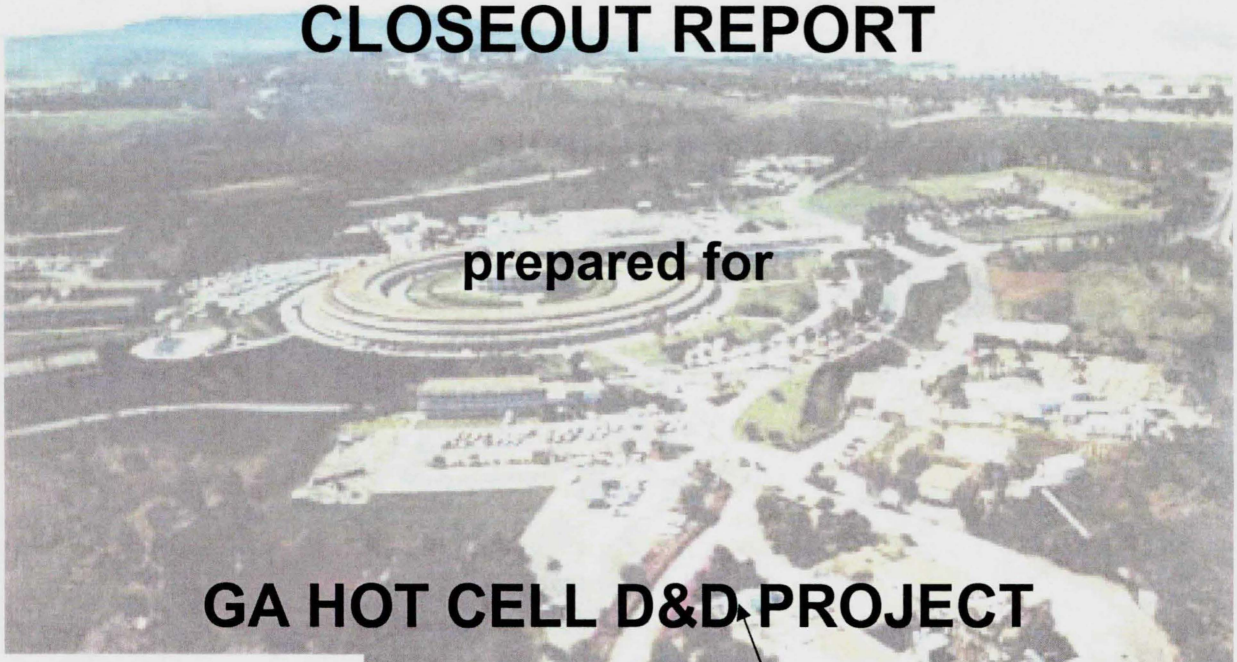
Attachment A

GENERAL ATOMICS
HOT CELL FACILITY
DECONTAMINATION & DECOMMISSIONING
PROJECT

FINAL PROJECT
CLOSEOUT REPORT



prepared for

GA HOT CELL D&D PROJECT

CONTRACT NUMBERS DE-AC03-84SF11962
and DE-AC03-95SF20798

PBS VL-GA-0012

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LIST OF ACRONYMS

AAL	Authorized Access List
ACBM	Asbestos Containing Building Material
ADS	Activity Data Sheets
ALARA	As Low As Reasonably Achievable
APPM	Accident Prevention Program Manual
ARWT	Advanced Radiological Worker Training
CA	Conditional Authorization
CAA	Clean Air Act
CAL-DHS	California Department of Health Services
CAL-DTSC	California Department of Toxic Substances Control
CAL-EPA	California Environmental Protection Agency
CAL-RHB	California Radiological Health Branch
CAL-OSHA	California Occupational Safety and Health Act
CCR	California Code of Regulations
CDE	Committed Dose Equivalent
CE	Conditional Exemption
CERCLA	Comprehensive Environmental Response and Liability Act
CFR	Code of Federal Regulations
CPR	Cardiopulmonary Resuscitation
CWA	Clean Water Act
D&D	Decontamination and Decommissioning
DOE	Department of Energy
DOE-EM	Department of Energy-Environmental Management
DOE-NE	Department of Energy-Nuclear Energy
DOE-OAK	Department of Energy-Oakland Operations Office
DOT	Department of Transportation
EA	Environmental Assessment
EBOR	Experimental Beryllium Oxide Reactor
EH&S	Environmental, Health, and Safety
EPA	Environmental Protection Agency
ESTES	Engineering Scale Tritium Extraction System
FFCA	Federal Facilities Compliance Act
FONSI	Finding Of No Significant Impact
GA	General Atomics
HCF	Hot Cell Facility
HCFA	Hot Cell Facility Area
HLC	High-Level Cell
HLW	High-Level Waste
HP	Health Physics
HTGR	High Temperature Gas-Cooled Reactor

HVAC	Heating, Ventilating & Air Conditioning
HWA	Hazardous Work Authorization
IFM(s)	Irradiated Fuel Material (s)
INEEL	Idaho National Energy and Environmental Laboratory
LLC	Low-Level Cell
LLW	Low-Level Waste
LSA	Low Specific Activity
LS&NC	Licensing, Safety and Nuclear Compliance
MAP	Mixed Activation Products
MBA	Material Balance Area
MFP	Mixed Fission Products
MGCR	Marine Gas Cooled Reactor
MLLW	Mixed Low-Level Waste
MSDS	Material Safety Data Sheets
MTRU	Mixed Transuranic
NIOSH	National Institute for Occupational Safety and Health
NPR	New Production Reactor
NRC	U.S. Nuclear Regulatory Commission
NWPF	Nuclear Waste Processing Facility (permitted facility at GA)
ORR	Operational Readiness Review
OSHA	Occupational Safety and Health Act
PaR	Programmable and Remote (Electromechanical Arm)
PCB	Polychlorinated Biphenyl
PPE	Personal Protective Equipment
QA	Quality Assurance
RCRA	Resource Conservation and Recovery Act
RWP	Radiation Work Permit
RWT	Radiological Worker Training
SD-DHS-HMMD	County of San Diego Department of Health Services Hazardous Materials Management Division
SDE	Shallow-Dose Equivalent
SNM	Special Nuclear Material
SSA	Soil Staging Area (lay-down area)
TEC	Total Estimated Cost
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter
TRIGA	Training, Research, and Isotope Production, General Atomic (reactor)
TRU	Transuranic
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage and Disposal Facility
VSRA	Ventilation System Restricted Area

WA	Work Authorization
WAA	Waste Accumulation Area
WBS	Work Breakdown Structure

LIST OF ABBREVIATIONS

α	alpha
β	beta
BeO	beryllium oxide
cfm	cubic feet per minute
Ci	curies (1 Ci = 2.22 x 10^{12} dpm)
cpm	counts per minute
cps	counts per second
dpm	disintegrations per minute
γ	gamma
μCi	microcurie (1 μCi = 2.22 x 10^{6} dpm)
μR	microRoentgen
mR	milliRoentgen
mrad	millirad
mrem	millirem
mSv	milliSievert
Nal (Tl)	sodium iodide, thallium doped
pCi	picocuries (1 pCi = 2.22 dpm)
R	Roentgen
rem	Roentgen Equivalent Man
UO2	uranium oxide
ThO2	thorium oxide

CHRONOLOGY OF EVENTS

(See also Photo 1 and Following)

Early 1993	Hot Cell Facility (HCF) proposed to DOE as a candidate for the Surplus Facility Management Program. (See Photo 1)
Early 1993	HCF Decontamination & Decommissioning Project accepted by –EM-40.
April 1993	OAK awarded a sole-source contract to General Atomics (GA) for Phase 1 of the GA HCF D&D Project, Contract No. DE-AC03-84SF11962.
April 1993	GA mobilized.
July 1993	EM-40 accepts responsibility to fund and manage the disposition of the NE legacy Irradiated Fuel Materials (IFMs)
November 1993	Draft Environmental Assessment issued for the D&D of the GA HCF.
November 1993	Inventory reports for the NE legacy waste (HTGR, TFE, ESTES, and general facility) and building stored IFMs completed and issued.
December 1993	Approval granted by the State of California Department of Health Services, Radiological Health Branch to move the IFMs from HCF Building 23 to GA Building 30, Room 118.
February 1994	Fuel Materials Characterization Plan completed and issued.
March 1994	Contract DE-AC03-84SF11962 amended to include the disposition of the NE legacy waste (HTGR, TFE, ESTES, and general facility) and the management of the IFMs
May 1994	Site and Facility Characterization Plan completed and issued.
June 1994	Operational Readiness Review conducted for Phase 1 activities.
July 1994	Subcontract for asbestos characterization activities awarded.
July 1994	Westinghouse Hanford conducts off-site assessment of HCF D&D Project waste operations.
September 1994	DOE/OAK grants approval to commence Phase 1 activities.
September 1994	Radiological characterization and soil assessment activities commence.
October 1994	Asbestos sampling is completed.
November 1994	Facility sampling and soil coring for characterization completed.
December 1994	Westinghouse Hanford designates GA an “Approved Waste Generator.”
December 1994	GA formally notifies NRC of intent to cease “principal activities” at the Hot Cell Facility.
January 1995	Hanford approves GA Waste Certification Plan.
January 1995	Radiological waste shipping begins.
July 1995	GA Hot Cell Site and Facility Characterization Report approved by EM-40 and OAK.

July 1995	GA Hot Cell Facility Decommissioning Plan submitted to NRC and CA-DHS for approval.
July 1995	Five cask shipments of remote handled, category 3, LLW sent to Hanford. (See Photo 2)
August 1995	Letter Contract issued to GA for Phases 2 and 3 of the HCF D&D Project.
August 1995	Final Environmental Assessment for the HCF D&D Project issued followed by a FONSI.
August 1995	GA mobilized for Phases 2 and 3, and Phase 2 activities commenced.
November 1995	GA Hot Cell Phase 1 activities completed.
December 1995	Operational Readiness Review conducted for IFM transfer activities.
December 1995	IFMs transferred from the HCF (Building 23) to GA Building 30, Room 118. Material transferred to commence Phase 2 activities. (See Photo 3)
January 1996	DOE definitized the Letter Contract for HCF D&D Project, Phases 2 and 3.
February 1996	Operational Readiness Review for Phase 2 decommissioning activities conducted.
February 1996	GA Hot Cell Facility Decommissioning Plan approved by CA-DHS.
May 1996	GA Hot Cell Facility Decommissioning Plan interim approval by NRC.
May 1996	Decommissioning activities commenced (removal of interior walls). (See Photo 4)
December 1996	Sixth cask shipment of remote handled, category 3 LLW sent to Hanford.
January 1997	GA Hot Cell Facility Decommissioning Plan approved by NRC.
March 1997	Shipment of equipment removed from the cells (8 Model E Manipulators, 1 Koll-Morgan Periscope, 1 PaR, and 1 Metallograph) to GE for reuse (recycle measure) completed. (See Photo 5)
July 1997	Six HCF window assemblies packaged and shipped to Hot Cell Services in Washington to be refurbished and recycled.
October 1997	Underground diesel storage tank removal and closure completed.
November 1997	ORR for HEPA system shutdown conducted.
December 1997	Building decontamination activities completed.
January 1998	Dismantlement of interior walls and ceilings completed.
March 1998	Hot Cell Facility HEPA system shut down.
May 1998	Dismantlement of roof and exterior walls completed. (See Photo 6)
July 1998	Dismantlement of High Level Cell, Low Level Cell and Metallurgy Cell completed. (See Photo 7 (set))
October 1998	Dismantlement of the building storage pits and wells completed.
October 1998	Dismantlement of building operating systems and services completed.

October 1998	Dismantlement of building below ground service lines completed. (See Photo 7 (set))
October 1998	Dismantlement of the Hot Cell Facility completed. (See Photo 8)
October 1998	Approval to ship contaminated soil and debris to Envirocare received.
November 1998	Shipments to Envirocare initiated.
November 1998	Final Radiological Survey Plan submitted to NRC for review.
September 1999	Soil and debris shipments to Envirocare completed (174 shipments).
September 1999	Independent survey activities commenced (ORISE) on pits and trenches.
November 1999	IFMs relocated from Building 30, Room 118, to GA Building 31, Room 103A to avoid interference with other GA D&D activities.
December 1999	GA radiological surveys of the HCF site completed.
March 2000	GA confirmatory radiological surveys of the HCF site completed.
March 2000	Independent verification activities completed (ORISE and NRC)
March 2000	NRC and CA-DHS received GA Final Radiological Survey Report and the request to release the GA Hot Cell Site to unrestricted use.
June 2000	ORISE Final Report on Verification Survey of the GA Hot Cell Site issued.
July 2000	Hot Cell Site released to unrestricted use by NRC (by license amendment).
August 2000	Hot Cell Site released to unrestricted use by CA-DHS (by license amendment).
February 2001	Approval to ship radiologically contaminated soil and asphalt to the Nevada Test Site (NTS) received.
March 2001	Low level waste shipments to NTS initiated.
March 2001	Low level waste shipments to Hanford completed (438 Y-4 boxes, 6 cask liners of waste, 79 slabs, 14 wells, 7 shield doors, and miscellaneous equipment).
April 2001	All GA Site Treatment Plan Milestones of the GA Compliance Order under the FFCA completed.
May 2001	Soil shipments to NTS completed (100 shipments).
June 2001	All radiological waste disposal activities complete.
September 2001	Hot Cell Facility decommissioning activities complete.
April 2002	Radiological characteristics and containment packaging details of the DOE legacy irradiated fuel materials completed and issued in a report titled, “HTGR/RERTR Fuel Materials Characterization and packaging Report”.
June 2002	Initiated project planning and established interface communications between GA, NAC, INEEL, OAK, and ID to coordinate irradiated fuel shipment activities.

July 2002	GA completes statement of work for the shipment of the IFMs and issues the Request for Proposals to qualified shipping cask service vendors.
August 2002	GA completed and issued to INEEL Fuel and Packaging Required Shipper Data forms for receipt and storage of the DOE legacy IFMs in accordance with INEEL's acceptance criteria.
October 2002	Submitted all Pre-irradiation and Post-irradiation reports covering the numerous fuel test irradiation capsules in the HTGR and RERTR IFMS to INEEL.
October 2002	Completed an audit of NAC International, Norcross, GA (NAC) in order to qualify NAC as an "Approved Shipping of IFMs Vendor".
November 2002	GA awarded a shipping cask service contract to NAC International (NAC), Norcross, Georgia for shipping the irradiated fuel materials to INEEL.
February 2003	Completed a layout of the proposed IFM highway transport route and physically mapped/traveled the route. Information to be used to develop a detailed Transportation Plan.
June 2003	Fabrication of special IFM Basket (Top Module) and Spacer hardware for the containment of the GA IFMs in the NAC-LWT shipping cask approved by the NRC.
June 2003	Approval by the NRC of the application for an amendment to the NAC shipping cask U.S. Nuclear Regulatory Commission (NRC) Radioactive Material Package License to allow the transport of the GA IFM in the NAC-LWT shipping cask.
April 2003	Approval of the application for GA to be designated by the NRC as a "NRC Authorized User" of the NAC-LWT shipping cask.
July 2003	Preparation, submittal, and acquisition of specific Route Approval from the U.S. NRC for the highway transport of the NAC-LWT shipping cask containing the GA IFM from GA, San Diego, CA, to the INEEL, Idaho Falls, ID.
February 2003	Development and issuance of shipment-specific Shielding/Source Term Calculations,CriticalitySafetyEvaluation,Structural/Thermal/ Containment Calculations, Security Plan, and Transportation Plan for the shipment of GA IFM.
March 2003	Established interface communications between GA, NAC, INEEL, DOE/OAK and DOE/ID to coordinate IFMs shipment activities.
April 2003	GA and NAC finalized specific methodologies to be utilized for the free-air transfer of the IFM canisters to the NAC Basket, and the loading of the NAC-LWT cask.
April 2003	Developed specific radiation dose calculations for the free air transfer of the IFM canisters in the Dry Pit and the handling of the loaded NAC Intermediate Transfer System (ITS) Inner Shield.
April 2003	GA QA Program certified as acceptable by INEEL.

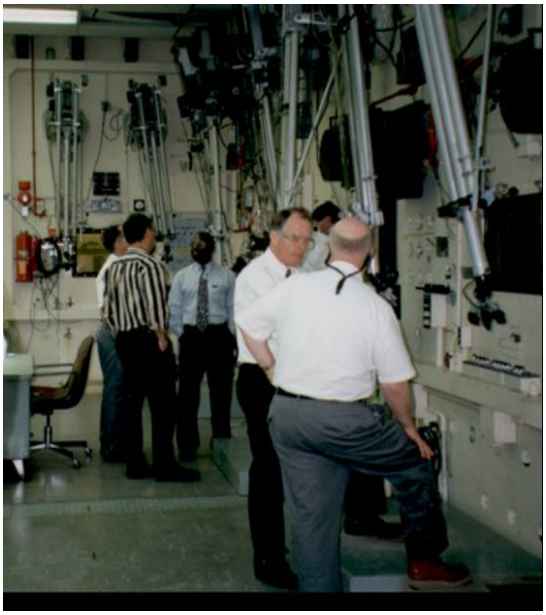
May 2003	Preparation and approval by INEEL, DOE/ID, DOE/OAK, and GA of a Material Control and Accountability Shipper/Receiver Agreement for shipment of the GA IFM.
May 2003	Fabrication procedures completed for the machine fabrication of the NAC Basket (Top Module) and Spacers to be used for NAC-LWT transport of the GA IFM.
June 2003	Finalization and approval of a Shipper/Receiver Agreement between GA, NEEL, DOE/OAK, and DOE/ID.
July 2003	Development and issuance of specific procedures for the loading and shipment of the IFM from GA to the INEEL.
August 2003	Preparation and issuance of a job-specific nuclear safety evaluation of the IFM loading operations, and a pre-job radiological safety study to determine expected personnel radiological doses and permitted stay times for individual tasks.
August 2003	Fabrication of NAC Basket (Top Module) and Spacer to be utilized in the NAC-LWT cask for IFM transport completed.
August 2003	Witnessed fit-up of the NAC Basket (Top Module) and Spacer inside the NAC-LWT cask cavity and the operational checkout of auxiliary NAC transfer equipment.
September 2003	Application for and acquisition of a specific amendment to the GA site-wide U.S. NRC Radioactive Material License to allow for the handling and high lift of the GA IFM storage casks.
September 2003	Formal GA Readiness Review for IFM shipment activities.
September 2003	Performance of operational IFM transfer practice runs, utilizing the mock-up IFM canister and storage cask, and specialty reach tools and grapples, (9/4/03 thru 9/11/03).
September 2003	Notification to state governor's designees of the planned shipment through the states of California, Nevada, Arizona, Utah, and Idaho, (as required by 10CFR73), and arrangement for continuous highway escort of the shipment by state and/or local law enforcement throughout the transport route,
September 16, 2003	Receipt, inspection, set up, and operational checkout of the NAC-LWT shipping cask and auxiliary equipment at GA. (See Photo 9)
September 17, 2003	Performance of final operational dry runs utilizing mock-up IFM canister and storage cask.
September 18, 2003	Final GA Readiness Review Committee review and approval to proceed with actual IFM transfer/cask loading actions.
September 19, 2003	Preparation and issuance of a final job-specific GA Health Physics Radiological Work Permit for IFM transfer/cask loading operations.
September 19, 2003	Safe handling, lift, and positioning in the TRIGA Mark III Dry Pit of the two GA storage casks containing the IFM.
September 20, 2003	Free-air transfer of highly radioactive IFM canisters from GA storage casks to the NAC Basket/NAC Interim Transfer System (ITS), and the

	subsequent loading of the IFM-loaded NAC Basket into the NAC-LWT shipping cask utilizing the NAC Dry Transfer System (DTS). (See Photo 10 (set))
September 20, 2003	Closure, assembly, radiological survey, leak testing, and packaging of the loaded NAC-LWT shipping cask for transport.
September 22, 2003	Inspection and repair of the Tri-State Motor Transit (TSMT) trailer and tractor utilized for transport of the NAC-LWT, in accordance with the standards of the Commercial Vehicle Safety Alliance (CVSA).
September 23, 2003	Dispatch of the loaded NAC-LWT shipping cask from GA, San Diego, CA, for transport to the INEEL, Idaho Falls, ID. (See Photo 11)
September 23, 2003	Armed vehicle escort over the entire highway transport route by State law enforcement personnel through the affected states of California, Nevada, Arizona, Utah, and Idaho, (9/23/03 – 9/24/03).
September 23,2003	Radiological survey, characterization, packaging, and shipment of the two empty GA storage casks and project-related low-level radioactive waste from GA, San Diego, CA, to Alaron Corporation, Wampum, PA, for decontamination and disposal. (See Photo 12)
September 23, 2003	**EM Mission Completed** (See Photo 13)
September 24, 2003	Receipt at INEEL INTEC facility of the loaded NAC-LWT shipping cask transport vehicle.
September 25, 2003	Preparation and transmittal of required U.S. DOE and U.S. NRC Nuclear Material Transaction Report, DOE/NRC Form DP-741, to document the transfer of the Special Nuclear Material (SNM) contained in the IFM between GA and INEEL.
October 7, 2003	Off-loading of NAC Basket, containing GA IFM, from the NAC-LWT cask into the IFSF at the INEEL INTEC facility.
October 8, 2003	Dispatch of empty NAC-LWT cask from INEEL for transport to Alaron Corporation, Wampum, PA.
September 8, 2004	CD-4 Approved for the Closeout of the Project and the Transfer of GA Project files to the Office of Legacy Management

A PHOTO DOCUMENTATION OF HOT CELL FACILITY D& D PROJECT OPERATIONS

GA Hot Cell Facility Structure

Photo 1



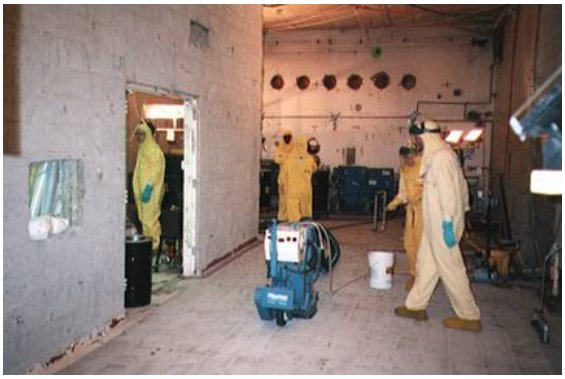
Interior of Hot Cell Facility

Remote Handled Category 3 LLW to Hanford

Photo 2

IFM Transferred from the HCF to another On-site Location

Photo 3



HCF Decontamination Activities

Photo 4

Shipment of 8 Manipulators, 1 Periscope, 1 PaR, and 1 Metallograph to GE

Photo 5

Dismantlement of Roof and Exterior Walls

Dismantlement of Interior Walls and Ceilings

Photo 6

Dismantlement of High Level Cell,. Low Level Cell and Metallurgy Cell

Dismantlement of Building Below Ground Service Lines

Photo 7

Dismantlement of HCF Completed
Photo 8

Receipt of the NAC-LWT Shipping Cask

Receipt, Inspection, Set-up, and Operational Checkout of the NAC-LWT Shipping Cask

Photo 9

Positioning of the 2 Storage Casks Containing IFMs in the GA TRIGA Mark III Pit

Transfer System with Loaded NAC Basket and the Subsequent Loading of the IFM Loaded Basket into the NAC-LWT Cask Utilizing the NAC Transfer System

Loaded NAC-LWT Shipping Cask

Photo 10

DOE General Atomics D&D Team

Dispatch of the Loaded NAC-LWT Shipping Cask to INEEL

Photo 11

Shipment of the 2 GA Storage Casks and IFM Generated LLW Off-site for Disposal

Photo 12

EM Mission Completed - September 2003

Photo 13

1. BACKGROUND

With the decline in nuclear fission research and the increasing development surrounding the General Atomic (GA) San Diego site in the early 1990s, GA's management made a decision that it was appropriate to decontaminate and decommission (D&D) its Hot Cell Facility (HCF) and the associated yard area. GA submitted a request to the Department of Energy requesting assistance. The facility was regulated under GA's Special Nuclear Materials license with the U.S. Nuclear Regulatory Commission (NRC) and byproduct materials license with the State of California Department of Health Services Radiological Health Branch (CAL-RHB).

