

D&D/REINDUSTRIALIZATION OF BUILDING K-1420 AT THE EAST TENNESSEE TECHNOLOGY PARK

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ABSTRACT

In November 1997, DRS was awarded a \$10M, 3 year, fixed price DOE prime contract to decontaminate BLDG K-1420 at the East Tennessee Technology Park (ETTP). K-1420, an 80,000 sq ft building, was constructed in 1954 and served as the K-25 decontamination facility for gaseous diffusion process equipment. Operations ceased in K-1420 in approximately 1990. K-1420 is currently contaminated with U234, U235, U238, Tc99, Np237, PCBs, heavy metals, and asbestos.

The scope of the DRS contract is to cleanup the facility to industrial reuse standards for future facility reuse. The schedule and sequence of decontamination operations is divided into 6 phases which results in a restored facility, ready for complete tenancy in 36 months after notice to proceed.

The general approach to decontaminating K-1420 is to first survey and clean the office area to facilitate operations management and provide worker amenities. This will be followed by decontamination and equipment removal in the building high bay area, the uranium recovery area, and the basement.

Phase 1 (3 quarters in duration) of the cleanup includes mobilization, documentation approval, full facility characterization, and structural evaluation of the facility. DRS is currently in Phase 1 of the project. Phase 2 (6 weeks in duration) of the project includes reconditioning of certain facility systems, hazardous material removal, roof repair, establishment of a waste processing area, removal/recycle of non-usable equipment and materials, and decontamination of high bay areas. Phase 3 (26 weeks in duration) activities will include removal of special nuclear materials from the building and decontamination of the uranium recovery area (currently a high contamination area). Phase 4 activities will include cleanup operations in the facility basement (currently a high contamination area) and demolition of two out buildings (K-1421 and 1422). Phase 5 activities will include decontamination of the remainder of the building high bay areas and miscellaneous floor and wall decontamination. Phase 6 activities will include verification sampling and preparation of the final facility decontamination report. DRS will then lease the facility from CROET for nuclear related service uses.

INTRODUCTION

The objective of this project is to remove obsolete equipment, systems, and components from Building K-1420, decontaminate the interior of the facility to the identified end point, decontaminate and demolish Buildings K-1421 and K-1422, perform required surveillance and maintenance activities, and package waste to specified waste acceptance criteria, thereby preparing the facility for reuse.

The general approach to D&D of K-1420 is to decontaminate surfaces using non-destructive methods and remove surplus equipment in the high bay, the mezzanine, uranium recovery area, and basement. Paint will be removed from the accessible surfaces of the floor areas down to bare concrete or metal. The walls, structural members, and ceilings will be decontaminated to the end point criteria provided in table B.1. The floors and first 8-ft. of the walls will be repainted after verification by DOE. Inactive piping and electrical conduits will be removed and will be cut and capped on the interior side of each exterior wall. Exterior siding will be left in place in its current condition. Stacks, blowers, and other equipment on the roof will be removed. Decontamination of the roof and exterior building surfaces will not be performed; however, roof defects will be repaired. Each internal area will be decontaminated to the levels identified in the attached table. An interim waste processing area will be established on the West End of the high bay for sizing and packaging waste. Activities such as project management and waste management will be performed throughout the project duration. DRS surveillance and maintenance activities of the facility commenced as soon as the building responsibility was turned over to DRS (May 1998).

PHASE 1 MOBILIZATION, CHARACTERIZATION, AND PLANNING

Mobilization

The project staff has mobilized in the K-1420 facility. Pre-mobilization tasks included formalizing the DRS team, completing subcontracting documents, securing the performance bond, and transferring security clearances for project personnel. Staffing plans were finalized and local hiring efforts and training programs were initiated. During mobilization, interface negotiations between the site M&O, DOE, and DRS were initiated to define relationships to support emergencies and efficient daily operations. The project staff now occupies the K-1420 office area and performs project engineering and management activities from this area. Security procedures have been prepared and site badging of project personnel has been completed.

Facility Characterization

DRS has developed and submitted to DOE documents that define health and safety requirements, quality requirements, the sampling and analysis plan, sampling protocol, and types of analyses. Once these were reviewed and approved, the characterization of Building K-1420 was initiated to provide the information and data needed to safely plan the D&D effort.

