PLUTONIUM DISPOSITION PROJECT (U)

Project M09A

SCOPE OF WORK

M-SOW-K-00019 Revision 0

for

Oxidation System (U)

Originated by: EC Tefft III Date: 3/26/07
Edward Tefft
Senior Mechanical/Process Engineer

Reviewed by: N. Shanmuganathan Date: 3/27/2007
Nathan Shanmuganathan
Principal Process Engineer

Approved by: Clayton Holloway Date: 3/28/07
Clayton Holloway
Mechanical Lead

Approved by: Roderick King Date: 3/27/07
Roderick King
Electrical/I&C Lead

Approved by: Ghada S. Elchoufi Date: 3/28/2007
Ghada Elchoufi
C/S/A Lead

Approved by: Date: 3-28-07
Drew Negus
Plant Design Lead

Approved by: John Hammond Date: 3-28-07
John Hammond
Construction Lead

Approved by: W. P. Randall FOR Date: 27 MAR 07
William Randall
Design Authority

Approved by: B.C. Patel Date: 3/28/07.
B.C. Patel
Project Engineer

UNCLASSIFIED
DOES NOT CONTAIN UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION
DC/RO: EC Tefft III 3/26/07

Revision Page

Revision	Revision Date	Affected Section	Description of Change
0	3/28/07	N/A	Initial Issue

Table of Contents

Section Page

1.0 SCOPE 4
1.1 General Description 4
1.2 Background 4
2.0 ACRONYMS/ABBREVIATIONS 4
3.0 DESCRIPTION OF PHYSICAL WORK 5
3.1 Performance Category and Functional Classification (SC, SS, PS, GS) 5
3.2 Mechanical/Nuclear/Process 5
3.3 Instrumentation and Controls 9
3.4 Electrical 12
3.5 Plant Design 12
3.6 Civil/Structural/Architectural 12
4.0 ASSUMPTIONS 14
4.1 General Assumptions 14
4.2 Specific Assumptions 14
4.3 HBDER Scope 15
5.0 REFERENCES 15
5.1 Drawing List 15
5.2 Design Input Documents 17
5.3 Applicable SRS & Industry Codes, Guides and Standards 17
5.4 Related Scopes of Work (SOW) 18
5.5 Miscellaneous 18
6.0 ATTACHMENTS 18
6.1 Attachment 1, Bulk Material List, Piping/valves 18
6.2 Attachment 2, C/S/A Bulk Material List 18
6.3 Attachment 3, Electrical Bulk Material List 18
6.4 Oxidation Room 3D Room Layout Drawing 18

1.0 SCOPE

1.1 General Description

This Scope of Work (SOW) Covers the Oxidation System for the Plutonium Disposition Project. The Oxidation System receives 3013 containers containing plutonium metal from the Material Receipt and Storage System. In the Oxidation System the 3013 containers are opened, and plutonium metal is loaded into a Direct Metal Oxidation (DMO) Furnace where it is converted to plutonium oxide. Two DMO Furnaces will be required to obtain the throughput requirement. The plutonium oxide output from Oxidation is in transport cans which are weighed, scanned by a Gamma isotopic Scanner (GIS) and Passive Neutron Multiplicity Counter (PNMC). The completed transport cans are conveyed in the Material Handling System transport tunnels to the Feed Preparation System.

1.2 Background

The Office of Environmental Management has approximately 13 metric tons (MT) of plutonium in approximately 21 MT bulk materials without any defined disposition path. The Plutonium Disposition (PUD) Project is critical to meet the Department of Energy's strategic goal of providing a responsible resolution to the permanent disposal of the nation's excess high-level radioactive materials and waste; and to enable the cleanup of Environmental Management sites.

The Plutonium Disposition Facility (PDF) will be located at the K-Area Complex (KAC) to disposition up to approximately 13 Metric Tons (MT) of Environmental Management (EM) owned surplus plutonium. The facility will utilize a vitrification process to vitrify plutonium into a lanthanide borosilicate (LaBS) glass matrix. This glass will be packaged into bagless transfer cans and placed inside a Defense Waste Processing Facility (DWPF) type canister. The canister will be transported to DWPF and filled with High Level Waste (HLW) glass. The DWPF canisters will be stored in the Glass Waste Storage Buildings and later transported to the geologic repository at Yucca Mountain.

This Scope of Work (SOW) has been developed for the purpose of facilitating **construction** cost and schedule estimates for the Conceptual Design Report (CDR) on the PUD project. The input to this SOW was the approved technical baseline consisting of a Facility Design Description (FDD) and associated System Design Descriptions (SDD). Every intent has been made to assure alignment and consistency between this SOW and the appropriate sections of the technical baseline, in order to provide accurate estimates. This SOW is not a PUD technical baseline document. A more detailed description of the system can be found in the associated SDD listed in the reference section.

A **HOLD** is placed to identify information that is preliminary in nature, results from a design uncertainty, originates from insufficient documentation, needs verification, or identifies a discrepancy. A **TBD** is placed to identify places in the text where numeric values or descriptive information is not available at the time that the current revision of the SOW is released.

2.0 ACRONYMS/ABBREVIATIONS

AC	Alternating Current
CCTV	Closed Circuit Television
C/S/A	Civil/Structural/Architectural
DMO	Direct Metal Oxidation

DS	Design Services
DWPF	Defense Waste Processing Facility
EM	Environmental Management
EMT	Electrical Metallic Conduit
GS	General Services
HBDER	High Business Design Estimate Range
HEPA	High-Efficiency Particulate Air (filter)
HVAC	Heating, Ventilation and Air Conditioning
ICS	Integrated Control System
IMC	Inter Metallic Conduit
I/O	Input/Output
KAC	K-Area Complex
LaBS	Lanthanide Borosilicate
MC&A	Material Control and Accountability
NFPA	National Fire Protection Association
OCS	Operator Control Station
PC	Performance Category
PNMC	Passive Neutron Multiplicity Counter
PS	Production Support
Pt/Rh	Platinum/Rhodium
PU	Plutonium
PUD	Plutonium Disposition
PuVit	Plutonium Vitrification
SC	Safety Class
SDD	System Design Description
SOW	Scope Of Work
SRID	Safeguards and Security Requirements Identification Document
SRS	Savannah River Site
SS	Safety Significant
TBD	To Be Determined
UNO	Unless Noted Otherwise
VAC	Volts, Alternating Current
WSRC	Washington Savannah River Company

3.0 DESCRIPTION OF PHYSICAL WORK

3.1 Performance Category and Functional Classification (SC, SS, PS, GS)

3.1.1 Performance Category

3.1.1.1 The Oxidation System is Performance Category PC-1. **HOLD**. (Reference X-SYD-K-00003).

3.1.2 Functional Classification

3.1.2.1 All systems and equipment in this SOW shall be designed in accordance with the requirements of WSRC Manual WSRC-E7, Conduct of Engineering and Technical Support Procedure 2.25 Rev 14, “Functional Classification”, having a Functional Classification of Production Support (PS) (Reference X-SYD-K-00003):

3.2 Mechanical/Nuclear/Process

The Oxidation System is contained in one glovebox system comprised of five gloveboxes: Material in 3013 containers is introduced into the Material Entry & Prep

Glovebox where the outer 3013 can is removed. The material then is passed through an airlock to the Furnace Prep Glovebox where the inner 3013 can is opened and a furnace basket is loaded with Pu metal. The furnace basket is then transferred to one of two Furnace Gloveboxes and introduced into a furnace. After the Pu metal is converted to an oxide in a furnace, the oxide is transferred to a transport can. The transport can is transferred through an airlock to the Exit Staging Glovebox where Material Control and Accountability (MC&A) functions are performed. An overview of the Oxidation process is provided in block flow diagram M-M8-K-00005. Material movement through the process is summarized in block flow diagram M-M8-K-00016.

3.2.1 Oxidation Glovebox Components

3.2.1.1 The following Oxidation process components will be contained within the Oxidation Glovebox system. Reference sketch SK-DE-DMO-0001 for layout and location of components in the glovebox.The major components are:

A. DMO Furnace (2 ea.)

1. Details of the furnace are in Data Sheet M-DS-K-00072. The furnace has a removable basket which is loaded with Pu metal. The furnace is equipped with a motor that rotates the basket to tumble the Pu metal while it is heated. The Pu Oxide collects in the bottom of the furnace where it is transferred by dustless valve to a transport can. **HOLD.**

B. Argon Blower (2 ea.)

1. Details of the argon blowers are in Data Sheet M-DS-K-00072. The blowers provide cooling to the furnaces at the end of an oxidation run.