DOE discussions with GA led to an agreed cost sharing arrangement for the D&D based upon the utilization of the Facility for the DOE compared to the GA commercial work. The split was determined to be seventy-six percent (76%) DOE/ twenty four percent (24%) commercial (private GA work) based on an examination of records. Work was initiated in 1993 to inventory the material and equipment in the facility for disposition, dispose of legacy waste material from previous contracts, determine/characterize the magnitude and extent of contamination, and prepare D&D plans and supporting documents. This work, termed Phase 1, was performed under Contract DE-AC03-84SF11962 at a cost to the DOE of $11M. A new, sole-source, cost-shared contract was placed as a letter contract in August 1995 and definitized in January 1996. The tasks included completing the Hot Cell Facility and Yard Area decontamination, dismantlement, and remediation and packaging and shipping the Irradiated Fuel Materials (IFMs) to a DOE site for interim storage. This included removing contaminated material, shipping the waste to a DOE waste repository, storing the IFM and eventually transferring the material to a DOE site, and completing the confirmatory surveys and associated documentation for the Project. This work, termed Phases 2 and 3, was performed under Contract DE-AC0395SF20798 at a cost to the DOE of $23,396K. Plans for relocation and on-site storage of the IFM in shielded casks were included in the event (subsequently the case) that the fuel could not be removed to a DOE site in time to avoid interference with the decommissioning effort. Costs to relocate and the on-site storage of the materials are included in the total project (Phase 2 and 3) cost of $23,396K.

1.1. Facility History

The HCF was located at GA's main site, a 60-acre complex on Torrey Pines Mesa in San Diego, California, just southwest of the convergence of US Interstate Highways 5 and 805, Figures 1 and 2. The GA main site is approximately 300 feet above sea level, 1 mile from the Pacific Ocean, and 13 miles northwest of downtown San Diego. The GA site is located in the center of Torrey Mesa Science Center, a 304-acre industrial park, Figure 3. The HCF construction was completed in 1959, and had approximately 7,400 $ft.^2$ of laboratory and remote operations cells. Licensed operations at the HCF included receipt, handling, and shipment of radioactive materials; remote handling, examination, and storage of previously irradiated fuel materials; engineering scale tritium extraction operations and other New Production Reactor development support activities; and development, fabrication, and inspection of UO_2-BeO fuel materials. GA had maintained the HCF in primarily a

surveillance and maintenance mode in accordance with license conditions since 1991, when research and development activities at the Hot Cell essentially stopped.

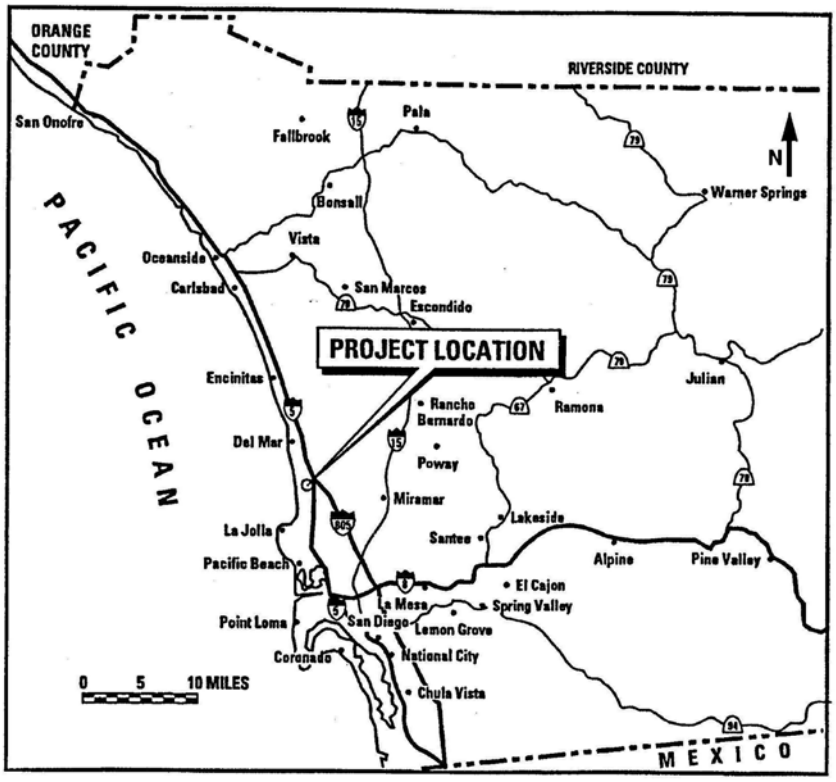


Figure 1
Project Location Relative to the San Diego, CA Area

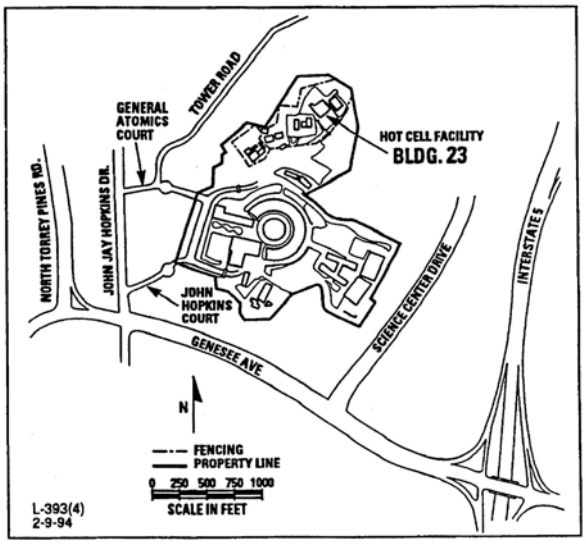


Figure 2
Hot Cell Facility (Building 23) Relative to the General Atomics Main Site

Figure 3
Hot Cell Facility Site Relative to the General Atomics Main Site

Prior to developing the Decommissioning Plan, Document Number PC-000423/4, GA performed extensive radiological and hazardous materials characterization of the HCF and associated site. Utilizing this characterization data, GA carefully considered the alternatives for decommissioning (leave in place, entombment, dismantlement, or decommissioning in place) and DOE determined that the most favorable and cost effective alternative was complete facility dismantlement. Therefore, the final release survey for the HCF consisted of a direct radiation survey and the sampling and analysis of the HCF site/soils only. The wastes from HCF dismantlement and subsequent site/soil remediation consisted of soil, asphalt and concrete rubble, construction material debris, and facility equipment. Survey methods established in the Decommissioning Plan and the subsequent final survey plan submitted to NRC and CAL-RHB provided means to demonstrate compliance with the criteria for release to unrestricted use allowing disposal at sanitary and commercial landfills. When materials did not meet the criteria for release to unrestricted use, the DOE had approved the removal of all project-generated waste from the designated GA site to an approved federal and/or commercial disposal site(s).

1.2. Project Purpose

The purpose of the Project was to decontaminate and dismantle the Hot Cell facility, remediate the associated Yard Area to obtain regulatory release of the HCF site to unrestricted use, and to ship the DOE owned legacy irradiated fuel materials from the GA Main Site, San Diego, CA to the Idaho National Engineering and Environmental Laboratory (INEEL), Idaho, Falls, Idaho for interim storage. This purpose was achieved September 23, 2004 with the removal of radiological and other contaminants from the site, obtaining regulatory release of the HCF site to unrestricted use, and the shipment of the IFMs to INEEL.

2. FACILITY DESCRIPTION AND STATUS

As a result of the decontamination and decommissioning activities performed, all associated equipment has been removed, the Hot Cell Facility has been completely dismantled, the Yard Area remediated to below release levels for a future industrial land use scenario, and the DOE legacy IFMs shipped to INEEL for interim storage. All waste has been removed from the site. Initial grading was performed in the yard area to alleviate physical hazards from pits and trenches extant at the time of release. Clean dirt was then stockpiled on the site. Final grading and compacting has been completed.

3. DECOMMISSIONING OBJECTIVES (INCLUDING TECHNICAL APPROACH)

The objective of the Hot Cell D&D Project was to obtain regulatory release of the site to unrestricted use. Prior to development of the Decommissioning Plan, GA performed extensive radiological and hazardous materials characterization of the HCF and associated site. Utilizing this characterization data, GA carefully considered the four alternatives for decommissioning presented in NRC Regulatory Guide 1.86 (leave in place, entombment, dismantlement, or decommissioning in place) and determined that the most favorable and cost effective alternative was complete facility dismantlement. The four alternative evaluations are summarized below.

- Leave in Place—Evaluated and not considered as an acceptable option due to the extensive contamination within the Facility requiring continued surveillance and maintenance and the development of other facilities in close proximity to the GA site. This alternative would not result in release to unrestricted use.

- Entombment—Evaluated and not considered as an acceptable option due to the contamination detected in the soil around the Facility requiring continued surveillance and access control. This alternative would not result in release to unrestricted use.

- Dismantlement—In this alternative, the dismantlement of the Facility would be performed, including removal of the Facility structure, and remediation of the soil

around the Facility, as necessary, followed by NRC and State of California inspections and release of the site to unrestricted use.

- Decommissioning in Place—In this alternative, decommissioning of the Facility would be performed with the structure left in place, followed by NRC and State of California inspections and release to unrestricted use. This alternative was evaluated and was not considered as an acceptable option due to the extensive dismantlement required for access to areas that are contaminated. An example was the HEPA exhaust ducts that were buried under the walls of the hot cells. This process, when carried out in all necessary areas, would leave the building in an unusable condition.

The dismantlement alternative was the one selected. An Environmental Assessment (Ref. 5) including consideration for endangered species, was conducted. It resulted in a Finding of No Significant Impact (FONSI).

Prior to the start of decontamination, decommissioning, and dismantlement of the Facility, a detailed Project Management Plan, Document No. PC-000448-1 (Ref. 6) was prepared and decommissioning procedures were in place. Principal activities had ceased and the Facility was unoccupied. Health Physics (HP) control points were established outside of the building. Selected materials and equipment were removed from the Facility for salvaging or packaging for disposal. In addition, external electrical lines were supplied to the systems essential for Facility operation as necessary to avoid interruption of service and hazards inside the building. These systems include the HEPA blowers, the air compressors, outlets for portable lighting and electrical equipment, and emergency services. A readiness review was held to ensure that all preparations were complete prior to the start of decommissioning.

This preparation phase was followed by dismantlement activities. Contaminated systems were removed, packaged, and shipped to a low-level radioactive waste disposal facility. Decontamination of the Facility was performed concurrently with the system removal activity. There were two parallel tasks during dismantlement. One was the decontamination and dismantlement of the rooms surrounding the main building structure and the other was the decontamination of the hot cells. The decontamination of the rooms included a variety of techniques; the predominant one was abrasive cleaning of the concrete surfaces. The interior of the hot cells was cleaned using remotely operated cleaning methods followed by abrasive cleaning.

When all contamination had been removed or fixed and the cells cleaned, a readiness review was held to ensure that all preparations for shutdown of the HEPA system had been completed and the roof of the building could be opened. Following this, the building was dismantled and removed as clean waste or shipped to burial as contaminated waste. With the building removed, the cell structure followed by the concrete foundation could be addressed. Finally, buried items including wells, hot drain lines, and HEPA ducting could be pulled out. At this time, the yard area remediation was also undertaken. This was followed by HP surveys and additional remediation until release criteria were met in all areas.

4. WORK PERFORMED

4.1. Project Management

The Project was managed to a limited set of DOE Orders since the site was regulated under NRC and State of California licenses. The DOE Orders implemented included DOE Order 4700.1, "Project Management System," Part A / Attachment II-3, Chapter II, Part B; DOE Order 5480.19 and Change 1, "Conduct of Operations Requirements for DOE Facilities;" and DOE Order 5820.2A, "Radioactive Waste Management," Chapter III. Because GA is a private facility and in recognition of the NRC and State of California licenses, only these DOE Orders were applied.

Work was controlled to a Work Breakdown Structure, Appendix 1, and progress reporting was performed based on earned value. Each Fiscal Year, a Multi-Year Work Plan was prepared with planned scope, funding, and performance profiles utilized for status. During several years of the Project, additional funding was provided to accomplish unforeseen tasks or to accomplish additional objectives originally planned for the next year. Requirements for unforeseen and substantial additional funding were associated with much larger than expected radioactive waste volumes. This occurred when the amount of contaminated soil proved much larger than estimated. As a result, 174 intermodal shipments were made when only 60 were originally planned. Later in the project, soil, which was believed clean, was found to have hot particle contamination and could not be cleaned and released with assurance. This result necessitated 100 burrito wrap soil shipments to the Nevada Test Site Waste Facility, which had not been foreseen and planned.

4.2. Project Engineering

Readiness reviews were held prior to initiating major activities. A readiness review was required prior to initiation of decommissioning to ensure that all plans and documents were in place and personnel were trained. Subsequently, readiness reviews were held prior to initiation of waste shipments to Hanford, prior to initiation of Remote Handled Category 3 waste shipments in the FSV-1 cask, and prior to HEPA shutdown at the Facility. A number of less formal assessments and inspections were held prior to specific actions or operations to ensure that all equipment, training, and procedures were in place.

Preparations for waste shipping to both Hanford and Nevada Test Sites required considerable effort to prepare plans, procedures, train the staff, and host the site audits by the waste receiving organizations. Findings from audits were resolved with waste organization concurrence before shipping could commence. Preparations for shipment to Envirocare were somewhat less detailed but the same questions had to be addressed. Arrangements also had to be made for prepayment of waste burial fees. Hanford fees were paid through the contracts with GA, but NTS and Envirocare fees were paid by DOE.

The Project was organized with a Project Manager as the head of the team and with a small operations staff (administrative assistant/configuration control, planner, and project operations manager) acting as the project office, see Appendix 2. At the job site, the work was managed by a Site Engineer, who utilized facility drawings and other records to plan the sequence for removal of equipment, non-structural building parts and finally the structure. He was supported by a Principal Investigator responsible for the facility until all radioactivity was removed. Other staff included a Health Physics Manager, a Shipping Manager, a Safety Engineer, Quality Assurance Engineer, and, early in the project, a Waste Manager and a Hazardous Materials Manager. These lead professionals were supported in the field by operations and health physics technicians. Several contractors supported the dismantlement including asbestos removal and concrete cutting, electrical, and HVAC. Project support functions were provided by GA organizations including contracts, purchasing, finance, facilities, records management, licensing, nuclear compliance, and the Nuclear Waste Processing Facility (NWPF). The Phase 1 and 2/3 Schedules in Appendices 3 and 4 display the major component tasks and their durations.

4.3. Site Characterization

A Hazards Analysis (Reference 3) was prepared for the Hot Cell Facility (HCF) at General Atomics in response to guidance from the DOE and attendant standards. The purpose of the Hazards Analysis was to establish a hazard classification for the HCF and to identify approximate levels of risk to workers and the public due to future activities involving decontamination and decommissioning (D&D) of the HCF. Also, the safety importance of design controls and administrative procedures during D&D was evaluated.

HCF operations considered in the Hazards Analysis included characterization of the site by HCF workers; packaging of contaminated debris, parts and equipment, and decontamination and dismantlement of equipment. Removal of the irradiated fuel from the wells in the HCF, placing the materials into interim storage casks; movement of the fuel to another building at GA for temporary storage and the transfer of the fuel from the interim storage cask to the shipping cask were also considered. Finally, decontamination of building/structure surfaces and removal of contaminated parts, equipment and waste generated by decontamination operations were included.

Methods of analysis included a Preliminary Hazards Analysis to identify potential accident situations and logic diagrams to develop and group accident scenarios. Generic accident statistics were applied to the site specific conditions and operations to estimate the likelihood of accident scenarios. Consequence analyses and use of a risk matrix diagram to illustrate the approximate levels of risk were also employed.

Two key potential accident scenarios were identified in the Hazards Analysis. Scenario A is a release of radioactivity or hazardous waste. Scenario B is a release of external radiation. Calculated probabilities and consequences of the scenarios were found to correspond to the acceptable risk portion of the risk matrix diagram, namely extremely low risk rating for Scenarios A and B. No additional Technical Safety Requirements or operational restrictions were considered to be necessary.

Estimates were made of the total maximum radioactivity inventory in the HCF. This inventory was compared, isotope by isotope, with minimum thresholds for Hazard Category 2 and 3 facilities. It was found that the radioactive inventory corresponded to a Hazard Category 3 facility with a wide margin below Category 2 levels. Hazardous materials have been identified and the majority removed. There were no significant amounts highly hazardous materials as defined by OSHA in 29 CFR 1910.119 and extremely hazardous substances as defined in 40 CFR 355. Principal hazardous materials (as defined in 40 CFR 302.4) were asbestos and lead. The bulk of the asbestos was in non-friable form and procedures were implemented to preclude airborne dust. No accident was identified that could impact persons off-site, either for radioactive or for hazardous material exposure. Therefore, the HCF was concluded to be a Hazard Category 3 facility.

4.4. Alternatives Assessment

The alternatives assessed for the Hot Cell are described in Section 3, "Decommissioning Objectives." With buried HEPA ducts, hot drain lines, wells, a concrete pit, and some contamination detected by core sampling as well as several substantially contaminated rooms; it was judged extremely difficult to obtain unrestricted release without dismantling the building. An extensive review was conducted by the DOE and confirmed that this was the most cost-effective way to reach the objective.

4.5. Site Preparation

The site was prepared by first ceasing operations, a difficult step for any facility with a history and utility for new programs. Access to the building and yard was controlled and materials crossing into the area were scrutinized to ensure that no hazardous materials entered. This was done to prevent the generation of additional mixed waste.

All items in the facility were inventoried and storage of material was improved, if required, to meet requirements. Facility maintenance was performed where it was clear that the building or equipment would have to last for several more years e.g. roof leaks were repaired and alarm systems updated.

Trailers were moved into place to support the crew without utilizing the facility itself. These included office quarters and bathrooms. Contamination monitors (two PCM-2s) were positioned at the exit and their use was required. With the support personnel out of the facility, gas was shut off and heaters were brought in locally if required. Electrical distribution was provided externally wherever practicable (some exceptions included the cells and other inaccessible areas).

Staging and loading areas were identified and foot traffic patterns through the building were rearranged to limit the number of step-off points and provide for donning and doffing protective clothing.

Necessary equipment and supplies were assembled with storage sea-land containers utilized as temporary buildings for these purposes. Operating equipment was obtained and dedicated

to the project including several forklifts, a man-lift, and a backhoe. Equipment for occasional use such as special forklifts, truck-cranes, concrete cutting or coring equipment, and scaffolding was rented as needed provided that there was little risk of radiological contamination. Subcontractors supplied their own specialized equipment.

As the work progressed, the personnel traffic patterns and controlled areas were altered to suit current needs. Ventilation ducts were rerouted several times to ensure adequate airflow and direction. As material staging and shipping became a large part of the job, truck scales were installed when bulk loading of shipments called for accurate axle weights.

4.6. Decommissioning Operations

Programs over the years of Hot Cell Facility (HCF) operations resulted in contamination of the HCF and surrounding yard with various radionuclides (primarily Cobalt 60, Cesium 137, Europium 156, Strontium 90, Uranium and Thorium). Remediation of the HCF and surrounding yard was accomplished in three phases:

> Phase 1 – Site and facility characterization and disposal of legacy waste and the relocation and on-site storage of 0.0052 MTHM of DOE owned legacy irradiated fuel materials;
>
> Phase 2 – Implementation of the D&D Plan, soil remediation, waste handling and disposal; and
>
> Phase 3 – Confirmatory studies and final site release for unrestricted use.

Phase I was largely one of planning and preparation for D&D with development of plans for addressing the IFMs and the Facility. Characterization by sampling of the Facility and surrounding site was also a major focus. In addition, waste inventory, removal, packaging, and shipping to a treatment, storage and disposal facility (Hanford) was accomplished. Phase 1 covered the period from April 1993, through October 1995. Waste shipping was initiated in January 1995, and much of the remote-handled, Category 3 Low-Level Waste stored in the cells was shipped in July 1995. The Decommissioning Plan was submitted to the regulatory agencies in July 1995. Administrative preparations for Phases 2 and 3 were accomplished during this period.

