96-0000003

Department of Energy
Germantown, MD 20874-1290

December 29, 1995

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

Dear Chairman Conway:

On June 30, 1995, Secretary O'Leary transmitted the Implementation Plan (IP) that responds to your Recommendation 94-3, Rocky Flats Seismic and Systems Safety. I am providing this letter to advise you of the Phase I results (enclosure 1), our decision regarding interim storage of plutonium at Rocky Flats and the revised Integrated Program Plan (IPP) schedule.

Based on conclusions and technical evidence summarized in enclosure 1, we are taking two parallel paths forward to ensure safe storage of plutonium at the Rocky Flats Environmental Technology Site, pending a final decision on the interim storage facility in March 1996. Specifically, an upgraded Building 371 option and a new passive vault option address the safety issues relative to the interim plutonium storage mission, and we have elected to further narrow the uncertainties associated with costs and schedules of both options. Immediate action will be taken to reduce seismic risks in Building 371 through upgrades that are warranted based on committed near-term missions (through $\approx$ 2002), regardless of the ultimate decision on the interim storage mission. Additionally, an effective near-term and interim residue strategy will be developed in sufficient detail to support the scheduled final decision.

The IPP will serve both to coordinate implementation of these recommendations and to complete the response to the Defense Nuclear Facilities Safety Board 94-3 recommendation. The completion date for the IPP has been extended from December 29, 1995, until January 17, 1996. The completion date was extended to accommodate pursuing both options into March 1996. I am enclosing a revised schedule (enclosure 2).

TAB

Enclosure 1

Technical Summary and Conclusions from Phase I Implementation Plan (IP) Activities Addressing Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 94-3 at the Rocky Flats Environmental Technology Site (Site)

Recommendation 94-3 (94-3) Phase I IP activities yielded a substantial body of technical knowledge regarding: the seismic hazard at the Rocky Flats Site; the structural and seismic capacity of Building 371 and of its safety systems; vulnerabilities, which are not related to natural phenomena, of safety-related Structures, Systems, and Components (SSCs) that, if not addressed, might preclude adequately reliable operation of the facility; alternatives in material form, packaging, or other storage conditions that might enhance safety of storage in Building 371 or elsewhere; and alternative facilities that might afford superior reliability or cost performance to Building 371. The details of these investigations and their conclusions are documented in a series of reports described and referenced in Table 1.

The decision criteria for the evaluation of the accumulated body of technical knowledge deviate somewhat from the form contemplated in the IP but not from the intent, which is understood to be a focus on the need to ensure not only acceptable overall safety for the final configuration, but also the identification and consideration of practical measures to enhance safety above minimum standards. Thus, the evaluation in the IP placed less emphasis on hazard categorization and SSC safety classification per se, and more emphasis on understanding the materials and mechanisms contributing to the building and site hazards associated with Special Nuclear Material (SNM) so that they might be effectively addressed by engineering means. Hazard classification and SSC safety classification will be addressed in the subsequent Integrated Program Plan (IPP) according to applicable Department of Energy (DOE) standards and guidelines.

The most significant conclusions and their bases include:

1. The appropriate Evaluation Basis Earthquake (EBE) for Building 371 is one with a 2000-year estimated return period (0.12g at rock). This is the requirement DOE imposes on a new Performance Category (PC) 3 facility per DOE 5480.28. A separate Collapse Prevention Earthquake (CPE) with an estimated 10,000 year return period (0.26g at rock) is also appropriate for study of the costs and benefits of facility improvements. The PC3 Natural Phenomena Hazard (NPH) provisions in DOE 5480.28 were chosen to be consistent with those used by the Nuclear Regulatory Commission (NRC) in the mid-70s for reevaluation of plutonium (Pu) facilities; they afford conservatism between that of building code requirements (e.g., the Uniform Building Code [UBC]) and that of civilian nuclear power plant requirements. (DOE Order 5480.28 is being superseded by DOE 420, but the PC3 provisions remain in IG-420.4 and in DOE-STD-1021.)
2. Building 371 affords substantial seismic capacity and can meet DOE's requirements for a PC3 facility with limited, practical seismic upgrades. An earthquake large enough to cause facility collapse is estimated to have a return period of about 35,000 years with a lower uncertainty bound of about 10,700 years. Thus, hazards associated with the collapse of Building 371 in an earthquake are very improbable.

