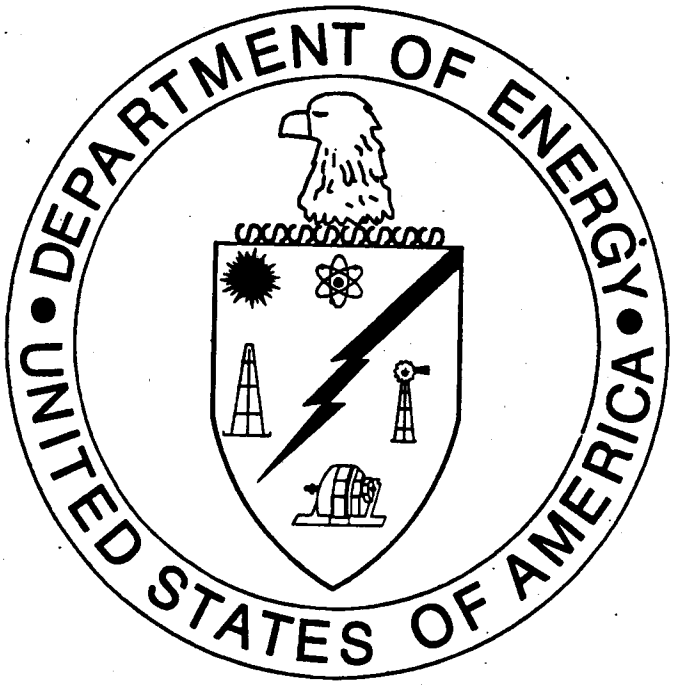
FACILITY UTILIZATION STRATEGY

FOR THE

SAVANNAH RIVER SITE

CHEMICAL SEPARATION FACILITIES



DECEMBER 1995

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Facility Utilization Strategy for the Savannah River Site
Chemical Separation Facilities

I. Summary

The strategy for operation of the chemical separation facilities (F-Canyon and H-Canyon facilities) at the Savannah River Site was evaluated to assess the most effective approach for implementing the material stabilization activities described in the IMNM-EIS. The evaluation also considered the potential future actions to stabilize offsite nuclear materials and the capability to accommodate potential future Department of Energy missions for which these facilities may be considered as alternatives.

Three basic strategies were evaluated consisting of a baseline plan of continuing operation of both canyon facilities, consolidation in F-Canyon facilities, and consolidation of activities in H-Canyon Facilities. Key factors considered in the study include the impacts on meeting DNFSB Recommendation 94-1; cost, risk and environmental, safety and health impacts; consistency with U.S. nonproliferation policies; and flexibility to accommodate potential future missions.

Based on the evaluation, the recommended strategy is to consolidate to the F-Canyon facilities with no startup of those parts of the H-Canyon and HB-Line that are currently not operating. This approach provides significant cost savings, and other advantages with minimum or no adverse impacts on current stabilization commitments and the capability to deal with potential future missions. It provides additional confidence that the existing stabilization commitments can be met since it will not require a large infusion of trained and qualified personnel that would otherwise be required to operate multiple facilities. Furthermore, focussing limited financial and personnel resources on F-Canyon operations will provide greater confidence that the facilities can be maintained in a safe condition in a decreasing budget environment. This approach would also provide adequate flexibility in the near term to allow the Department to revert back to a two-canyon approach if decisions expected to be made over the next year require additional separation facility capacity at the Savannah River Site. Based on the mix of likely future missions, the operation of a single canyon appears to be a more optimum strategy than potentially operating both canyons at full capacity for a shorter duration since it would potentially avoid a major dislocation in employment and facility management when these missions are near completion.

Near term employment impacts at the site from implementation of the recommended strategy are expected to be minimal and a phased approach to transition of the H-Canyon from its current state to a de-inventoried standby condition over a period of about 5 to 6 years is proposed.