C. Vacuum pump (3 ea.)

1. Details of the vacuum pumps are in Data Sheet M-DS-K-00072 and two pumps maintain the DMO furnace at sub-atmospheric pressure during oxidation runs. A similar third vacuum pump is used to evacuate glovebox airlocks when these airlocks are being purged with argon (Ref. M-M6-K-02268).

D. Can Cutter (2 ea.)

1. Details of the can cutter are in Data Sheet M-DS-K-00071. One can cutter is to be used to open the Outer 3013 container. The second can cutter is for opening the Inner 3013 container and convenience cans which cannot be opened manually.

E. Convenience can opener (1 ea.)

1. The convenience can opener (Equip. No. DMO-COP-0001) consists of a vise mounted to the glovebox work surface and some customized wrenches (3 to 4 ea.) to fit the convenience can tops.

F. Furnace Basket Dumping Station (1 ea.)

1. Conceptual details of the furnace basket dumping station are in Data Sheet M-DS-K-00153. The manually operated station will transfer Pu metal from a 3013 container or convenience can to the furnace basket. **HOLD.**

G. Gantry Hoist (3 ea)

1. Details of the Gantry Hoist are in Data Sheet M-DS-K-00109. The hoist will be used for moving containers inside the gloveboxes.

H. Basket Hoist (2 ea)

1. Details of the basket Hoist are in Data Sheet M-DS-K-00110. The Basket Hoist will be used to install and remove furnace baskets from the furnace. **HOLD.**

I. Can Cart (2 ea)

1. Details of the Can Cart are in Data Sheet M-DS-00111. The Can Cart is used to move transport containers and baskets from the Furnace Prep Glovebox to the Furnace Gloveboxes.

J. Glovebox Atmosphere Regeneration Unit (1 ea.)

1. Details of the Glovebox Atmosphere Regeneration Unit are in Data Sheet M-DS-K-00074. The Regeneration Unit will purify the glovebox argon atmosphere removing excess moisture and oxygen. A vacuum pump is part of the Regeneration Unit.

K. Cooling Coil (1 ea.)

1. A chilled water cooling coil (Equip. No. DMO-CCL-001) will be required to cool the glovebox atmosphere (Ref. M-M5-K-01944 and M-M6-K-02267).

L. Blower (1 ea.)

1. A blower (Equip. No. DMO-BLO-003) will be required to circulate glovebox argon atmosphere through the cooling coil (Ref. M-M5-K-01944 and M-M6-K-02267).

H. For Piping and valves bulk material for inside the Oxidation glovebox see Attachment 1. Piping exterior to the glovebox is covered in other scopes of work.

3.2.2 Gloveboxes

See M-SPP-K-00059 for general glovebox requirements. Oxidation Gloveboxes dimensions and layout are shown in drawing SK-DE-DMO-0001.

3.2.2.1 Material Entry & Prep Glovebox and Exit Staging Glovebox-The Material Entry & Prep Glovebox atmosphere is room air. The Exit Staging glovebox atmosphere is dry air. These gloveboxes are equipped with shielding to reduce the radiation dose to collocated workers and maintenance personnel.

These gloveboxes are ventilated with room air and dry air which is drawn through an inlet HEPA filter and exhausted through additional HEPA filters to the Glovebox Exhaust System. See drawings M-M5-K-01943 and M-M6-K-02266 for glovebox exhaust flow diagram and piping and instrumentation diagram.

A. HEPA filters in stainless steel housing. (3 ea.)

B. Non-testable HEPA filter mounted to skin of glovebox. (2 ea.).

C. 10” automatic damper, pneumatically operated, stainless (1 ea.)

D. 4” isolation dampers, stainless (6 ea.)

E. 4” balancing damper, stainless (2 ea.)

F. ¼” three-way ball valves, stainless (12 ea.)

G. 10” isolation damper, stainless (5 ea.)

H. 6” balancing damper (1 ea.)

I. 6” isolation damper (2 ea.)

3.2.2.2 Furnace Prep and Furnace Gloveboxes- These gloveboxes are connected to the Material Entry & Prep glovebox and the Exit Staging Glovebox by airlocks. These glovebox’s atmosphere is argon. These gloveboxes are equipped with shielding to reduce the radiation dose to collocated workers and maintenance personnel.

A removable maintenance panel is provided to replace the entire furnace assembly in the event of a failure of the furnace (e.g. furnace vessel leakage). (Ref. M-ESR-K-00017). The maintenance concept is to have the furnace assembly mounted on rails in the glovebox and to be easily removable/replaceable manually.

These gloveboxes are ventilated with recirculating argon. The argon is circulated through a Glovebox Atmosphere Regen. Unit. See drawings M-M5-K-01945 and M-M6-K-02268 for the inert atmosphere flow diagram and piping and instrumentation diagram.

A. HEPA filters in stainless steel housing. (2 ea.)

B. Non-testable HEPA filter mounted to skin of glovebox. (3 ea.).

C. 3/4” isolation dampers (ball valve), stainless (3 ea.)

D. 1/4” ball valves, stainless (5 ea.)

E. ¼” three-way ball valves, stainless (12 ea.)

F. 1” ball valves, stainless (6 ea.)

G. 1” balancing damper (1” butterfly valve), stainless (3 ea.)

H. ¼” inline stainless filter (Swagelok) (1 ea.)

The Furnace Gloveboxes are cooled by circulating the inert atmosphere through a blower and cooling coil. Cooling water is supplied to the cooling coil and to the furnace. See drawings M-M5-K-01944 and M-M6-K-02267 for the Glovebox/Furnace Cooling flow diagram and piping and instrumentation diagram.

I. Non-testable HEPA filter mounted to skin of glovebox. (2 ea.).

J. 1” isolation gate valves, stainless (10 ea.)

K. ¼” three-way ball valves, stainless (4 ea.)

L. ½” gate valves, stainless (4 ea.)

M. 1” chilled water circuit setter valve, stainless (2 ea.)

N. 1” chilled water 3-way control valve (stainless) (1 ea.)

O. 4” isolation dampers (butterfly valves) (2 ea.)

3.2.2.3 The furnaces have associated valving and filters due to connections to gas utilities and vacuum pumps. See drawings M-M5-K-01942 and M-M6-K-02270 for the Oxygen Feed and Offgas Exhaust flow diagram and piping and instrumentation diagram.

A. ½” Swagelok filter (stainless) (4 ea.).

B. ½” globe valves, stainless (8 ea.)

C. ½” automatic globe valve, air actuated, stainless (4 ea.)

D. 12” X 12” filter housing for blowers, stainless (2 ea.)

E. 1” Swagelok filter (stainless) (2 ea.)

F. 1” globe valve stainless (2 ea.)

3.2.3 Piping

3.2.3.1 Piping material is designated by a “P-spec” designation from SRS Document WSRC-IM-95-58, Guide No. 15060. The piping material will be welded or utilize flange fittings.

3.3 Instrumentation and Controls

The Oxidation System defined in P&ID's M-M6-K-02266, M-M6-K-02267, M-M6-K-02268, and M-M6-K-02270, consists of a Furnace Prep Glovebox with entry and exit gloveboxes and two furnaces, each in a glovebox, with supporting equipment. Controls are defined in the Oxidation Control Block Diagram J-J8-K-00020 and Logic J-J2-K-01552. For Cable and raceway estimated bulk quantities refer to Attachment 3.