3. One portion of Building 371, two vaults near the center of the sub-basement, affords limited storage capacity that will survive the CPE by modifying the vault ceilings. The most hazardous material to be stored (relatively dispersible Pu oxide powders) can be stored in this area provided that the non-dispersible pits currently stored there are relocated.

4. Practical system upgrades to Building 371 that are focussed on the most important active safety functions (i.e., maintaining negative building pressure and filtered exhaust) and fire protection features can ensure public safety. Other practical equipment modifications together with planned stabilization and repackaging (50-year packages per DOE-STD-3013) can ensure worker safety. The "simple active" option in the Task 8 report is favored over the somewhat less expensive "passive" option because it is judged likely to mitigate potential releases from seismic hazards above the EBE but below the CPE. As earthquake magnitude increases in this range, the building is likely to lose confinement capability even though collapse is precluded. While it is possible, perhaps even expected, that no significant release will occur within the building under such conditions, the high-efficiency particulate air (HEPA) filtration systems afford an important component of defense-in-depth, consistent with the original design basis for Building 371. The comprehensive "full active" option is judged to be impractical for this facility.

5. Building 371 with identified upgrades would be suitable for interim storage of SNM at Rocky Flats (this is a direct, positive response to 94-3). Follow-on actions in the IPP will substantiate and implement this mission, if Building 371 is selected.

6. Monolithic forms for Pu oxides, considered as alternatives to the current plan for thermally stabilized oxide powder, are likely to be attainable at costs and within schedules comparable to those of the calcining and repackaging process already committed to by the Site (meeting DOE-STD-3013 per the 94-1 Implementation Plan). These alternative processes entail uncertainties, subject to confirmatory testing, however, regarding process parameters and dispersibility of the final form. The cost to demonstrate operational readiness for these processes is also uncertain. Since the relocation of oxides to the sub-basement in Building - 371 adequately minimizes the risk of dispersion, no further change in form or package is required beyond DOE-STD-3013 requirements. The insights from these studies may be applicable to residues.

7. Studies confirm that seismic events of sufficient intensity to topple site buildings are significant to public risk, even though they probably will not occur, because they can involve the entire inventory of material and disable engineered confinement systems if they do occur. Within Building 371, the Pu oxides dominate risk when planned consolidation is complete as they afford the largest inventory of dispersible material. The 1/3 of Pu residues not presently in Building 371 poses a much greater risk than the 2/3 presently in the building because the 1/3 not in Building 371 is in substantially less rugged buildings. These studies thus not only show that the strategy of SNM consolidation in Building 371 increases safety but also favor the consolidation of residues (Category III SNM) as well as Categories I and II as presently planned.

8. Residues in Building 371 (with or without near-term consolidation) are the second largest contributor to building risk. Further study is needed and is underway to determine the longer-term course of action for residue material management. If residues are repackaged for shipment to Waste Isolation Pilot Plant (WIPP) in pipe components and 55-gallon drums, it

appears practical to relax safeguards requirements and to demonstrate that the package will afford adequate protection against dispersion, thus permitting storage in even an unhardened facility. An interim residue storage mission for Building 371 has not been precluded, however; if adopted, it could impact the selection of the SNM storage facility.

9. Following SNM consolidation and assuming only limited upgrades to Building 371 to achieve PC3 capability, the site risk from large seismic events has been assessed as less than 1% of DOE's safety goal for latent cancer fatalities, indicating a low risk to the general public. For extreme seismic events which could cause collapse scenarios which are not included in the required evaluation basis, however, the potential dose levels at the site boundary are well above typical guidelines for evaluation basis events (5 to 25 rem). Further, the potential dose levels at the site boundary would increase with any reduction in the site boundary (such as the proposed release of 4100 acres for at least limited public use). The proposed options have been developed in this context to reduce these potential doses and achieve meaningful risk reduction where it is practical to do so.