Also, the basis for selection of the preferred stabilization method for the Mark-16 and -22 fuel and other aluminum-clad targets is presented. The preferred alternative for these materials is chemical processing with subsequent blend-down of the recovered highly enriched uranium to

low enriched uranium. This approach results in removal from wet storage and stabilization of these materials two to five years sooner than the dry storage alternative thus reducing environmental, health and safety vulnerabilities associated with the wet storage of failed fuel and meeting the DNFSB Recommendation 94-1 commitment for stabilization of this fuel. Processing and blending to low enrichment also results in incremental cost savings and eliminates the large uncertainties associated with the ultimate disposition of this material when compared to the nonprocessing options.

II. Introduction

This document presents an evaluation of various operational strategies for the nuclear material chemical separation and storage facilities at the Savannah River Site (SRS) (F- and H-Canyon facilities) in the context of the material stabilization actions proposed in the Interim Management of Nuclear Materials (IMNM)-Final Environmental Impact Statement (EIS), dated October 1995. The purpose of the evaluation was to assess the most effective facility utilization strategy for these stabilization activities in light of the continuing budget pressures and limitations on the availability of trained and qualified personnel. DOE evaluated three strategies: (1) the current SRS Baseline Plan (using F- and H-Canyons), (2) consolidation of activities in F-Canyon, and (3) consolidation of activities in H-Canyon. The candidate strategies were also evaluated with respect to potential future actions to stabilize offsite nuclear materials and the capability to accommodate potential future Department of Energy (DOE) missions for which these facilities may be considered as alternatives. The report provides a summary of these analyses and reviews, including the conclusions and their rationale. Attachment 1 to the report provides the detailed analyses and data used in reaching these conclusions. Also, this document, in Attachment 2, provides the additional review for the decision-maker, of issues associated with the identification and selection of a preferred alternative for the stabilization of the Mark-16 and -22 fuels and other aluminum-clad targets discussed in the IMNM-EIS.

III. Background

The Final IMNM EIS, issued October 20, 1995, was prepared in order to assess the potential environmental impacts of actions necessary to manage nuclear materials at the SRS for a period of about 10 years, while decisions on their ultimate disposition are made and implemented.[1] The most critical management activity involves stabilization of materials at the site that are not suitable for storage in their present form or location as identified in the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 94-1 and several DOE vulnerability studies. The EIS identifies preferred alternatives for management, including stabilization and storage for most of these materials.

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[1]A previous EIS, "F-Canyon Plutonium Solutions Final EIS", was issued December 1994, considered the stabilization of certain plutonium solutions of special concern to the Department.

The management of the materials covered in the EIS involves utilization of various processing and storage facilities at the site and, for a number of these materials, the preferred alternative for stabilization can be achieved through the use of several different groups of facilities. The environmental impacts of these different approaches are described in the EIS. In developing the implementation plan for the DNFSB Recommendation 94-1, the Department assumed for planning purposes utilization of both canyon facilities. In light of the need for a large infusion of trained and qualified personnel to achieve the timely restart of the facilities identified under this two canyon strategy and the uncertainty in future budget resources to support their safe operation for the duration of stabilization activities, the Department initiated a study of facility utilization strategies to determine if the stabilization activities could be accomplished effectively through consolidation to a single canyon. This study included an evaluation of potential future missions, including consideration of the potential receipt of off-site materials for stabilization and other missions, to provide an integrated approach to determine the optimum facility strategy.

The key factors considered in the study include:

(1) DNFSB Recommendation 94-1 impacts. This factor considers the ability of the different strategies to meet the stabilization commitments in the Department's Implementation Plan for DNFSB Recommendation 94-1.

(2) Cost. This factor identifies the annual costs for the canyon facilities over the next ten years for each option based on historical information for the existing facilities and estimates for the limited additional facilities required, such as the vitrification capability in F-Canyon and the new Actinide Packaging and Storage Facility. The costs include funding for upgrades required for safe operation for the period needed to complete the stabilization actions. These upgrades would improve the reliability of the canyon ventilation systems and improve fire protection.

(3) Risk and environmental, safety and health impacts. These potential impacts are identified in the IMNM-EIS. The estimated overall impacts are low, although differences between strategies were highlighted.

(4) Nonproliferation issues. Consistency with U.S. nonproliferation policies are assessed for each strategy.