Facility characterization has been performed to obtain a complete understanding of the structural, hazardous material, and radiological hazards that will be encountered on a daily basis. As well as being essential to work force health and safety, a full understanding is critical to efficient planning and sequencing of the work. The presence of Resource Conservation Recovery Act (RCRA) and Toxic Substance Control Act (TSCA) hazardous materials and radiological material, including mixed waste, have a significant impact on environmental compliance aspects of waste disposal engineering. Direct radiological surveys and wipe samples were used for uranium detection on surfaces. A limited number of analyses were also performed to determine

the presence of volumetric contamination in materials. Isotopic analyses were performed to quantify radiological constituents and to establish the extent of surface and volumetric radioactive contamination inside equipment, piping, and building components. Asbestos analysis were performed per 29 CFR 1926.1101. Chemical analyses will be conducted per U.S. EPA methodology, such as SW-846.

Project Planning

Concurrent with characterization, the project schedule and project documents were prepared. The initial emphasis is on development and approval of the Sampling and Analysis Plan, and Sampling Health and Safety Plan as discussed above. In addition, a Quality Assurance Plan and the Radiological Protection Program Plan (RPPP) were completed to facilitate turnover of the building to DRS. The Security Plan, Waste Management Plan, Nuclear Materials Control and Accountability Plan, Emergency Preparedness Plan, Surveillance and Maintenance Program Plan, and the East Tennessee Technology Park Interface Document have been prepared and approved. Concurrent with results from the characterization phase, the Decommissioning Plan, Safety Basis Documentation, Decommissioning Health & Safety Plan, Verification Plan, and work packages and permits are in the process of being drafted. The work packages will be prepared throughout project duration, and each work package will be approved prior to work proceeding on the specific task described in that work plan.

Utility Services and System Modification Design

Services, utilities, and equipment will be modified as documented in design packages. The systems will remain in place or be removed as follows, or as determined and agreed upon during the design phase:

Portions of the potable water system will be removed; other portions will be left operational.

Electrical power will be maintained to lighting, cranes, and receptacles. Upgrades to some items may be required. Deactivated switchgear, transformers, and equipment will be removed. Distribution power may be left for future loads.

The criticality alarm system will remain.

Plant air will remain for the clarion horns and sump pumps.

The bridge cranes and cables will remain.

The groundwater sumps, pumps, and alarms will remain.

The fire suppression system will remain in operation.

The steam system will be cut and capped at the entrance to K-1420.

Portions of the ventilation system, which contains 108 stacks, blowers, and pipes, shall be removed.

The gas lines shall be purged, cut, and capped at the building entrance.

Most wastewater piping will be removed inside the facility and capped at the facility exit. Most of the plumbing and building drains will be left operational.

Most equipment inside K-1420 will be removed, with the exception of the spray booth, glove boxes, hydroblast room, and western effluent treatment system.

Inactive piping and conduit, not encapsulated in concrete, will be removed.

Permanent caps will be placed over inactivated drains.

Plans for modification to access, parking, and fencing will be prepared to efficiently move into the critical path activities identified on the project schedule.

PHASE 2 ESTABLISH A WASTE PROCESSING AREA, REPAIR ROOF, AND RADIOLOGICALLY RELEASE THE EAST END OF K-1420

Establish a Clean Work Area

The intent of the initial area decon effort is to establish a clean area, free of hazardous materials and radioactive contamination to allow unrestricted access, free of the requirement to don protective clothing. The clean area will be used as the staging area from which to move to more complicated areas to continue facility decontamination. The first area to be released for project use will be the laboratory area. Equipment will be removed from this area; walls and floor area will be decontaminated and hazardous material removed. Following verification by DOE, the area will be repainted and configured to support project objectives. Asbestos is present in the office area, above ceiling tiles, in the boiler room, and in pipe chases. ACM removal will be coordinated to minimize the impact to project office operations.

Establish Waste Processing Area

Project waste minimization and management operations will be optimized by establishing a waste processing area. The high bay west end will be set up to allow for a) surveys for material release, b) decontamination, 3) waste treatment, and 4) improved packaging for disposal. Equipment that may be installed in this area includes a compaction press with associated HEPA filtration, a shear and saws to be used to size piping and materials, appropriate contamination detection and monitoring equipment, a waste treatment station, and sorting tables. Space will be allocated for material Laydown, shipping container storage and boxing stations for various waste streams.