10. The off-site (within Colorado) alternatives studied did not prove feasible as the State did not identify an alternative and the only available missile silos were as close to Denver as the Site. A site more remote from Denver's two-plus million people would be required and would afford inherent risk reduction worthy of consideration (and potential cost advantages). DOE should evaluate the feasibility of making an MX site in Northeast Colorado available, for example. A number of stakeholders urge such an approach.

11. A new passive vault for Categories I and II SNM is a practical alternative to the use of Building 371 for interim storage. Such a facility could afford PC4 seismic capacity for both oxides and metals and could better resist airplane crashes and a broad range of potential terrorist threats. The principal considerations favoring a new facility, however, are reliability assurance and cost (Building 371 is acceptable from a safety perspective). A new vault appears to have sufficient advantage in operating and security costs that it can repay the capital investment (within five years of occupancy for DOE funded construction — over 20% life-cycle cost savings for a design-build-lease approach) and earn substantial life-cycle cost savings. However, further study is appropriate to confirm these conclusions and to provide the basis for procurement of such a facility.

Based on these conclusions, on the technical evidence summarized in the Table 1 reports, and on related discussions between Kaiser-Hill and RFFO management, the following recommendations are made regarding the path forward for safely storing non-waste Pu at the Site. In general, the approach is one of taking those actions clearly warranted based on the available information and of continuing investigation where the potential advantages are attractive but uncertainties are judged to require further study. Funding priorities and performance objectives remain to be developed and agreed to between Kaiser-Hill and DOE.

1) A commitment to develop and pursue the option of a new passive vault for interim storage of Categories I and II Special Nuclear Material (SNM) is recommended, pending a final decision on the interim storage facility in March 1996 and subject to coordination with the Site-Wide Environmental Impact Statement (SWEIS) or with an alternative National Environmental Policy Act (NEPA) approach. The commitment to pursue the passive option is necessary to permit further study but does not imply a prejudgment regarding the March 1996 decision. The Building 371 upgrade option will continue to receive equal emphasis. Categories I and II

SNM include those forms of non-waste Pu (e.g., metals and oxides) most attractive for diversion and subject to the most stringent security requirements (about 75% of the site non-waste Pu inventory). This recommendation entails: pursuing studies to develop both the passive vault and Building 371 options with emphasis on strengthening the decision basis (i.e., reducing the uncertainties) — these studies will serve to validate the Construction Project Data Sheet (Schedule 44 submittal), to establish functional requirements, and to ensure high confidence in the Kaiser-Hill cost and schedule estimates; securing Headquarters (HQ) support for expedited capital funding for design in FY-97 (estimate~$5M); and developing and securing agreement on an updated strategy for disposition of pits currently stored at the Site.

The March 1996 confirmation would consider the study results, the developing site strategy for residues, the status of the material disposition draft Programmatic Environmental Impact Statement (PEIS) (including an evaluation of the potential for early off-site shipment of SNM), and an updated comparison of costs for both options. If the new vault retains significant advantages overall, Kaiser-Hill will request a final decision in favor of the new vault by EM-1 in March 1996. Such a decision would commit to proceeding with a conceptual design report (CDR) and then procurement, coordinated with the SWEIS, including consideration of privatization as an option (e.g., leasing of a privatized, "turn key" facility).

Note that the DNFSB 94-3 recommendation did not request consideration of a new Pu storage facility. In fact, new facility alternatives were included in the Phase I IP primarily as a fall back in the event that Building 371 could not practically be made acceptably safe. In the course of the evaluation, practical means for ensuring safe interim storage in Building 371 were identified. A new passive vault, nevertheless, emerged from the evaluation as potentially superior, principally from operational reliability and cost perspectives.

The basis for proceeding with this recommendation includes judgments regarding concern over uncertainty in the reliability of Building 371 systems, a potential cost advantage of a new building over Building 371 for the interim storage mission, the need for timely action, other considerations favoring the new vault, and the expected separation of residue issues from the non-waste Pu interim storage decision.