(5) Flexibility to accommodate potential future missions. Each strategy was reviewed with respect to its ability to accommodate potential future missions from the standpoint of both capability (feasibility to conduct the mission) and capacity (ability to meet schedule and throughput requirements). Emphasis was placed on those missions currently judged as having a reasonable likelihood of being implemented at the Savannah River Site.

IV. Scope

The scope of the activities considered in the study included: (1) missions currently being conducted in the facilities and those analyzed in the IMNM-EIS, which are considered as the planned activities; and (2) possible future missions including potential stabilization of off-site materials and potential new missions which are in various stages of development. These are described in more detail below.

A. Savannah River Site Planned Activities

The study focused on the management of the Savannah River Site materials covered in the IMNM-EIS, current operations to purify plutonium-238 in the HB-Line, and stabilization of the F-Canyon plutonium-239 solutions in FB-Line. The materials covered by the EIS are shown in Table A.1-1 in Attachment 1 and include both stable materials and those which are candidates for stabilization or are needed for programmatic purposes. The IMNM-EIS identifies preferred alternatives for all the materials. These alternatives involve continued storage for the stable materials and, for the most part, utilization of existing facilities to process those materials that are candidates for stabilization and those needed for programmatic purposes.

DOE's preferred alternative identified in the IMNM-EIS for the Mark-16 and -22 fuels and other aluminum-clad targets was Continuing Storage (No Action). No Action was recommended at the time because DOE elected to perform a further review of costs, schedules, and the technical uncertainty of dry storage techniques for failed fuel before advancing a proposal on management options. The additional review was prompted by public comments that DOE received on potential alternatives to technologies involving chemical dissolution. This review, documented in Attachment 2 of this report, is intended to provide the decision maker sufficient information on which to base designation of a preferred stabilization alternative. The review indicates that processing of the Mark-16 and -22 fuels and other aluminum-clad targets as compared to dry storage is the preferred alternative for stabilization of these materials. The rationale for this conclusion is described in Attachment 2.

B. Potential Future Missions

Critical to evaluating facility utilization strategies is an understanding of potential future missions, including potential stabilization of offsite 94-1 materials that could be accomplished using the capabilities of the separations facilities at SRS. Table 2-1 of Attachment 1 includes a compilation of pending departmental material stabilization and/or disposition decisions potentially involving utilization of SRS canyons and associated facilities. The table presents the quantities and expected availability of materials for which SRS handling and/or processing capability is a reasonable alternative under consideration. Appendix A of Attachment 1 describes each potential mission, including the facilities which would be utilized, the expected decision date, the dates when each mission would be implemented, and the status of the

decision-making process (i.e., the current schedule for National Environmental Policy Act documentation).

In assessing the current status of the likelihood of these missions, it is expected that the technical study examining alternatives for stabilization of existing Rocky Flats Scrub Alloy will indicate that Savannah River has the optimum capability for stabilization of this material. In addition, the Savannah River canyons may be proposed as the preferred alternative for a portion (24-40 tons) of the highly enriched uranium (HEU) material identified for blend down in the HEU Disposition EIS.[2] The canyons also remain a potential alternative for processing a portion of the foreign research reactor fuel, if it is to be received, and for disposition of surplus weapons-usable plutonium. Utilization of the canyon facilities for the other missions identified in Table 2-1 are considered less likely at this time or, as in the case of the material proposed for inclusion in a Site Specific Fuel Management EIS, it is too early in the decision making process to estimate a probable outcome. For example, the Department is assessing the technical feasibility of alternative methods to reprocessing for preparing spent aluminum-clad fuel for ultimate disposal (e.g., dissolution followed by vitrification, melting and dilution, and consolidation and poisoning).

V. Description of Cases

DOE evaluated three primary strategies that would involve the use of the canyon facilities for near-term management of nuclear materials. Additionally, in order to evaluate the capability of the three primary strategies to accommodate various combinations of the more likely potential missions, a number of subcases were analyzed as described in Attachment 1. The following is a brief description of each primary strategy.