Instrument Cabinet DMO-INST-100 (1 ea.) will be used to house transmitters associated with the following equipment:

3.3.1 The following controls equipment is associated with the two furnaces:

3.3.1.1 Furnace Gloveboxes GBS-GB-001C and GBS-GB-001D as defined in Data Sheet M-DS-K-00072 and P&ID M-M6-K-02270 involve the following control interfaces:

A. (2 ea.) Motor control for driving the furnace basket tumblers (DMO-FURN-001 and DMO-FURN-002)
B. (2 ea.) Temperature control loop (thermocouple and heater) , housed in two (2 ea.) control cabinets DMO-CONT-001 and -002)
C. (2 ea.) Relay cabinets (DMO-CAB-001 and -002)

3.3.1.2 Furnace Argon Purge as defined in P&ID M-M6-K-02270 includes the following controls:

A. (2 ea.) Flow element, transmitter, and control valve
B. (2 ea.) Valve control with Limit Switches

3.3.1.3 Furnace Oxygen/Helium as defined in P&ID M-M6-K-02270 includes the following controls:

A. (2 ea.) Flow element, transmitter, and control valve
B. (2 ea.) Hand Valve with Limit Switches

3.3.1.4 Glovebox Inert Atmosphere as defined in P&ID M-M6-K-02268 includes the following controls:

A. (2 ea.) Moisture element and transmitter
B. (2 ea.) Temperature element and transmitter
C. (2 ea.) Oxygen sensor and transmitter
D. (2 ea.) Pressure Differential Indicator (PDI) for filters.

3.3.1.5 Furnace Cooling as defined in P&ID M-M6-K-02267 includes the following controls:

A. (2 ea.) Temperature element and transmitter
B. (2 ea.) Flow element and transmitter
C. (2 ea.) PDI for filters.

3.3.1.6 Furnace Exhaust as defined in P&ID M-M6-K-02270 includes the following controls:

A. (2 ea.) PDI for filters.
B. (2 ea.) Hand Valve with limit switches
C. (2 ea.) Pump with run and status controls

3.3.1.7 Furnace Atmospheric Blower as defined in P&ID M-M6-K-02270 includes the following controls:

A. (2 ea.) Blower control (run and status)

3.3.2 The Oxidation Gloveboxes will contain the following:

3.3.2.1 Cooling Water System - see Chilled Water Scope of Work No. M-SOW-K-00022 and Milling and Mixing and Oxidation Heat Exchanger P&ID M-M6-K-02291. The system and equipment are not part of the Oxidation Scope of Work.

3.3.2.2 Material Entry Prep Glovebox Room Dry Air as defined in P&ID M-M6-K-02266 includes the following controls:

A. (2 ea.) PDI's for filters.
B. (1 ea.) Room PDI
C. (1 ea.) Moisture element and transmitter

3.3.2.3 Exit Staging Glovebox Dry Air as defined in P&ID M-M6-K-02266 includes the following controls:

A. (2 ea.) PDI's for filters.
B. (1 ea.) Room PDI
C. (1 ea.) Moisture element and transmitter

3.3.2.4 Glovebox Airlock Exhaust as defined in P&ID M-M6-K-02266 includes the following controls:

A. (1 ea.) PDI for filters.
B. (1 ea.) Flow element and transmitter

3.3.2.5 Glovebox Inert Air Exhaust / Supply as defined in P&ID M-M6-K-02268 includes the following controls:

A. (1 ea.) Pump Control (Run and status)
B. (2 ea.) PDI for filters.
C. (1 ea.) Room PDI

3.3.2.6 Glovebox Cooling as defined in P&ID M-M6-K-02267 includes the following controls:

A. (1 ea.) Blower control (Run and Status)
B. (1 ea.) TIC with (2) temperature elements and (1) control valve interface
C. (2 ea.) Temperature elements and transmitters
D. (1 ea.) Pressure element and transmitter
E. (1 ea.) Flow element and transmitter

3.3.2.7 Glovebox Maintenance Exhaust Air Flow Valve Control as defined in P&ID M-M6-K-02266 includes the following controls:

A. (1 ea.) Modulating Valve Control with limit switches

3.3.3 The installation of the Oxidation ICS I.O. cabinet ICS-CAB-020 to be located in the -20' Melter I/O Support Room and the OCS workstation ICS-OWS-014 to be located in the Feed Preparation / Oxidation Control Room are included in the ICS Scope of Work, J-SOW-K-00002 and defined in the Control Automation Plan J-PMP-K-00001 and the ICS Network Block Diagram J-J8-K-00050. These items are required for system operation, but are not included within the Oxidation Scope of Work.

3.3.4 MC&A Equipment (reference Control Block Diagram J-J8-K-00018 and SK-DE-DMO-0001 for location)

3.3.4.1 Scales (3 ea.) (reference Data Sheet no. J-JD-K-00035)

3.3.4.2 Barcode readers (6 ea.) (reference Data Sheet no. J-JD-K-00056)

3.3.4.3 Gamma Holdup Monitors (14 ea.) (reference Data Sheet no. J-JD-K-00055)

3.3.4.4 Passive Neutron Multiplicity Counter (1 ea.) (reference Data Sheet no. J-JD-K-00051). This system will include a computer rack DMO-NCC-001A on the -20 level.

3.3.4.5 Gamma Isotopic System (1 ea.) with a Mechanical Cooler (1 ea) (reference Data Sheet no. J-JD-K-00036). This system will include a computer rack DMO-GRIS-001A on the -20 level. (Ref. SK-DE-VIT-0009)

3.4 Electrical

3.4.1 The following major components require 480 VAC electrical service (Ref. E-E2-K-02225):

A. Service to DMO Furnace (2 ea.)
B. Service to Argon Blower (2 ea.)
C. Service to Vacuum Pump (3 ea.)
D. Service to Gantry Hoist (3 ea.)
E. Service to Basket Hoist (2 ea.)
F. Service to Furnace Drum (2 ea.)
G. Service to Inert Atmosphere Blower (1 ea.)

3.4.2 The following major components require 120 VAC electrical service (Ref. E-E2-K-02225):

Miscellaneous items such as can cutters, MC&A components, GB regen unit, knife gate doors, etc.

3.4.3 For bulk cable and raceway quantities see Attachment 6.3. Unless noted otherwise Construction will be responsible for furnishing these components and associated pullbox/junction boxes, fittings and termination hardware.

3.4.4 See Attachment 6.3 for glovebox penetration connector quantities.

3.5 Plant Design

3.5.1 Piping quantities estimate inside the glovebox are in Attachment 1. Piping and ductwork quantities outside the glovebox are contained in other scopes of work (SOW).

3.5.2 The estimated number of glovebox piping/tubing penetrations is 25.

3.6 Civil/Structural/Architectural

3.6.1 The C/S/A scope of work required for installation of the major components of the Oxidation system is as follows:

3.6.1.1 Material Entry and Staging Glovebox.
The size of the Glove Box will be 9’ x 4’ x 8’ high and will weigh approx. 15,000 lbs. It will be provided with 4 legs with an approximate footprint of 6” X 6” square plate. Each foot will be welded to 12” X 12” X ¾” thick, steel base plate which will

be anchored to the concrete floor on -40 Level with ¾" Dia. Maxi-bolts. Alternatively cast-in place anchors with grout sleeves or Hilti Kwik Bolt-TZ are acceptable for anchoring items.

3.6.1.2 Furnace Prep Glovebox.
The size of the Glove Box will be 18' x 4' x 8' high and will weigh approx. 27,500 lbs. It will be provided with 6 legs with an approximate footprint of 6" X 6" square plate. Each foot will be welded to 12" X 12" X ¾" thick, steel base plate which will be anchored to the concrete floor on -40 Level with ¾ "Dia. Maxi-bolts. Alternatively cast-in place anchors with grout sleeves or Hilti Kwik Bolt-TZ are acceptable for anchoring items.

3.6.1.3 Exit Staging Glovebox.
The size of the Glove Box will be 10' x 4' x 8' high and will weigh approx. 15,000 lbs. It will be provided with 4 legs with an approximate footprint of 6" X 6" square plate. Each foot will be welded to 12" X 12" X ¾" thick, steel base plate which will be anchored to the concrete floor on -40 Level with ¾ "Dia. Maxi-bolts. Alternatively cast-in place anchors with grout sleeves or Hilti Kwik Bolt-TZ are acceptable for anchoring items.

3.6.1.4 Furnace Gloveboxes [2 ea.]
The size of each Glove Box will be 5' x 4' x 12' high and will weigh approx. 16,000 lbs. It will be provided with 4 legs with an approximate footprint of 6" X 6" square plate. Each foot will be welded to 12" X 12" X ¾" thick, steel base plate which will be anchored to the concrete floor on -40 Level with ¾"Dia. Maxi-bolts. Alternatively cast-in place anchors with grout sleeves or Hilti Kwik Bolt-TZ are acceptable for anchoring items.

