

COTTER CORPORATION

**URANIUM/VANADIUM PRODUCT BUILDING DEMOLITION
WORK PLAN**

**Prepared by:
Cotter Corporation**

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1. Uranium/Vanadium Product Description

The Uranium/Vanadium Product Building was part of the new milling facility that began operation in 1979. The outside tanks and the surrounding building structure describes the Uranium/Vanadium Product Building. Attachment 1 includes a site plan of the Cotter Mill, showing the location of the Uranium/Vanadium Product Building.

The Uranium/Vanadium Product Building was used to process enriched solutions from the Solvent Extraction Circuit. The building contains thickener tanks, precipitation tanks, a calciner for drying uranium slurry, a decomposition furnace for vanadium, and a fusion furnace for fusing vanadium metal. In addition, there are filtration assemblies, baghouses and scrubbers for ventilation, and barreling stations. Also located in the building is a 200 hp boiler and boiler support equipment.

2. Demolition Objectives and Approach

Demolition of the Uranium/Vanadium Product building will include the removal of the structures described in Section 1.2 and size reduction and disposal of the components in the on-site lined Main Impoundment. The project goals for Uranium/Vanadium Product Building demolition are:

- Attain an as low as reasonably achievable (ALARA) dose outcome for (1) workers performing the demolition, (2) other on-site personnel, and (3) off-site individuals.
- Complete the demolition and waste disposal in a safe, cost-effective manner, in full compliance with applicable state and federal requirements.
- Contamination control is essential to achieving ALARA (both personal and environmental) and minimizing the need for additional cleanup
- Spills in excess of 100 gallons of liquid are possible and expected for during this activity. Cleanup of spills will be conducted as soon as practicable.
- Provide adequate environmental protection from contaminated dust and water runoff.

The approach involves use of mechanized equipment configured for demolition work, minimizing manual labor. Heavy-duty equipment will allow largely remote demolition of structures and buildings and loading of debris. A water truck with both fire hose and water cannon capability will be utilized to minimize dusting during the project. During Radiation Work Permit (RWP) operations, dust control objectives will be achieved utilizing a spray misting system to avoid dispersing radioactive material into the air due to splashing from higher pressure hoses..

A pre-demolition characterization (Appendix A and B) of the facilities has been completed and has been used to assess potential contaminants of concern as detailed in Section 5 (Master Plan). This characterization has been conducted in accordance with procedure SPA-0012. This information will guide the work practices and/or the implementation of engineering controls to maintain potential exposures ALARA and insure the safety of the workers performing the operation.

During any phase of this operation if circumstances occur that were unanticipated then additional characterization will be conducted in accordance with procedure SPA-0012.

Contemporaneously, a demolition permit and an asbestos abatement permit will be applied for as necessary.

3. Pre-Demolition Activities

The intent of the pre-demolition activities is to prepare the Uranium/Vanadium Product Building for demolition. The following items must be completed prior to beginning the demolition of that building.

3.1 Inventory of Tanks, Bins, and Containers

Prior to beginning demolition of the building an inventory of all tanks, bins, and containers will be conducted to determine what materials (liquids, solids) are present and an estimate of the volumes. Based

on this inventory a determination will then be made as to the handling of these vessels. This determination will include what is necessary to remove the materials (i.e. Hazardous Work Permit, Radiation Work Permit) and disposal of materials. In all cases the materials will be disposed of in the Main Impoundment but this determination will be specific as to the disposal location in the Main Impoundment.

3.2 Remove Oil From Gearboxes

There are a total of 30 gearboxes associated with this building. The oil will be drained from the gear boxes prior to beginning demolition. A hazardous work permit will be issued for the removal of the oil.

3.3 Remove the Decomposition Furnace

The decomposition furnace was used in the vanadium circuit. If the furnace is going to be salvaged it will be removed as a pre-demolition activity. Removal of the furnace will be conducted under a hazardous work permit. If the furnace is not going to be salvaged it will be removed during the demolition of the building and disposed of in the primary impoundment.

3.4 Remove the Fusion Furnace

The fusion furnace was used to fuse vanadium metal. If the furnace is going to be salvaged it will be removed as a pre-demolition activity. Removal of the furnace will be conducted under a hazardous work permit. If the furnace is not going to be salvaged it will be removed during the demolition of the building and disposed of in the primary impoundment.