A. SRS Baseline Plan

The SRS Baseline Plan is the plan submitted by DOE to the Defense Nuclear Facilities Safety Board (DNFSB) in response to Recommendation 94-1, as reflected in the "SRS Integrated Stabilization Management Plan (ISMP)", Revision 2, dated October 10, 1995. The Baseline Plan includes the management strategy for all nuclear materials at SRS that are within the scope of DNFSB Recommendation 94-1 and which are included within the scope of the Final EIS on the Interim Management of Nuclear Materials. The management strategy includes the use of both F-Area and H-Area facilities at the SRS. The strategy is composed of the preferred stabilization alternatives for nuclear materials as identified by DOE in the Final EIS and the preferred stabilization alternatives for the Mark-16 and Mark-22 fuels and other aluminum-clad targets as discussed in Section IV above. The nuclear materials and management activities included in the Baseline Plan are:

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[2]Draft EIS, "Disposition of Surplus Highly Enriched Uranium (HEU)", October 1995.

(1) Plutonium-239 solutions in F-Canyon would be processed to metal using the FB-Line facility;
(2) Operations to purify and convert plutonium-238 materials to an oxide would continue in HB-Line to support NASA;
(3) Plutonium-242 solutions in H-Canyon would be processed to purified oxide using the Phase III portion of the HB-Line facility;
(4) Americium and curium solutions would be vitrified upon the installation of equipment in the space currently occupied by the Multi-Purpose Processing Facility (MPPF) in F-Canyon;
(5) Mark-31 targets would be processed in F-Canyon and the recovered plutonium converted to a metal in FB-Line;
(6) Failed Taiwan Research Reactor (TRR) fuel and a failed canister of metal slugs from the Experimental Breeder Reactor (EBR)-II would be processed in F-Canyon and any recovered plutonium converted to a metal in FB-Line;
(7) Neptunium-bearing solutions and nine (9) obsolete reactor targets would be processed to a purified oxide using H-Canyon and the Phase II portion of the HB-Line facility;
(8) Plutonium-239 solutions in H-Canyon would be processed to an oxide using the Phase II portion of HB-Line;
(9) Plutonium-bearing vault materials would be stabilized using a combination of facilities and techniques: (i) stable metal forms would be repackaged in FB-Line upon installation on a new glovebox, (ii) high purity oxide would be heated and repackaged in a new Actinide Packaging and Storage Facility, and (iii) unstable forms containing reactive or corrosive compounds would be dissolved in one of the canyons or B-Lines and converted to a purified form, either metal (FB-Line) or oxide (HB-Line);
(10) Mark-16 and Mark-22 fuel would be processed in H-Canyon and the recovered highly enriched uranium (HE) blended with existing inventories of natural or depleted uranium at SRS to produce a low enriched uranium (LEU) solutions, which would be stored or converted to an oxide in FA-Line;
(11) Other irradiated aluminum-clad targets from SRS reactors would be dissolved in H-Canyon and the resulting solutions transferred to the high level waste tanks for subsequent vitrification in the Defense Waste Processing Facility (DWPF).

Attachment 1 (Appendix C, Section C.1) contains an integrated schedule showing the major activities and facilities involved in the SRS Baseline Plan.

B. Consolidation of Activities in F-Canyon (No H-Area Restarts)

Under this scenario, rather than start-up the H-Canyon and the Phase II portion of HB-Line, DOE would complete the planned activities in HB-Line to stabilize Pu-238 and Pu-242 solutions and process the following materials in F-Canyon and its associated facilities as described below:

(1-6) For these materials, the activities would be the same as described in the Baseline Plan;

(7) Solutions and the nine obsolete targets containing neptunium would be processed in F-Canyon and vitrified, subsequent to installation of the necessary equipment. The solutions would be transported subject to the procurement/development of a shipping container and minor modifications to each canyon for loading and unloading;

(8) Plutonium-239 solutions in H-Canyon would be transported to F-Canyon and converted to a metal in FB-Line or to glass in the MPPF, subject to the procurement/development of a shipping container for the solutions and minor modifications to each canyon for loading and unloading;