- The new vault option will ensure reliability for the critical SNM interim storage mission at a predictable, reasonable cost. While the cost estimates for the upgraded Building 371 option include substantial funding for system upgrades and high maintenance costs in the first five years, reliability of its operations will continue to be uncertain because of its contamination levels and the potential future unavailability of spare parts needed to keep its aging systems operational.
- The cost advantage has been tested internally and is founded on fundamental inefficiencies in the current Building 371 configuration and equipment, reflecting the fact that Building 371 was not designed for storage and could hardly be expected to afford either an optimal layout or the most efficient systems for such a mission. Building 371 is an older facility resulting in increased uncertainty regarding the reliability of its systems (i.e., the cost of assuring safety). Similarly, the cost of providing the required safeguards and security measures reflects inefficiency in the design and entails uncertainty. For example, while the passive vault would be designed to preclude entry into the vault area (thereby obviating security concerns that can lead to a physical sampling requirement), surveillance without vault entry is impractical for the Building 371 configurations. These inefficiencies imply

an estimated Operations and Maintenance (O&M) budget for the interim mission in Building 371 of $35M per year. One sensitivity study predicted that a sizable reduction in Building 371 O&M costs, to about $23M per year, would be needed to break even with the new vault, even assuming its more expensive lease option, on a life cycle cost basis. Such lower O&M budgets, however, appear unattainable and would serve to increase concern over Building 371 operational reliability.

- The schedule for the new vault acquisition is deemed to be uncertain. The target completion date of 2002, chosen to coincide with the commitment for completion of 94-1 processing, is also uncertain and may be accelerated. Thus, even though current projections show completion with ample time to complete material transfer during 2002, any delays prior to initiating pre-conceptual design (FY-96), Title I design (when FY-97 capital funding is available), or more detailed design following the NEPA record of decision, could jeopardize timely achievement of its mission.
- In addition to reliability and cost, the new passive vault has several other advantages over Building 371 for the interim storage mission. These other advantages include the potential for: improved security performance (an underground facility designed to facilitate storage security); reduced worker exposure with a highly automated design that precludes vault entry or direct package contact; a seismically more rugged building, even less susceptible to collapse; inherent reliability with a new, well-designed facility; greater flexibility to accommodate a future reduction in the site boundary; and earlier start of demolition of Building 371, a significant step toward site closure.
- This recommendation for SNM can be separated from the still pending issue of residue disposition because residues are expected to be reclassified or converted, as necessary, to waste forms. The storage requirements for transuranic (TRU)wastes are significantly different (less stringent) than those for SNM. Thus, even though TRU wastes may also require a new storage facility, feasible residue strategies to be developed by mid-1996 are not expected to impact the decision to build a new passive vault for interim storage of SNM.

2) An effective near-term and interim residue strategy needs to be developed in sufficient detail to support a final decision on the passive vault in March 1996. This recommendation entails: developing plans for near-term consolidation in Building 371 of at least the higher public risk (i.e., more dispersible) residue types while developing other equally acceptable but more cost effective options; identification of appropriate stabilization and repackaging strategies for residue categories with the potential to impact public risk; defining and initiating tests to establish the effectiveness of the proposed residue form and package, if they are to be credited, in mitigating potential large releases of dispersible residues; and pursuing resolution of uncertainties regarding shipment of Site residues to WIPP.

   The basis for proceeding with this second recommendation includes insights gained from site-wide risk estimations that residue dispersion (assuming seismic building collapse caused by a beyond Evaluation Basis Earthquake [EBE]) dominates public risk once Pu oxides are safely stored; consolidation of the most dispersible residues into Building 371 even in their current containers significantly reduces public risk from large earthquakes because of the higher seismic strength of Building 371 compared to other buildings on site; and promising technologies should be investigated now for the possibility that they may be needed to reduce

residue risks in storage at Site if WIPP does not open on time.

3) Immediate action should be taken to reduce seismic risks in Building 371 through upgrades that are warranted based on committed near-term missions (through ~2002), regardless of the ultimate decision on the interim storage mission. This recommendation entails: implementing key structural upgrades to establish PC3 capability; deciding whether other upgrades to address system vulnerabilities are appropriate; deciding whether oxide relocation in the near term is warranted; planning for and removing TRU wastes and combustibles from Building 371 to lessen hazards in the building and to reserve this robust storage volume for more hazardous residues and SNM; planning for storage of oxides and metals outside the stacker/retriever (S/R) after DNFSB 94-1 stabilization and repackaging; evaluating the practicality (i.e., technical feasibility and costs) of investing in either decontamination of portions of Building 371 (to lessen future O&M and Decontamination & Decommissioning [D&D] costs) or security upgrades (to lessen future annual security costs); and determining whether processing of non-waste Pu (either oxide or residue forms) is a near-term mission of Building 371.