Phase 2 covered the D&D of the building and the remediation of the site. It was initiated in August 1995 but, with the discovery of hot particle contamination in the soil stored in the Soil Staging Area, was not completed until June 2001. During this Phase, building equipment was removed, asbestos was addressed, non-load-bearing walls were removed, and the building was dismantled. Radioactive waste from the building was characterized, packaged, and shipped to Hanford. Mixed waste was treated at the NWPF to remove the hazardous component and dispositioned as radioactive waste or shipped to an appropriate TSD facility. Clean waste was shipped to a landfill. Subsequently, contaminated soil under the building and in the yard area was packaged and shipped to Hanford in boxes where contamination levels and packaging logistics dictated and later in bulk shipments to Envirocare in intermodal boxes. Soil in the soil staging area was shipped in bulk “burrito wrap” packages to NTS.

Equipment associated with the cell operations which could be reused was recycled to other users.

Phase 3 covered the confirmatory surveys and site release and was completed in August 2000, except for the extra project work associated with the Soil Staging Area (SSA) material. Thus the phase was complete in September 2001.

A comprehensive chronology of events is presented at the front of this document to give the reader a concise summary of the Project events.

Although operations generally went as planned and health and safety practices were emphasized throughout the effort, there were 5 Reportable Incidents. There were no serious injuries during the project.

The first incident was the slight depressurization of the Fort Saint Vrain (FSV)-1 shipping cask upon opening at the Hanford burial site. The FSV-1 shipping cask was used to ship the Remote Handled Category 3 LLW to Hanford. A small amount of contamination was released but clean-up was quickly accomplished and no personnel were injured. It was determined that the slight difference in elevation (400 feet) between closing the cask and opening at Hanford along with any bulk temperature change of the contents during shipping was sufficient to cause the pressure. After this incident, a vacuum was drawn on the cask prior to shipment and pressure was equalized through the cask system upon arrival prior to lid removal.

The second incident was a paperwork discrepancy where a shipment designation required by new regulations was incomplete. This was quickly remedied and personnel were retrained, as shipping documentation must be complete and correct.

The third incident was a fire in the Low-Level Cell which was limited to a plastic paint tray ignited by torch cutting sparks drawn by the ventilation draft under a door. The strippable paint, used to remove contamination from the cell walls, was not flammable and did not burn. The HEPA system operated within limits through the incident and soot deposition on the cell walls was quickly removed.

The fourth incident was a more serious fire during cell interior liner removal but again the HEPA system operated within limits. This fire was ignited when torch cutting slag fell into a plastic covered ventilation “elephant trunk” used to draw fumes away from the welder. The plastic cover reached ignition temperature and burned to the screen at the HEPA system inlet. There was no other flammable material in the cell, which had been cleaned to the walls. Immediate action by the Fire Watch got the welder out and the building evacuated but one technician suffered smoke inhalation sufficient to justify an overnight stay in a hospital for observation. He was subsequently released with no permanent injury.

The fifth incident was reported when loose contamination was discovered during removal of a shipment cover tarp upon arrival in the burial area at the Hanford site. Although it was determined that the cover retained the material during shipment, the loose paint flakes with

radioactive contamination should have been controlled inside the package. In hindsight, the sealed, painted well being shipped should have been wrapped in plastic, an adequate "container" where there is risk of having this type of contamination.

Weather was not a significant factor in the D&D process. Only one shipment was delayed when rain prevented truck loading. Rain in San Diego is usually limited to a few months in the winter season and the average rainfall is only 10 inches. Near the coast, there are neither extremes in temperature nor high winds.

However, rain did affect the soil remediation when runoff filled the pit created by removal of the Service Gallery Storage Pit. Remediation had not been completed and slight contamination above release limits was found in the silt. It was assumed that the pit would dry out and the silt could be removed. Unfortunately, the clay layer in the soil retained the water and evaporation was extremely slow. Further, the silt was so finely divided that Brownian motion held it in suspension. After 6 months of observation and an abortive attempt to filter the water (the filter quickly clogged) the project purchased storage tanks and a number of children's wading pools Water was transferred to the storage tanks and then periodically to the pools. Slow, natural evaporation was utilized to remove several thousand gallons of clean water from the contaminated sludge. The water and sludge was also utilized in making concrete to stabilize waste at the NWPF. Although requiring a long time, this operation did not affect the overall schedule as radiological surveys and remediation continued in the yard area throughout the period.

Project completion schedule and cost were affected by the discovery of hot particles contaminating the soil and asphalt (over 50,000 cubic feet) removed from the yard area and placed in the SSA as clean. Although sampling showed that the soil was, in bulk, below release limits, it did not identify the particle problem. Attempts to remove the particles by detection through gamma scans at the surface proved uncertain and there are no established release criteria for clean soil with hot particles. To avoid a long and uncertain regulatory review with both the NRC and the State of California, it was determined by GA and DOE that the soil should be dispositioned as radioactive waste. It was subsequently shipped to NTS in 100 "burrito wrap" bulk shipments and 11 Y-4 boxes of asphalt. Arranging for funding, planning, meeting requirements, and shipping added approximately 1 year to the overall clean-up schedule.

4.7. Waste Disposal

Radioactive waste from the removal of stored material, building dismantlement, and some yard remediation was sent to the DOE site at Hanford, Washington. Bulk soil with radioactive contamination was shipped to Envirocare of Utah (under an agreement between Envirocare, the Army Corps of Engineers, and DOE) and the DOE Nevada Test Site. Contaminated lead was also sent to Envirocare under a DOE sponsored program. Mixed waste was sent to DSSI, Alaron, and Perma-Fix with burial of residuals at Envirocare. Clean waste was sent to the local Miramar Landfill. Hazardous only waste was removed by a contractor. Where practicable, equipment was recycled, notably to GE (Hot Cell Manipulators) and Hot Cell Services (Hot Cell Windows).

4.8. Post-Decommissioning Radiological Survey

Post-decommissioning radiological surveys could not be initiated until all structures, buried lines, and wells were removed. Further, dirt with known contamination was removed, packaged, and shipped to burial. This action reduced the background to near natural levels and permitted meaningful post-decommissioning surveys. In addition, based on the conditions found as D&D was completed, a Final Radiological Survey Plan was prepared and submitted to the NRC and State of California for review in May 1999. All GA final and confirmatory radiological surveys were completed in March 2000 (Ref. 7). The yard area was subsequently surveyed by ORISE (Ref. 8), NRC, and to a more limited degree by the State of California. Release to unrestricted use was given by NRC in July 2000 and by the State of California in August 2000. Disposition of remaining hot particle contaminated soil and asphalt, removed from the site in 1999 to a nearby lay-down area termed the Soil Staging Area (SSA) was completed in June 2001.

4.9. Post-Decommissioning Hazardous Chemical Condition

Based on characterization studies, no significant areas of hazardous chemical contamination were identified in the Hot Cell Yard Area. Because the building and significant portions of the upper soil layer were removed in connection with radioactive contamination remediation, the situation with respect to hazardous chemical contamination is now even more certain. Further, extensive hazardous constituent sampling and analysis (both for Federal RCRA and State of California Constituents) was carried out over a three-year period from FY 1998 through FY 2000. Characterization was performed on the excavated surface soil from the Hot Cell Yard Area by laboratory analysis of samples. No hazardous contamination was found. Soil and debris was subsequently shipped as radioactive-only, low-level waste to Envirocare of Utah directly from the yard and to Nevada Test Site from the SSA. This exercise was carried out to support shipment and disposal under transportation regulations and the respective Waste Acceptance Criteria. The Hot Cell soil was analyzed for Federal and state of California hazardous metals and hazardous organic compounds to provide a basis for the hazardous waste determination. The SSA soil was analyzed for Federal and State of California hazardous metals. The Hot Cell Yard Area soil that remains came from locations below the non-hazardous excavated Hot Cell soil that was shipped for disposal and below the non-hazardous SSA soil that was also shipped for disposal. Since the remaining Hot Cell Yard Area soil was beneath non-hazardous soil, it is logical to conclude that the remaining Hot Cell Yard Area soil is non-hazardous material. The (negative) sampling survey results are compiled in Reference 9.

The comprehensive sampling and analysis program supporting soil shipments was carried out following the protocols outlined in EPA SW-846 along with specific GA QA requirements stated in the GA Waste Certification Program sampling and Analysis Plan. In addition, the Hot Cell Yard Area soil that was shipped to Envirocare satisfied the requirements of the Envirocare Waste Acceptance Guidelines; SSA impounded Hot Cell yard soil shipped to NTS satisfied the requirements of the NTS Waste Acceptance Criteria.

In all, 63,000 cubic feet of Hot Cell soil material and debris were shipped to Envirocare in a campaign utilizing 174 Intermodal containers in FY98 (November 1997 through September 1998).

In all, over 56,000 cubic feet of Hot Cell soil removed from the SSA were shipped to NTS in 100 burrito wrap truck shipments in FY01 (March 2001 through May 2001).

Because these soils were removed from various parts of the yard and were above remaining soil at the time of release, it is concluded that the site contains no remaining hazardous component.

4.10. Hot Cell Irradiated Fuel Materials

In September, 2003, General Atomics (GA) successfully packaged and shipped a quantity of U.S. Department of Energy (DOE) owned legacy Irradiated Fuel Materials (IFMs) from the GA Main Site, San Diego, CA, to the Idaho National Engineering and Environmental Laboratory (INEEL), Idaho Falls, ID, for interim storage. This action resulted in the completion of the EM Mission on the GA site. INEEL is storing the GA IFMs at the Irradiated Fuel Storage Facility (IFSF) at the Idaho National Technology and Engineering Center (INTEC).

The IFM packaging and shipment activities performed were funded under Contract No. DE-AC03-95SF20798 under Work Breakdown Structure (WBS) 1.4.8.4.2.4.4.2, entitled “IFM Disposal”. All packaging and transportation tasks were successfully completed within budget and on schedule.

The IFMs shipped in this campaign included two separate spent nuclear fuel quantities, identified as High-Temperature Gas-Cooled Reactor (HTGR) and Reduced Enrichment Research and Test Reactor (RERTR) fuels. Receipt of the GA IFM at INEEL complied with the requirements of INEEL Document No. STD-1120, “Standard for Receipt of Spent Nuclear Fuel.”

Highway transport of the subject IFMs was conducted in accordance with the requirements of all U.S. Nuclear Regulatory Commission (NRC) and U.S. Department of Transportation (DOT) regulations. Containment packaging of the IFMs for highway transport was provided by the NAC International (NAC) Model No. NAC-LWT shipping cask, NRC Certificate of Compliance (CoC) No. 9225, which was specifically amended to authorize transport of the GA IFM.

General Atomics described the shipment process in *Shipment of General Atomics Hot Cell Irradiated Fuel Materials Final Report* (PC-000512), dated December 2003 (Ref. 12).

4.10.1. Consolidation and Initial Packaging of the IFMs

The GA IFMs had been collected and retained in the GA Hot Cell Facility (HCF) archival fuel storage inventory during a succession of Hot Cell Post-Irradiation Examination (PIE)

projects, conducted by GA in support of various DOE-sponsored fuel development programs over the 30+ year active operating history of the GA HCF (1959 through 1992). In November, 1995, as part of the initial actions of active Decontamination and Decommissioning (D&D) of the GA HCF, the subject IFM was remotely inspected, inventoried, and packaged in the HCF, for the purpose of physical removal of the material from that building, and the temporary storage in a separate facility on the GA site. The removal of the IFMs from the GA HCF was necessary to allow for HCF D&D actions to proceed.

As part of the initial IFMs packaging process, the IFMs mass was separated by fuel type into two packaging groups, one IFM group composed of the High-Temperature Gas-cooled Reactor (HTGR) type fuel entities (designated as HTGR/IFMs), and one IFM group composed of the Reduced-Enrichment Research and Test Reactor (RERTR) type fuel (designated as RERTR/IFMs).

The initial packaging of each of the two IFM groups, performed in the GA HCF in November, 1995, involved the remote handling, collection, loading, and weld-encapsulation of the IFM into 304SS-construction Primary and Secondary Enclosures, the design of which allowed for the subsequent installation of the packaged IFM groups into separate, shielded GA-owned storage casks. Design details of these packages are described in "HTGR/RERTR Fuel Materials Characterization and Packaging Report", GA Document No. PC-000384, dated April 2002 (Ref. 10).

The initial packaging of the HTGR/IFMs involved the physical consolidation of several discrete HTGR entities, each of which had originated from specific DOE-sponsored fuel test irradiation programs conducted by GA. These HTGR/IFMs entities, held at GA under the HTGR Advanced Fuel Base Program (DOE Project No. LAF2050100), had been separately controlled, inventoried, and retained as historical samples at the GA Hot Cell Facility (HCF) in shielded, retrievable storage. However, to facilitate handling and disposal of these HTGR items, in July 1992, the DOE granted the authorization to physically consolidate all stored HTGR/IFMs.,

The initial packaging of the RERTR/IFMs did not necessitate DOE authorization for physical consolidation, as this material was received at the GA HCF as a single discrete inventory line item. The RERTR/IFMs were received at the GA HCF in 1985, from the Oak Ridge National Laboratory (ORNL) as irradiated fuel, was held at GA under the RERTR Fuel Base Program (DOE Project No. C400480000), and had been separately controlled, inventoried, and retained as historical samples at the GA HCF in shielded, retrievable storage.

4.10.2. Temporary Storage of the IFMs at GA

GA safely controlled and stored the initially packaged IFMs in two separate unlicensed shipping casks from December, 1995 through September, 2003. Over this time period, GA utilized a succession of three different storage locations on the GA site, including GA Bldgs. 30, 31, and finally Bldg. 21. In each of these storage locations, GA provided appropriate security and radiological/nuclear safety measures necessary for the safe control and surveillance of the stored IFMs. Information related to the temporary storage of the subject

IFMs at GA was provided in GA Document No. PC-000457, entitled "Safeguards and Security Measures for the Irradiated Fuel Material Temporary Storage Facility at General Atomics", Rev. 1, dated January, 2000.

4.10.3. Description of the GA IFMs

Details of GA IFMs characterization methodologies and specific fuel and packaging parameters for both HTGR and RERTR IFMs are contained in *HTGR/RERTR Fuel Materials Characterization Report* (Ref. 10). In order to fully comply with the requirements set forth in INEEL Document No. STD-1120, entitled "Standard for Receipt of Spent Nuclear Fuel", Rev. ID:0, dated 8/31/01 (Ref. 2), it was necessary for GA to complete and submit to INEEL specific forms containing detailed information regarding the IFMs fuel and packaging characteristics. The required information was documented on INEEL forms, entitled "Fuel and Packaging Required Shipper Data (RSD) Forms".

4.10.4. HTGR IFMs

The HTGR IFMs were comprised of a consolidated, previously irradiated fuel mass in three forms, loose coated fuel particles, fuel compacts, and fuel pebbles.

Coated fuel particles were solid, spheridized, sintered ceramic fuel kernels, composed of UC_2, UCO, UO_2, $(Th,U)C_2$, or $(Th,U)O_2$ substrate, isotropically coated with discrete multi-layered fuel particle coatings, composed of pyrolitic carbon (PyC) and silicon carbide (SiC).

Fuel compacts are multi-coated ceramic fuel particles (described above), bound in solid, cylindrical, injection-molded, high-temperature heat-treated compacts, the binding matrix of which is composed of carbonized graphite shim, coke, and graphite powder.

Fuel pebbles are multi-coated ceramic fuel particles (described above), bound in solid, spherical, injection-molded, high-temperature heat-treated pebbles, the binding matrix of which is composed of carbonized graphite shim, coke, and graphite powder.

The initial enrichment of the HTGR IFMs varied from 10.0 to 93.15 wt% U-235. The nuclear material and fission product radionuclide content of the HTGR IFMs, decayed to the reference decay date of 9/30/03, is presented in Table 4.10-1.

4.10.5. RERTR IFMs

The RERTR IFMs were comprised of 20 irradiated TRIGA-type 0.512 in. (1.30 cm) diameter. x 22.05 in (56.0 cm) intact length, Incoloy 800H clad fuel elements; 13 of the elements were intact assemblies, the remaining 7 were physically sectioned for post-irradiation examination. The RERTR fuel matrix was a metal alloy comprised of uranium-zirconium hydride. The elements contain three distinct mass loadings of uranium, i.e., 20, 30, and 45 wt% U.

The initial enrichment of the RERTR IFM was approximately 19.7 wt% U-235. The nuclear material and fission/activation product radionuclide content of the RERTR IFMs, decayed to the reference decay date of 9/30/03, is presented below in Table 4.10-1.

Table 4.10-1: RADIONUCLIDE CONTENT OF HTGR AND RERTR IFM, AS OF 9/30/30

Nuclide	HTGR IFM		RERTR IFM		Total HTGR+RERTR	
	Activity (Ci)	Mass (g)	Activity (Ci)	Mass (g)	Activity (Ci)	Mass (g)
H-3	1.96E-01	2.02E-05	1.61E+00	1.66E-04	1.81E+00	1.87E-04
Mn-54	0.00E+00	0.00E+00	2.14E-05	2.58E-09	2.14E-05	2.58E-09
Fe-55	0.00E+00	0.00E+00	4.27E+00	1.94E-03	4.27E+00	1.94E-03
Co-60	0.00E+00	0.00E+00	8.84E-01	8.04E-04	8.84E-01	8.04E-04
Ni-59	0.00E+00	0.00E+00	3.30E-01	4.07E+00	3.30E-01	4.07E+00
Ni-63	0.00E+00	0.00E+00	3.75E+01	8.16E-01	3.75E+01	8.16E-01
Kr-85	5.57E+00	1.39E-02	3.55E+01	8.88E-02	4.11E+01	1.03E-01
Sr-90	1.27E+02	8.45E-01	6.32E+02	4.21E+00	7.59E+02	5.06E+00
Y-90	1.27E+02	6.10E-04	6.32E+02	2.53E-03	7.59E+02	3.14E-03
Tc-99	0.00E+00	0.00E+00	1.40E-01	8.24E+00	1.40E-01	8.24E+00
Ru-106	0.00E+00	0.00E+00	3.43E-03	1.01E-06	3.43E-03	1.01E-06
Sb-125	1.64E-02	1.17E-05	5.97E-01	4.27E-04	6.14E-01	4.38E-04
Cs-134	2.70E-02	2.25E-05	1.71E+00	1.42E-03	1.73E+00	1.44E-03
Cs-137	1.31E+02	1.34E+00	6.91E+02	7.05E+00	8.22E+02	8.39E+00
Pm-147	3.34E-01	3.56E-04	1.22E+01	1.30E-02	1.25E+01	1.33E-02
Sm-151	1.20E+00	4.63E-02	3.16E+00	1.22E-01	4.36E+00	1.68E-01
Eu-154	8.11E-01	5.41E-03	1.28E+01	8.52E-02	1.36E+01	9.06E-02
Eu-155	4.78E-02	3.42E-05	2.15E+00	1.53E-03	2.20E+00	1.57E-03
Th-232	2.10E-04	1.91E+03	0.00E+00	0.00E+00	2.10E-04	1.91E+03
U-233	2.92E-01	3.07E+01	1.71E-07	1.80E-05	2.92E-01	3.07E+01
U-234	3.13E-02	5.05E+00	3.91E-04	6.30E-02	3.17E-02	5.11E+00
U-235	2.27E-04	1.08E+02	7.39E-04	3.52E+02	9.66E-04	4.60E+02
U-236	1.04E-03	1.66E+01	5.61E-03	8.90E+01	6.65E-03	1.06E+02
U-238	3.84E-06	1.16E+01	8.58E-04	2.60E+03	8.62E-04	2.61E+03
Np-237	0.00E+00	0.00E+00	2.48E-03	3.60E+00	2.48E-03	3.60E+00
Pu-238	2.74E+00	1.61E-01	0.00E+00	0.00E+00	2.74E+00	1.61E-01
Pu-239	1.70E-02	2.75E-01	1.30E+00	2.10E+01	1.32E+00	2.13E+01
Pu-240	1.91E-02	8.31E-02	1.35E+00	5.86E+00	1.37E+00	5.94E+00
Pu-241	2.16E+00	1.96E-02	1.95E+02	1.78E+00	1.98E+02	1.80E+00
Pu-242	1.08E-04	2.77E-02	3.35E-03	8.60E-01	3.46E-03	8.88E-01
Total	**3.98E+02**		**2.27E+03**		**2.66E+03**	

4.10.6. Description of the IFMs Canisters

The HTGR and RERTR IFM were both separately packaged in right-circular cylindrical welded Primary Enclosures, encased inside a welded Secondary Enclosure, with integral lifting bail. The construction material of the Primary and Secondary Enclosures was Type 304 Stainless-Steel (SS) seamless tubing, with end caps of Type 6600 Inconel plate. The lifting bail on each of the Secondary Enclosures was constructed of 0.125" (0.32 cm) diameter Type 304 SS wire rope, the ends of which were threaded through Type 304 SS 0.50" (1.27 cm) square blocks, and affixed with crimped copper stop sleeves.

The HTGR IFM canister external dimensions (i.e., HTGR Secondary Enclosure) were 39.05 in. height x 5.25 in. diameter (99.2 cm h x 13.3 cm dia). The gross weight of the HTGR IFM canister was the combined weight of HTGR fuel materials, 23.52 lb (10.668 kg), plus the weight of the Enclosures, 47.98 lb (21.764 kg), for a total loaded canister weight of 71.50 lb (32.432 kg).

The RERTR IFM canister external dimensions (i.e., RERTR Secondary Enclosure) were 37.25 in. height x 4.75 in. diameter (94.6 cm h x 12.1 cm dia). The gross weight of the RERTR IFM canister was the combined weight of RERTR fuel materials, 23.73 lb (10.766 kg), plus the weight of the Enclosures and non-fuel element components, 52.27 lb (23.708 kg), for a total loaded canister weight of 76.00 lb (34.474 kg).

5. COSTS AND SCHEDULES

The cost objective was to complete the Phases 1, 2 and 3 technical, economic, schedule and quality and reliability objectives within a total estimated cost of $32,156,146 as stated in the Contracts. Of this amount, $25,824,146 was DOE's share and $6,332,000 was GA's share. These costs did not include the packaging and shipment costs of the IFMs to INEEL for interim storage. Total costs provided to GA for the shipment of the IFMs to INEEL was of $1,872,769. Final contract value is currently $34,028,915 with DOE's share at $27,696,915 and GA's share at $6,332,000. Including the burial fees at Envirocare and NTS, the total project cost is $35,099,915.