(9) Plutonium-bearing vault materials would be stabilized in much the same manner as in the Baseline Case, except that H-Canyon and HB-Line (Phase III portion) would be used only in the stabilization of materials that contain plutonium-238. All other plutonium-bearing materials would be stabilized by processing or repackaging in F-Canyon, FB-Line and a new Actinide Packaging and Storage Facility;

(10) Mark-16 and Mark-22 fuel would be processed in F-Canyon and the recovered HE blended with natural or depleted uranium to produce LEU solutions which would be stored or converted to an oxide in FA-Line; and,

(11) The other aluminum-clad targets from SRS reactors would be dissolved in F-Canyon and transferred to the high level waste tanks for subsequent vitrification in the DWPF.

Attachment 1 (Appendix C, Section C.2) contains an integrated schedule showing the major activities and facilities involved in the consolidation in F-Canyon strategy (No H-Area Restarts).

C. Consolidation of Activities in H-Canyon

This case involves the same approach as the Baseline Plan for all of the nuclear materials, except plutonium-bearing vault materials. After processing Mark-31 targets, failed TRR fuel, and a failed canister of EBR-II slugs, the F-Canyon PUREX process would not be used. No plutonium-bearing vault materials would be dissolved in F-Canyon or FB-Line for stabilization. Instead, all plutonium-bearing vault materials requiring chemical stabilization would be processed in H-Canyon and HB-Line. Use of the FB-Line would continue for examination and inspection of plutonium-bearing vault materials, repackaging operations and for vault storage until a new Actinide Packaging and Storage Facility could be constructed. Only limited F-Canyon operations to support FB-Line stabilization activities would be performed after vitrification of the americium and curium solutions.

Attachment 1 (Appendix C, Section C.7) contains an integrated schedule showing the major activities and facilities involved in the consolidation in H-Canyon strategy (Early F-Canyon PUREX shutdown).

VI. Comparison of Cases

In order to evaluate the relative advantages or disadvantages of consolidating future stabilization activities at SRS into a single canyon facility, DOE compared each of the other two cases to the Baseline Plan. Attachment 1, provides a detailed analysis of the cases relative to costs, DNFSB 94-1 impacts, and flexibility to accommodate future DOE missions. In addition, the risk and environmental, safety and health impacts identified in the IMNM-EIS were compared for each strategy, along with an assessment of nonproliferation issues. A summary comparison of the results of the detailed analysis is shown in Table 1.

A. DNFSB Recommendation 94-1 Impacts

The consolidation of future stabilization activities in F-Canyon could result in a delay of up to 8-months in the stabilization of plutonium-239 solutions stored in H-Canyon. DOE is exploring opportunities to expedite the transfer of the solutions from H-Canyon to F-Canyon, thereby accelerating the stabilization of the Pu-239 solutions and potentially maintaining DOE's current schedule commitment. Processing and stabilization of neptunium-bearing solutions and targets would potentially begin 8 months sooner than the Baseline Plan. All other current schedule commitments would be maintained using this strategy.

In contrast to consolidation of activities in F-Canyon, consolidation of future activities in H-Canyon would have significant impacts on current DOE commitments. This would delay stabilization of: (a) neptunium solutions by 15 months, (b) plutonium-bearing vault materials (repackaging) by 8 months, (c) plutonium-bearing vault materials (requiring chemical processing and stabilization) by 8 months, (d) Mark-16 and Mark-22 fuel by 18 months, and (e) plutonium vault materials (processing of sand, slag and residue materials) by 31 months. Due to the number and extent of activities impacted, acceleration of activities to meet existing schedule commitments would be impractical.

The Baseline Plan is the source of the Departmental commitments in response to DNFSB Recommendation 94-1. Recent experience with restart of the F-Canyon and FB-Line has raised concerns with our ability to meet the facility restart schedules identified in the Baseline Plan with the limited available cadre of trained and qualified personnel. Therefore, an approach enabling the Department to focus its limited resources on a smaller number of facilities, by consolidation of activities in F-Area, whose facilities are operating, will potentially result in greater confidence in meeting stabilization commitments.

