Completion Date: March 31, 1999

4. Modify 1-W-36-APR-111, Acquisition Procedure for Requisitioning Commodities and Services, to require the mandatory use of the SOW Guideline whenever A/E firm work includes modification of safety class SSC's.

Responsibility: W. Franklin

Completion Date: March 31, 1999

In addition, all work by subcontractors conducted in nuclear facilities is subjected to review by Nuclear Safety. This review confirms that the design and its installation comply with the Authorization Basis. Coupled with the reviews by facility engineers, sufficient oversight now exists to identify and correct potential deficiencies with a design.

Observation 9)

*Kaiser-Hill integration of the feedback and improvement actions resulting from the CURE notice issued to its subcontractor, did not appear to involve all parties affected by the underlying challenge to the Authorization Basis posed by major subcontractor QA deficiencies. DOE/RFEC should ensure that the integration issues, of potential site-wide significance, raised in the RFEC corrective action plan are fully resolved prior to acceptance of the associated Price Anderson Act closeout action.*

Kaiser-Hill Closure Projects has reviewed the outstanding issues on which RFEC requested Kaiser-Hill support, and has addressed each as described below. All action is complete on this issues believed to have merit. No further action is planned Closure Projects prior to closure of the CURE notice.

EI1, s-AECCM-1626, 12/12/97, A. Parker  
CONCERNS

1. Lack of Q clearances.  
*Action was taken to clear additional RFEC personnel through the AAA process, which was successful in helping to alleviate the problem.*
2. Lack of escorts.  
*The Escort Contract was novated. Performance measures showed no lack of escorts existed beyond May 98.*
3. RFEC's exclusion from the RFETs planning process.  
*No action is planned.*
4. Contract Limitations  
*It is our position that the contract is sufficient. Individual SOWs are used to address the Task Order specific requirements.*
5. Propensity to manage AECCM as a cost-reimbursable contract when convenient.  
*No action is planned.*
6. An evolved RFETS culture that allows selective compliance and accepts work around solutions.  
*No action is planned.*
7. Unilateral task negotiations eliminating control processes.  
*There is no intent to eliminate control processes. Both inspection and safety personnel were included in the pricing structure of RFECs unit rates. They many also price additional resources as required for specific SOWs.*

8. Inappropriate/unsuitable site requirements for implementing engineering and construction. *A number of reengineering efforts have been completed in the areas of engineering and construction. RFEC has participated in the efforts and their personnel briefed on the outcomes.*
9. Unclear chains of command within and between RFETS organizations. *RFEC has been reminded to correspond only with the Contracting Officer and accept direction only from the projects' Contracting Technical Representatives. All strategic relationships are regularly published in organization charts.*

97-002, PA04, S-AECCM-1876, 2/13/98, R. Boyd  
CONCERNS

1. The KH QAPD does not describe the responsibility of the functional level personnel, nor the names of individuals responsible for interface with RFEC. *Individual Project Execution Plans will address functional level personnel.*

97-006, PA32, S-AECCM-1887, 2/17/98, R. Boyd  
CONCERNS

1. Worker frustration due to building delays or interruptions, security delays and late arrival of required support personnel. *The complexity of SNM and numerous security and safety barriers contribute to this problem which is an environmental condition under constant improvement.*
2. Worker morale and motivation negatively impacted because they know they must meet schedule even though they are delayed. *The complexity of SNM and numerous security and safety barriers contribute to this problem which is an environmental condition under constant improvement.*

97-006, PA35, S-AECCM-1889, 2/17/98, R. Boyd  
CONCERN

1. External influences may have distracted RFEC management from placing adequate emphasis on safety and conduct of operations. *No action is planned.*

97-006, PA33, S-AECCM-188, 2/17/98, J. Wood  
CONCERN

1. Radiological postings do not provide adequate barrier to entry. *RFETs Radcon protection program requires literacy, Radworker Training and Building Specific Training. Our opinion is that these requirements are sufficient and that complete physical barriers are not necessary.*

97-002, PA03, S-AECCM-1924, 2/24/98, R. Boyd

CONCERN

1. Limitations of Labor Pool.

*Two of the recommended actions in this letter were implemented; subcontractors and AAA process.*

The Kaiser-Hill team has reviewed the NCRs generated from RFEC projects and confirmed that the NCRs do not impact the Authorization Basis.