3.5 Add Expansive Foam to the Calciner

Expansive foam will be added to the interior of the yellowcake calciner prior to moving the calciner to the Primary Impoundment for disposal. The expansive foam will capture and seal any residual yellowcake in the calciner and contain any additional contamination. The calciner will be removed as a single unit and transported to the Primary Impoundment for disposal. This activity will be accomplished under the auspices of a Radiation Work Permit. (Appendix C)

4. Demolition

This section describes how the demolition will be conducted. Demolition of the building will be systematic with walls being removed individually thereby creating access to the inside of the building from several directions. Example: After a wall is removed then additional access to the internal tanks will be created. Demolition will be evaluated on a daily basis and modifications to the plan will be made as necessary based on situations that arise.

- Daily meetings will be conducted and documented to evaluate the progress of the demolition activities and evaluate any problems i.e. safety encountered during the operations. (Attachment 3)
- Daily tailgate meetings will be conducted and documented to evaluate the progress of the demolition activities and evaluate any problems i.e. elevated air samples, haulage routes, safety issues. (Attachment 4)
- Staff will evaluate buildings to determine which equipment will be best suited for the demolition activity.
- Necessary equipment will be available at the start of operations.
- Prior to beginning demolition silt fences and/or berms will be installed along the perimeter of the demolition area, as necessary.
- Identified asbestos containing material (ACM) in this building has been identified as floor tiles in the control room. When the floors are removed they will be removed in accordance with regulation. Caulking and gaskets were also identified as ACM. The material will be removed in a manner that insures that the material will not become friable. It is planned that equipment will be removed as single units for disposal. These items will not be dismantled nor cut up thereby the gaskets and caulking will remain intact and not become friable.

- The Utility Disconnect Verification form must be completed prior to any demolition taking place.
- Removal of items such as the Yellowcake Calciner, Yellowcake baghouse, fan and associated ventilation duct work, and the Redler conveyor will be conducted using the guidance of a Radiation Work Permit (RWP) (Appendix C). Additional items, may also be removed using the RWP system, as deemed necessary by the Environmental Coordinator/Radiation Safety Officer (EC/RSO).

4.1 Equipment

Equipment used in the demolition activities may include a front end loader, excavator, hydraulic shear, backhoe, water truck, boom truck, 25 ton crane, heavy lift crane or cranes, low boy trailer, dozer and dump truck(s). Rubble removal may be conducted using the excavator, front end loader and dump truck(s). Removal of soils may be conducted using the excavator, backhoe, or loader and dump truck(s).

4.2 Sequence of Demolition – U/Vn Product Building (Appendix A “Demolition”)

1. Obtain breathing zone sample pump prior to beginning operations.
2. Set barricades or caution tape on roadway to prevent access to demolition area.
3. Prior to starting demolition wet U/Vn Product Building down, inside and outside, using water truck cannon or fire hose. During operations additional wetting may be accomplished utilizing water hose with mist sprayer, for additional dust control fire hose, or water cannon may also be used.
4. Using an excavator and shear begin by removing the outer building wall (skin). This will grant access to the building I-beams.
5. The calciner will be removed, as a single unit, and transported to the Primary Impoundment for disposal. (Appendix C)
6. The decomposition furnace and fusion furnace will be removed and transported to the Primary Impoundment for disposal. (See Section 4.0)
7. The Redler Conveyor will be removed, as a single unit, and transported to the Primary Impoundment for disposal. (See Section 4.0) (Appendix C)
8. The yellowcake baghouse and fan will be removed, as single units, and transported to the Primary Impoundment for disposal. (See Section 4.0) (Appendix C)
9. Using an excavator and shear begin removing the building structure.
10. Size rubble as necessary for transport by dump truck.
11. Load rubble using the loader into the dump truck for transport to the impoundment disposal area.
12. Water haul roads as necessary.

4.3 Sequence of Demolition – Concrete (Appendix A “Concrete”)

1. Obtain breathing zone sample pump prior to beginning operations.
2. Set barricades or caution tape on roadway to prevent access to demolition area.
3. Prior to starting demolition wet concrete using water truck cannon or fire hose.
4. During all phases of demolition use water to control any dusting as necessary. A water hose with misting sprays will be the primary method for dust control, for additional dust control fire hose or water canon may be used to accomplish this task.
5. Evaluate wind conditions at start/end of each day and periodically throughout day for dust control and safety.
6. Using the excavator with rock hammer and dozer begin demolition of the concrete. As necessary use shear to cut rebar.
7. Size rubble as necessary for transport by dump truck.
8. Load rubble using the loader into the dump truck for transport to the Main Impoundment disposal area.
9. Water haul roads as necessary.