   The basis for proceeding with this third recommendation is that the safety analyses performed under the 94-3 project show that significant vulnerabilities in public protection can be corrected by relatively low-cost improvements in Building 371, and these costs are justified even if Building 371 is replaced by a new passive vault in 2002; worker risks can be reduced, and increased residue and waste storage space can be provided by the elimination of combustible waste storage in Building 371; the stacker/retriever (S/R) is highly contaminated and not particularly resistant to seismic damage; the Building 371 alternative for interim storage of non-waste Pu can be made more attractive by further O&M cost reductions; and elimination of all processing options for Building 371 offers mission simplicity (on the other hand, Building 371 may nevertheless be the best overall location for required processing based on its rugged design, proximity to the Pu inventory, and its internal facilities).

   In summary, this recommended course of action for non-waste Pu management at the Rocky Flats Site is one that will best ensure protection of the public, our workers, and the environment commensurate with the reduced but still significant hazards posed by near-term consolidation of most Pu in Building 371 and the subsequent interim storage mission for SNM.

Table 1
Rocky Flats Environmental Technology Site (Site) Reports
Generated in Stage 2 of the Defense Nuclear Facilities Safety Board
(DNFSB) 94-3 Implementation Plan

On June 30, 1995, Hazel O'Leary submitted the Department of Energy's (DOE's) Implementation Plan (IP) for Recommendation 94-3, Rocky Flats Seismic and Systems Safety, to John Conway, Chairman of the DNFSB. The work prescribed in the IP has now been completed; the deliverables submitted to the Project Manager for compilation and evaluation are summarized in this Table, keyed to the IP tasks.

3-2 Two separate final reports address the conclusions of two separate alternative study teams: one focussed on material form and packaging alternatives and the other focussed on storage facility alternatives.

3-2A "Material Form and Packaging Alternatives," Elizabeth Conrad, Roger Mattson, and Jerry Stakebake, November 22, 1995.

A comprehensive list of material form and package alternatives is developed and presented in this report. The pros and cons of each are weighed, costs are estimated, and recommendations are made for metals and oxides (residues are concluded to require further study). While planned 94-1 stabilization and repackaging of metals and oxides in accordance with DOE-STD-3013 address worker risk more than public risk, these steps appear sufficient for controlling the risk of these materials for the leading facility alternatives. Monolithic forms may be attainable at comparable cost and schedule, but research on these options and the resilience of their products is not recommended until a need for further risk reduction is identified.

3-2B "Interim Plutonium Storage Vault Alternatives Evaluation," Site Facility Team, Bob Richardella, Chairman, November 21, 1995.

The facility team used a systems engineering approach to brainstorm facility alternatives, evaluate their pros and cons, estimate costs, and arrive at conclusions. Team members were chosen for familiarity with both Rocky Flats storage issues and private industry engineering experience. Nine alternatives were evaluated; all were in Colorado (though not necessarily at Site); most were "passive," but two afforded "active" processing capabilities. The study developed significant insights into what might be possible with respect to functional performance requirements for a suitable interim storage facility and into the design features likely to have the greatest impact on cost and schedule.

4-2 "Ground Motion Reconciliation for Evaluation Basis Earthquake (EBE) Building 371, Rocky Flats Environmental Technology Site," Geomatrix, December 1995.

This report addresses the existing seismic hazard issues for Rocky Flats and concludes that the earlier seismic hazard results (Risk Engineering 1994) remain valid. Among the issues addressed is the possibility that additional seismic sources should now be included in the seismic hazard assessment. The report also reconciles deterministic and probabilistic methods of evaluating seismic hazard.

4-3 "DNFSB Recommendation 94-3 Task 4, Report to Establish the Evaluation Basis Earthquake," Jeff Kimball, October 30, 1995.