The schedule objective was to complete the Phases 1, 2 and 3 technical and economic objectives by August 2000 and the shipment of the IFMs to INEEL by September 2003. This was accomplished. The originally adopted schedule for Phases 2 and 3 is presented in the Decommissioning Plan, Document No. PC-000423. The schedule implemented for the Phase 1 activities is presented in Appendix 3. The schedule implemented for Phases 2 and 3 is presented in Appendix 4. The schedule implemented for Hot Cell irradiated fuel materials is presented in Appendix 5.

The chronology at the front of this document shows the times for actual accomplishment of key milestones.

While initial estimates based on unrestricted funding indicated that the D&D could be accomplished in 3 years, a 5-year program was planned based on the availability of funding.

The Phase 2/3 Contract was initiated in August of 1995 and definitized in February 1996. Later, Small Site Initiative funding was made available and accelerated the clean-up to 4 years. This provided higher funding in the earlier years than otherwise planned. Although the dismantlement of the building was complete at the end of calendar 1998, remediation of the yard area soil and Health Physics surveys (Ref. 7) were not completed until March 2000. This was the result of the need for many 100% surveys and remediation to address hot particles and buried surfaces, which were originally contaminated at grade. Also, surveys were performed using a gamma detector at grade level and an alpha/beta detector for confirmation against release criteria. An additional year was required to put funding in place and remove the contaminated soil/asphalt from the SSA.

Table 5-1 presents the actual contract funding by fiscal year. Costs shown represent the DOE and GA contributions.

Table 5-2 presents the total project costs by major WBS element. The costs associated with the IFMs represented planning, procedure development, characterization, packaging, transfer to a storage area, storage, and the preparation and shipment to of the IFMs to INEEL for interim storage. Actual dismantlement of the building, excluding all preparation and waste disposition, costed about $200K.

The GA contracts are now in the DOE closeout process. When the final invoices are submitted and certified, the final Total Project Cost will be determined.

Table 5-1
PROJECT DOE FUNDING PROFILE BY FISCAL YEAR

Phase 1 Contract DOE, AC03-84SF11962

Fiscal Year	**Amount ($)**
FY1993	1,500,000
FY 1994	5,788,000
FY 1995	2,430,000
Total DOE Cost[1]	**9,718,000**
Total GA Cost[2]	**1,377,000**
Total Phase 1 Cost (1 + 2)	**11,095,000**

Phase 2 and 3 Contract, DE-AC03-95SF20798

Fiscal Year	**Amount ($)**
FY1995	549,045
FY 1996	3,000,000
FY 1997	3,708,944
FY 1998	4,269,439
FY 1999	3,232,393
FY 2000	627,000
FY 2001	719,325
Total Phases 2 & 3 DOE Costs[1]	**16,106,146**
Total GA Costs[2]	**4,955,000**
Total Phases 2 & 3 Costs (1 + 2)	**21,061,146**
FY2002 (IFMs Activities)	298,000
FY2003 (IFMs activities)	1,574,769
Total IFM Costs[3]	**1,872,769**
Total GA IFMs Costs[4]	**0**
Total DOE Cost(1 + 3)	**17,978,915**
Total GA(2 + 4)	**4,955,000**
Total Costs(1 + 2 + 3 + 4)	**22,933,915**

Total Project Cost, Phases 1, 2, and 3 and IFMs Disposition

	DOE ($)	**DOE[1] ($)**	**GA ($)**	**Total ($)**
Total Project Cost, Phases 1, 2, and 3 plus Irradiated Fuel Material Activities plus the burial fees to Envirocare and NTS paid directly by DOE.	27,696,915	1,071,000	6,332,000	35,099,915

[1] Burial fees to Envirocare and NTS that were paid directly by DOE. Hence, this cost is outside the DOE/GA contracts.

Table 5 2
TOTAL PROJECT COST BY MAJOR WBS ELEMENT

WBS Element	Phase 1 ($K)	Phases 2 & 3 ($K)	IFMs ($K)	Sub-Total ($K)	Items Paid Separately[2] ($K)	Total ($K)	Percent of Grand Total
IFMs	4,820	410	0	5,230	0	5,230	15
Maintenance	892	3,156	0	4,048	0	4,048	12
Compliance	392	1,109	289.7	1,790.7	0	1,790.7	5
Plans/Procedures/Training	1,310	390	0	1,700	0	1,700	5
Characterization	986	0	0	986	0	986	3
Materials & Services	0	3,689	25.7	3,714.7	0	3,714.7	11
Operations/Site Supervision.	302	633	0	935	0	935	3
Quality Assurance	184	1,231	0	1,415	0	1,415	4
Structural Decon/ Dismantlement	0	1,151	0	1,151	0	1,151	3
Waste Disposal	1,256	6,257	0	7,513	1,071	8,584	24
DOE Requirements/ Requests	284	655	0	939	0	939	3
Project Management	479	1,540	479.1	2,498.1	0	2,498.1	7
Final Surveys	0	673	0	673	0	673	2
Other	190	167	1,078.3	1,435.3	0	1,435.3	4
TOTAL	**$11,095**	**$21,061**	**$1,873**	**$34,029**	**$1,071**	**$35,100**	**100**

6. WASTE VOLUMES

Waste volumes are summarized in Tables 6-1 and 6-2. Table 6-1 presents the baseline estimates for waste volume by waste category compared to the actual values. Of particular significance is the actual volume of radioactively contaminated soil, which is 14 times the projected amount. This increase led to a cost addition of approximately $1.5 million for shipping and disposal of the contaminated soil at Envirocare and NTS. Construction debris was also greater than expected (by a factor of 4) but was offset by lower than expected values in other areas.

Table 6-2 presents a summary of the radioactive waste shipped by waste category and package type. All waste shipped for burial was solid in form. All liquids generated, except a small amount of mixed waste sent to DSSI for incineration, were solidified or treated at the NWPF to yield a solid waste form.

TABLE 6-1

SUMMARY OF HOT CELL D&D WASTE STREAM TOTALS

(Estimated and Actual)

	Baseline/D&D Plan Projected Waste Volumes (ft^3)	**Actual Disposal Volumes (ft^3)**
LLW (Construction Debris)	22,900	94,438
MLLW (Construction Debris)	920	486
Clean (Construction Debris)	22,100	11,000
Soil (Clean)	0	0
Soil (Contaminated)	8,300	117,083
Soil (Mixed)	2,300	0
Asphalt (Clean)	13,400	1,000
Asphalt (Contaminated	2,300	1,100
TOTALS	**72,220**	**225,107**

LLW actual disposal volume by category: Category 1, Contract Handled 197,740 cu.ft.
Category 3, Contract Handled 13,705 cu.ft.
Category 3, Remote Handled 1,176 cu.ft.

TABLE 6-2

HOT CELL SHIPPING ITEM INVENTORY

Period 1995 - 2001

Category 1 Waste	**Category 3 Waste**	**Totals**
387 Boxes	63 Boxes	450 Boxes
7 Doors	4 Well	7 Doors
79 Concrete Slabs	6 FSV Casks (liners)	79 Concrete Slabs
9 Wells		14 Wells
174 Intermodals		174 Intermodals\
1 Forklift		1 Forklift
10 Casks (Waste)		16 Casks
100 Burrito Wraps		100 Burrito Wraps
		~401 trucks
		~212,621 cu.ft*

*The total volume of roughly 212,621 cubic feet of LLW, as indicated above, does not include 11,000 cubic feet of clean construction debris, 1,000 cubic feet of clean asphalt and 486 cubic feet of MLLW.

Table 6-3 summarizes the radioactive waste by campaign. Most of the waste was shipped to Hanford with bulk packages (intermodals and burrito wraps) going to Envirocare and NTS. Note that the bulk shipments are most economical with additional advantages for waste burial cost and shipping distance. NTS is the closest waste site to GA with Envirocare and Hanford more distant. All shipments were by truck except the Intermodal shipments to Envirocare. These were trucked to Los Angeles where they were placed on rail flatbed cars for transport to Envirocare. All bulk shipments included the return of the container (Intermodal or End-dump truck trailer) and hence there was a return cost included. In addition, small amounts of mixed waste such as contaminated lead and old casks were sent to Alaron for treatment or directly to Envirocare for macroencapsulation.

TABLE 6-3

SUMMARY OF RADIOACTIVE WASTE SHIPPING CAMPAIGNS

Treatment or Disposal Site	Waste Type	Duration	Waste Volume Cost of Campaign* Cost per Cubic Foot
Hanford	Cell Debris Equipment Building Debris Soil	January 1995 Through April 2001	94,438 cu.ft. $6,054,000 ~64 $/cu.ft w/o casks
Envirocare	Bulk Soil/Debris	November 1998 Through September 1999	60,524 cu.ft. $1,354,000 ~22 $/cu.ft.
Nevada Test Site	Bulk Soil	March 2001 Through June 2001	57,659 cu.ft. $805,000 ~14 $/cu.ft.
Various: DSSI SEG-Duratek Alaron Envirocare Perma-Fix	Mixed Waste	August 1995 Through April 2001	486 cu. ft. $371K ~760$/cu. ft.

* Cost of packaging, shipment, and burial in thousands of dollars.

7. OCCUPATIONAL EXPOSURE TO PERSONNEL

The estimated total occupational exposure under the approved Decommissioning Plan was less than 35 person-Rem. The actual total collective dose received at the Hot Cell Facilities during decommissioning activities was 10.1 person-Rem. This value includes all routine maintenance, surveillance, and survey activities through the final release surveys as well as D&D activities. This actual exposure value is approximately 29% of the estimate. There was

no measurable additional dose added during shipping operations to dispose of remaining radioactive waste. These operations were concluded in June 2001 with the completion of IFMs activities in September 2003.

In reflecting on the project from a Health Physics perspective, it is interesting to ask why the total exposure was so much lower than the estimate. Clearly the estimate in the Decommissioning Plan should not be exceeded and therefore should be a conservative yet real estimate. Compared to this evaluation, good ALARA practices were maintained but several additional factors should be credited.

At the beginning of the project, the Hot Cell Facility contained many radioactive items and areas. However, by its nature, the facility is designed to protect operations workers from the hazard. Thus in the early stages, D&D doses were controlled using engineered systems and instruments. In addition, protective clothing to avoid contamination and personnel contamination monitors (PCM-2s) were available. Further, a thorough characterization of the radioactive materials in the Facility was undertaken at the beginning. Finally, portable, alarming (pager sized PD-3s) dosimetry was worn by all workers and extra units were worn taped to extremities for special operations. Thus HP was able to evaluate the level of exposure on a daily and/or task basis and to respond to the radioactive level of each job. Problems were quickly identified and D&D operations were modified whenever needed to minimize exposure.

During preparations for entry into the Metallography Cell with its high Sr 90 contamination, it was discovered that the normal TLD badges were not protected from energetic beta (Sr 90) doses entering through holes in the side and would therefore read high. Additional TLD badges were utilized to provide more accurate beta dose readings. Doses during this remediation were also minimized through rehearsed and rapid, hands-on work.

Finally, high radioactive levels were again a potential when the radioactive hot drain lines and buried HEPA ducting were addressed. The drains had been previously plugged with concrete at the entry in the cells to prevent shine during remediation. Ducts and drains were accessible as the building and concrete slab were removed. The drains were encased in concrete and were removed by cutting into sections with the concrete in place for shielding. Clean out of the drains was avoided by characterization and packaging directly into waste boxes. The ducts were not as great a dose hazard as they were not as radioactive but incomplete or broken welds and leakage during sectioning gave greater potential for hot particle contamination.

8. FINAL SITE CONDITION

At the time of release, the Hot Cell Yard Area site was generally a bare dirt lot with a number of trenches, pits, and depressions representing something of a physical hazard to visitors. In addition, storm water runoff was not well controlled by the contour of features on the site. Consequently, GA, privately, undertook a compacted fill and contouring program to provide an interim safe temporary surface arrangement of the area and a basin with storm water runoff control to preclude major erosion damage to the lower hillside. The site was utilized as a

storage yard for clean fill dirt stockpiled to support grading to a final contour. Yard Area temporary fencing was maintained until the physical hazards in the area were mitigated. A permanent GA site boundary fence was installed at the north end tied to existing fences to control unauthorized access to the general area. Final grading has now been completed.

9. PROJECT CLOSEOUT AND TRANSITION (CD-4)

In accordance with DOE M 413.3-1 and specific guidance from EM and the Office of Legacy Management (LM), a Critical Decision 4 (CD-4) package was submitted in June 2004. Approval from the DOE Under Secretary (S-3) was received in September 2004 for closeout of the GA HCF D&D Project (Project Baseline Summary VL-GA-0012) and the transfer of GA project files to LM. A copy of the approved CD-4 package is included as Appendix 6.

There were two DOE contracts for characterization and D&D of the GA Hot Cell Facility:

- DE-AC03-84SF11962
- DE-AC03-95SF20798

These contracts are currently in the DOE contract closeout process. It would not be unusual for this process to take several years to complete all the administrative actions (e.g.: legal, financial, audit, invoicing, payment, and retirement). (Properly, only then can this report be finalized.)

10. LESSONS LEARNED, CONCLUSIONS, SUGGESTIONS

A review of the Contract scope of work (given below) indicates that all D&D related activities have been completed.

1. Reduce the concentration of individual radionuclides, which could contribute to residual radioactivity to regulatory prescribed clean-up limits and levels (**Complete)**;
2. Reduce and/or remove from the site any hazardous constituents of concern found at levels above regulatory prescribed levels and limits (**Complete**);
3. Dismantle the HCF (**Complete**);
4. Dispose of all HCF generated radiologically contaminated construction debris (**Complete**);
5. Implement the commitments in the Site Treatment Plan for DOE mixed wastes at GA as applicable to the Project (**Complete**);
6. Ensure the site-generated hazardous wastes are treated and disposed of in accordance with all applicable orders, laws and regulations (**Complete**);
7. Remove the HCF foundation and dispose of the generated material (**Complete**);

8. Dispose of Phase 1 low level waste (LLW), mixed low level waste (MLLW), and hazardous waste (**Complete**);
9. Provide the systems and procedures necessary to ensure protection of the health and safety of the workers, the environment, and the public from contamination associated with the HCF decommissioning and site remediation activities (**Complete**);
10. Provide the physical security and material accountability measures required for decommissioning (**Complete**);
11. Remediate groundwater, if necessary to acceptable levels to be negotiated between DOE and GA (**Not found necessary**);
12. Perform site final radiation and hazardous material surveys (**Complete**);
13. Prepare the Site Closure Report and coordinate confirmatory studies activities with the appropriate parties (**Complete**);
14. Obtain NRC and CA/DHS release of the site for unrestricted use (**Complete**);
15. Assist DOE in the completion of the Environmental Assessment for transfer of the Irradiated Fuel Materials to a DOE location for storage (**Complete**);
16. Store the IFM in GA Building 30 for a period up to September 2003 (**Completed**);
17. Transfer the IFM to a DOE designated location for storage (**Completed**);
18. Provide GA STP technical support and reporting as detailed in Mod M016 of the reference contract (**Complete**).

10.1. Overall Project Lessons

A first lesson was the inability to survey under the building. Although some coring was done during characterization, the number of samples was not sufficient and the depth of pits and vaults precluded investigation. Thus, it was not possible to develop a clear picture of the extent of contamination in the soil until it was finally exposed and addressed. Also, with the HEPA ducts and hot drain lines running underground, it was not possible to ascertain if there were any leaks into the soil due to corrosion or some other mechanism. A French drain was also found under the HEPA exhaust stack, but not noted on the drawings of the area. (Accidental release of contamination during remediation of the ducts and drains is also a possible source.) Additionally, water spills or rain may have driven contamination down in the disturbed soil around the outside of the pit, well, or foundation structures.

Second, hot particles (fission products in fuel fragments from destructive, irradiated fuel and container examinations etc. - in this case mostly HTGR coated particle fuel) were known to be present but not expected in the numbers and pervasiveness found. Spills (e.g. a flooding incident due to a hose failure) and other activities over the years put many particles into the yard. Possibly, some of these were buried in the topsoil by equipment operations during remediation activities including digging, transporting, and packaging of waste. Other particles were found on old surfaces not identified in drawings and later covered over with asphalt

and/or dirt and buried prior to D&D. Many were not detectable until the background was low as they were under the surface.

The third lesson is that scanning release surveys cannot be conducted until the background is well below release limits. This may seem obvious but until the contaminated parts of the building and much of the yard waste was removed from the area (including contaminated soil), the background was too high to detect levels down to 15 to 25 micro-R per hour at the surface. Hence earlier characterization and status radioactivity surveys could not quantify the "releasability" status of the yard area near the Hot Cell. Soil sampling that was conducted during characterization would only indicate a hot particle if the particle were contained in the sample. During D&D the concern is for millirem levels significant for personnel exposure during activities. Release to unrestricted use requires levels 100 to 1000 times lower. (Note that equipment release must be conducted in a low background area but the scans and wipes might not detect hot particles as well as distributed contamination.)

A fourth lesson is the "shortage" of lay-down areas (due to other uses and the desire to not encumber any more land than necessary). As a result of insufficient dedicated lay-down area, soil was piled in the yard area and moved several times. This could have contributed to the particle contamination problem.

10.2. Specific D&D Suggestions

- Prohibit all hazardous items from entering the project area. This will avoid creating more mixed waste. Read the MSDS for everything used.

- Dismantle walls from the top down.

- Beware of potential for cutting or coring into unrecognized buried energized electrical and other lines. Shut off electrical, gas, air, and water service wherever possible. So-called as-built drawings either do not exist or are not representative of details such as line routing. Subsequent modifications to facilities are rarely incorporated into as-built drawings. Photographs taken during construction, if available, are more reliable.

- Use extreme caution when lifting items with an unknown center of gravity.

- Be certain that ladders are stable and tied off.

- Make certain that protective clothing is always utilized. Always wear hard hats during dismantlement.

- Torch cutting is always an ignition source. Remove combustibles from the area and have a firewatch.

- When multiple teams are working in the same area, be certain that each team knows the scope of the other job. Also, ensure communication with multiple teams (i.e. shifts) working on the same job.

- Be cautious when moving items which could tip over and spill.

- Never assume any container is empty.

- Disable CO_2 fire blanket system or equivalent by a very positive means (such as removing a spool piece) before entry into the protected area (such as a cell).

10.3. Waste Shipment Related Suggestions

- Wrap all packages where there is any remote chance of external contamination before shipping. Use absorbent to ensure that there is no condensation or leakage.

- Draw a vacuum on sealed casks before shipment to ensure that leakage is inward when the lid is loosened at a different elevation and temperature.

- Treasure any organization that will accept your radioactive waste. Meet their requirements and don't cut corners. This goes double for mixed waste. D&D does not make radioactive waste just disappear, it simply repackages the waste and sends it to a more acceptable place (from the D&D site perspective).

- Respond quickly and in force to any problems that develop during shipment or receipt of radioactive waste. Own the problem and let others know it. Send project staff to the scene to get the facts.

- Rain or irrigation water collected in the box standoff rails could be a problem (leaking out during shipment or at the waste recipient location and giving the appearance of loose contamination). Although there are supposed to be drainage holes, these sometimes are missing or plugged.

- Bulk pieces may be wrapped as part of packaging. Despite considerable diligence, rainwater can enter the flaps (which should be "sealed" and positioned so that water cannot collect) and enter in the package. Use a tarp cover.

10.4. Management Suggestions

Contractor

- The DOE planning/funding system does not lend itself to "surprises" since funding is planned on a two-year cycle. Substantial changes in the cost of D&D efforts can occur, particularly if waste volumes are significantly underestimated, e.g., due to unexpected contamination. Therefore be very conservative in the waste volume estimation.

- As with any job on a limited budget, it is very helpful to have other work "in waiting" so that staff can be redirected to the other task (and charge numbers) if there is not full time work on the main job. Try not to be the "flywheel" job.

- Every visitor is an auditor. Have an exit interview.
- A picture with a violation is a violation forever.
- Carefully file all survey records or risk doing it again.
- A work schedule of four ten-hour days can raise efficiency if significant suit-up/suit-down time is required for the job. Ten-hour days provide a longer work interval between breaks.
- Don't perform a final survey prior to a ground-level 100% gamma scan using a sodium iodide crystal detector or equivalent if there is any chance of hot particles.
- Don't tolerate shortcutting of rules, horseplay, or sabotage. Make an example of any instance early in the project.
- Keep the team focused on accomplishment of the job, together. Make certain the staff is a team.
- Staff with operational knowledge of a facility and participating in the D&D of that facility are extremely valuable for what they know but may have great difficulty adapting to the notion of "wasting" it.
- From time to time, build morale with give-away specialty personal items emphasizing the team (e.g. hats, jackets, etc.).
- Have breakfast or luncheon meetings. Keep the staff informed. Address all rumors. Answer questions honestly. Walk the job often.
- Expect the best and set an example.
- It is better to march in some direction than no direction. Evaluate options and have a plan.
- Others will judge the Project by the way things appear. Good housekeeping is essential. Make certain that appearances send the correct message. Perception is reality.
- Keep management informed in a positive but honest way. All they know is it is taking too long and costing too much. A little positive PR doesn't hurt.
- Clearly inform regulators, management, or customers with respect to any situation. Have no surprises.
- A tough, practical, independent internal auditor is of great value. Treasure that person. Better to learn the truth from them than an outsider.
- It is always more costly to deal with an accident than to prevent one.

- Have a staff you trust. Delegate to them and don't second-guess their best shot. Otherwise, you will get to do it all, and you are not as well informed as they are.

- Be certain that your staff can tell you if you are about to do something dumb. Don't shoot the messenger. Always deal with the problem not the people.

- There is no gentler way to learn than from someone else's mistakes. Visit similar projects whenever possible and look for lessons-learned on similar work.

DOE

- Get a clear requirement from HQ and revisit it often.

- Start the CD-4 process early.

- Build in larger contingencies. Contaminated facilities usually have unexpected contamination. Any processes that must be reviewed by committees will always take more time (and money) than common demolition tasks.

- Work closely and build good working relationships with all parties, from contractors to stakeholders, to contracts personnel.

11. REFERENCES

1. **Site and Facility Characterization Report**
PC-000424, "General Atomics Site and Facility Characterization Report," Volumes 1 and 2, dated March 1995.