Reconditioning of Existing Facility Systems

The building fire protection system will be evaluated and repaired or augmented with temporary systems to protect the workers and the environment from fire hazards. An evaluation, to be reviewed and approved by DOE, will be prepared using a fire hazard analysis format. Alarm systems will be tested and repaired to provide notification to the work force of general evacuation requirements. These include fire, unexpected radiological conditions, and inadvertent criticality alarms. Cranes will be load tested and maintained to support work activities. Building lighting and electrical systems will be upgraded to support the D&D operations. Portions of the ventilation system will be repaired, as needed, and made operational. This activity may require system modification and permitting and will be driven by the need to minimize the work force exposure to airborne contamination and heat stress. Structural deficiencies will be evaluated.

Remove Roof Equipment and Repair the Roof

Identified structural concerns with the roof will be repaired. It is assumed that 5% of the existing roof area requires repair. Should this assumption be in error, additional quantities of repair will be completed in accordance with contract change procedures. Prior to roof repair, equipment on the roof must be removed and holes patched. The areas requiring repair will be prepared by removing the deficient materials. Once prepared, construction crafts can perform the needed repairs. The roof surface will be made watertight and roof drains verified to be operational. This is required to minimize the spread of contamination from water leaking onto noncontaminated areas in the building.

Roofing materials will comply with the National Roofing Contractors Manual, or equivalent industry standards, and will be submitted to DOE for approval. The anticipated materials include gypsum board, asphalt primer, and roofing felts, as required to be compatible with the existing materials.

Remediate East End

The East End will be decontaminated and released in order to remove Contamination Area postings. Engineering controls will be put in place to prevent the spread of contamination from other areas in K-1420 to this area. Access to and from the East End will be through the office area.

PCB and Asbestos Contamination Removal and Disposal

The existence of PCBs and asbestos presents a hazard to the work force and will be removed as a priority effort. The sequencing of hazardous material removal is based on removal of radiological contamination prior to the generation of hazardous waste to minimize the generation of mixed waste. The Waste Management Plan will define the process for removal and disposal of hazardous material. During the PCB and asbestos removal tasks, a temporary personnel asbestos decontamination station will be constructed in the change room. Personnel will doff protective clothing prior to entering the change room and temporary decontamination showers will be installed that provide for collection and sampling of waste water prior to disposal.

ACM removal techniques and decontamination procedures will be performed according to NESHAPS regulations, as well as 29 CFR 1926.1101. Accessible asbestos will be removed. Transite siding on K-1420 will not be removed.

PCB residuals will be decontaminated to 40 CFR 761.125 limits (10 ug/100 cm² for exposed surfaces and 100 ug/100 cm² surfaces to be encapsulated)

Removal and Disposal of Hazardous/Contaminated Materials

The building contains hazardous materials left from previous operations. The Characterization Report or Decommissioning Plan will identify these materials and define the process for removal. The Waste Management Plan will define the process for waste packaging and turnover to DOE for disposal. The material may be classified as waste as soon as it is disturbed and may be subject to RCRA handling and controls that will specify time duration for disposal. Therefore, it is significant that the Waste Management Plan be in place that to resolve issues affecting the timely disposal of this material. Also, several options for disposal or reuse may need evaluation prior to the selection of the best project alternative.

All wastes will be characterized using appropriate EPA methodology, including Toxicity Characteristic Leaching Procedure (TCLP) using SW-846 analytical methods, or process knowledge determinations. Should on site treatment of waste be required to minimize waste disposal cost, DRS will provide a recommended approach and cost proposal to perform treatment.

Tanks, piping, and process equipment will be cleaned to meet RCRA cleanup release criteria. Cleanup criteria for mercury, lead, nitric acid, sodium hypophosphate, sodium hydroxide, and other compounds are specified in 40 CFR 261.