This report evaluates the available geotechnical information for the Rocky Flats site and recommends that an Evaluation Basis Earthquake (EBE) for rock be established "at a peak ground acceleration of 0.12g with the EBE response spectrum defined using the 2,000 year mean uniform hazard spectrum from Risk Engineering, Incorporated (REI), 1994 [the Risk Engineering hazard study]." The EBE is consistent with Performance Category (PC) 3. A separate collapse prevention earthquake (CPE) is recommended at 0.26g based on a 10,000 year spectrum. The CPE "can be used to assist in decision making regarding potential cost beneficial improvements that could reduce the risk from severe seismic events for Building 371."

6-1 " A Reassessment of Tornado and Straight Wind Hazards at the Rocky Flats, Colorado Site," James R. McDonald and Narendra Pulipaka, November 3, 1995.

This report updates a prior study performed in 1985, incorporating five years of available additional straight wind data and more thorough regional tornado data. Some increase in tornado wind speeds is identified and attributed to improved tornado recording efficiency. Straight wind speeds exceed tornado wind speeds for credible events (probability greater than 10^{-7} per year).

6-3 "Summary Report of the Structural Evaluation of Rocky Flats Building 371," M. Callahan, W. E. Faires, T. W. Houston, F. Loceff, E.B. Macaraeg, G. Mertz, J. S. Mulliken, WRSC-TR-95-0004, December 1995.

This report presents the results of the IP Task 6 scope of work, including static, dynamic, and pushover analyses for Building 371. The report identifies structural weakness at a construction joint along column line T in the ground floor support beam and girder system; modifications are recommended. Once this column line T construction joint is strengthened, the report concludes that Building 371 is structurally suitable for the storage of Special Nuclear Material (SNM). The conclusion is based on demand-capacity ratios below unity in static analyses with even greater margins indicated by dynamic analyses. The pushover analyses predict that the structure is capable of maintaining structural stability for a 0.72g (surface) seismic event corresponding to a return period of about 35,000 years.

7-1 Task 7, "Evaluation of Structures, Systems, and Components for Natural Phenomena Hazards," G. Antaki, E. Baker, G. Driesen, R. Hoskins, S. Hargett, W. Faires, Jr., and A. Wu, ECS-SSA-95-0206, November 9, 1995.

This report documents the assessment of structural integrity of structures, systems and components (SSCs) in previously identified, potential high-cost safety systems when the SSCs are subjected to natural phenomena loads (seismic, wind, and tornado). The evaluation was performed with input floor response spectra derived from the Analysis Basis Earthquake (ABE) in the Implementation Plan. The evaluation methodology was based on that of the Seismic Qualification Utility Group (SQUG). The required equipment was generally found to be robust, but numerous design details requiring attention were identified (e.g., add lateral brace to trapeze duct supports). The costs of the recommended modifications are estimated in the 8-1 report.

8-1 Task 8, "Assess Configuration and Performance of Safety Systems, Structures, and Components (SSCs)," D. S. Seely, K. Brusegaard, T.Mitchell, B. Peregoy, D. Persinko, J. Phillips, D. Rhoadarmer, and P.Simons, December 1995.

This report documents vulnerabilities of safety system SSCs, recommends material and/or programmatic upgrades, and estimates their costs. Vulnerabilities identified and costed include those from Task 6 (the 6-3 structural evaluation), Task 7 (the 7-1 SSC Natural Phenomena Hazard [NPH] vulnerability assessment), and Task 8 (the assessment of reliability and operability reported in this report). The Task 8 assessment utilized: walkdowns of potential high-cost systems; interviews with Building 371 personnel; and reviews of the Building 371 Safety Analysis Report, the Programmatic Environmental Impact Statement (PEIS) (which identified potential Building 371 upgrades), the reports of the Systematic Evaluation Program (SEP), and available design and maintenance status information. The upgrades were identified for three safety strategies affording progressively increasing performance assurance at progressively greater cost. The simplest strategy relied upon passive confinement for severe seismic events and upgraded door seals but did not assure the performance of active equipment. An intermediate strategy ensured the function of the high-efficiency particulate air (HEPA) filters and exhaust fans utilizing local controls and small, dedicated emergency power supplies. The final strategy afforded a broad complement of equipment capable of performing its safety function under EBE loading. Up-front costs for the three options ranged from about $24 million (passive) to about $36 million (simple active) and up to about $82 million (full active). Each option would entail additional costs for future Operations and Maintenance (O&M) on new equipment or surveillance requirements. The objective of the report was to estimate costs at each level of capability; additional evaluation would be needed to determine the exact list of upgrades appropriate to implement the selected option.