5. Material Disposal in the Main Impoundment

Materials will be disposed in the Main Impoundment in accordance with the Tailings Reclamation Plan. Demolition materials will be placed in the Main Impoundment according to the procedures outlined below:

1. Material will be cut or dismantled into pieces that can be safely lifted or carried with the equipment being used. Material will also be cut or dismantled to minimize void spaces in the disposal area.
2. A dozer or front-end loader may be used to crush or compact compressible materials.
3. Pipe, conduit, or other items with an opening or diameter larger than 18 inches that cannot be crushed will be filled with earthen materials, concrete, or a foaming agent prior to disposal.
4. Debris placement will be a minimum distance of 10 feet above the Main Impoundment liner.
5. Soils will be placed in the Main Impoundment.

6. Post Demolition Activities

Upon completion of soils assessment and removal restore area to grade for proper drainage. Remove silt fences and any residual material at the silt fence. Soils will be treated by chemical treatment or seeded to control dusting from the area. Remove barricades and re-establish traffic roadway.

Attachment 1 Mill Site Map



Appendix A U/Vn Product Building Pre-Demolition**Complete all information use as many sheets as necessary**

Task Location	U/Vn Product Building	Task Title	Pre Demolition Activities
Department	Maintenance	Prepared By	Richard Wooten
Supervisor	Craig Simpson	Reviewed By	ALARA Review Committee (ARC)
		Approved By	ARC

Standard Requirements
(SOP, SP, PPE, etc.)

Sequence of Job Steps	Potential Hazards (P,E,C,R)	Safe Procedures/Practices/Controls	Consequence Level	Likelihood	Risk Code	Hazard ID Code*
Asbestos Survey	P,C,R	Outside contractor	II	B	1	
Obtain Demolition Permit		Submit Permit application	I	A	0	
Conduct Inventory of all tanks, vessels, and containers	P,C,R	Trained Personnel, PPE, SPA-0003,	II	B	1	1
Add expansive foam to Calciner and other vessels as necessary.	P,C,R	PPE, RH-190, RH-150, RH-060	III	B	2	1, 16, 21, 23
Remove Oil from Gearboxes	P,C	Trained Personnel, PPE, SP-0006, SP-0009, SPA-0003, RH-190, Guidelines for Spill Notification	II	B	1	1,15,16

When a completed analysis indicates that the estimated risk code for any of the steps of this task is "medium" or higher (RC=3 or 4), then develop a formal written procedure for the task and have it reviewed and approved prior to beginning the work.

* From Hazard Identification Sheet

Appendix A Demolition**Complete all information use as many sheets as necessary**

Task Location	U/Vn Product Building	Task Title	Demolition
Contractor	Kessler Reclamation	Prepared By	Richard Wooten
Supervisor	Calvin Kessler	Reviewed By	ARC
		Approved By	ARC

Standard Requirements
(SOP, SP, PPE, etc.)

Sequence of Job Steps	Potential Hazards (P,E,C,R)	Safe Procedures/Practices/Controls	Consequence Level	Likelihood	Risk Code	Hazard ID Code*
Barricade area	P	Work practice, area isolation	I	A	0	12
Install silt fences - Run on/Run off	P	Work practice	I	A	0	12
Wash Down Building – Inside and Outside	P	Work Practice	I	A	0	12
Wash Down Equipment – Inside Building	P	Work Practice	I	A	0	12
Demolition	P,R	SP-0005, training, PPE, Wind Speed in excess of 25mph. No use of man lift at wind gust in excess of 30 mph.	III	B	2	2, 14, 17, 19, 21
Remove Rubble		See Remove Rubble Spreadsheet				

When a completed analysis indicates that the estimated risk code for any of the steps of this task is "medium" or higher (RC=3 or 4), then develop a formal written procedure for the task and have it reviewed and approved prior to beginning the work.

* From Hazard Identification Sheet

Appendix A Remove Concrete**Complete all information use as many sheets as necessary**

Task Location	U/Vn Product Building	Task Title	Remove Concrete
Contractor	Kessler Reclamation	Prepared By	Richard Wooten
Supervisor	Calvin Kessler	Reviewed By	ARC
		Approved By	ARC

(SOP, SP, PPE, etc.)

Sequence of Job Steps	Potential Hazards (P,E,C,R)	Safe Procedures/Practices/Controls	Consequence Level	Likelihood	Risk Code	Hazard ID Code*
Barricade area	P	Work practice, area isolation	I	A	0	12
Install silt fences or berms	P	Work practice	I	A	0	12
Dust control-pre demolition	P,R	Work practice, SP-0005	I	A	0	14, 17, 19, 21
Demolition	P,R	SP-0003,SP-0005, training, PPE, Wind Speed in excess of 25 mph. No use of man lift at wind gust in excess of 30 mph.	III	B	2	2, 14, 17, 19, 21

When a completed analysis indicates that the estimated risk code for any of the steps of this task is "medium" or higher (RC=3 or 4), then develop a formal written procedure for the task and have it reviewed and approved prior to beginning the work.