Reuse, Recycle, and Disposal of Equipment and Materials

Equipment and materials to be removed, as defined in project documentation, will be inventoried, removed, and packaged for reuse, metal recycle, or disposal. The decision to decontaminate items will be based on the cost effectiveness of decontamination and salvage, disposal as noncontaminated waste, or disposal as low-level radioactive waste. Removal of excess equipment will simplify the general area decontamination process. The hydroblast room and associated equipment will be left in place.

Decontamination

Instructional work steps will be prepared for each task and will describe the initial radiological surveys, personal protective equipment, containment and work area establishment, ventilation requirements, temporary shielding, system draining, decontamination techniques, component and insulation removal, and post-work decontamination and surveys. The primary methods of decontamination will consist of vacuuming, wiping, and scrubbing. Telescoping poles will be used for hard-to-reach areas. Consideration will also be given during the planning process, to using alternative decontamination methods such as chemical cleaners and mechanical removal methods. In addition to completing surface surveys, radiological contaminants will be assayed in-situ with NaI or HpGe detectors. Concentrations of hard-to-detect nuclides will be determined

from scaling factors, which will be determined from lab analyses during the characterization phase. Fissile material will be recovered and decontamination wastes will be packaged and staged for disposal as LLW or MLLW, as applicable. Soda blasting and strippable coatings may be used on isolated areas, rather than globally, to minimize the secondary waste volumes.

Radiological End Point

The radiological end point will be to ensure that building floors, walls, ceilings, and remaining equipment have less than the **removable** surface contamination limits specified in DOE Order 5400.5 and supplemented with NRC Regulatory Guide 1.86 for TRU contamination. Areas of fixed contamination will not be decontaminated to the limits of DOE Order 5400.5. Physical and administrative controls may be used to limit access to areas of fixed contamination. A supplemental release criteria is the use of a pathways analysis to calculate the Total Effective Dose Equivalent (TEDE), using the DOE recommended RESRAD-BUILD code. The TEDE above background (excluding radon) to a building occupant will be less than 15 mrem per year upon completion of the DRS contract. IVC verification of in-process milestones will be completed within 45 days of DRS notification. DOE will provide up to 2 verification evaluations for any given area. If the end point criteria are not satisfied within the 2 evaluations, additional DRS and/or IVC verification sampling may be required and DRS shall be responsible for the cost of the additional sampling.

PHASE 3 URANIUM RECOVERY AREA, MEZZANINE, MERCURY RECOVERY ROOM, BLENDING ROOM, AND SCRUBBERS

Mercury Contamination Removal and Disposal

Mercury presents a hazard to the work force and will be removed as a priority effort. Mercury contaminated piping and equipment will be disassembled and gross deposits collected in approved packaging. Equipment with entrained Hg deposits will be sectioned and packaged for future retort or stabilization.

Mezzanine

This high contamination area (HCA) contains 6 nitric acid tanks and provides roof access. The tanks will be removed and taken to the waste processing area. An evaluation will be performed on the RCRA applicability of these tanks.

Uranium Recovery Area

This HCA contains many pieces of process equipment that present material holdup concerns. Vessels will be opened and verified empty or emptied by vacuuming or scraping. Residues will be collected and assayed. The slab tanks, feed columns, extraction/evaporator system, calciner room, centrifuge, and remaining uranium recovery equipment will be disassembled and moved to the waste processing area. The fluoridation facility consists of the flame reactor tower, scrubbers, blenders, hoppers, ash receiver and miscellaneous equipment. Vessels will be opened to verify the removal of uranium materials. Materials will be moved to the waste processing area. At the completion of equipment removal, the lead paints will be removed, followed by final decontamination of the walls.

Highly enriched uranium (HEU) will be removed using mechanical methods including draining, scraping, and vacuuming material into criticality safe vessels and containers, provided by DOE, and this material will be transferred to DOE. Procedures will be developed to address specific work tasks involved in the safe recovery of fissile materials, trained fissile material handlers will be utilized, material accountability will be employed, and DOE approval will be obtained prior to fissile material handling.

Modifications to Access, Parking, and Fencing

Following the removal of SNM and classified material, the security requirements can be downgraded. The modifications to the site fencing and security arrangements to support efficient access to K-1420, while maintaining appropriate security, will be identified in the Security Plan. DRS intends to configure the project site to allow for access to K-1420 without accessing the ETTP property. This will improve the efficiency of work force access and material deliveries and will allow for efficient commercial business traffic access.