2. **Decommissioning Plan**
PC-000423/4, "General Atomics Hot Cell Facility Decommissioning Plan," dated January 1998.

3. **Hazards Analysis**
PC-000420, "Hazards Analysis for the General Atomics Hot Cell Facility," dated December 1994.

4. **Basis for the GA Hot Cell Yard Area Boundary**
GA Letter, HCI:151R1:GCB:95, G. C. Bramblett to James Davis III, "Basis for the Proposed GA Hot Cell Yard Area boundary (revised for Clarification)," dated February 22, 1996.

5. **Environmental Assessment for D&D of the GA Hot Cell Facility**
DOE/EA-1053, "Final Environmental Assessment for Decontaminating and Decommissioning the General Atomics Hot Cell Facility," dated August 1995, and associated FONSI.

6. **Project Management Plan**
PC-000448/1, "Project Plan/Project Management Plan – Phases 2 and 3," dated February 1996.

7. **GA Final Radiological Survey Report for the Hot Cell Site**
PC-000495/0, "General Atomics Final Radiological Survey Report for the Hot Cell Site," March 2000.

8. **ORISE Confirmatory Survey Results for the Hot Cell Site**
ORISE Report, "Verification Survey of the Hot Cell Facility Site, General Atomics, San Diego, California," dated June 2000.

9. **Hazardous Survey**

a) Memo, HCI:009:DGC:00, "Sampling and Analysis Results for Hot Cell Soil/ Debris Shipped to Envirocare-Utah, QA Package PC#48893 (Quanterra Reports #18779, #19250, #20555, #20796, #21692) for TCLP RCRA Metals," by D. G. Czechowicz, dated 22 December 1999.

b) Memo - documenting sampling results for TCLP metals for soil/ debris being shipped to NTS

c) Memo - documenting no volatile or semi volatiles from diesel tank removal or other things identified in the characterization report. Since all structures and pipes have been removed the only relevant review is for soil in the Yard Area.

10. **HTGR/RERTR Fuel Characterization & Packaging Report**
PC-000384/0, "HTGR/RERTR Fuel Materials Characterization & Packaging Report," dated April 2002.

11. **Statement of Work** – for the Shipment of HTGR/RERTR Irradiated Fuel Materials from General Atomics to the Idaho National Engineering and Environmental Laboratory, General Atomics RFQ No. 2021 dated May 2, 2002.

12 **Irradiated Fuel Material Shipment Final Report**
Shipment of General Atomics Hot Cell Irradiated Fuel Materials Final Report (PC-000512), dated December 2003

Appendix 1
Work Breakdown Structures, Phases 2 and 3

WORK BREAKDOWN STRUCTURE
PART I - INDEX

1. PROJECT TITLE/PARTICIPANT	2. DATE	3. IDENTIFICATION NUMBER
General Atomics Hot Cell Project - Phase 2	1/6/1997	

4	5 WBS ELEMENTS								6	7	8	9
LINE NO.	INDENTURE LEVEL							TITLE	PARTICIPANT WBS ELEMENT CODE	BUDGET AND REPORTING NO.		
	1	2	3	4	5	6	7	8				
1	X								Hot Cell D&D	1.4.8.4		
2		X							Decontamination & Decommissioning	1.4.8.4.2		
3			X						Phase 2 D&D	1.4.8.4.2.4		
4				X					Support Functions	1.4.8.4.2.4.1		
5					X				Facility Maint/Security/Surveillance	1.4.8.4.2.4.1.1	7350.100		
6						X			Maintenance	1.4.8.4.2.4.1.1.1	7350.100.100		
7						X			Security	1.4.8.4.2.4.1.1.2	7350.100.200		
8						X			Industrial Safety	1.4.8.4.2.4.1.1.3	7350.100.300		
9						X			Radiological Surveillance	1.4.8.4.2.4.1.1.4	7350.100.400		
10					X				Licensing, Safety and Nuclear Compliance	1.4.8.4.2.4.1.2	7350.200.100		
11					X				Training	1.4.8.4.2.4.1.3	7350.300.100		
12					X				Plans and Procedures	1.4.8.4.2.4.1.4	7350.400		
13						X			Radiation Safety	1.4.8.4.2.4.1.4.1	7350.400.100		
14						X			Industrial Safety	1.4.8.4.2.4.1.4.2	7350.400.200		
15						X			Facility Maintenance/Operations	1.4.8.4.2.4.1.4.3	7350.400.300		
16						X			Decontamination & Decommissioning	1.4.8.4.2.4.1.4.4	7350.400.400		
17						X			Waste Disposal	1.4.8.4.2.4.1.4.5	7350.400.500		
18					X				QA Support	1.4.8.4.2.4.1.5	7350.500.100		
19					X				Track & Trend Activities	1.4.8.4.2.4.1.6	7350.950.400		
20				X					Decommissioning	1.4.8.4.2.4.2	7350.600		
21					X				Materials and Services	1.4.8.4.2.4.2.1	7350.610.100		
22					X				Site Supervision	1.4.8.4.2.4.2.2	7350.620.100		
23					X				Engineering Support	1.4.8.4.2.4.2.3	7350.630.100		
24					X				Hot Cell Equipment	1.4.8.4.2.4.2.4	7350.640.100		
25					X				Structural Decontamination	1.4.8.4.2.4.2.5	7350.650.		
26						X			High-Level Cell	1.4.8.4.2.4.2.5.1	7350.650.501		
27						X			Low-Level Cell	1.4.8.4.2.4.2.5.2	7350.650.502		
28						X			Metallography Cell	1.4.8.4.2.4.2.5.3	7350.650.503		
29						X			Service Gallery and Decon Room	1.4.8.4.2.4.2.5.4	7350.650.504		
30						X			ESTES Rooms/Manipulator Repair Room	1.4.8.4.2.4.2.5.5	7350.650.505		
31						X			Pump Room, X-ray Lab, Tool Room, Mezzanine	1.4.8.4.2.4.2.5.6	7350.650.506		
32						X			Machine Shop	1.4.8.4.2.4.2.5.7	7350.650.507		
33						X			Warm Metallography Lab	1.4.8.4.2.4.2.5.8	7350.650.508		
34						X			Boiler Room	1.4.8.4.2.4.2.5.9	7350.650.509		
35						X			Change Room, Dark Room, Lobby and Offices	1.4.8.4.2.4.2.5.10	7350.650.510		
36						X			Operating Gallery	1.4.8.4.2.4.2.5.11	7350.650.511		
37						X			Building Exterior, Roof & Aux. Structures	1.4.8.4.2.4.2.5.12	7350.650.512		
38					X				Dismantlement	1.4.8.4.2.4.2.6	7350.660		
39						X			HLC, LLC, Metallography Cell	1.4.8.4.2.4.2.6.1	7350.660.100		
40						X			Interior Walls, Sub-ceilings	1.4.8.4.2.4.2.6.2	7350.660.200		
41						X			Roof and Exterior Walls	1.4.8.4.2.4.2.6.3	7350.660.300		
42						X			Concrete Floor	1.4.8.4.2.4.2.6.4	7350.660.400		
43						X			Storage Pit and Wells	1.4.8.4.2.4.2.6.5	7350.660.500		
44						X			Outside Structures	1.4.8.4.2.4.2.6.6	7350.660.600		
45						X			Removal of Below ground serv. lines & equip	1.4.8.4.2.4.2.6.7	7350.660.700		
46						X			Removal of HEPA & other operating systems/services	1.4.8.4.2.4.2.6.8	7350.660.800		
47					X				Yard	1.4.8.4.2.4.2.7	7350.670		

WORK BREAKDOWN STRUCTURE
PART I - INDEX

1. PROJECT TITLE/PARTICIPANT									2. DATE		3. IDENTIFICATION NUMBER	
General Atomics Hot Cell Project - Phase 3									1/6/1997			
4	5 WBS ELEMENTS								6	7	8	9
LINE NO.	INDENTURE LEVEL								TITLE	PARTICIPANT WBS ELEMENT CODE	BUDGET AND REPORTING NO.		
	1	2	3	4	5	6	7	8					
1	X								Hot Cell D&D	1.4.8.4			
2		X							Decontamination & Decommissioning	1.4.8.4.2			
3			X						Phase 3 - Site Release	1.4.8.4.2.5			
4				X					Final Report	1.4.8.4.2.5.1			
5				X					Confirmatory Survey	1.4.8.4.2.5.2			
6				X					Site Survey/NRC Coordination	1.4.8.4.2.5.3			
7			X						Phase 3 - Project Management	1.4.8.4.3.5			
8				X					Project Management	1.4.8.4.3.5.1			
9				X					DOE Requirements Support	1.4.8.4.3.5.2			
10													
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12													
13													
14													
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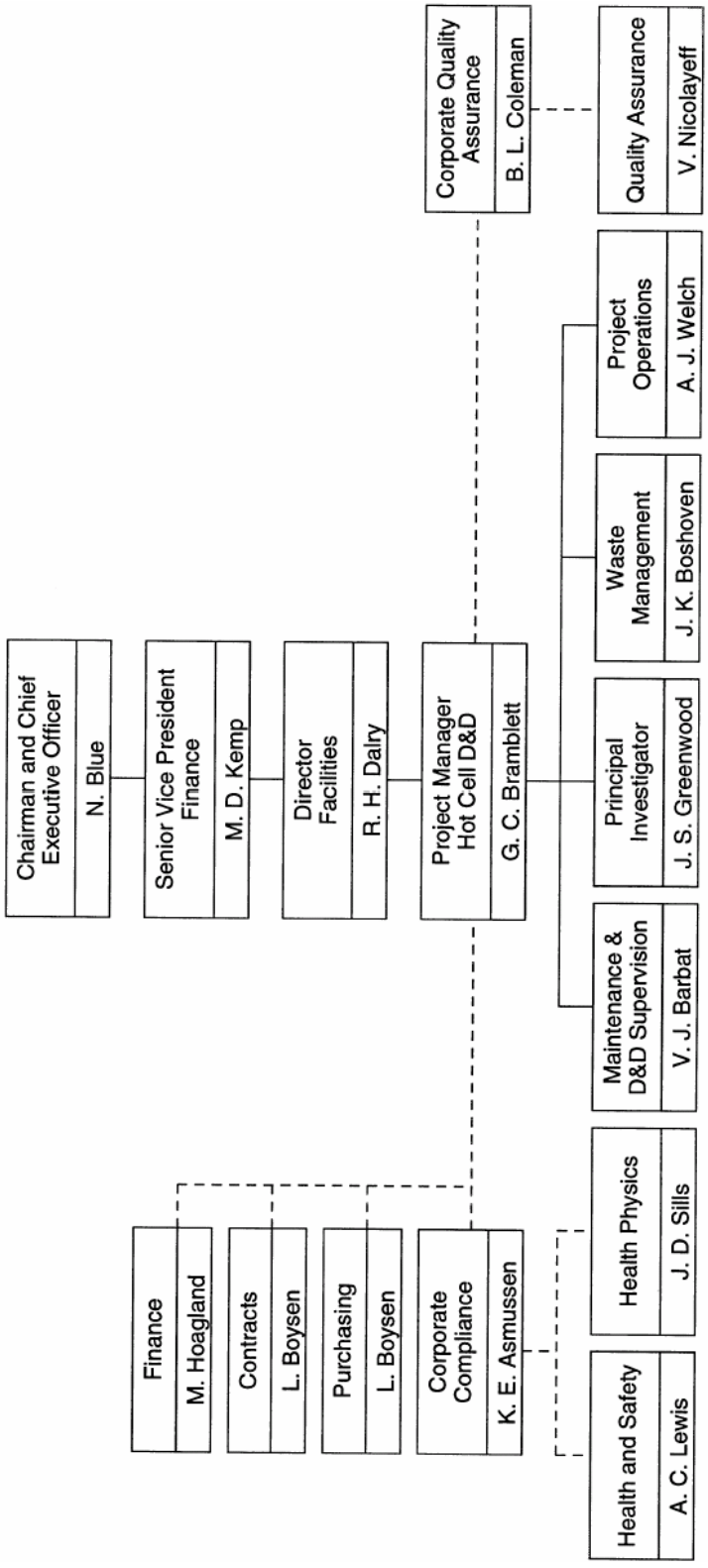
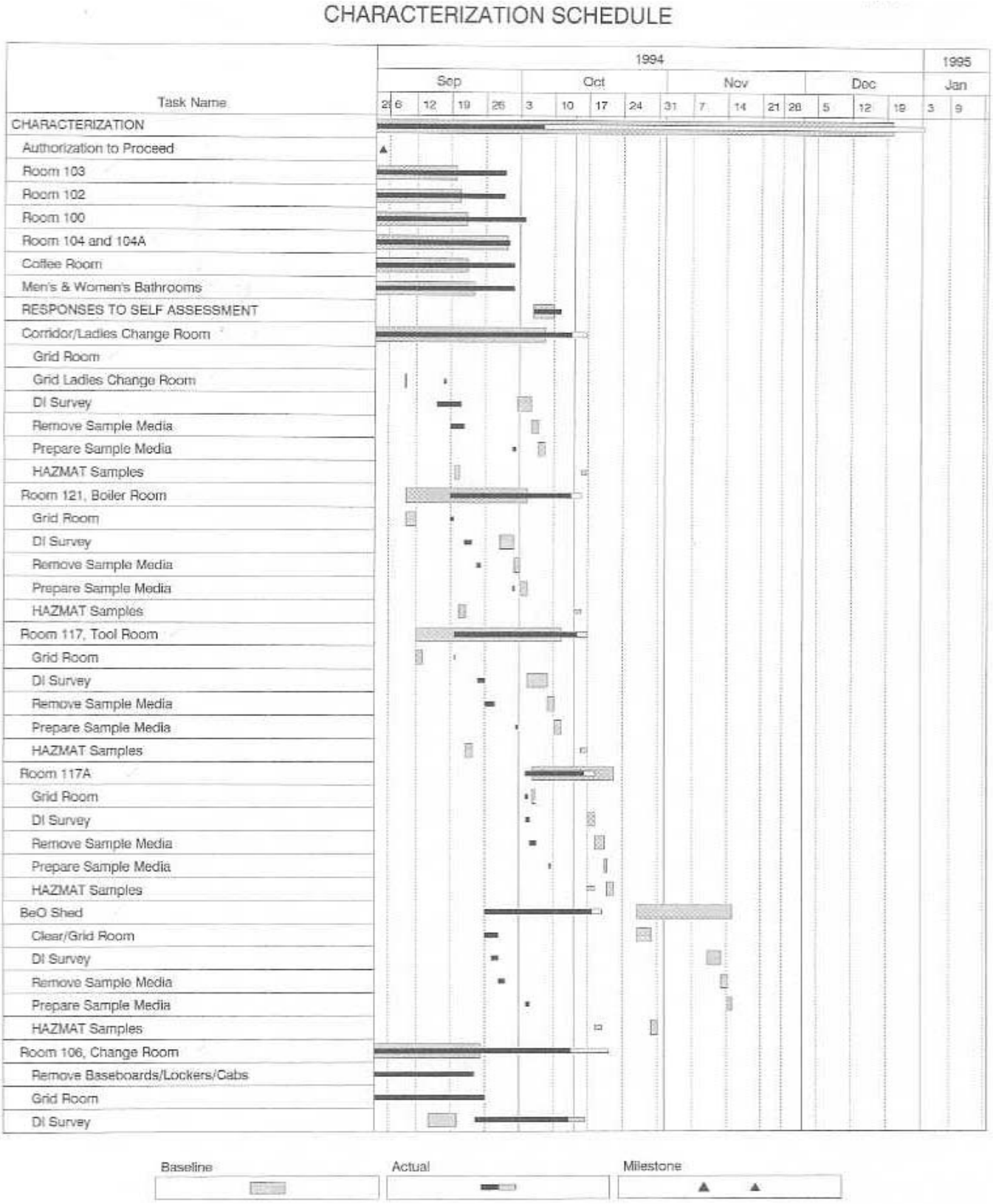
Appendix 2
Project Management Team

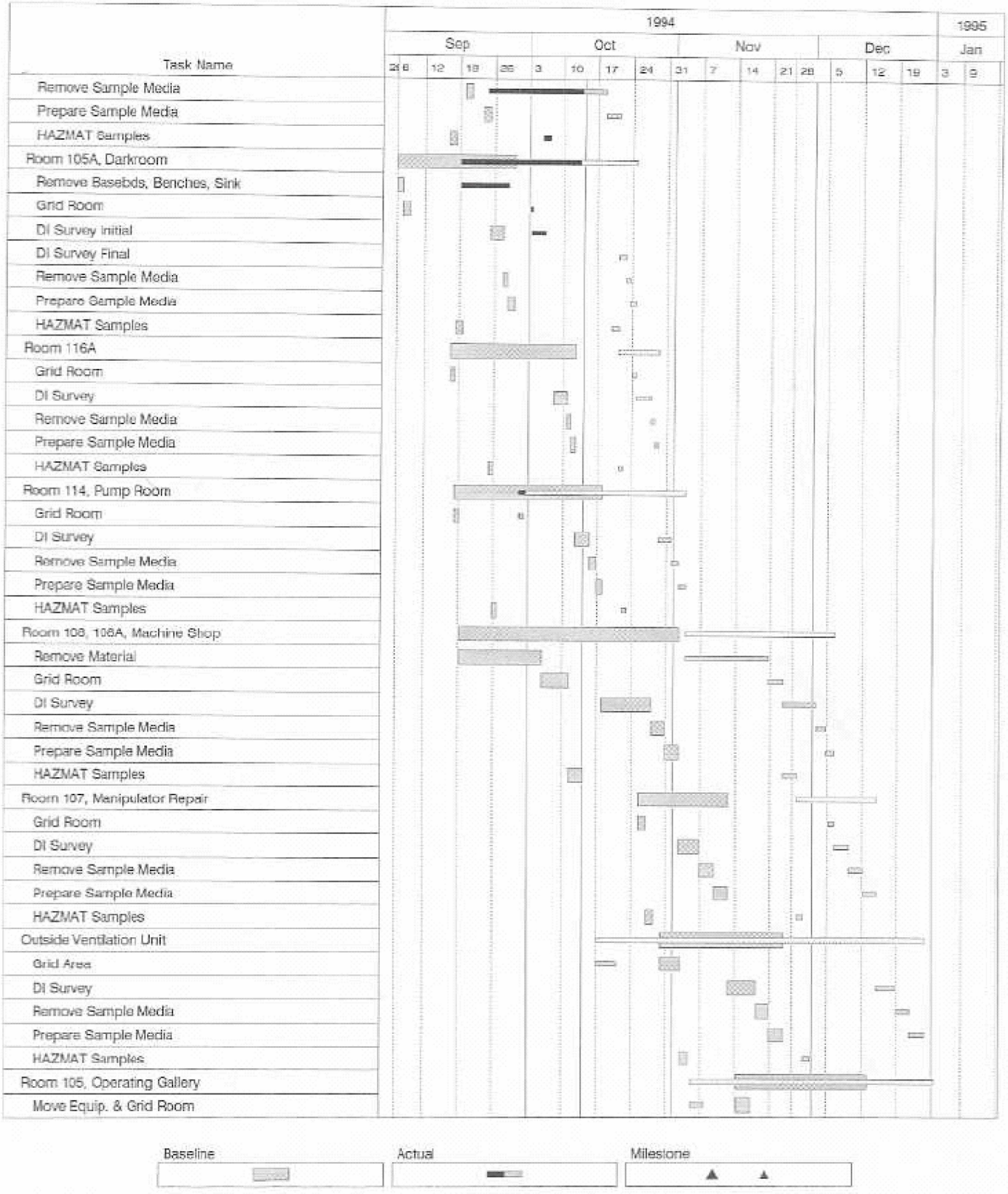


GA Hot Cell D&D Project Organization

Appendix 3 - Phase 1 Schedule



CHARACTERIZATION SCHEDULE



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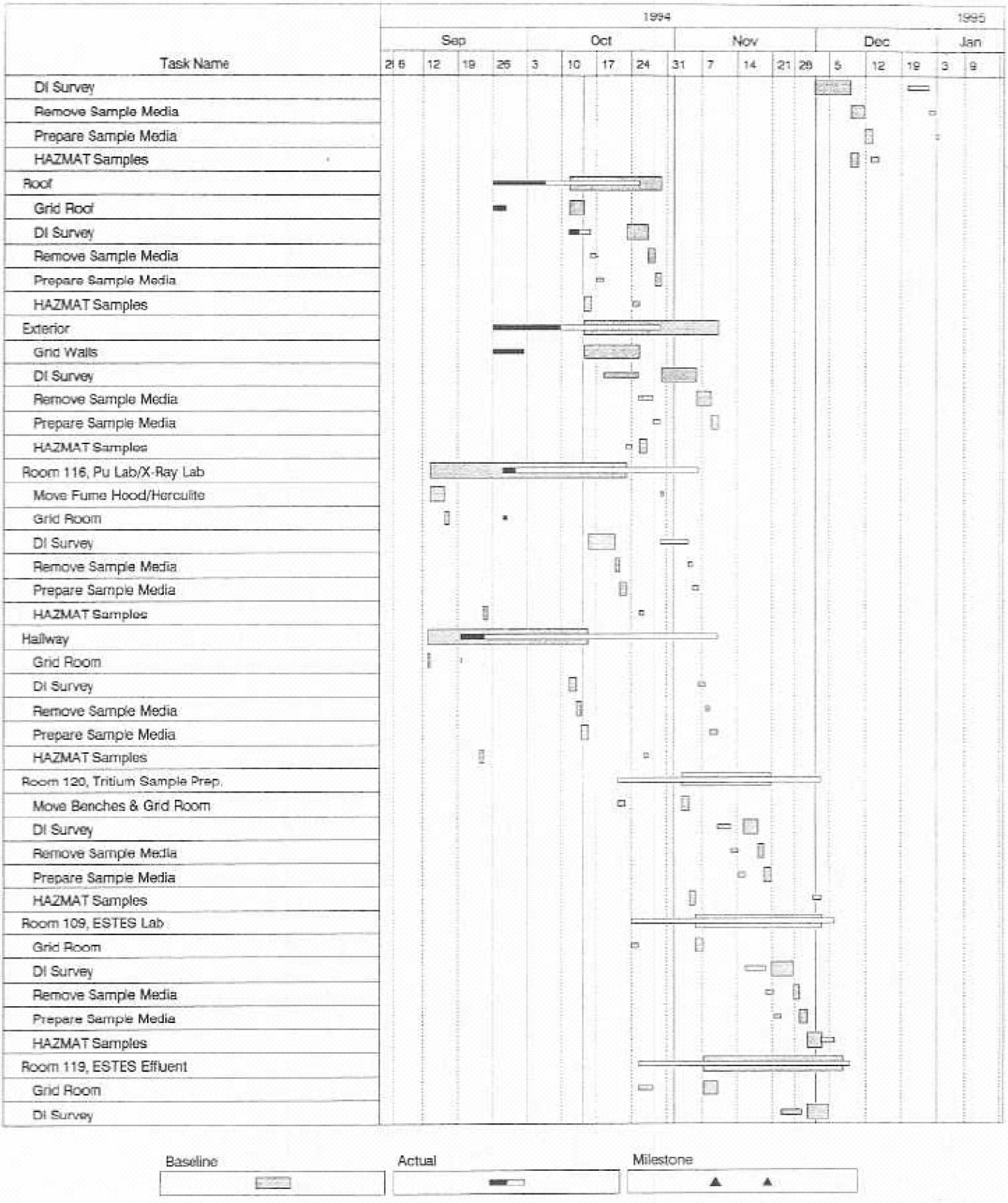