9-1 Deliverable 9-1: Risk Assessment of Building 371 Baseline and Alternatives for Consolidation of SNM," Terry Foppe, December 11, 1995.

This report documents an evaluation of the Building 371 baseline condition and of the risk reduction associated with individual alternatives (or upgrades) and with combinations of them. To provide a complete perspective, residues and plutonium (Pu) holdup currently in

buildings other than Building 371 were included. Based on estimates of the relative importance to risk of numerous accident types or sequences, the analyses focussed on seismically induced collapse of building structures assuming seismic events of magnitude significantly greater than their design capability. The evaluation addressed risk to the public (both the maximum off-site individual [MOI] and the population within 50 miles), to the collocated worker, to the worker, and to the environment. Comparisons were made of both potential dose and risk for numerous alternative risk reduction strategies. One key insight from these evaluations involved the importance of dispersible residues to risk.

9-2 Deliverable 9-2: Department Criteria for Evaluation of Proposed Alternatives.

DOE Rocky Flats Field Office (RFFO) worked closely with Kaiser-Hill in evaluating information as it was developed by the 94-3 Program. The criteria that proved to be significant for the evaluation were not separately documented but are an integral part of these conclusions and recommendations (see, for example, conclusions 2, 3, 7, and 9). Among them are the significance attached to the calculated consequences of seismic building collapse at earthquake levels above the adopted EBE notwithstanding the fact that the risk is well within the DOE safety goal. Further, the evaluation was broadened from Building 371 to assess SNM risk from a site-wide perspective, including the risk from Pu holdup. The potential dose from holdup alone (assuming seismic collapse of contaminated buildings) exceeds 25 rem. The operative criteria serve to manage site risk reduction. The overall strategy for reduction of risk to the public is illustrated in Figure 1. Risk reduction is to be achieved through: consolidation of SNM in the most rugged building (371); stabilization and repackaging for interim storage in selected facilities; off-site shipment of hazardous material; and site closure activities (to address Pu holdup). In the figure, options 1 and 2 refer to the Building 371 upgrade and the new passive vault which are equivalent in terms of public risk reduction.

9-3 Deliverable 9-3: Comprehensive Report by the Project Manager with Recommended Course of Action.