Radiological End Point

The radiological end point will be to ensure that building floors, walls, ceilings, and remaining equipment have less than the **removable** surface contamination limits specified in DOE Order 5400.5 and supplemented with NRC Regulatory Guide 1.86 for TRU contamination. Areas of fixed contamination will not be decontaminated to the limits of DOE Order 5400.5. Physical and administrative controls may be used to limit access to areas of fixed contamination. The TEDE above background (excluding radon) to a building occupant will be less than 15 mrem per year upon completion of the DRS contract. IVC verification of in-process milestones will be completed within 45 days of DRS notification. DOE will provide up to 2 verification evaluations for any given area. If the end point criteria are not satisfied within the 2 evaluations, additional DRS and/or IVC verification sampling may be required and DRS shall be responsible for the cost of the additional sampling.

PHASE 4 BASEMENT AND OUTER BUILDINGS

Basement Space

This HCA consists of contaminated platforms and equipment, as well as building surfaces. The general approach for the basement area is to remove the west elevator and use the hatchway for hoisting equipment up to the waste processing area. Material collection and paraffin columns will be removed and sectioned on the main floor for packaging. The pump station will be dismantled and processed in the waste handling area. The tunnel rails and the second elevator components will be removed and sectioned. The working platforms will be left in place to facilitate surveillance and maintenance of the sumps. Decontamination will be performed sufficiently such that the area can be radiologically downgraded from an HCA to a CA.

Building 1421

The incinerators and stack will be dismantled and moved to the waste processing area, sectioned, and packaged as LLW or mixed waste, depending upon the characterization data. The asbestos will be removed and packaged, and the cinder block building will be demolished to slab. The slab will be decontaminated or removed for disposal. Piping will be cut and capped at the building boundary.

Building 1422

Asbestos will be removed and the small gas bottle storage building will be demolished to slab. The slab will be decontaminated or removed for disposal.

Tank Farm

Tanks will be flushed of residuals and released per the 40 CFR debris rule. The flush solution will be disposed in accordance with engineered procedures based on characterization data. This may include filtering, chemical neutralization or use of the on-site Central Neutralization Facility. The tanks will be moved to the waste processing area for sectioning and proper disposal.

Radiological End Point

The basement tunnels will be decontaminated from a high contamination area to a contamination area, as defined in 10 CFR 835.603. Areas of fixed contamination will not be decontaminated. Appropriate physical and administrative controls will be used to limit access to areas of removable and fixed contamination.

The outer buildings radiological end point will be to ensure the remaining slab have less than the fixed and removable surface contamination limits specified in DOE Order 5400.5 and supplemented with NRC Regulatory Guide 1.86 for TRU contamination. If more cost efficient, the slab will be removed and disposed. The underlying soils are not in the scope of work. IVC verification of in-process milestones will be completed within 45 days of DRS notification. DOE will provide up to 2 verification evaluations for any given area. If the end point criteria are not satisfied within the 2 evaluations, additional DRS and/or IVC verification sampling may be required and DRS shall be responsible for the cost of the additional sampling.

PHASE 5 HIGH BAY AND INSTRUMENT SHOP

The High Bay Area contains overhead cranes, hoists, a decon spray booth, hammer mill, barrier destruct room, vapor and grit blasters, vapor degreasers, compressor disassembly area, separation columns, megatherm room, maintenance shop, decontamination shop, floor pans, floor pan effluent treatment facility. Hoppers related to tube removal will be investigated to determine if materials currently in the hoppers require removal.

Floor Decontamination

The floor contains up to 1 in. of lead paint that will be removed mechanically and resealed. DRS will, during the process of floor paint removal in all areas, remove an average thickness of floor

paint of ¼ inch. Contamination contained below the level of the floor surface in cracks or crevices will not be removed.

As ventilation systems and roof penetrations are removed, the openings will be patched and sealed. Equipment to be left in place for reindustrialization may include the glove boxes, spray booth, and water treatment system. The hammer mill, associated hammer mill equipment, and the new decon shop will be removed by DOE. Once decontamination operations have been completed, the removal of systems and components used to facilitate the decommissioning effort will be completed in accordance with the end point requirements.