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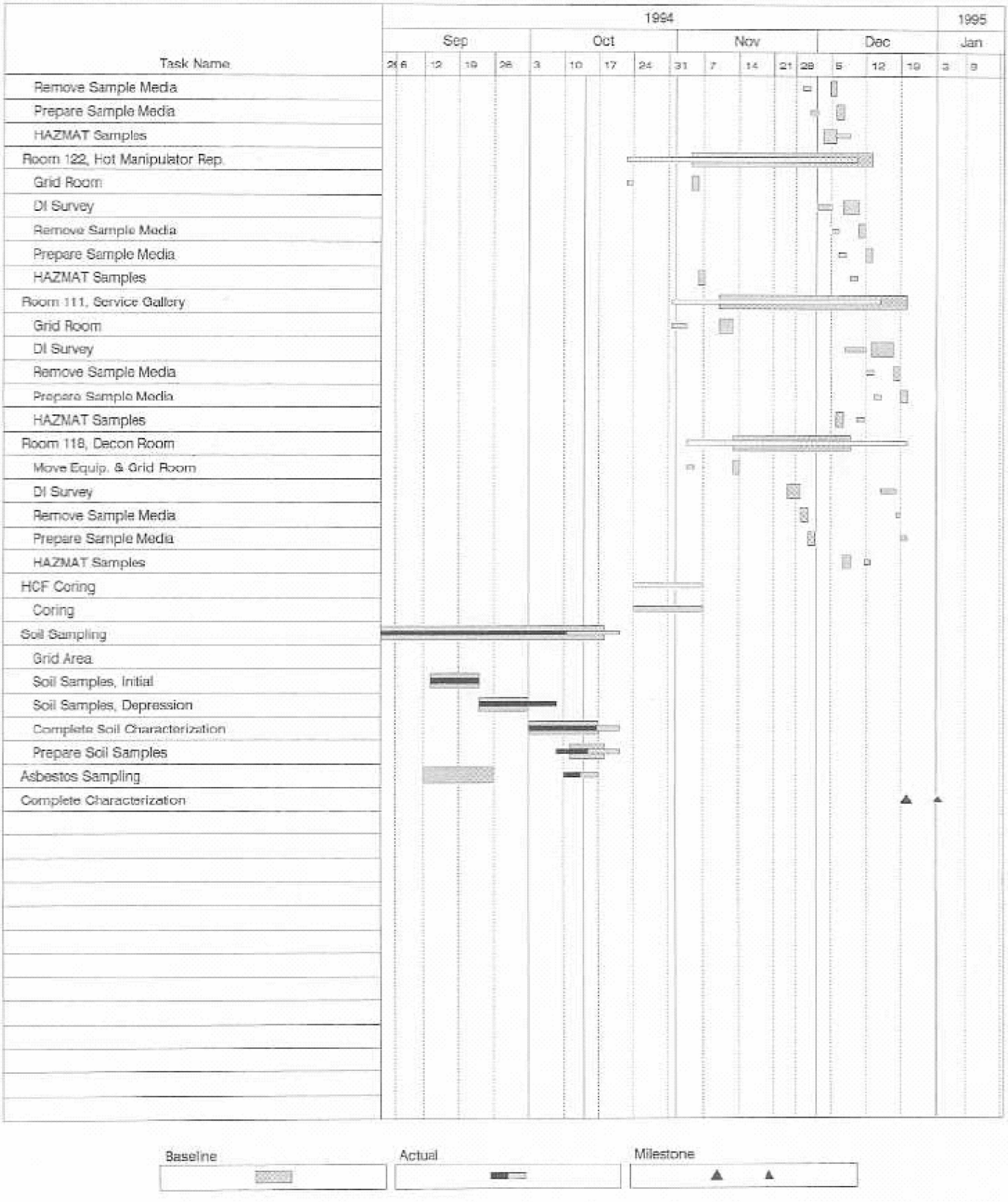
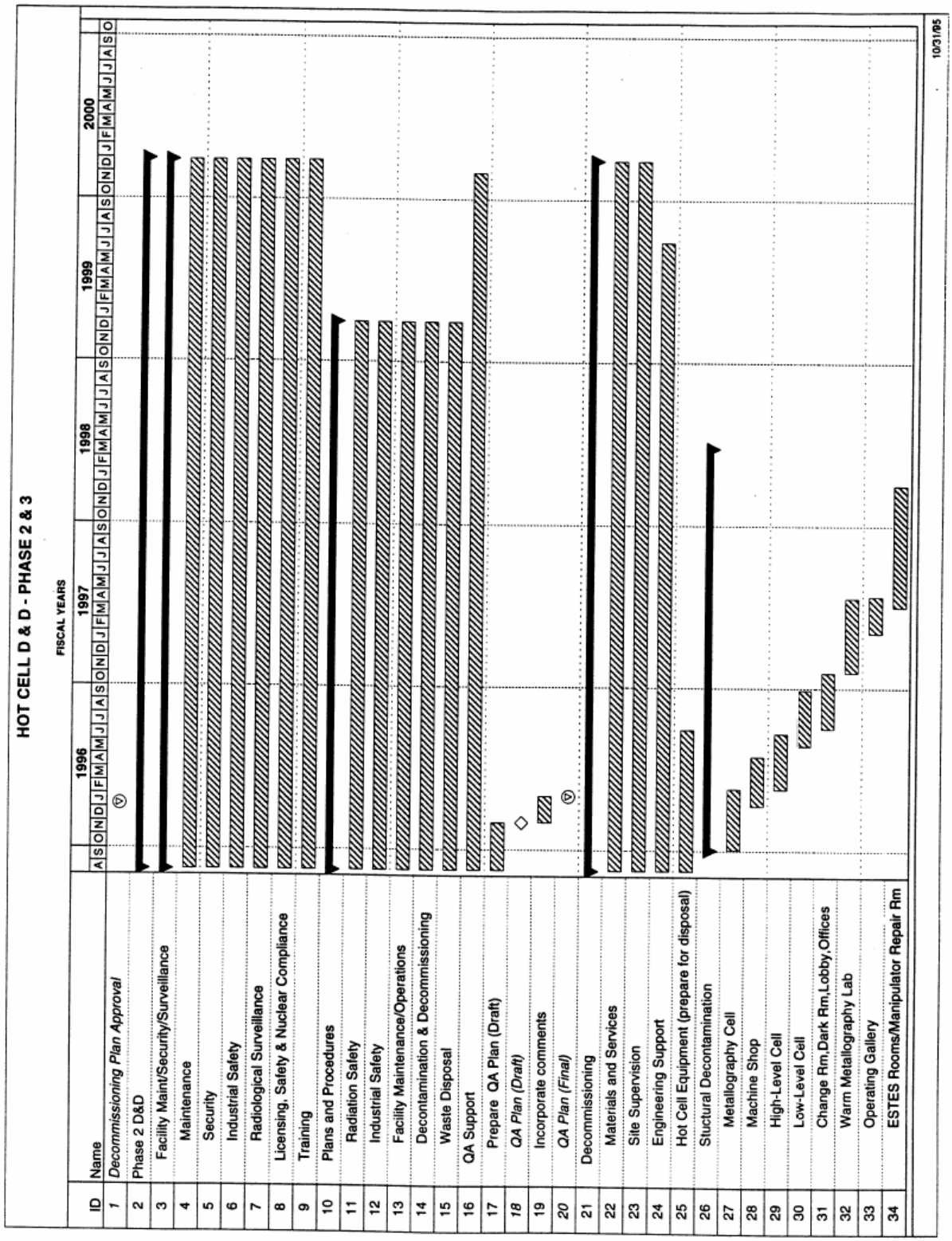
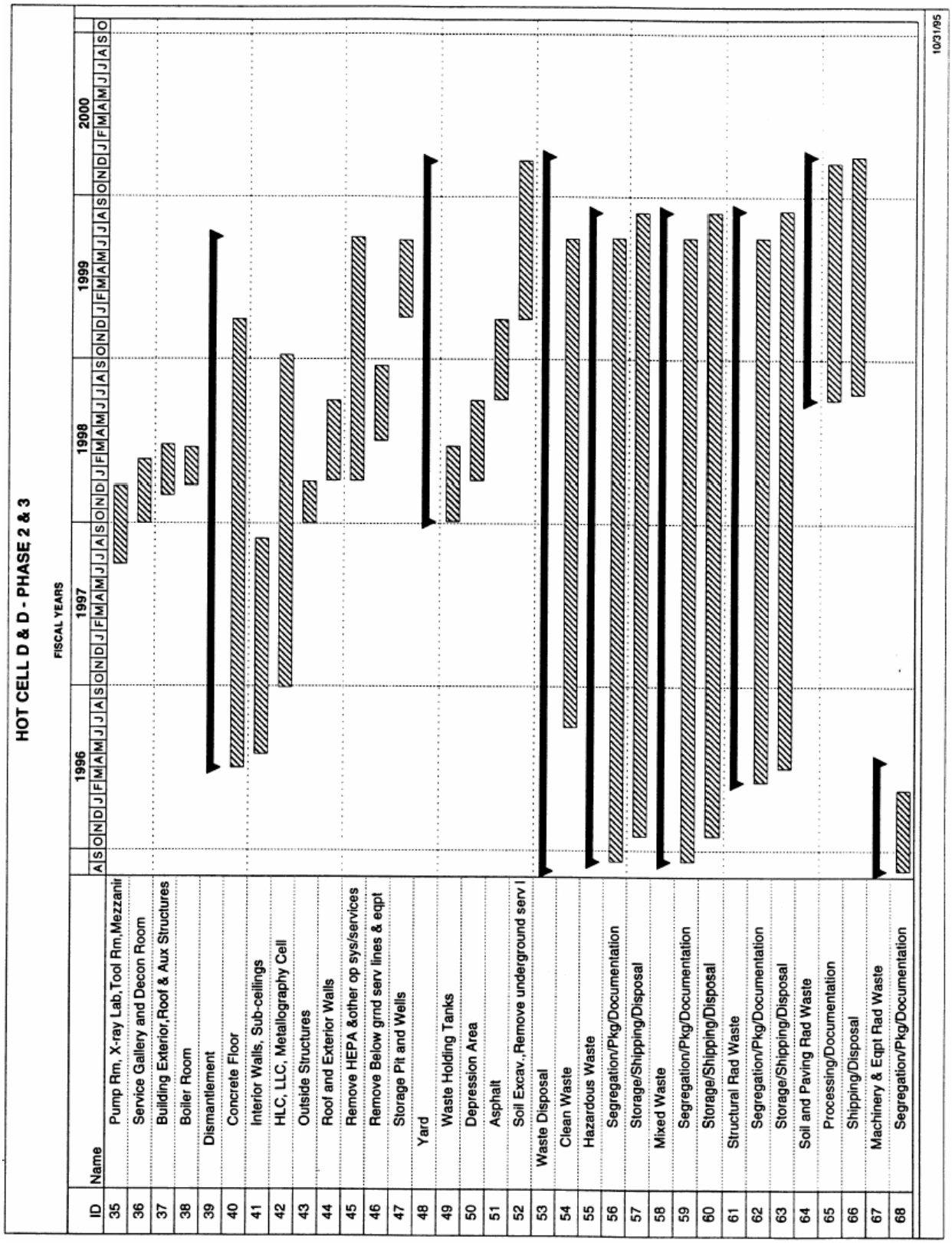


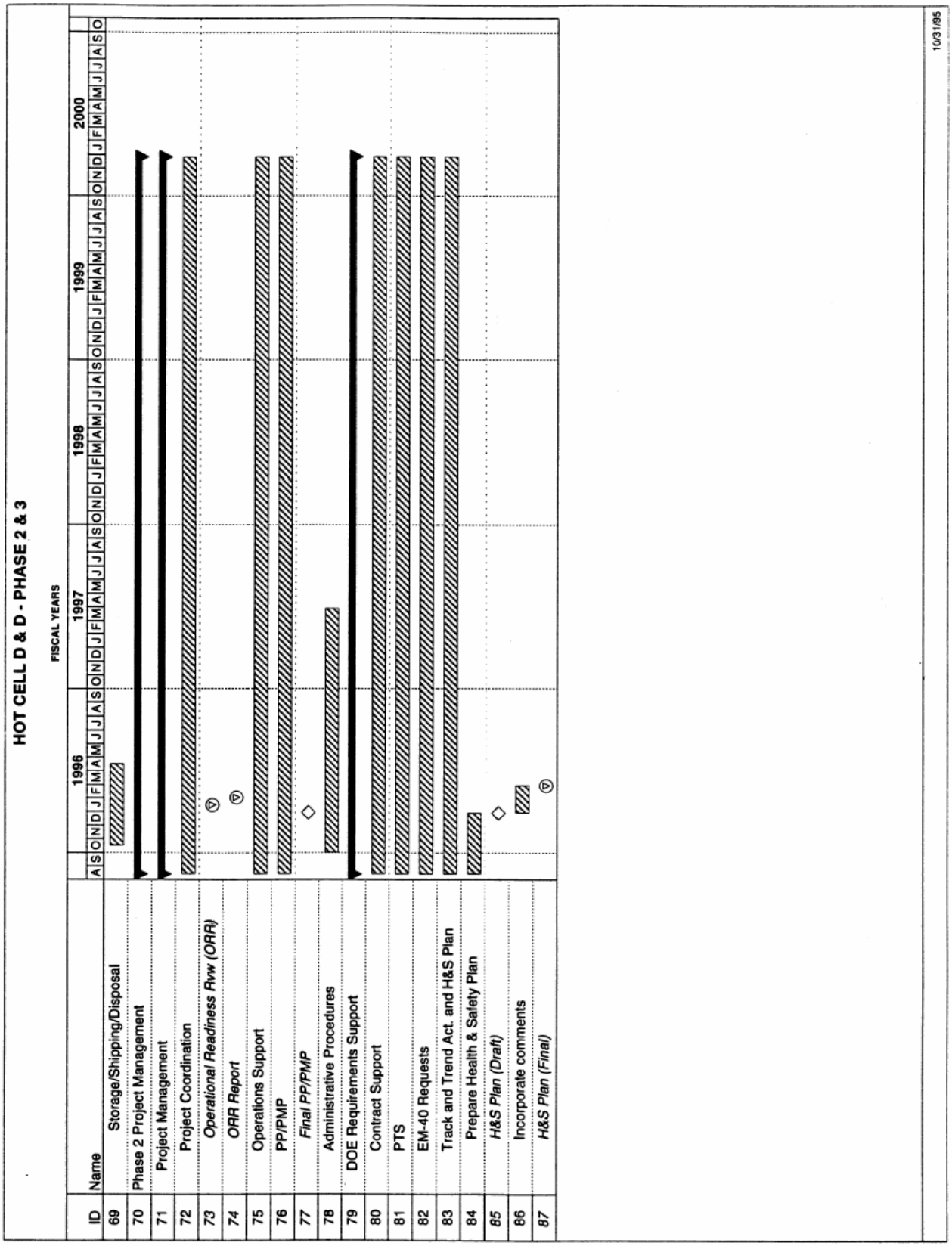
Appendix 4
Phases 2 and 3 Schedule



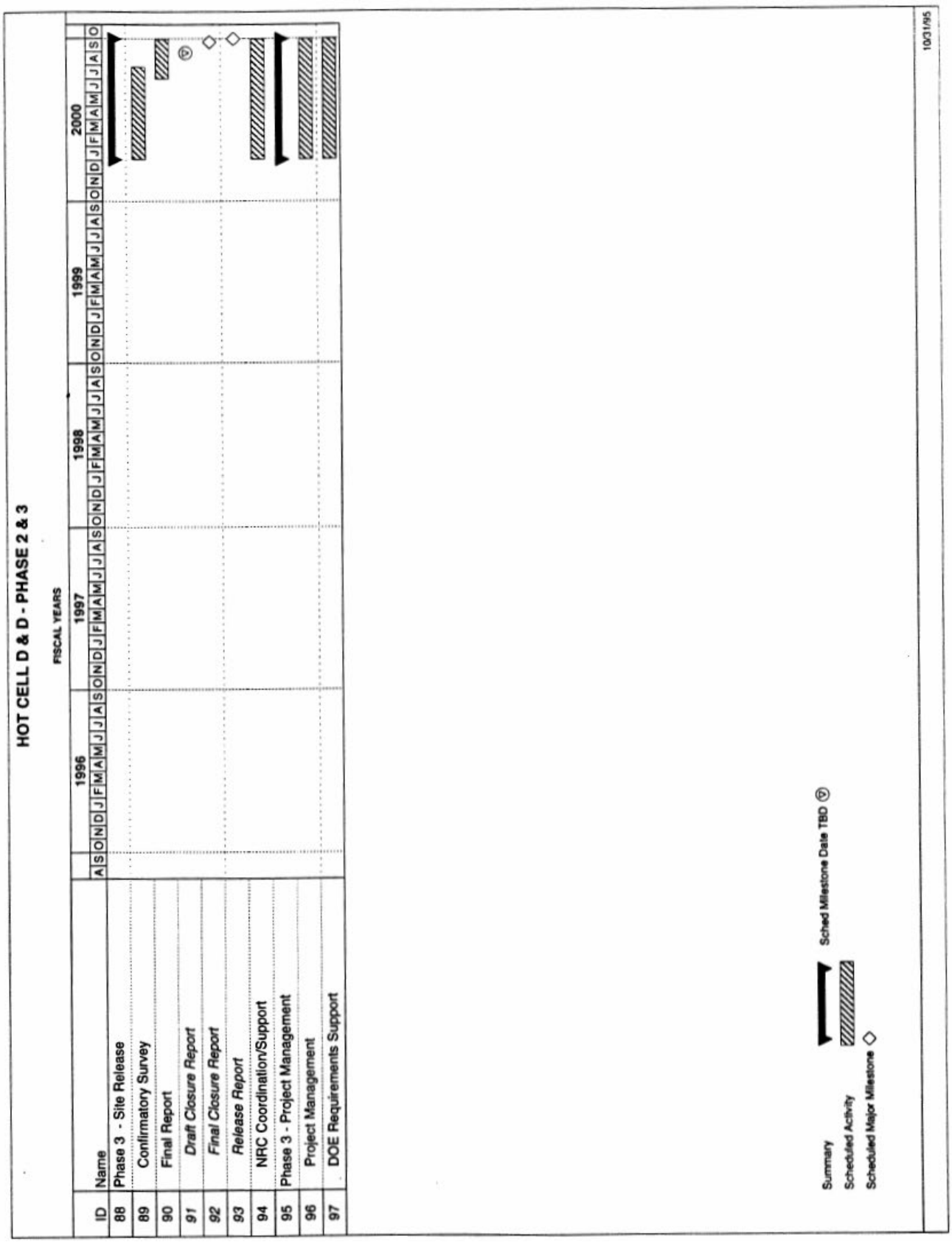
Decommissioning Schedule (Page 1 of 4)



Decommissioning Schedule (Page 2 of 4)

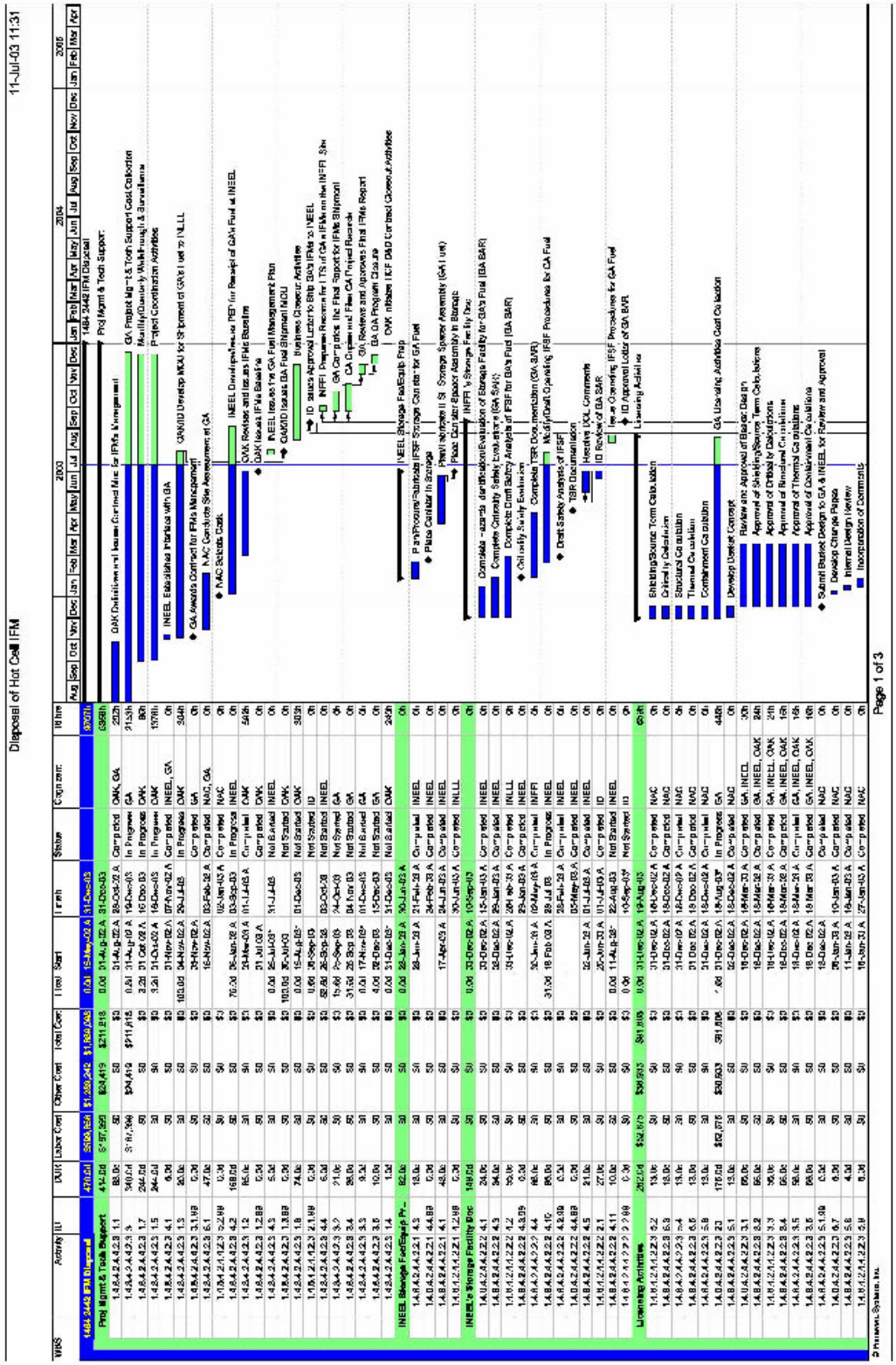


Decommissioning Schedule (Page 3 of 4)