3.6.1.5 HEPA Filters floor mounted [3 ea.]
The size of the housing of each floor mounted HEPA Filter will be 30" x 30" x 30" high and will weigh approx. 100 lbs. Each filter shall be provided with a mounting frame with the bolt holes. The frame will be anchored to the concrete floor on -40 Level with ½" Dia. Maxi-bolts. Alternatively cast-in place anchors with grout sleeves or Hilti Kwik Bolt-TZ are acceptable for anchoring items.

3.6.1.6 HEPA Filters mounted above Gloveboxes [3 ea.]
The size of the housing of each HEPA Filter mounted above the Glovebox will be 36" x 36" x 36" high and will weigh approx. 300 lbs. It will be supported by a frame work made with TS 4x4x.375. The frame will be welded to the 12"x 12" x ¾" thick steel base plates, which will be anchored to the ceiling under -20 Level concrete floor with ¾" Dia. Maxi-bolts. Alternatively cast-in place anchors with grout sleeves or Hilti Kwik Bolt-TZ are acceptable for anchoring items.

3.6.1.7 Glovebox Atmosphere Regen. Unit
The size of this unit will be approx. 26" x 22" x 90" high and will weigh approximately 1170 lbs. It will be provided with a mounting frame with the bolt holes. The frame will be anchored to the concrete floor on -20 Level floor with ¾ "Dia. Maxi-bolts. Alternatively cast-in place anchors with grout sleeves or Hilti Kwik Bolt-TZ are acceptable for anchoring items.

3.6.1.8 Instrument Rack (DMO-INST-100)
The size of the Instrument Rack will be approx. 24" x 30" x 72" high and will weigh approx. 100 lbs. It will be provided with a mounting frame with the bolt holes. The frame will be anchored to the concrete floor on -40 Level with ¾ "Dia. Maxi-bolts. Alternatively cast-in place anchors with grout sleeves or Hilti Kwik Bolt-TZ are acceptable for anchoring items.

3.6.1.9 Mechanical Cooler.
The size of the Mechanical cooler package will be approx. 12” x 12” x 12” high and will weigh approx. 36 lbs. It will be provided with a mounting frame with the bolt holes. The frame will be anchored to the concrete floor on -40 Level with ½” Dia. Maxi-bolts. Alternatively cast-in place anchors with grout sleeves or Hilti Kwik Bolt-TZ are acceptable for anchoring items.

3.6.1.10 Instrument Cabinets. [6 ea.] (Ref. SK-DE-BOP-0011)
The size of each Instrument Cabinet will be approx. 24” x 30” x 48” high and will weigh approx. 80 lbs. It will be provided with the bolt holes for mounting the cabinet. The upper part of the Cabinet will be anchored to the concrete wall with ½” Dia. Maxi-bolts or Hilti Kwik-bolts and the base of the Cabinet will be anchored to the concrete floor on -20 Level with ½” Dia. Maxi-bolts. Alternatively cast-in place anchors with grout sleeves or Hilti Kwik Bolt-TZ are acceptable for anchoring items.

3.6.2 See Attachment 2 for C/S/A bulk material list.

4.0 ASSUMPTIONS

4.1 General Assumptions

4.1.1 The Construction Agency will be the SRS Construction Group. Design Services will provide engineering documentation for the installation of this equipment and will rely on the use of SRS Guides and Standards.

4.1.2 SRS Construction Group will procure all bulk materials.

4.1.3 SRS Construction Group will procure all off-the-shelf components and equipment identified on engineering data sheets that do not require testing or quality documentation.

4.2 Specific Assumptions

4.2.1 Mechanical

4.2.1.1 Glovebox detailed design and fabrication will be performed by a vendor/supplier.

4.2.1.2 The gloveboxes (except for Material Entry & Prep Glovebox) will have an inert atmosphere or dry air atmosphere. **HOLD.**

4.2.1.3 All pressure vessels with an ID 6" or greater will be per ASME B&PVC Section VIII, Division 1 code stamped or an approved waiver. An appropriate SRS verification record will be competed for each vessel and pressure protection device (disk or valve).

4.2.1.4 All piping will be per ASME B31.3.

4.2.2 Instrumentation and Controls

4.2.2.1 No specific assumptions have been made in this group.

4.2.3 Electrical

4.2.3.1 All permanently installed cabling will be routed in protected conduit/tray.

4.2.3.2 Cables installed within Gloveboxes will be routed within designated tray located within GB and/or supported from structural members within GB utilizing cable tie wraps.

4.2.3.3 Existing grounding grid is intact and adequate for grounding of new equipment.

4.2.3.4 Pull/junction boxes will be required at 100 ft. run minimum intervals. Assume box size to be 18” X18” X 6”.

4.2.3.5 Glovebox feed thru connector assemblies are functionally classified as SS and will be purchased as engineering material.

4.2.4 Plant Design

4.2.4.1 No specific assumptions have been made in this group.

4.2.5 Civil/Structural/Architectural

4.2.5.1 Core drills will be required for routing electrical conduit and piping through existing walls or floors.

4.2.5.2 Anchor bolts used for equipment and commodity supports will be A36 Drillco Maxi bolts. Alternatively, cast-in-place anchors with grout sleeves or Hilti Kwik Bolt-TZ are acceptable for anchoring items.

4.2.5.3 Assume Functional Classification for drilling holes in concrete surface is SC.

4.2.5.4 For electrical conduits and equipment supports, use cookbook No. C-CI-G-0039. For routing and supports for NPS 2” and smaller piping, use cookbook No. C-CH-G-00004.

4.2.5.5 Any components inside the gloveboxes are an integral part of the glovebox (such as can storage racks/wells). These components are not included for structural components.

4.3 HBDER Scope

4.3.1 A video camera in each Furnace Glovebox for 2 total to view basket installation and removal from the furnace, with associated camera controls would be HBDER scope.