B. Cost

DOE determined that consolidation of future stabilization activities in F-Canyon could result in a projected cost savings over the next ten years of approximately $168 million and would approach $200 million if efforts were successful to accelerate removal of nuclear materials from H-Canyon. Savings could also be achieved from consolidation of future activities in H-Canyon, but are projected to be substantially less at approximately $43 million.

Recent startup experience involving the HB-Line, F-Canyon, and FB-Line facilities indicates that projected costs for startup of similar activities or facilities tend to be underestimated. Therefore, consolidation of activities in F-Canyon could potentially result in cost savings in addition to those discussed above by allowing DOE to avoid the need to startup dissolution operations in H-Canyon or the Phase II portion of the HB-Line facility.

C. Environment, Safety and Health Impacts

The potential environment, safety and health impacts of the activities associated with each strategy were evaluated in the Final IMNM-EIS. The three strategies are representative of the scenarios involving possible combinations of management alternatives that were analyzed to estimate cumulative impacts in Chapter 5 of the Final EIS. Each strategy represents a slight variation to the preferred alternative identified in the Final EIS, and would result in the same relative level of impacts.

The cases all involve use of the large canyon facilities and there would be very small, but measurable amounts of radionuclides and hazardous chemicals released through air and water emissions. None of the emission levels would exceed existing SRS environmental permits or regulatory standards. Estimated exposures to the public and workers from operations would be comparable among the cases and well below limits established by DOE and other agencies. The environmental impacts are forecasted to be less than prior years of peak canyon operations due to the limited amount of material requiring stabilization and the much lower processing rates anticipated.

Consolidation in F-Canyon would require neptunium and plutonium solutions to be transported from H-Canyon to F-Canyon for stabilization. Although transport of solutions has not historically occurred between the canyons, the solutions are similar to high level liquid waste that has been transported onsite at SRS and other sites, both domestically and internationally. Although technical details must be finalized (type of container, limitations on content, special precautions during movement, etc.), the level of safety would be commensurate with that afforded by domestic (DOT, NRC) and international (IAEA) regulations governing the packaging and transport of hazardous materials. Therefore, it is expected that the risks associated with the transfer of the solutions would be low.

Consolidation in H-Canyon would delay the potential removal of Mark-16 and -22 from the basins by approximately 18 months due to the level of restart efforts required for H-Canyon concurrent with other stabilization activities. Some additional physical degradation of the fuel would occur due to the delay, extending health and safety vulnerabilities as discussed in Attachment 2.

The greatest risk posed to the environment, workers or the public would be from a major facility related accident that could occur during certain stabilization activities (dissolving, processing, vitrification, etc.). However, the materials are susceptible to many of the same accidents now (e.g., fires, unexpected chemical reactions, earthquakes) and for some, their

physical condition is degrading into forms whose chemical behavior may be unknown and unpredictable. Upon completion of stabilization actions, the risk associated with continued storage of the nuclear materials is expected to be significantly reduced. The short-term increase in risk is negligible in comparison to the significant reduction in risk expected upon stabilization of the materials.

D. Nonproliferation Issues

Each of the strategies evaluated support nonproliferation objectives through the blend-down of highly enriched uranium to a low enriched form that is unsuitable for weapons use. However, consolidation to F-Canyon enhances non-proliferation goals in that the F-Canyon process requires that the HEU be blended down before the fission products are separated from the uranium. This is not the case for the H-Canyon, which produces a purified HEU solution prior to blending.

Each strategy results in the chemical separation and recovery of plutonium-239 in a relatively pure weapons usable form. However, the Secretary of Energy has committed that any weapons-usable fissile materials recovered through stabilization and phaseout operations will not be used for nuclear explosive purposes.[3] This prohibition and commitment would apply to any plutonium-239 recovered at SRS. DOE is also pursuing declassification of information related to the amount of plutonium resulting from stabilization actions at the SRS.