Corrective Actions to the List of outstanding questions and issues in Appendix B of the 94-3 Upgrade Work Package Assessment

Issue	Resolution	Completion Date
1. The seismic integrity of the System 2 duct to bypass isolation damper 6936A requires the evaluation of the Pittsburgh-lock seam joint.	Research is underway to determine how best to determine the Pittsburgh-lock seam integrity. A test plan or other means of resolving seam integrity will be developed and any further corrective actions identified to verify seismic capacity.	3/19/99 <i>In progress and on schedule</i>
2. Seismic capacity vs. demand of the intake HEPA filter bank tube steel and anchorage needs to be verified.	Calculations have been completed and are being verified.  <i>Verification was completed; comments will require some recalculation to be completed to include missed loads.</i>	12/31/98  <i>New completion date 1/31/99</i>
3. The deluge system design calculations must be reconciled to the as-built condition. In particular: the water tank bolts are shorter than assumed in the initial calculation (calc. 362); the span calculation (calc. 369) should reconcile elbows and axial supports.	Walkdowns of the deluge system areas of concern are being conducted. Calculations based on walkdown results will be conducted to verify as-built conditions.	12/31/98  <i>Walkdowns continue.</i>  <i>In progress and on schedule</i>
4. The egress routes must be inspected to verify that they are free of fallen equipment that could block the exit path.	Building egress routes will be inspected. Equipment that could hinder safe egress after a seismic event will be identified and relocated if necessary.  <i>Walkdowns of egress routes are complete. Results are being documented for facility action as appropriate.</i>	12/31/98 <i>In progress and on schedule</i>
5. Reconcile the basis for attic and roof members that do not meet the specified design code factor of 1.4 for concrete.	The design issue concerning conformance with specified code factors is being researched. Corrective action will be developed based on research results.	1/31/99 <i>In progress and on schedule</i>

<p>6. There is evidence that the conduct of nitrogen subsystem testing (for Plenum Deluge Modifications, System 2) failed to meet acceptance criteria and that additional testing will be required.</p>	<p>Necessary nitrogen testing will be conducted.</p>	<p>2/26/99 <i>In progress and on schedule</i></p>
<p>7. The DOE-EM approved exemption to DOE requirements for Life Safety has not been incorporated explicitly as a component of the Building 371 BIO as would be appropriate.</p>	<p>The exemption approved a Life Safety Code noncompliance caused by existing penetrations in stairwells used for egress. It established the capability of the stairwells to provide equivalent protection to personnel despite NFPA code deficiencies. Although the BIO identified the stairwells as defense-in-depth for worker protection in a fire, the exemption was not needed to provide for nuclear safety, but rather to allow the facility to achieve compliance with the Site Fire Protection Program in an alternate manner from that specified by NFPA standards. The Fire Protection Program is invoked by the BIO as both a Safety Management Program and an Administrative Control. Since the exemption is a programmatic feature, it is applied to the ongoing operation of the facility through the program and does not need to be specifically included as a component of the BIO. This is consistent with the management of all other Safety Management Program exemptions applicable to the Complex, none of which are explicitly part of the BIO controls.</p> <p>This Site is currently preparing a response to an independent assessment of the Authorization Basis program that recommended more detailed attention to standards flow-down in ABs. If the Site response to the recommendation includes the identification of exemptions to standards in the AB, the Building 371/374 Complex BIO will be changed in accordance with an approved implementation plan.</p>	<p>N/A</p>