5.0 REFERENCES

5.1 Drawing List

5.1.1 PUD Project Drawings & Sketches

5.1.1.1 E-E2-K-02225, Rev. C, Feed Preparation and Oxidation Area Single Line Diagram

5.1.1.2	J-J2-K-01552, Rev. A, Oxidation Logic Description
5.1.1.3	J-J8-K-00018, Rev. C, Metal Oxidation MC&A Control Block Diagram, (to be issued)
5.1.1.4	J-J8-K-00020, Rev. C, Oxidation System Control Block Diagram (to be issued)
5.1.1.5	J-JD-K-00035, Rev. B, Weigh Scale Datasheet
5.1.1.6	J-JD-K-00036, Rev. B, Gamma Isotopic System Datasheet
5.1.1.7	J-JD-K-00051, Rev. B, Oxidation Passive Neutron Multiplicity Counter, (to be issued)
5.1.1.8	J-JD-K-00055, Rev. A, Oxidation Gamma Holdup Monitors
5.1.1.9	J-JD-K-00056, Rev. A, Oxidation Barcode Readers
5.1.1.10	M-CLC-K-00693, Rev. A, Oxidation Glovebox Cooling Load and Chilled Water Demand Calculation
5.1.1.11	M-CLC-K-00706, Rev. A, Plutonium Disposition - Oxidation Glovebox: Air Flow Requirement
5.1.1.12	M-ESR-K-00017, Rev.0, Maintenance and Replacement Strategy
5.1.1.13	M-DS-K-00071, Rev. B, Can Cutter Datasheet
5.1.1.14	M-DS-K-00072, Rev. B, Direct Metal Oxidation Furnace Datasheet
5.1.1.15	M-DS-K-00073, Rev. B, Oxidation Glovebox Datasheet
5.1.1.16	M-DS-K-00074, Rev. B, Glovebox Atmosphere Regen. Unit
5.1.1.17	M-DS-K-00109, Rev. A, Oxidation Gantry Hoist with Electric Gripper
5.1.1.18	M-DS-K-00110, Rev. A, Oxidation Motorized Basket Hoist with Electric Gripper
5.1.1.19	M-DS-K-00111, Rev. A, Oxidation System Linear Actuated Can Cart with Scissors Lift
5.1.1.20	M-DS-K-00153, Rev. B, Oxidation System Furnace Basket Dumping Station
5.1.1.21	M-M5-K-01942, Rev. B, Oxidation System - Oxygen Feed/Offgas Exhaust Flow Diagram
5.1.1.22	M-M5-K-01943, Rev. C, Oxidation System Glovebox Ventilation Air Flow Diagram
5.1.1.23	M-M5-K-01944, Rev. C, Oxidation System Glovebox - Furnace Cooling Flow Diagram
5.1.1.24	M-M5-K-01945, Rev. C, Oxidation System Glovebox Inert Atmosphere Flow Diagram
5.1.1.25	M-M6-K-02266, Rev. C, Oxidation System Glovebox Ventilation Piping & Instrument Diagram
5.1.1.26	M-M6-K-02267, Rev. B, Oxidation System Glovebox Furnace Cooling Piping & Instrument Diagram
5.1.1.27	M-M6-K-02268, Rev. D, Oxidation System Glovebox Inert Atmosphere P&ID
5.1.1.28	M-M6-K-02270, Rev. C, Oxidation System Oxygen and Offgas Piping & Instrument Diagram
5.1.1.29	M-M8-K-00005, Rev. A, Oxidation System Block Flow Diagram
5.1.1.30	M-M8-K-00016, Rev. A, Oxidation System Material Handling Block Flow Diagram
5.1.1.31	P-PG-K-02142, Rev. B, Plutonium Disposition Project General Arrangement Plan at Level -20
5.1.1.32	P-PG-K-02143, Rev. B, Plutonium Disposition Project General Arrangement Plan at Level -40
5.1.1.33	SK-DE-BOP-0011, Rev. A, Electrical / IC Commodities Location Sketch Elevation -20
5.1.1.34	SK-DE-DMO-0001, Rev. C, Oxidation System Glovebox layout Plan & Sections
5.1.1.35	SK-DE-DMO-0002, Rev. A, Equipment Location Plan at -40, Oxidation Room
5.1.1.36	SK-DE-DMO-0003, Rev. B, Oxidation, Partial Floor Plan @ Elev. -40 & Building Sections
5.1.1.37	SK-DE-VIT-0009, Rev. A, Electrical / IC Commodities Location Sketch Elevation -40

5.1.2 Existing Savannah River Site (SRS) Drawings

5.1.2.1 W134828, Rev. 44, Process Area Bldg. #[KAC] Power Transformer Rm. #2 Electrical & Concrete
5.1.2.2 W134850, Rev. 19, Process Area Bldg #[KAC] Power Transformer Rm.#3 Electrical
5.1.2.3 W825664, Rev. 54, Process Area – Bldg. {KAC] Reactor Elect. Distr. System T.R.2, 480V
5.1.2.4 W825665, Rev. 55, Reactor Elect. Distr. System T.R.3, 480V. SWGR-Single Line Diagram Electrical

5.2 Design Input Documents

The following Facility Design Description and System Design Descriptions are the baseline documents used to develop this SOW.

5.2.1 Facility Design Description

5.2.1.1 G-FDD-K-00001, Rev B, “PUV Facility Design Description”

5.2.2 System Design Description

5.2.2.1 X-SYD-K-00003, Rev. B “Oxidation System (DMO) SDD”

5.2.3 Safeguards and Security Requirements Identification document

5.2.3.1 S-SRI-K-00005, Rev. 0, “KAC Safeguards and Security Requirements Identification Document for Plutonium Disposition”.

5.3 Applicable SRS & Industry Codes, Guides and Standards

5.3.1 Industry Codes and Standards

5.3.1.1 ASME B31.3, 2006 - Chemical Plant and Petroleum Refinery Piping
5.3.1.2 ASME Boiler and Pressure Vessel Code, Sect. VIII, Div. 1, 2006
5.3.1.3 NFPA 70, 2005 – National Electrical Code

See Functional Design Description and System Design Descriptions for more codes and standards. (Ref. G-FDD-K-00001 and X-SYD-K-00006).

5.3.2 SRS Guides & Standards

5.3.2.1 SRSESM 15980-03-R, Mechanical Installation of General and Nuclear Services Instrumentation.
5.3.2.2 WSRC-TM-95-1, Standard no. 03010, Rev: 1, Coring, Chipping, and Drilling in Concrete.
5.3.2.3 WSRC-TM-95-1, Standard no. 05057, Rev: 1, Control of Welding.
5.3.2.4 WSRC-TM-95-1, Standard no. 15980, Rev. 6, Mechanical Installation of Safety Class and Safety Significant Instrumentation.
5.3.2.5 WSRC-IM-95-58, Guide 03252-G, Rev: 1, Installation and Testing of Concrete Anchors.
5.3.2.6 WSRC-IM-95-58, Guide 15060-G, Rev. 5, Application of ASME B31.3.
5.3.2.7 WSRC-IM-95-58, Guide no. 15980-G, Rev.3, “Installation and Calibration of Instruments”
5.3.2.8 WSRC-IM-95-58, Guide no. 16051-G, Rev.2, “Installation of Electrical Raceway Systems and Cable Trays”
5.3.2.9 WSRC-IM-95-58, Guide no. 16052-G, Rev.3, “Installation of Electrical Wires, Cables and Terminations”
5.3.2.10 WSRC-IM-95-58, Guide no. 16053-G, Rev.2, “Installation of Electrical Equipment”
5.3.2.11 WSRC-IM-95-58, Guide no. 16056-G, Rev.2, “Installation of Grounding Systems”

5.4 Related Scopes of Work (SOW)

5.4.1 C-SOW-K-00009, Rev. 0, Scope of Work for Structural and Architectural Modifications for Process Building. (To be issued).

5.4.2 E-SOW-K-00017, Rev. 0, Electrical General Scope of Work. (To be issued).

5.4.3 J-SOW-K-00002, Rev. 0, Scope of work for ICS & MC&A Network. (To be issued).

5.4.4 J-SOW-K-00003, Rev. 0, Scope of Work for Health and Safety Monitoring System. (To be issued).

5.4.5 M-SOW-K-00020, Rev. 0, Scope of Work for HVAC System. (To be issued).

5.4.6 M-SOW-K-00021, Rev. 0, Scope of Work for Balance of Plant –Compressed Gas Systems. (To be issued).

5.4.7 M-SOW-K-00022, Rev. 0, Scope of Work for Balance of Plant -Water Systems. (To be issued).

5.5 Miscellaneous

5.5.1 C-CI-G-0039, Rev: 0, Electrical Conduit and Equipment Supports.
5.5.2 C-CH-G-00004, Rev. 0, Routing & Supports for NPS 2 and Smaller Piping.
5.5.3 M&O-PUD-2006-00033, Deletion of Offgas activities from the current schedule of Pu Disposition Project M09A.

6.0 ATTACHMENTS

6.1 Attachment 1, Bulk Material List, Piping/valves
6.2 Attachment 2, C/S/A Bulk Material List
6.3 Attachment 3, Electrical Bulk Material List
6.4 Oxidation Room 3D Room Layout Drawing

6.1 ATTACHMENT 1
BULK MATERIAL LIST PIPING/VALVES

Inside gloveboxes (Note: piping outside glovebox is covered in other SOW's)

Item No.	Description of Item	Spec	Size	Quantity	Remarks
1	Glovebox Ventilation (Dry Air)	NA	NA	0'-0"	Ref. Dwg. M-M6-K-02266 Rev. B
2	Process Chilled Water	PS204A	1/2"	40'-0"	Ref. Dwg. M-M6-K-02267 Rev. B
3	Inert Gas (Argon)	NA	NA	0'-0"	Ref. Dwg. M-M6-K-02268 Rev. B
4	Oxygen and Offgas	PS204A	1"	70'-0"	Ref. Dwg. M-M6-K-02270 Rev. A

6.2 ATTACHMENT 2
C/S/A BULK MATERIAL LIST

Note: Table below includes the bulk material for installing/supporting major equipment. Bulk material for piping and conduit support is not included in the table below.