This letter, including its enclosure and this table, constitutes the 9-3 report

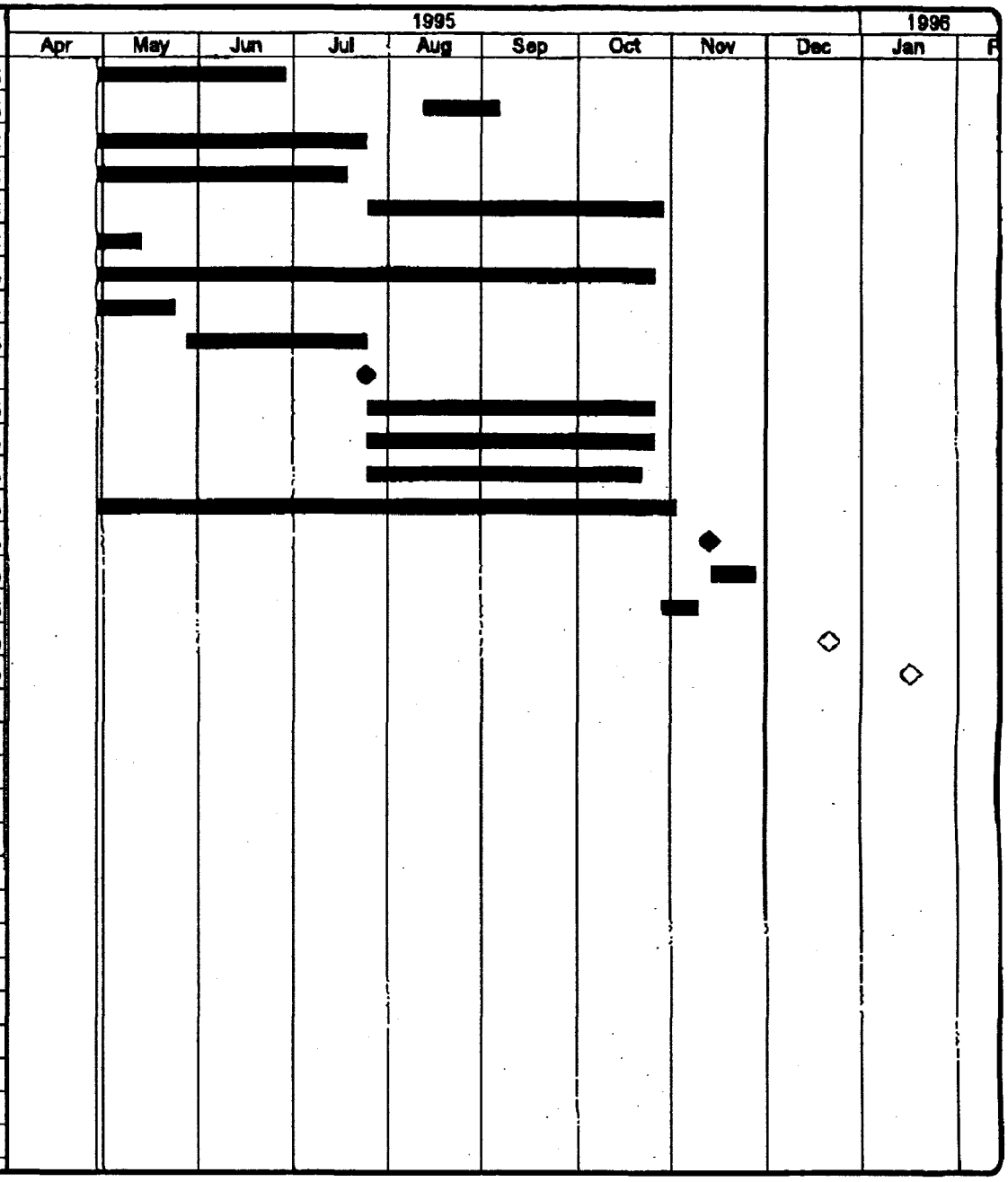
11-1 Deliverable 11-1: Preliminary Criteria for Hazard Classification and Safety Classification at Rocky Flats.

Like the evaluation criteria (9-2), the hazard classification criteria are built into these recommendations and include the identification of PC4 storage capability for Pu oxides and PC3 for the balance of the SNM inventory with the provision that further practical means of reducing residue risk are to be investigated. The safety classification criteria for Rocky Flats are being separately developed through the new authorization basis process to be applied for the near term to Building 371.

TAB

Appendix 1

Task Name	Start	End
Task 1A B371 Config. and Loads	01/May/95	30/Jun/95
Task 1B Complete Utility Loads	14/Aug/95	07/Sep/95
Task 2 Safety Systems and Function	01/May/95	26/Jul/95
Task 3A Storage Alternatives	01/May/95	20/Jul/95
Task 3B Storage Alternatives	27/Jul/95	30/Oct/95
Task 4A Ground Motion Definition	01/May/95	15/May/95
Task 4B Ground Motion Report	01/May/95	27/Oct/95
Task 5 Review Records	01/May/95	26/May/95
Task 6A Stage 1 Evaluation	30/May/95	26/Jul/95
Project Status Review	**26/Jul/95**	**26/Jul/95**
Task 6B Stage 2 Evaluation	27/Jul/95	27/Oct/95
Task 7 SSC Evaluation	27/Jul/95	27/Oct/95
Task 8 Config. and Performance	27/Jul/95	23/Oct/95
Task 9 Evaluation Criteria	01/May/95	03/Nov/95
Task 9 Recommendations	14/Nov/95	14/Nov/95
Task 10 Department Decision	15/Nov/95	28/Nov/95
Task 11 Preliminary Hazard Criteria	30/Oct/95	10/Nov/95
Task 11 Submit IPP to DOE HQ	22/Dec/95	22/Dec/95
Submit IPP to DNFSB	**17/Jan/96**	**17/Jan/96**



Enclosure 2