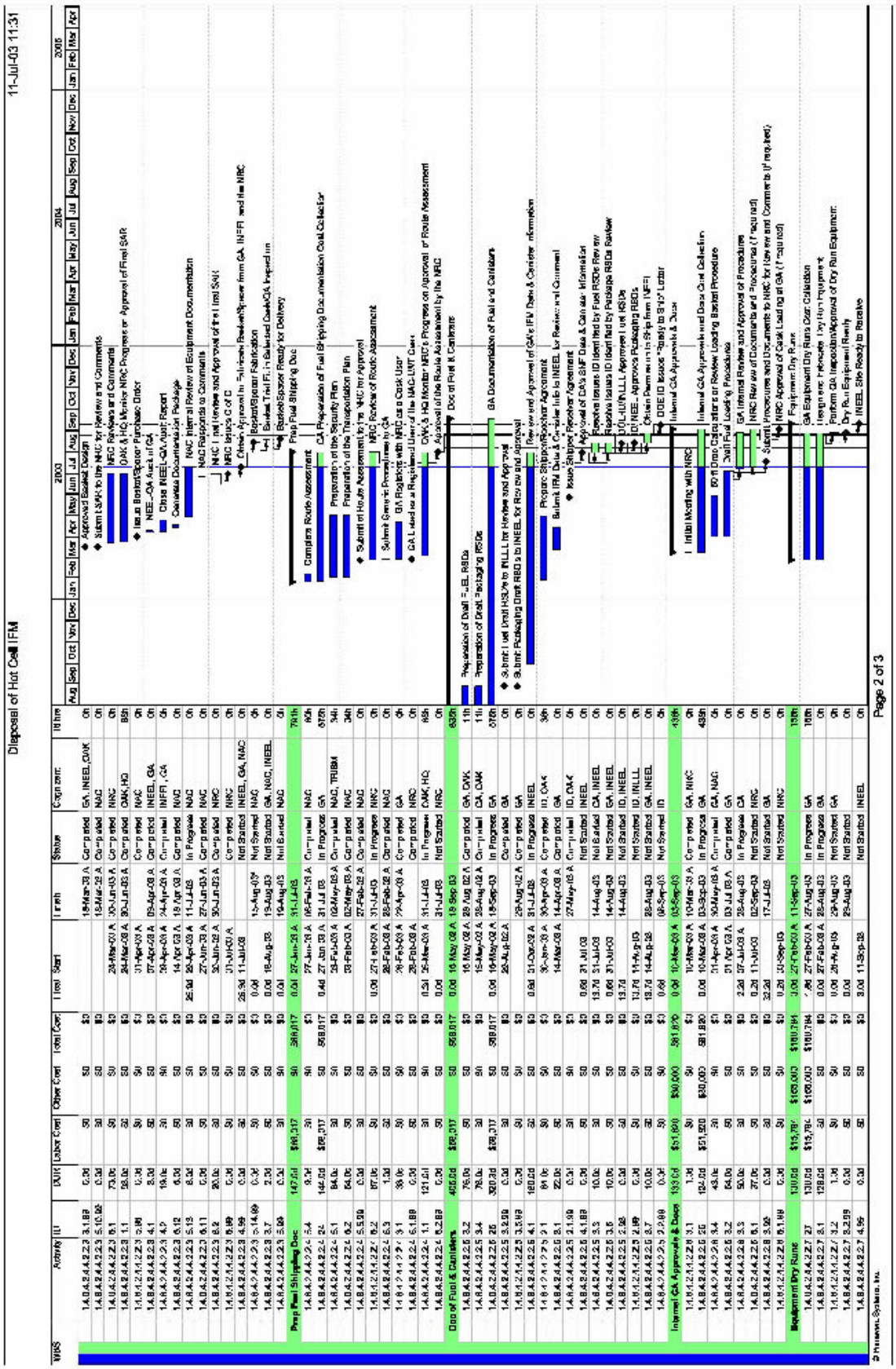


Decommissioning Schedule (Page 4 of 4)

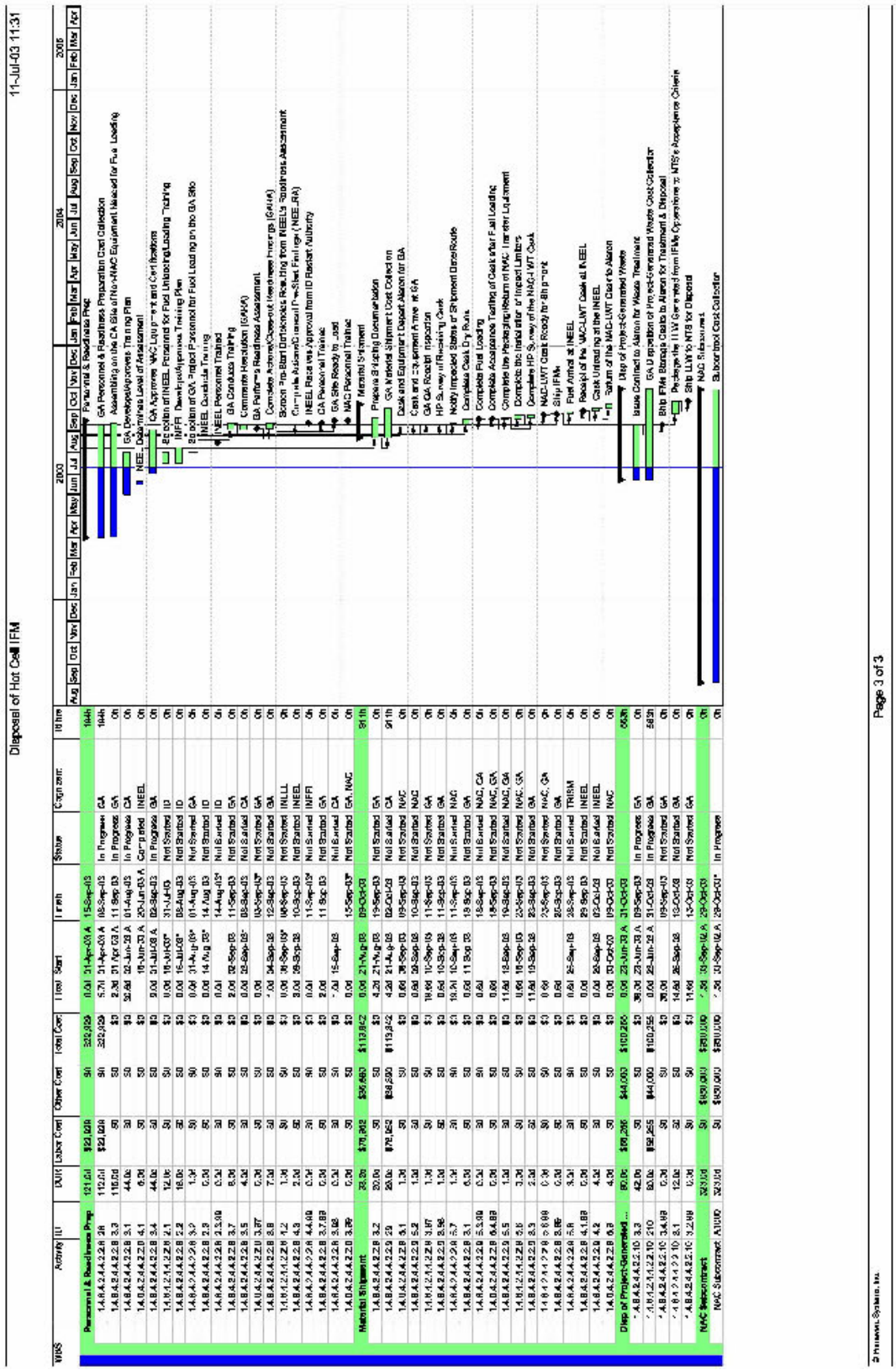
Appendix 5
Irradiated Fuel Materials Schedule



IFM Disposal Schedule (Page 1 of 3)



IFM Disposal Schedule (Page 2 of 3)



IFM Disposal Schedule (Page 3 of 3)

Appendix 6
General Atomic Hot Cell Facility
Decontamination and Dismantlement Project
Project Closeout / Critical Decision 4 (CD-4) Package

Department of Energy
Washington, DC 20585

September 3, 2004

2004-009079

MEMORANDUM FOR DAVID K. GARMAN
ACTING UNDER SECRETARY OF ENERGY

THROUGH: MICHAEL W. OWEN [redacted]
DIRECTOR
OFFICE OF LEGACY MANAGEMENT

FROM: PAUL M. GOLAN [redacted]
ACTING ASSISTANT SECRETARY FOR
ENVIRONMENTAL MANAGEMENT

SUBJECT: ACTION: Approval of the Critical Decision 4 for the Closeout of the General Atomics (GA) Hot Cell Facility (HCF) Decontamination and Decommissioning (D&D) Project, Project Baseline Summary VL-GA-0012, and the Transfer for the GA Project Files to the Office of Legacy Management (LM)

ISSUE: None

BACKGROUND: Activities associated with the cleanup of the GA HCF and surrounding site were completed on September 28,2003. The GA site has been remediated to negotiated cleanup standards and released by the U. S. Nuclear Regulatory Commission (NRC) and the State of California Department of Health Services Radiological Health Branch (CAL-RHB) to unrestricted use. All project generated waste and legacy spent fuel materials have been dispositioned. GAts Special Nuclear Materials license with the NRC and byproduct materials license with the CAL-RHB have been amended to remove any reference to the HCF. Environmental Management (EM) completion has been achieved at a total project cost of$35M. Attached are CD 4 documents in support of the closure.

1. CD-4Briefing to the Energy System Acquisition Advisory Board
2. LM Site Transition Plan
3. LM Transition Framework

DISCUSSION: Scope of EM's mission on the GA San Diego, California, site, which was completed on September 30, 2003, consisted of the characterization of the HCF and associated yard area, decontamination and demolition of the HCF, off site disposal of all generated waste, the remediation of the surrounding site leading to the regulatory release of the HCF site to unrestricted

use, and the shipment of 0.0052 metric tons heavy metals (MTHM) of the Department of Energy (DOE) owned legacy irradiated' fuel materials (IFMs) to the Idaho National Engineering and Environmental Laboratory (INEEL) for interim storage.

The above scope of work was accomplished through the execution of Contracts DE-AC03-84SFI1962 and DE-AC03-95SF20798. The NRC, in a letter dated July 2002, amended the GA's site material license to release the HCF site to unrestricted use and deleted references to the HCF site from the GA license. Similarly, the CAL-RHB in a letter dated August 2000 amended GA's Radioactive Materials License to release the HCF site to unrestricted use and deleted references to the HCF site from the license. Project generated waste was packaged and disposed in FY03. The 0.0052 MTHM of DOE owned legacy IFMs were packaged and shipped to INEEL for interim storage in September 2003. Remaining scope of work consists of contract closeout and the transfer of project files to LM in August, 2004. It is anticipated that approximately fifty (50) 10" x 15" x 10" boxes will be transferred to LM for storage.

Clause H.035 of the Contract indemnifies the DOE against any future liabilities, lawsuits, losses, judgments, damages regarding the HCF site. Any future cleanup activities will be the responsibility of GA.

SENSITIVITIES: None

POLICY IMP ACT: None

RECOMMENDATION: Approve the Critical Decision 4 Closeout of the GA HCF D&D Project and the transfer of the project records to LM.

Attachments

APPROVAL: [redacted]

DISAPPROVAL: _____

DATE: 8 SEPT 2004

cc: H. M. De Graca, Oak

Attachment I

Department of Energy
National Nuclear Security Administration
Service Center

National Nuclear Security Administration

JUN 14 2004

MEMORANDUM FOR: David K. Garman
Acting Under Secretary of Energy (S-3)

THROUGH: Jessie Hill Roberson
Assistant Secretary for
Environmental Management (EM-1)

THROUGH: Michael W. Owen, Director
Office of Legacy Management (LM-1)

FROM: [redacted]
Henry M. De Graca, Manager
Oakland Environmental Programs Division

SUBJECT: Critical Decision 4 for the Closeout of the General Atomics (GA) Hot Cell Facility (HCF) Decontamination and Decommissioning (D&D) Project, Project Baseline Summary VL-GA-0012, and the Transfer for the GA Project Files to the Office of Legacy Management (LM)

BACKGROUND: Activities associated with the cleanup of the GA HCF and surrounding site were completed on September 28, 2003. The GA site has been remediated to negotiated cleanup standards and released by the U. S. Nuclear Regulatory Commission (NRC) and the State of California Department of Health Services Radiological Health Branch (CAL-RHB) to unrestricted use. All project generated waste and legacy spent fuel materials have been dispositioned. GA's Special Nuclear Materials license with the NRC and byproduct materials license with the CAL-RHB have been amended to remove any reference to the HCF. EM completion has been achieved at a total project cost of $35M.

DISCUSSION: Scope of EM's mission on the GA San Diego, Calfornia site, which was completed on September 30, 2003, consisted of the characterization of the HCF and associated yard area, decontamination and demolition of the HCF, off site disposal of all generated waste, the remediation of the surrounding site leading to the regulatory release of the HCF site to unrestricted use, and the shipment of 0.0052 metric tons heavy metals (MTHM) of the Department of Energy (DOE) owned legacy irradiated fuel materials (IFMs) to the Idaho National Engineering and Environmental Laboratory (INEL) for interim storage.

The above scope of work was accomplished through the execution of Contracts DE-AC03-84SF11962 and DE-AC03-95SF20798. The NRC, in a letter dated July 2002, amended the GA's site material license to release the HCF site to unrestricted use and deleted references to the HCF site from the GA license. Similarly, the CAL-RHB in a letter dated August 2000 amended GA's Radioactive Materials License to release the HCF site to unrestricted use and deleted references to the HCF site from the license. Project generated waste was packaged and disposed in FY03. The 0.0052 MTHM of DOE owned legacy IFMs were packaged and shipped to INEL for interim storage in September 2003. Remaining scope of work consists of contract closeout and the transfer of project files to the LM by June 2004. It is anticipated that approximately fifty (50) 10" x 15" x 10" boxes will be transferred to LM for storage.

Clause H.035 of the Contract indemnifies the DOE against any future liabilities, lawsuits, losses, judgments, damages regarding the HCF site. Any future cleanup activities will be the responsibility of GA.

SENSITIVITIES: None

RECOMMENDATION: Approve the Critical Decision 4 Closeout of the GA HCF D&D Project and the transfer of the project records to LM.

Attachments

cc w/atts:
I. R. Triay, EM-3
S. L. Johnson, EM-3.4
B. J. Heffernan, EM-12
E. C. Schmitt, EM-20
D. W. Geiser, LM-40

Slide 1

Attachment II

Energy System Acquisition Advisory Board

General Atomics Hot Cell Facility
Decontamination & Decommissioning Project
San Diego California Site
Project Baseline Summary VL-GA-0012

Critical Decision - 4
May 2004

Oakland Environmental Programs Division

Slide 2

Purpose

- Request Approval to:
- Close the General Atomics Hot Cell Facility D&D Project, PBS-VL-GA-0012, at the General Atomics San Diego, CA Main Site
- and Transfer the General Atomics Projects Records to the Office of Legacy Management

Slide 3

Background

- General Atomics Hot Cell Facility (Attributes)
  - Privately owned and operated nuclear facility, located at GA's main site 13 miles northwest of downtown San Diego
  - 7,400 sq. ft. single story building with a 90,000 sq. ft. service and storage yard
  - Operated under NRC and State of CA licenses
  - Utilized for DOE and private programs
- Scope of the Project consisted of:
  - (1) the remediation of the HCF site to negotiated clean-up standards for an industrial future land use scenario
  - (2) obtaining regulatory release of the HCF site to unrestricted use, and
  - (3) shipping the DOE owned legacy irradiated fuel materials to INEEL for interim storage.

Slide 4

Background (cont'd)

- Total Project Cost was $35M
- Any future clean-up activities regarding the HCF site will be the responsibility of GA per Clause H.035 of the Contract.
- There were no Special Nuclear Material Requirements.
- There were no Groundwater Requirements.
- There were no Site Transition/Transfer Requirements. Site is privately owned and operated.

Slide 5

Tasks Completed

- October 1998 – Building Dismantlement Completed – Facilities Requirements Met
- July 2000 – Hot Cell Site Released to unrestricted Use by the NRC (by license amendment)
- August 2000 – Hot Cell Site Released to Unrestricted Use by the State of CA (by license amendment) – Soil Requirements Met
- September 2001 – HCF Decommissioning Activities Completed

Slide 6

Tasks Completed (cont'd)

- September 2003 – DOE Legacy Irradiated Fuel Materials Shipped to INEEL for Interim Storage – Spent Nuclear Fuel Requirements Met
- September 2003 – All Project Generated Radiological Waste Disposal Activities Completed – Waste Disposition Requirements Met
- September 2003 – EM Mission Accomplished

Slide 7

Task Remaining

- Transfer approximately 50 boxes of project records to the Office of Legacy Management for storage.

Slide 8

Recommended Actions

- Approve closeout of the GA Hot Cell Facility D&D Project, PBS VL-GA-0012.
- Approve transfer of GA Project records to the Office of Legacy Management for storage.

Attachment III

General Atomics Hot Cell Facility Decontamination & Decommissioning Project Site Transition Plan

U. S. Department of Energy
National Nuclear Security Administration
Service Center (Oakland)
Oakland Environmental Programs Division
May 2004

1.0 Executive Summary

The U. S. Department of Energy (DOE), National Nuclear Security Administration (NNSA) Service Center Oakland (OAK) has developed this document to describe the remaining actions to be completed by OAK federal staff leading to project completion. The actions consist of completion of the final Project Closure Report per DOE M413.3-1, the retirement of the General Atomics Hot Cell Facility (HCF) Decontamination and Decommissioning (D&D) Contracts, DE-AC03-85SF11962 and DE-AC03-95SF20798 and the transferring of the project files to the Office of Legacy Management for storage.

2.0 Background

The Environmental Management (EM) mission on the General Atomics San Diego, California site was to decontaminate and demolish the HCF, obtain regulatory release of the HCF site to unrestricted use, and ship 0.0052 metric tons of heavy metal (MTHM) of irradiated fuel materials to the Idaho National Engineering Laboratory (INEL) for interim storage. The EM mission was accomplished on September 28, 2003 with the completion of all physical cleanup activities. All HCF associated equipment was removed and disposed of in March 2001; the HCF decontaminated and dismantled in October 1998; HCF associated yard area remediated to negotiated cleanup levels and released to unrestricted use by the Nuclear Regulatory Commission (NRC) and the State of California Department of Health Services Radiological Health Branch (CAL-RHB) in August 2000; radiological waste disposal activities completed in June 2001; and 0.0052 MTHM of irradiated fuel materials packaged and shipped to the INEL for interim storage on September 28, 2003. The Nuclear Regulatory Commission, in a letter dated July 3, 2000, amended the GA's site byproduct source and/or special nuclear material license to release the HCF site to unrestricted use and deleted references to this area from the license. Similarly, the CAL-RHB in a letter dated August 31, 2000 amended GA's Radioactive Material License to release the HCF site to unrestricted use and deleted references to this area from the license.

Remaining HCF D&D work to be completed by federal staff includes the close-out and retirement of the HCF D&D contracts, DE-AC03-84SF11962 and DE-AC03-9520798, and the transferring of HCF D&D Project files to the Office of Legacy Management for storage. The goal is to transfer the project files to the Office of Legacy Management by June 2004.