The structural integrity of K-1420 will be verified. DRS will repair holes created during equipment removal, permanently cap drains and pipes that are not removed, and ensure no exterior holes remain. Small openings (4 in. or less) in the concrete floor slab will be plugged with a grout. Larger openings may require appropriate joints between new and existing concrete. Large holes created by removing elevators, hammer mill, and other equipment will be covered, or will have handrails installed around them.

Radiological End Point

The radiological end point will be to ensure that building floors, walls, ceilings, and remaining equipment have less than the **removable** surface contamination limits specified in DOE Order 5400.5 and supplemented with NRC Regulatory Guide 1.86 for TRU contamination. Areas of fixed contamination will not be decontaminated to the limits of DOE Order 5400.5. Physical and administrative controls may be used to limit access to areas of fixed contamination. The TEDE above background (excluding radon) to a building occupant will be less than 15 mrem per year upon completion of the DRS contract. IVC verification of in-process milestones will be completed within 45 days of DRS notification. DOE will provide up to 2 verification evaluations for any given area. If the end point criteria are not satisfied within the 2 evaluations, additional DRS and/or IVC verification sampling may be required and DRS shall be responsible for the cost of the additional sampling.

PHASE 6 POST-D&D CHARACTERIZATION, VERIFICATION, AND CLOSEOUT

Post-D&D Characterization, Verification, and Final Report

Post-D&D samples will be collected and analyzed to verify the established end point criteria have been satisfied. Verification of cleanliness will also be accomplished, in accordance with a facility final survey plan, and the facility will be declared ready for final confirmation by the Independent Verification Contractor. A facility final report will be completed to document the facility condition, methods used during D&D, end points achieved, release criteria attained, waste stream volumes and disposition, S&M requirements, and any work restrictions that remain. This report will serve as the basis for verification that project requirements have been accomplished.

Radiological End Point

The radiological end point will be to ensure that building floors, walls, ceilings, and remaining equipment have less than the **removable** surface contamination limits specified in DOE Order 5400.5 and supplemented with NRC Regulatory Guide 1.86 for TRU contamination. Areas of fixed contamination will not be decontaminated to the limits of DOE Order 5400.5. Physical and administrative controls may be used to limit access to areas of fixed contamination. A supplemental release criteria is the use of a pathways analysis to calculate the Total Effective Dose Equivalent (TEDE), using the DOE recommended RESRAD-BUILD code. The TEDE above background (excluding radon) to a building occupant will be less than 15 mrem per year upon completion of the DRS contract. The IVC final survey verification will be completed within 45 days of DRS declaring that cleanup is complete. DOE will provide up to 2 verification evaluations for any given area. If the end point criteria are not satisfied within the 2 evaluations, additional DRS and/or IVC verification sampling may be required and DRS shall be responsible for the cost of the additional sampling.

CONTINUAL ACTIVITIES

Project Management

Each DRS workday will be initiated with a pre-job briefing that provides the work crew with understanding of the daily work plan, provides the opportunity to discuss lessons learned, and the opportunity for training. DRS will develop approved work packages or procedures for each work task or series of work tasks. The level of detail contained in each work package and the use of quality hold points will be consistent with the complexity of the task and the health and safety challenges presented. Work packages will be reviewed and approved by a certified industrial hygienist, a certified safety professional, and the Remediation Manager. Work involving the potential for worker radiation exposure or personnel contamination will be approved by the Radiological Control Supervisor. Asbestos work will require the additional approval of our project asbestos supervisor.

The DRS Quality Assurance Plan provides the standards for acceptable program execution and records management. Quality records are identified in the QAP and include work packages, S&M activity sheets, waste characterization and certification reports, training records, and engineering reports.

The K-1420 project will be tracked and managed using Primavera Project Management software.

The management team will conduct activities in full compliance with applicable federal and state regulatory requirements.

DOE oversight will be performed by DOE Project Management, Facility Representatives, and the Independent Verification Organization.

The most significant aspect of DRS conduct of operations is that activities be accomplished in a manner that promotes personnel safety. The Health and Safety Plan will provide project specific implementation of our safety program. The DRS Safety Program will provide and maintain safe working conditions. Each task involving the potential for criticality, will be engineered to prevent the possibility of occurrence. A fire hazards analysis will be performed to determine the requirements for repair of the operational system, or installation of temporary systems.