Each strategy would make use of a new Actinide Packaging and Storage Facility (APSF) in F-Area. The new APSF would be designed to meet the storage and surveillance requirements of the International Atomic Energy Agency (IAEA). In the interim, the Department is continuing a dialog with IAEA representatives concerning the potential for international safeguards and inspections being placed on the nuclear materials, prior to construction of the new storage facility. This would further U.S. nonproliferation objectives (once they are in a form and storage location which is suitable for safe, effective monitoring).

E. Flexibility to Accommodate Future Missions

Consolidation in F-Canyon retains the capability to support all potential future missions, albeit at a more limited capacity than the two-canyon case. However, a review of this strategy for various combinations of the future missions having the greatest likelihood of using the canyon facility capability (Cases I-A, I-B, and I-C in Attachment 1) indicates that, while limitations in capacity would extend the time for some of these missions, the timing requirements for most missions could be accommodated. The expected delays would not influence one's decision to use the F-Canyon if it was determined to be the best alternative.

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[3]Memorandum to the Secretary of Energy from Assistant Secretary of Energy for Defense Programs and Assistant Secretary for Environmental Management, "ACTION: Commitment to Prohibit the use of Plutonium-239 and Highly Enriched Uranium Separated and/or Stabilized During Facility Phaseout, Shutdown and Cleanout Activities for Nuclear Explosive Purposes", December 20, 1994.

According to current schedules, DOE expects to make decisions in early 1997 concerning potential future missions that could involve the canyons. Should Savannah River facilities be selected for a significant number of additional missions, no actions would have been taken by early 1997 that would preclude reverting back to a two-canyon strategy at that point in time. This is discussed further in Section VIII. After the H-Canyon facilities are transitioned to a de-inventoried standby condition, reactivation would be possible, but on a more extended schedule should new missions be identified or a major failure occur with the F-Canyon facilities that requires that capability.

Also, as mentioned briefly above, the Department is continuing to investigate the use of alternate technologies and methods to stabilize and prepare materials for final disposition. If the use of such methods proves to be technically viable and cost effective, it would also provide a backup to the F-Canyon capability for certain materials.

Consolidation in H-Canyon would not provide adequate capability to support the pit fabrication and plutonium disposition missions, would delay initiation of such future potential missions as HEU blend-down and disposition and foreign research reactor fuel processing. Consolidation in H-Canyon also results in limitations in capacity similar to the consolidation in F-Canyon.

Table 1 CANYON CONSOLIDATION VS BASE PLAN DECISION

Decision Factor	Base Plan (2 Canyons)	Consolidate in F-Canyon	Consolidate in H-Canyon
94-1 Commitments	No significant delays in commitments	-Delays H-Canyon Pu solution processing by up to 8 months, although efforts would be conducted to reduce or eliminate this delay.	-Delays: Np solution stabilization 15 months Pu packaging 8 months Pu residue stabilization 8 months Mk-16 & 22 dissolution 18 months Complete processing Sand, Slag & Crucible 31 months Start 16 & 22 dissolution 18 months
Cost (Canyons Only)	10 year cost $2.7B 95 97 98 99 00 01 02 352 315 327 308 291 264 244	10 year cost: $2.5B 96 97 98 99 00 01 02 353 307 308 298 280 241 201	10 year cost $2.6B 96 97 98 99 00 01 02 350 305 319 297 277 264 230
Risk/ES&H Impacts	-Optimum plan for stabilization/facility utilization and minimizing transfers -Overall risk/impact of activities is low	-Must transfer NP and Pu solutions from H- to F-Canyon -Must move HB-Line Pu-238 to 235F - no repackaging until Actinide Packaging & Storage Facility -Overall risk/impact of activities is low	-Delays removal of Mark-16 & 22's from wet storage by 18 months -Overall risk/impact of activities is low
Nonproliferation Issues	HEU blended to LEU	-HEU blended to LEU -F-Canyon process requires blending to LEU prior to separation of fission products	-HEU blended to LEU -H-Canyon produces a purified/ separated HEU solution prior to blending
Flexibility/ Future Needs	-Supports all potential future needs on reasonable schedule	-Supports Rocky Flats Scrub Alloy (RFSA) and HEU blend-down -Retains capability for all other missions may not support optimum schedule, but delays would not effect decision-making.	-Supports RFSA on delayed schedule -Retains fuel processing/HEU blend down capability, but not on reasonable schedule -Eliminates most Plutonium missions