3.0 Schedule of Activities to be completed leading to project completion.

Action	Completion Date	Responsible Party
Complete Preliminary Project Closure Report per DOE M413.3-1	June 2004	James A. Davis, III
Close and Retire Hot Cell Facility D&D Contract DE-AC03-84SF11962	August 2004	Aundra Richards
Transfer DE-AC03-84SF11962 Files (contract and project) to Grand Junction for Storage	July 2004	John Lee
Close and Retire Hot Cell Facility D&D Contract DE-AC03-95SF20798	Depending on receipt of final invoice, could be as early as 2006.	Aundra Richards
Transfer Contract DE-AC03-95SF20798 Project Files to Grand Junction for Storage	July 2004	John Lee

SITE TRANSITION FRAMEWORK FOR LONG-TERM SURVEILLANCE AND MAINTENANCE FOR

GENERAL ATOMICS HOT CELL FACILITY DECONTAMINATION DECOMMISSIONING PROJECT

REVIEW ITEM	COMPLETED	N/A	STATUS
I. Authorities and Accountabilities are Assigned and Documented:			
● All interested parties' assignment of accountability and authority for long-term surveillance and maintenance has been identified and documented.		X	There are no requirements for long-term surveillance and maintenance for the General Atomics Hot Cell Facility site. Site was remediated to negotiated clean-up standards and has been released to unrestricted use by the regulators, (Nuclear Regulatory Commission and the State of Cal Dept of Health Services Radiological Health Branch.
A. All documents allocating the roles and responsibilities of interested parties have been approved and signed (e.g., Memorandum of Agreement, Memorandum of Understanding, Interagency Agreement, Cooperative Agreement).		X	There are no requirements for long-term surveillance and maintenance for the General Atomics Hot Cell Facility site. Site was remediated to negotiated clean-up standards and has been released to unrestricted use by the regulators, (Nuclear Regulatory Commission and the State of Cal Dept of Health Services Radiological Health Branch.
B. Each federal or non-federal entity responsible for long-term surveillance and maintenance activities listed in section I(A) have been identified. Funding sources for each activity have been identified.		X	There are no requirements for long-term surveillance and maintenance for the General Atomics Hot Cell Facility site.
C. Appropriate governmental policies and procedures for managing resources are incorporated into the long-term surveillance and maintenance plan and agreements.		X	There are no requirements for long-term surveillance and maintenance for the General Atomics Hot Cell Facility site.
D. The legal authority under which long-term surveillance and maintenance will be conducted has been identified and documented or a "reservation of rights" has been indicated.		X	There are no requirements for long-term surveillance and maintenance for the General Atomics Hot Cell Facility site.
E. Authorities relating to Institutional Controls are further discussed in paragraph IV.		X	There are no requirements for long-term surveillance and maintenance for the General Atomics Hot Cell Facility site.
II. Site Conditions are Accurately and Comprehensively Documented:			
● All documentation identifying site historical uses, characterization, and remedial action, including the Preliminary and Final Closeout Reports have been completed and made available to the public. Where available, the information identified in this section should be of survey quality and have Global Information Systems (GIS) references.	x		Site has been well characterized and is documented in a report titled, "Final Survey of the GA Site".
A. The site at the time of closure, including all remedies and remaining hazards, has been described. Examples include:	x		Site has been well characterized and is documented in a report titled, "Final Survey of the GA Site".
1. Physical features of the site, including, site topography, geology, hydrogeology, geomorphology, seismicity, site and area boundaries, and other features relevant to the long-term performance of the site.	x		Site has been well characterized and is documented in a report titled, "Final Survey of the GA Site".
2. Locations of active, inactive, and decommissioned buildings, structures, and surface and subsurface infrastructure (e.g., utilities)	x		Site has been well characterized and is documented in a report titled, "Final Survey of the GA Site".

REVIEW ITEM	COMPLETED	N/A	STATUS
3. Locations of residual hazards and associated engineered and institutional control systems.		X	Site has been remediated to negotiated clean-up standards and has been released to unrestricted use by the regulators.
4. Locations of groundwater wells, wastewater outfalls, and air quality monitoring stations. Information has been depicted on site maps.		X	Ground water was not an issue.
5. For those sites undergoing closure, locations of off-site buildings and structures, important ecological resources, and associated potential receptors in the vicinity of the site.		X	Site has been remediated to negotiated clean-up standards and has been released to unrestricted use by the regulators.
6. Characteristics of the remaining contaminants (e.g., radioisotope, activity, and physical form).		X	Site has been remediated to negotiated clean-up standards and has been released to unrestricted use by the regulators.
7. Describe the initial risk at the site and the risk remaining at the site following remediation. This will be used to provide a reference baseline.		x	Site has been remediated to negotiated clean-up standards and has been released to unrestricted use by the regulators.
8. The existence of a "No Further Action" decision should be indicated.		X	Site has been remediated to negotiated clean-up standards and has been released to unrestricted use by the regulators.
B. For those sites undergoing closure, a conceptual site model for long-term surveillance and maintenance has been completed (if deemed applicable), showing the relationships between existing residual hazards, environmental transport mechanisms, exposure pathways, and human/ecological receptors.		X	Site has been remediated to negotiated clean-up standards and has been released to unrestricted use by the regulators.
C. All remedial action(s) and associated documentation have been completed and approved by regulators.	X		Site was remediated to negotiated clean-up standards and has been released by the regulatory agencies to unrestricted use August 2001.
D. Results of any Natural Resource Damage Assessment claims, where applicable, performed with associated documentation has been identified. This assessment should discuss the Department's potential environmental liability at the site.		X	No damage claims were filed.
III. Engineered Controls, Operation & Maintenance Requirements, and Emergency/Contingency Planning are Documented:			
A. Engineered controls have been identified and documented, information should include:		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term surveillance and maintenance.

SITE TRANSITION FRAMEWORK FOR LONG-TERM SURVEILLANCE AND MAINTENANCE FOR

GENERAL ATOMICS HOT CELL FACILITY DECONTAMINATION DECOMMISSIONING PROJECT

REVIEW ITEM	COMPLETED	N/A	STATUS
1. Design and construction drawings, specifications, and completion report.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term surveillance and maintenance.
2. Site physical and geotechnical data.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term surveillance and maintenance.
3. Locations of engineered controls accurately identified and depicted on site maps.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term surveillance and maintenance.
4. Identification of on-going remediation and related waste management activities.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term surveillance and maintenance.
5. Performance history assessments indicating successful operation.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term surveillance and maintenance.

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REVIEW ITEM	COMPLETED	N/A	STATUS
6. A life-cycle cost estimate, including basis and assumptions. The life-cycle cost estimate should be based on best available data but should also include a reasonable and prudent amount for future contingencies, recognizing that in most cases the long-term surveillance and maintenance activities may be on-going until such time that no hazards remain to human health and the environment.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term surveillance and maintenance.
7. A master schedule of on-going activities has been made available, including exit criteria outlining if and/or when engineered controls are no longer necessary. If exit criteria will be implemented while hazards to human health and the environment remain, a Probabilistic Risk Assessment (PRA) over several half-lives should be provided to justify the exit strategy and the discontinuance of the engineered controls.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term surveillance and maintenance.
B. Operations & Maintenance (O&M) activities have been documented, funding is in place, and a party has been selected to perform the necessary activities.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term surveillance and maintenance.
1. Surveillance and monitoring requirements have been documented (e.g., scope, frequency, reporting, process descriptions, and analytical parameters and methods). This document should allow for optimization that is consistent with the selected remedy.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term surveillance and maintenance.
2. The cost, including basis and assumptions, of operations, maintenance and surveillance activities has been estimated, documented, and revised periodically as experience dictates. The request for funding should be in accordance with applicable budget appropriation procedures.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term surveillance and maintenance.

REVIEW ITEM	COMPLETED	N/A	STATUS
3. An agreement and/or contract is in place for performance of all O&M activities during long-term surveillance and maintenance if an outside party will be performing these activities.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term surveillance and maintenance.
C. Emergency/Contingency planning and the authority and responsibilities to implement have been identified.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term emergency planning.
1. Uncertainties associated with residual hazards, fate and transport mechanisms, exposure pathways, and the effectiveness of long-term surveillance and maintenance activities have been identified.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term emergency planning.
2. Scenarios related to each uncertainty have been identified (e.g., failure scenarios).		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term emergency planning.
3. Roles, responsibilities, and procedures to respond to each scenario have been established.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term emergency planning.
4. The conceptual site model developed in support of the remedial action or closure decision should be routinely reviewed, updated and re-evaluated based on new technical information and on monitoring data collected during stewardship of the site.		X	Physical work including decontamination, dismantlement, waste disposal, soil remediation, and spent fuel materials removal have been completed and the site was released to unrestricted use by the regulatory agencies. There is no requirement for long term emergency planning.
IV. Institutional Controls and Enforcement Authorities are Identified:			

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REVIEW ITEM	COMPLETED	N/A	STATUS
A. Land Use/Institutional Controls have been identified, approved by the regulators) (if applicable) and implemented. All institutional control components of each implemented remedy are described (e.g., future lands use assumptions upon which each implemented remedy is based, associated land use restrictions). If engineered barriers are relied upon as part of the remedy requiring institutional controls, assumptions regarding the longevity and performance of these barriers should be identified.		X	Site has been released by the regulators to unrestricted use for an industrial future land use scenario. Industrial zoning is enforced by the City and County of San Diego, California.
1. On-site and off-site land uses for each area (property) and its associated land use assumptions have been identified.		X	Site has been released by the regulators to unrestricted use for an industrial future land use scenario. Industrial zoning is enforced by the City and County of San Diego, California.
2. Procedures for managing, assessing potential changes in, and enforcing on-site and off-site(as appropriate) land uses have been documented and are being conducted.		X	Site has been released by the regulators to unrestricted use for an industrial future land use scenario. Industrial zoning is enforced by the City and County of San Diego, California.
3. Institutional controls established as part of an implemented remedy have been identified and a process is in place to monitor and document these institutional controls.		X	Site has been released by the regulators to unrestricted use for an industrial future land use scenario. Industrial zoning is enforced by the City and County of San Diego, California.
4. Roles and responsibilities have been outlined for responding to requests to change existing land uses that is inconsistent with the land use assumed during implementation of the selected remedy.		X	Site has been released by the regulators to unrestricted use for an industrial future land use scenario. Industrial zoning is enforced by the City and County of San Diego, California.
5. Procedures have been put in place for periodic review of land uses and institutional controls to ensure that they are being maintained and remain protective. Performance history indicating successful operation has been documented.		X	Site has been released by the regulators to unrestricted use for an industrial future land use scenario. Industrial zoning is enforced by the City and County of San Diego, California.
6. Procedures for management and periodic reassessment of institutional control restrictions are in place.		X	Site has been released by the regulators to unrestricted use for an industrial future land use scenario. Industrial zoning is enforced by the City and County of San Diego, California.
7. Off-site easements implemented to ensure the protectiveness of the remedy have been documented and a process in place to enforce/maintain these easements.		X	Site has been released by the regulators to unrestricted use for an industrial future land use scenario. Industrial zoning is enforced by the City and County of San Diego, California.
8. Exit criteria outlining when engineered controls/institutional controls are no longer necessary has been documented, if not previously documented in the ROD.		X	Site has been released by the regulators to unrestricted use for an industrial future land use scenario. Industrial zoning is enforced by the City and County of San Diego, California.

REVIEW ITEM	COMPLETED	N/A	STATUS
B. Property records (as required by applicable regulations and/or guidance) are complete.		X	The General Atomics San Diego California site is privately owned and operated. Future land use for the General Atomics Hot Cell Facility site will be determined by the owners of the site.
1. The site's real estate history has been documented, including identification of former property owners, deed restrictions, or other land use restrictions.		x	The GA- San Diego site is privately owned and operated. Future land use for the GA Hot Cell Facility site will be determined by the owners of the site.
2. Site boundaries and site markers are easily identified and documented.		x	The GA- San Diego site is privately owned and operated. Future land use for the GA Hot Cell Facility site will be determined by the owners of the site.
3. On-site and off-site easements, rights of way, and other property access rights have been established and documented. Preferably, this information should be depicted on site maps.		x	The GA- San Diego site is privately owned and operated. Future land use for the GA Hot Cell Facility site will be determined by the owners of the site.
4. Water, mineral, and other natural resource rights have been identified.		x	The GA- San Diego site is privately owned and operated. Future land use for the GA Hot Cell Facility site will be determined by the owners of the site.
5. Tribal treaty rights and other U.S. Government obligations have been identified.		x	The GA- San Diego site is privately owned and operated. Future land use for the GA Hot Cell Facility site will be determined by the owners of the site.
6. Areas where long-term surveillance and maintenance activities will be conducted have been documented in the property records.		x	The GA- San Diego site is privately owned and operated. Future land use for the GA Hot Cell Facility site will be determined by the owners of the site.
V. Regulatory Requirements and Authorities are Identified:			
● Regulatory requirements regarding residual contamination have been identified. Pertinent regulatory documents are maintained and available to the public (e.g., Records of Decision, RCRA Permits and Corrective Action Decisions, Consent Orders, Interagency Agreements, Federal Facility Agreements.).	x		Cleanup completed per NRC and Cal DHS reqs. Released for unrestricted use.
A. All regulatory decision documents and associated site characterizations have been identified and are either complete or scheduled for completion (e.g., all remedial action activities regarding the soil have been completed, but the impacted groundwater is in the process of being resolved) and are maintained in accordance with regulatory requirements.	x		Cleanup completed per NRC and Cal DHS reqs. Released for unrestricted use.

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REVIEW ITEM	COMPLETED	N/A	STATUS
B. The implemented remedy and associated long-term surveillance and maintenance activities are verified to be in compliance with all regulatory requirements (e.g., appropriate agreements have been entered into with appropriate regulator(s)).		x	Cleanup completed per NRC and Cal DHS reqs. Released for unrestricted use.
C. Five-Year Review results have been made available. Future periodic reviews (not to exceed five years), including supplemental analysis of site-wide Environmental Impact Statements (if applicable and/or required), should be planned and consistent with existing guidance.		x	Cleanup completed per NRC and Cal DHS reqs. Released for unrestricted use.
D. EPA NPL Status and/or RCRA permit status have been clearly indicated (e.g., de-listing, partial de-listing, non-NPL).		x	Cleanup completed per NRC and Cal DHS reqs. Released for unrestricted use.
E. NRC License Status has been established. This should identify the license holder and the development of license transfer plans.	x		Cleanup completed per NRC and Cal DHS reqs. Released for unrestricted use.
F. Locations of documents have been identified and made accessible. A process is in place to ensure that the documents are maintained and kept current (e.g., new technology updates for records management).	x		Cleanup completed per NRC and Cal DHS reqs. Released for unrestricted use. GA is responsible to NRC for records mgmt.
VI. Long-Term Surveillance and Maintenance Budget, Funding, and Personnel Requirements are Identified:			
● Sites should be consistent with and follow their prescribed guidance in determining budget, funding, and personnel requirements. Some of the elements in this section may not apply.	x		The GA- San Diego site is privately owned and operated. There are no continuing surveillance reqs or outyear costs.
A. A technical baseline document for long-term surveillance and maintenance programs and activities at the site has been developed.		x	The GA- San Diego site is privately owned and operated. There are no continuing surveillance reqs.
B. Funding (consistent with technical baseline).		x	The GA- San Diego site is privately owned and operated. There are no continuing surveillance reqs.
1. Any funds for long-term surveillance and maintenance have been identified and are made available.			
2. Estimates for the annual funding requirements for long-term surveillance and maintenance activities, associated oversight, and information mgmt requirements have been derived and have been included in the Annual Budget Request to Congress.			
3. Funding assurances have been made based on those estimates.			
4. Mechanisms to transfer funds required for long-term surveillance and maintenance have been established.			
5. Funding mechanisms for long-term surveillance and maintenance activities and regulatory oversight activities conducted by other federal and non-federal entities have been established (e.g., documentation of financial assurance agreements for long-term monitoring and surveillance funding).			
6. Estimates required for financial assurance payments have been determined.			
7. Authority has been granted to the steward to use, or have access to, funds related to long-term surveillance and maintenance.			

REVIEW ITEM	COMPLETED	N/A	STATUS
C. Personnel requirements have been identified (for activities not previously addressed within this set of criteria).		x	The GA- San Diego site is privately owned and operated. There are no continuing surveillance reqs.
1. All personnel functions and qualifications necessary for the technical implementation and administration of long-term surveillance and maintenance activities have been identified.			
2. A determination for the need of other on-site personnel has been made by identifying the specific duties that may be required.			
3. A closeout plan for the disposition of excess federal full time equivalents has been developed.			
D. A business close out process has been developed.		x	The GA- San Diego site is privately owned and operated. There are no continuing surveillance reqs.
VII. Information and Records Management Requirements are Satisfied.			
A. The Transfer of Information and Records.	**OPEN**		In the process of inventorying and scheduling the GA records. Awaiting CD4 decision before transferring records to LM.
1. Agreements are in place that specify records that do not transfer to LM (e.g., current contracts records, current litigation records, TRU waste related records, etc.)	**OPEN**		Per meeting with LM in April 2004, contract records will be transferred to LM after EM contract close-out. GA has no existing litigation nor TRU waste related records
2. Information and records needed for legacy management activities, including long-term surveillance and maintenance, property management, and government-owned contractor-operated (GOCO) pensions, annuities, and benefits, have been identified.		x	Record storage is the only work scope required of LM.
3. Practices and procedures for the transition of information systems and records have been established consistent with the "LM Information and Records Management Transition Guidance."	**OPEN**		Per meeting with LM in April 2004, the GA records will be sent to the Grand Junction office. Awaiting CD4 decision before transferring records to LM.
4. The guidance and operations information for information systems, including meta-data, have been identified and transferred along with the information systems.	**OPEN**		At site closure the Integrated Site Closure System will be transferred to LM.
5. A Site Information and Records Transition Plan has been developed and approved, which establishes a framework to address site-specific records and information requirements, including storage locations, special handling needs, spatial data, and access and retrieval requirements.	**OPEN**		A brief Site Information and Records Ttransition Plan that establishes the transfer of records to LM will be provided
6. The location(s) for storage and maintenance of site records and information systems has been identified and approved.	**OPEN**		Per meeting with LM in April 2004, the GA records will be sent to the Grand Junction office. Awaiting CD4 decision before transferring records to LM.
7. An LM records tracking system has been implemented and standards for data formats, finding aids, and indices have been provided to the transfer site.		x	
8. Information from the transfer site's records tracking systems have been migrated to the LM tracking system, along with other finding aids and indices.		x	

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REVIEW ITEM	COMPLETED	N/A	STATUS
B. Information and records management planning has been performed and is acceptable to the stakeholders, as required under regulatory requirements for stakeholder involvement and public availability.		x	
1. Systems and procedures for the archival of long-term surveillance and maintenance information in one or more on-site or off-site repositories have been developed.		x	Record storage is the only work scope required of LM.
2. Retention schedules that are appropriate for the management of information for long-term surveillance and maintenance and other Legacy Management needs have been developed.	x		OAK will use the DOE Environmental Records Schedule dated March 1999 to dispostion their closed site records.
3. Systems and procedures to establish and facilitate public access to and retrieval of records and information critical to long-term surveillance and maintenance are in place. Examples could include, but are not limited to, internet access, local library, on-site information center (e.g., Interpretive Center, Museum, etc.), etc.		x	
4. The National Archives and Records Administration (NARA) has been engaged, through the DOE Office of Chief Information Office (OCIO), to approve any transfer of records past their retention dates, or the loan of current records to organizations outside of DOE.	**OPEN**		OAK will notify NARA and the DOE OCIO of the transfer in custodianship to LM.
5. The DOE librarian and DOE historian should be consulted regarding the transfer of non-record materials, such as library materials and other items that may have historic value, before agreements are made regarding their transfer to non-DOE entities.		x	
6. Classes of long-term surveillance and maintenance information users and their access requirements have been identified and solutions have been implemented.		x	Record storage is the only work scope required of LM.
VIII. Public Education, Outreach, Information and Notice Requirements are Documented and Satisfied:			
● Any community involvement and associated community relations plans should be governed by existing participation standards and systems.	x		GA remains an active corporation and is the primary POC for concerns about the site.
A. List of site stakeholders with associated address information has been developed and a process is in place for updating this list.	x		List no longer required. Clean-up of the site has been accomplished and the site has been released by the regulatory agencies for unrestricted use, AUG2001.
B. Annual or more frequent updates of the administrative record and on-site information repository are made available to interested parties. Community involvement tools have been developed (e.g., fact sheets, newsletters, email notifications, public meetings, etc.).		x	GA was the primary public relations POC during D&D, and will remain so.
C. Costs associated with public involvement have been estimated (e.g., oversight committees, meeting locations, etc.). Funds sufficient for public involvement are included in the funding requests.		x	GA remains an active corporation and is the primary POC for concerns about the site.

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REVIEW ITEM	COMPLETED	N/A	STATUS
D. Updates of the administrative record/information repository on-site are annually (at a minimum) made available to interested parties.		x	GA remains an active corporation and is the primary POC for concerns about the site.
IX. Natural, Cultural and Historical Resource Management Requirements are Satisfied:			
A. A discrete system or process is in place to protect information about sensitive and natural resources from inappropriate or unauthorized use or access.		x	No sensitive natural, cultural or historical resources were identified.
B. Biological resources, threatened and endangered species, archeological and cultural resources, Native American treaty rights, and/or other natural and cultural resources requirements have been identified and satisfied.		x	No sensitive natural, cultural or historical resources were identified.
C. Locations and characteristics of natural and cultural resources, needing long-term surveillance and maintenance, have been identified (e.g., precise locations and characteristic of cultural and natural resources that require long-term surveillance and maintenance have been identified). A management system is in place and operating successfully.		x	No sensitive natural, cultural or historical resources were identified.
X. Worker Pension and Benefits			
A. Determination has been made for who will be responsible the administration of :		X	GA San Diego is a private site and all workers were employees of GA or their sub-contractors. There are no federal or M&O employees at issue.
1. Retiree benefits and pension fund(s)		x	
2. Workforce transition services		x	
3. National Defense Authorization Act for Fiscal Year 1993, Section 3161 Tuition Reimbursement Program and Relocation and Entrepreneurial Resource Program		x	
B. Current Contractor Pensions and Benefits needs are identified and planned		X	GA San Diego is a private site and all workers were employees of GA or their sub-contractors. There are no federally-funded pensions at issue.
1. Information about current benefit plans has been obtained		x	
2. Post-closure benefits administrator is identified and appointed		x	
3. Employment dates, salary, and clearances verified		x	
4. Personnel-related databases (including manual systems) and records responsibility identified		x	
a. Employment history and Personnel Files			
b. Historical radiological dose records			
c. Medical Records			
d. Retiree pension and benefit records			
e. Clearance History Files			
f. Training Records			
5. Scope for reconciling the accounts identified		x	

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REVIEW ITEM	COMPLETED	N/A	STATUS
C. All claims related to the following areas have been resolved (Note: Responsibility rests with EM and is a contract closeout issue, but may affect ability to transition to LM)		X	None have been filed.
1. Pollution Liability Policy			
2. Auto Liability Policy			
3. General Liability Policy			
4. Fiduciary/Crime/Medical Malpractice Liability Policy			
5. Government Rating Plan (GRP) for Workers Compensation			
6. Non-GRP Workers Compensation Claim			
7. Unresolved Hourly Employee Claims			
8. Beryllium Liability Claims			