Project Reporting

Weekly meetings will be scheduled to provide status and discuss near term upcoming activities. A monthly status report consisting of a description of work accomplished, a project baseline schedule updated to reflect current progress, and a discussion of open project issues will be submitted along with a monthly invoice for progress payment. The monthly invoice will be developed based on a negotiated agreement of percent complete for earned value for each activity statused on the baseline schedule. DRS expects receipt of payment within 30 days of submittal of valid invoices.

Surveillance and Maintenance

An S&M Plan will be prepared for Building K-1420 to maintain the systems, structures, and components such that the facility is safe to work in, release of contamination and hazardous materials is prevented, alarms and equipment required to support building functions are operable, and comply with safety basis documents. The process involves execution of a formal schedule of approved inspections and tests in parallel with cleanup tasks to identify the condition of systems, structures, and components; the evaluation of inspection results by competent reviewers; and the implementation of immediate compensatory actions, followed by prioritization and implementation of corrective actions. DRS shall perform required S&M activities internal to K-1420. Surveys and maintenance of the building exterior and surrounding areas are not the responsibility of DRS.

Waste Management

The Waste Management Plan will define the process for handling and packaging wastes from K-1420. DRS will 1) decontaminate and recycle/reuse much of K-1420 and its contents based on technical and economical feasibility, and 2) with off-site Waste Acceptance Criteria (WAC) in mind, design and implement a comprehensive characterization, decontamination, sorting/segregation, and packaging program that provides documented containers ready for shipment to a DOE waste disposal contractor. The WAC will be provided by DOE, for each projected waste stream.

DRS will identify primary and secondary waste streams, anticipated volumes, disposal procedures, and methods to achieve the WAC. DRS will identify procedures for waste minimization and waste segregation. Radiological release of non-real property and materials will be in accordance with DOE Order 5400.5. Documentation will accompany each shipment to include radiological surveys and RCRA/TSCA certification. Criticality issues will be addressed, especially during equipment and deposit removal. DRS will develop a protocol for releasing the building and associated material. DRS will develop a protocol for verifying waste packaging and shipping. IVC

verification of waste streams will be completed within 30 days of DRS notification. DOE will provide up to 2 verification evaluations for any given waste stream. If the waste acceptance criteria are not satisfied within the 2 evaluations, additional DRS and/or IVC verification sampling may be required and DRS shall be responsible for the cost of the additional sampling. DRS will obtain DOE approval of a waste laydown and storage area.

The final waste volumes expected to be generated are:

Hazardous Waste:	710 cf
Mixed Waste:	2,852 cf
Low-level radioactive:	10,142 cf
<u>Solid waste:</u>	<u>12,892 cf</u>
TOTAL WASTE:	26,596 cf

DOE will be responsible for the cost of disposition of waste up to 110% of the quantity set forth above. DRS will be responsible for the cost of disposing of waste that exceeds 110% of the quantity set forth above.

Assumptions

The following assumptions are part of the scope of work. Should these assumptions prove to be incorrect, an equitable adjustment will be requested in accordance with contract change provisions.

1. Contaminated paint on floors is assumed to average ¼ inch thick over the entire building high-bay area and removal will result in 1,700 CF of mixed waste.
2. Roof repair area, not including penetration sealing, will be no more than 4,200 ft².
3. No more than 300 samples will be required for initial characterization and no more than 50 samples will be required for final verification.
4. Less than 1% of the building surfaces are currently contaminated with TRU.
5. Significant differences between the actual condition of the building and that presented by the characterization provided in the RFP do not exist.
6. Waste containers required for Special Nuclear Material will be provided by DOE.
7. The three year proposed project duration is based on assumptions that document review and IVC involvement will be managed to support DRS operations. DRS assumes a timely DOE review and approval of documents and that IVC milestone and survey verification will be accomplished within 45 days of notification.
8. The DRS estimated total waste volume quantity of 26,596 cf will be measured as "contained volume", not "disposal volume."
9. The threshold value of 110% of actual generated waste applies to the total waste volume quantity of 26,596 cf – not to each individual separate waste stream.