Item No.	Description of Item	Size	Quantity	Remarks
1	Base Plates	12”x12”x ¾”	34 Ea.	Galvanized steel
2	Anchor Bolts	¾” Dia.	144 Ea.	
3	Anchor Bolts	½” Dia.	40 Ea.	
4	Tube Steel	TS 4x4x.375	60 Lft.	Galvanized steel

6.3 ATTACHMENT 3, ELECTRICAL BULK MATERIAL LIST

Scope Set: _____ **Date:** _____

Prepared By: _____ **Reviewed By:** _____

Exterior Glovebox Cables

Sum of Qty XGB (ft)	
Ext. Cable Size/Type	Total
3/c #12	4,195
#6 soft drawn copper	600
1pr #16	7,515
3/C # 18	1,410
GIS VENDOR SUPPLIED CABLE	120
NMC VENDOR SUPPLIED CABLE	120
HOLD. MON. VENDOR SUPPLIED	1,540
Grand Total	15,500

Interior Glovebox Cables

Sum of Qty NGB (ft)	
GB Cable Size/Type	Total
1pr #16	720
3/C # 18	160
3/c #12	480
Grand Total	1,360

All Raceway Types

Sum of Qty Rcwy (ft)	
RCWY	Total
1 1/2" IMC	570
1" IMC	220
2"	145
2" IMC	90
3 " IMC	180
3" IMC	70
3/4" IMC	1,560
(blank)	0
Grand Total	2,835

All Raceway Types Grouped by Red Designation

Sum of Qty Rcwy (ft)		
Red	RCWY	Total
N	1 1/2" IMC	480
	1" IMC	220
	2"	145
	3 " IMC	180
	3" IMC	70
	3/4" IMC	1,055
N Total		2,150
Y	1 1/2" IMC	90
	2" IMC	90
	3/4" IMC	505
Y Total*		685
(blank)	(blank)	0
(blank) Total		0
Grand Total		2,835

Total glovebox penetrations= 46

*Red conduit contains wiring for classified systems, and installation and support is more difficult than for “black” unclassified wiring systems.

6.3 ATTACHMENT 3, ELECTRICAL BULK MATERIAL LIST

Description: KAC Pu Disposition Modifications Oxidation, Bulk Materials, Cable and Conduit
Reference: E-E2-K-02225 R/C MCC 31E SINGLE LINE, J-J8-K-00020 CONTROL BLOCK DIAGRAM,

			Cable Estimates (Exterior GB)			GB Pentr	(Interior. GB)	Shared Rcwy/Tray	Raceway Estimates			
Item #	From Equipment	To Equipment	XGB Length (A) (ft)	Qty (A)	Cable size/description	Conn. (Qty)	NGB Length (B) (ft)	Length (C) (ft)	Length (D) (ft)	Qty (D)	Size/Desc. (D)	Red
1	ELNH-MCC-31E	VAC. PUMP #1	160	1	3/c #12	1	20	0	140	1	1 1/2" IMC	
2	ELNH-MCC-31E	VAC. PUMP #2	160	1	3/c #12	1	20	140	0	1	n/a	N
3	ELNH-MCC-31E	GANTRY HOIST	160	1	3/c #12	1	20	140	0	1	n/a	N
4	ELNH-MCC-31E	FURN. CONT. #1	130	1	3/c #12	0	0	55	55	1	1" IMC	N
5	ELNH-MCC-31E	FURN. CONT. #2	130	1	3/c #12	0	0	55	55	1	1" IMC	N
6	ELNH-MCC-31E	CONTROLLER CAB. #1	130	1	3/c #12	0	0	55	55	1	1" IMC	N
7	ELNH-MCC-31E	CONTROLLER CAB. #2	130	1	3/c #12	0	0	55	55	1	1" IMC	N
8	ELNH-MCC-31E	ARGON BLOWER#1	160	1	3/c #12	1	20	0	140	1	1 1/2" IMC	N
9	ELNH-MCC-31E	ARGON BLOWER #2	160	1	3/c #12	1	20	140	0	1	n/a	N
10	ELNH-MCC-31E	INERT ATM BLOWER	160	1	3/c #12	1	20	140	0	1	n/a	N
11	ELNH-MCC-31E	DUMBWAITER CONTROLLER	95	1	3/c #12	0	0	0	75	1	3/4" IMC	N
12	FURN. CONT. #1	FURNACE #1	165	1	3/c #12	1	20	0	145	1	2"	N
13	FURN. CONT. #2	FURNACE #2	165	1	3/c #12	1	20	145	0	1	n/a	N
14	CONTROLLER CAB. #1	FURNACE DRUM MOTOR	165	1	3/c #12	1	20	145	0	1	n/a	N
15	CONTROLLER CAB. #1	FURNACE BASKET HOIST	165	1	3/c #12	1	20	145	0	1	n/a	N
16	CONTROLLER CAB. #1	FURNACE GANTRY HOIST	165	1	3/c #12	1	20	145	0	1	n/a	N
17	CONTROLLER CAB. #2	FURNACE DRUM MOTOR	165	1	3/c #12	1	20	145	0	1	n/a	N
18	CONTROLLER CAB. #2	FURNACE BASKET HOIST	165	1	3/c #12	1	20	145	0	1	n/a	N
19	CONTROLLER CAB. #2	FURNACE GANTRY HOIST	165	1	3/c #12	1	20	145	0	1	n/a	N
20	Equipment	Ground grid	50	12	#6 soft drawn			30	0	0	n/a	N

6.3 ATTACHMENT 3, ELECTRICAL BULK MATERIAL LIST

Description: KAC Pu Disposition Modifications Oxidation, Bulk Materials, Cable and Conduit
Reference: E-E2-K-02225 R/C MCC 31E SINGLE LINE, J-J8-K-00020 CONTROL BLOCK DIAGRAM,

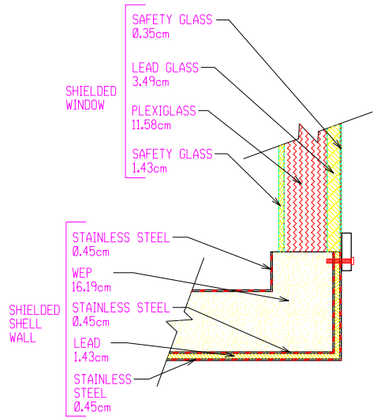
Item #	From Equipment	To Equipment	Cable Estimates (Exterior GB)			GB Pentr	(Interior. GB)	Shared Rcwy/Tray	Raceway Estimates			
			XGB Length (A) (ft)	Qty (A)	Cable size/description	Conn. (Qty)	NGB Length (B) (ft)	Length (C) (ft)	Length (D) (ft)	Qty (D)	Size/Desc. (D)	Red
					copper							
21	ICS-CAB-100	DMO-INST-100	200	18	1pr #16	0	0	0	180	1	3 " IMC	N
22	DMO-INST-100	OXIDATION GLOVEBOX	90	36	1pr #16	10	20	0	70	1	3" IMC	N
23	DMO-CNSL-011	DMO-JB-011 GB MT'D FESTOON	75	1	1pr #16	1	0	0	55	1	3/4" IMC	N
24	DMO-CNSL-012	DMO-JB-012 GB MT'D FESTOON	75	1	1pr #16	1	0	0	55	1	3/4" IMC	N
25	DMO-CNSL-021	DMO-JB-021 GB MT'D POWER FESTOON	75	1	1pr #16	1	0	0	55	1	3/4" IMC	N
26	DMO-CNSL-022	DMO-JB-022 GB MT'D CONTROLS FESTOON	75	1	1pr #16	1	0	0	55	1	3/4" IMC	N
27	INNER CONVENIENCE CAN CUTTER SWITCH	DMO-CUTR-002 INNER / CONVENIENCE CAN CUTTER	75	1	1pr #16	1	0	0	55	1	3/4" IMC	N
28	OUTER CAN CUTTER HAND SWITCH	DMO-CUTR-001 OUTER CAN CUTTER	75	1	1pr #16	1	0	0	55	1	3/4" IMC	N
29	DMO-CNSL-050 ENTRY STAGING GANTRY HOIST CONTROL CONSOLE	DMO-HOI-001 OXIDATION GANTRY HOIST #1	75	1	1pr #16	1	0	0	55	1	3/4" IMC	N
30	DMO-CNSL-051 FURNACE PREP GANTRY HOIST CONTROL CONSOLE	DMO-HOI-002 OXIDATION GANTRY HOIST #2	75	1	1pr #16	1	0	0	55	1	3/4" IMC	N
31	DMO-CNSL-052 EXIT STAGING GANTRY HOIST CONTROL CONSOLE	DMO-HOI-003 OXIDATION GANTRY HOIST #3	75	1	1pr #16	1	0	0	55	1	3/4" IMC	N