VII. Conclusions

The recommended approach for operation of the Savannah River separation facilities is to consolidate activities in the F-Area facilities with no startup of those parts of the H-Canyon and HB-Line that are not currently operational. This approach would provide significant cost reduction and other advantages with a minimum of adverse impacts on current stabilization commitments, while providing the capability to support likely future missions. Focusing limited financial and personnel resources on F-Canyon operations would provide greater confidence that the facilities can be maintained in a safe condition in a decreasing budget environment. Moreover, consolidation of activities increases DOE's confidence that the existing stabilization commitments can be met.

When looking beyond the current SRS 94-1 activities to the mix of likely future missions, the operation of the F-Canyon for a longer period of time is a more optimal strategy than operating both canyons at full capacity for a shorter duration. This consolidation strategy allows a more orderly facility and manpower transition as missions for these facilities are completed. Finally, this approach provides adequate flexibility in the near term to allow the Department to revert back to a two-canyon approach if decisions expected to be made over the next year require additional separation capacity at the SRS.

Regarding near-term manpower requirements, consolidation in F-Canyon would require staffing in both canyons approaching current levels for several years to complete HB-Line operations, management and transfer of solutions, and H-Canyon transition planning. While detailed staffing profiles for the canyons could only be defined after completion of planning for transition of H-Canyon to a de-inventoried standby state, significant manpower reductions are not expected in the near term (i.e., with the next 1-2 years) as a consequence of implementation of this strategy.

VIII. Strategy Implementation

Implementation of this strategy to consolidate activities to the F-Canyon facilities would be conducted in a phased approach to maintain reasonable flexibility in meeting current and future requirements while focussing limited resources to assure completion of planned stabilization activities safely and expeditiously. This approach would also provide flexibility to accommodate continuing budget pressures brought about by the nation's deficit reduction initiatives.

The first phase would consist primarily of actions to prepare for consolidation. Initially, preparations at the site to start-up the main processing equipment in the H-Canyon as well as the HB-Line, Phase II would be discontinued. Preparations for transfer of the neptunium-237 and plutonium-239 solutions in H-Canyon to the F-Canyon would begin and a detailed plan would be developed for the phased transition to a de-inventoried standby condition with minimum surveillance and maintenance for the H-Canyon. Also, some limited transition activities would be initiated such as flushing equipment not used and placing it in a safe storage configuration after development of standby surveillance and maintenance

requirements. The objective would be during this phase that the current timing for restart (approximately 2 years) would not be significantly degraded. Safety documentation which is nearing completion would likely be finished.

When decisions on future missions are made and the planned operations in HB-Line are completed (both expected in early 1997), the facility requirements to support these decisions would be evaluated to determine if the strategy to consolidate to the F-Canyon remains valid. If so, the H-Canyon facilities would continue transition to a de-inventoried standby condition. Those parts of the facility not required to manage the neptunium and plutonium solutions prior to transfer will be transitioned to a de-inventoried standby state. In this state, all systems required for safe standby of the equipment are maintained and those surveillance and maintenance activities deemed prudent, would be conducted, providing confidence that the facility would remain a viable backup to the F-Canyon. These would include activities such as operation of the ventilation systems, monitoring of effluents, operation of the building sump systems and transfer systems to waste, supply of utilities at a reduced level, operation of required lighting systems, maintenance of the cranes and crane control rooms in an operational state, and selected surveillance and maintenance of major equipment susceptible to degradation. Decisions on required activities will be based on assurance of a safe standby condition and on maintenance of a capability to restart within several years should problems develop with the operation of the F-Canyon.

When the canyon is fully de-inventoried following transfer of the plutonium and neptunium solutions to the F-Canyon (expected in the 2000 time frame), the remaining parts of the H-Canyon would be transitioned to the de-inventoried standby condition. This entire process would be expected to take 5-6 years.