6.3 ATTACHMENT 3, ELECTRICAL BULK MATERIAL LIST

Description: KAC Pu Disposition Modifications Oxidation, Bulk Materials, Cable and Conduit
Reference: E-E2-K-02225 R/C MCC 31E SINGLE LINE, J-J8-K-00020 CONTROL BLOCK DIAGRAM,

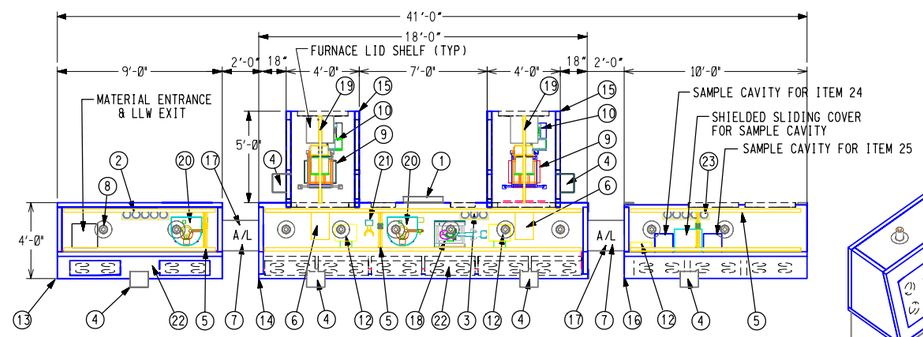
Item #	From Equipment	To Equipment	Cable Estimates (Exterior GB)			GB Pentr	(Interior. GB)	Shared Rcwy/Tray	Raceway Estimates			
			XGB Length (A) (ft)	Qty (A)	Cable size/description	Conn. (Qty)	NGB Length (B) (ft)	Length (C) (ft)	Length (D) (ft)	Qty (D)	Size/Desc. (D)	Red
32	MCA-CAB-001	DMO-GRIS-001A	250	1	3/C # 18	0	0	0	230	1	3/4" IMC	N
33	MCA-CAB-001	DMO-NCC-001A	250	1	3/C # 18	0	0	0	230	1	3/4" IMC	N
34	DMO-GRIS-001A	DMO-GRIS-001	120	1	GIS VENDOR SUPPLIED CABLE	0	0	0	100	1	1 1/2" IMC	N
35	DMO-NCC-001A	DMO-NCC-001	120	1	NMC VENDOR SUPPLIED CABLE	0	0	0	100	1	1 1/2" IMC	N
36	DMO-GRIS-001	DMO-CHU-001	45	1	3/C # 18	0	0	0	25	1	3/4" IMC	N
37	MCA-CAB-010	DMO-RDR-001	55	1	3/C # 18	0	0	0	35	1	3/4" IMC	Y
38	MCA-CAB-010	DMO-RDR-002	65	1	3/C # 18	0	0	0	45	1	3/4" IMC	Y
39	MCA-CAB-010	DMO-RDR-003	70	1	3/C # 18	0	0	0	50	1	3/4" IMC	Y
40	MCA-CAB-010	DMO-RDR-004	75	1	3/C # 18	0	0	0	55	1	3/4" IMC	Y
41	MCA-CAB-010	DMO-RDR-005	85	1	3/C # 18	0	0	0	65	1	3/4" IMC	Y
42	MCA-CAB-010	DMO-RDR-006	95	1	3/C # 18	0	0	0	75	1	3/4" IMC	Y
43	MCA-CAB-010	DMO-SCL-001	200	1	3/C # 18	1	120	0	180	1	3/4" IMC	Y
44	MCA-CAB-010	DMO-SCL-002	110	1	3/C # 18	1	20	90	0	1	3/4" IMC	Y
45	MCA-CAB-010	DMO-SCL-003	110	1	3/C # 18	1	20	90	0	1	3/4" IMC	Y
46	MCA-CAB-010	DMO-RE/RT-001A &1B	110	2	HOLD. MON. VENDOR SUPPLIED	0	0	0	90	1	1 1/2" IMC	Y
47	MCA-CAB-010	DMO-RE/RT-002A &2B	110	2	HOLD. MON. VENDOR SUPPLIED	0	0	90	0	1	1 1/2" IMC	Y
48	MCA-CAB-010	DMO-RE/RT-003A THRU 003J	110	10	HOLD. MON. VENDOR SUPPLIED	0	0	0	90	1	2" IMC	Y
49	1-20VOLT DISTR. PANEL	MISC. GLOVEBOX EQUIP.	130	10	3/c #12	10	20	110	0	1	3 " IMC	N
					Total GB Penetrations	46						

SRP DRAWING NO.

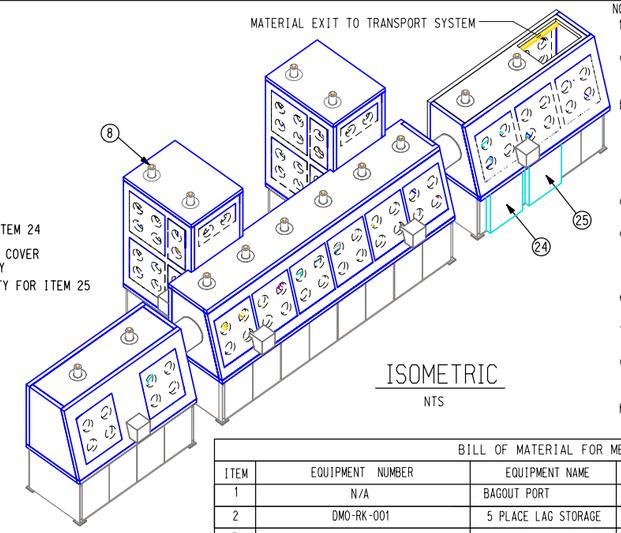


SHIELDING LAYOUT

NTS
(ALL SIDES OF GLOVEBOX)



PLAN



ISOMETRIC

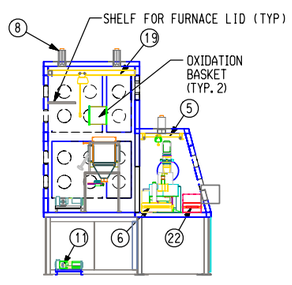
NTS

NOTES:

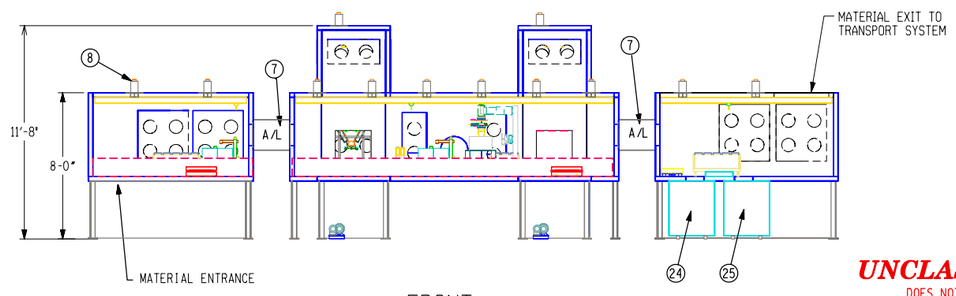
1) DURING DETAILED DESIGN, SEVERAL ADDITIONAL ATTRIBUTES SHALL BE REVISED INTO THIS LAYOUT:
a) ALL GLOVEBOX OPERATIONS SIDE WINDOW AREAS ARE TO BE ANGLED TOWARDS THE CENTER AT 10 DEGREES FOR EASE OF THE OPERATIONS & MAINTENANCE VISIBILITY.
b) THE AIRLOCK & ISOLATION DOORS ARE TO BE A GUILLOTINE STYLE. THESE DOORS MUST OPEN VERTICALLY WHEN OPENING & CLOSING IN THE GLOVEBOX. THE DIAMETER OF THE AIRLOCK WILL BE GOVERNED BY THE DOOR SWING AVAILABLE WITHIN THE ANGLED WALLS OF THE GLOVEBOX & THE EQUIPMENT THAT SHOULD BE PASSED THRU THE AIRLOCK.
c) HEPA FILTERS HAVE NOT BEEN SHOWN. THE HORIZONTAL PUSH-THRU CONCEPT UTILIZED AT LANL SHOULD BE CONSIDERED.
d) OTHER K-AREA INTERIM STORAGE (KAIS) GLOVEBOX DESIGN DETAILS SHOULD BE CONSIDERED FOR INCORPORATION IN THIS GLOVEBOX DESIGN - SUCH AS THE USE OF LaCalhene GLOVE PORTS & PREMIER TECHNOLOGY WINDOWS & FRAMES.
e) GB DESIGN TO PROVIDE METHOD OF ATTACHMENT TO FASTEN NEW WALL SEPARATING OPERATIONS & MAINTENANCE SIDES.
f) ITEM 14, GB INTERIOR HEIGHT MAY NEED TO BE RAISED WHEN DUMPING STATION DETAILS ARE KNOWN.
g) SHIELDING, CRITICALITY & LAG STORAGE LOCATION HAS NOT BEEN FINALIZED AT THIS TIME & MAY CAUSE REDESIGN WHEN FINALIZED.
h) LOWER FRONT OF GLOVEBOX TO BE COVERED WITH DOORS/PANELS.

BILL OF MATERIAL FOR METAL OXIDATION GLOVEBOX

ITEM	EQUIPMENT NUMBER	EQUIPMENT NAME	REQ'D	DATA SH	DESCRIPTION
1	N/A	BAGOUT PORT	1	NONE	18" DIA. FOR TRU WASTE
2	DMO-RK-001	5 PLACE LAG STORAGE	1	NONE	3013 CONTAINERS
3	DMO-RK-003	3 PLACE LAG STORAGE	1	NONE	3013 INNER CONTAINERS & TRANSPORT CANS
4	DMO-RDR-001, 002, 003, 004, 005 & 006	BAR CODE READER	6	JJDK00056	MICROSCAN, MS-860
5	DMO-HOI-001, 002 & 003	GANTRY HOIST	3	NONE	3D MOVEMENT REQUIRED
6	DMO-CART-001 & 002	CAN CART	2	NONE	TRANSPORTS CANS, TOOLS, FURN BSKT'S
7	DMO-CNVR-001, 002	A/L TELESCOPING TRAY	2	NONE	AIRLOCK USE
8	DMO-RE/RT-001A,B,002A,B,003A-003J	GAMMA HOLDUP MONITOR	14	JJDK00055	CANBERRA - 802 / ORTEC - digIBASE
9	DMO-FURN-001 & 002	OXIDATION FURNACE	2	MDSK00072	DIRECT METAL OXIDATION (DMO)
10	DMO-BLO-001 & 002	ARGON BLOWER	2	MDSK00072	SKID MOUNTED INSIDE GB
11	DMO-P-001 & 002	VACUUM PUMP	2	MDSK00072	TO BE LOCATED UNDERNEATH GB
12	DMO-SCL-001, 002, 003	SCALE	3	JJDK00035	METTLER TOLEDO, MODEL XS16001L
13	GBS-GB-001A	GLOVEBOX	1	MSPPK00059	MATERIAL ENTRY & PREP, 9'L x4'W x8'H
14	GBS-GB-001B	GLOVEBOX	1	MSPPK00059	FURNACE PREP 18'L x4'W x8'H
15	GBS-GB-001C & 001D	GLOVEBOX	2	MSPPK00059	FURNACE 5'L x4'W x11'-8"H
16	GBS-GB-001E	GLOVEBOX	1	MSPPK00059	EXIT STAGING GB10'L x4'W x8'H
17	GBS-ALOK-001A & 001B	AIRLOCK	2	NONE	30" DIAMETER x 2'LONG
18	DMO-STAT-001	DUMPING STATION	1	NONE	DUMPS A 3013 TO FURNACE BASKET
19	DMO-HOI-004 & 005	BASKET HOIST	2	NONE	REMOVE FURNACE LID AND BASKET
20	DMO-CUTR-001 & 002	CAN CUTTER	2	MDSK00071	OUTER & INNER 3013 & CONVENIENCE CAN
21	DMO-COP-001	CONV. CAN OPENER	1	NONE	CONVENIANCE CAN OPENER
22	DMO-TRLY-001 & 002	TROLLEY CART	2	NONE	MANUAL TRANSPORT IN GB
23	DMO-RK-002	5 PLACE LAG STORAGE	1	NONE	TRANSPORT CANS (IN EXIT STAGING GB)
24	DMO-GRIS-001	GAMMA ISOTOPIC SYSTEM	1	JJDK00036	ANTECH, SERIES 3610
25	DMO-NCC-001	APNMC	1	JJDK00051	ANTECH, MODEL 2442



SIDE



FRONT

UNCLASSIFIED

DOES NOT CONTAIN
UNCLASSIFIED CONTROLLED
NUCLEAR INFORMATION

ADC &/or Reviewing Official: E.C. TEFFT III, SR. ENG

Date: 2-08-07

LATEST C REVISION

SKETCH NUMBER: SK-DE-DMO-0001

PROJ.	REV. NO.	DATE	REVISION	PRP'D	LEAD ENG	CHK'D	APRV'D	APRV'D	APRV'D
MO9A	A	10-17-06	ISSUED FOR CDR (PRELIMINARY), ACTIVITY PUDE1080	JP	DN	ECT	BR	BCP	N/A
MO9A	B	1-10-07	GENERAL REVISION TO ADD MC&A EQUIPMENT, UPDATED B.O.M. & NOTES	JP	DN	ECT	DE	BCP	N/A
—	—	—	RE-ISSUED FOR CDR (PRELIMINARY), ACTIVITY PUDE71T01	—	—	—	—	—	—
MO9A	C	2-08-07	GEN'L REV & REV'D SHIELDING LAYOUT DETAIL, RE-ISSUED FOR CDR (PRELIM)	JP	DN	ECT	WJR	RCK	N/A

THIS DRAWING HAS BEEN FURNISHED BY THE SAVANNAH RIVER SITE. THE INFORMATION AND KNOW HOW THEREON MAY NOT BE USED NOR THE DRAWING REPRODUCED WITHOUT WRITTEN PERMISSION OF THE PRIME CONTRACTOR. ALL REPRODUCTIONS IN WHOLE OR IN PART, INCLUDING VENDOR'S SHOP DRAWINGS, SHALL BEAR OR REFER TO THIS STAMP.

REFERENCE DRAWINGS

EE2K02225	SINGLE LINE DIAGRAM
MM5K01942	OXY & OFFGAS FLOW DIAGRAM
MM5K01943	GLOVEBOX VENTILATION FLOW DIAGRAM
MM5K01944	GLOVEBOX/FURN COOLING FLOW DIAGRAM
MM5K01945	GLOVEBOX INERT ATMOS FLOW DIAGRAM
MM8K00005	OXIDATION SYS BLOCK FLOW DIAGRAM
MM8K00016	MATERIAL HANDLING BLOCK FLOW DIAGRAM
MM6K02266	GLOVEBOX VENTILATION P&ID
MM6K02267	GLOVEBOX/FURN COOLING P&ID
MM6K02268	GLOVEBOX INERT ATMOS P&ID
MM6K02270	OXY & OFFGAS P&ID
JJ8K00018	MC&A CONTROL BLOCK DIAGRAM

REFERENCE STANDARDS

UNITED STATES DEPARTMENT OF ENERGY
SAVANNAH RIVER SITE

BLDG. NO.	SITE CLEARANCE NO.	DESIGN AREA NO.	DESIGN GROUP
KAC	N/A	100-K	PD & CS

TITLE

PLUTONIUM DISPOSITION PROJECT

OXIDATION SYSTEM GLOVEBOX LAYOUT

PLAN & SECTIONS

SCALE	SRP DRAWING NO.	SHEET NO.	LATEST REVISION
1/4" = 1'-0"	N/A	1 of 1	C

JIM

Scale shown on this drawing is only applicable when plotted at 22"x34" (actual drawing size)

2-8-07

VHL: Mon Jan 08 07:48:56 2007

LEVELS 1111111111222222222333333333444444444555555555666666 123456789012345678901234567890123456789012345678901234567890123