* From Hazard Identification Sheet

Appendix A Remove Rubble**Complete all information use as many sheets as necessary**

Task Location	U/Vn Product Building	Task Title	Remove Rubble
Contractor	Kessler Reclamation	Prepared By	Richard Wooten
Supervisor	Calvin Kessler	Reviewed By	ARC
		Approved By	ARC

Standard Requirements
(SOP, SP, PPE, etc.)

Sequence of Job Steps	Potential Hazards (P,E,C,R)	Safe Procedures/Practices/Controls	Consequence Level	Likelihood	Risk Code	Hazard ID Code*
Barricade area	P	Work practice, area isolation	I	A	0	12
Install silt fences	P	Work practice	I	A	0	12
Dust Control	P,R	SP-0005, training	I	A	0	14, 17, 19, 21
Rubble size reduction	P,R	Work practice, SP-0005	III	B	2	2, 14, 17, 19, 21
Load and transport (track loads)	P,R	SP-0005, training, PPE	III	B	2	2, 12, 14, 17, 19, 21
Placement in Primary Impoundment	P,R	SP-0005, training, PPE, Solids Management Plan, Wind Speed in excess of 25 mph. No use of man lift at wind gust in excess of 30 mph.	III	B	2	2, 14, 17, 19, 21

When a completed analysis indicates that the estimated risk code for any of the steps of this task is "medium" or higher (RC=3 or 4), then develop a formal written procedure for the task and have it reviewed and approved prior to beginning the work.

* From Hazard Identification Sheet

Appendix A Post Demolition**Complete all information use as many sheets as necessary**

Task Location	U/Vn Product Building	Task Title	Post Demolition
Contractor	Kessler Reclamation	Prepared By	Richard Wooten
Supervisor	Calvin Kessler	Reviewed By	ARC
		Approved By	ARC

Standard Requirements
(SOP, SP, PPE, etc.)

Sequence of Job Steps	Potential Hazards (P,E,C,R)	Safe Procedures/Practices/Controls	Consequence Level	Likelihood	Risk Code	Hazard ID Code*
Radiation survey (Cotter)	P,R	Training; Work Practice; RH-110	I	A	0	21
Dust Control	P,C,R	Work practice, SP-0005, PPE	II	B	1	1, 2, 10, 14, 17, 21
Regrade area for drainage	P	Work practice, SP-0005, PPE	II	B	1	1, 2, 10, 14, 17, 21
Remove silt fences	P,R	Work practice, SP-0005	I	A	0	12, 14, 17, 21
Remove Barricades	P	Work practice	I	A	0	12

When a completed analysis indicates that the estimated risk code for any of the steps of this task is "medium" or higher (RC=3 or 4),

then develop a formal written procedure for the task and have it reviewed and approved prior to beginning the work.

* From Hazard Identification Sheet

Appendix B Hazard Identification Worksheet

Task: U/Vn Product Building Demolition		Date: March 2011
Instructions: Use the following list as a guide to evaluating task conditions and hazards. Apply information to the task hazard analysis sheet.		
General Conditions		Mitigations
1	Are you familiar with MSDS requirements for the materials being used and the required Personal Protective Equipment (PPE)?	SP-0009 "Hazard Communication"; SPA-0003 "Personal Protective Equipment"; Mill Safety Manual
2	Will you create dust, welding arcs, heat, excessive noise, or chemical mixtures during the task?	SP-0008 "Hearing Protection"; SP-0009 "Hazard Communication"; SP-0018 "Welding"; Mill Safety Manual; RH-190 "Respiratory Protection"; RH-130 "Occupational General Air Particulate Survey"; RH-150 "Occupational Breathing Zone Monitoring"
3	Are there any fire or explosive hazards associated with the task or likely to develop because of the task?	SP-0007 "Hot Work Permit"; SP-0017 "Fire Extinguishers"; Mill Safety Manual
4	Could the task create headaches, breathing problems, or dizziness from odors, etc.?	RH-190 "Respiratory Protection"; Mill Safety Manual
5	Is the task performed where limited entry, egress, or poor ventilation exists?	SP-0004 "Confined Space Entry"; Mill Safety Manual
6	Does the task require compressed, liquefied, or noxious gases?	SP-0014 "Compressed Gas Cylinders: Transportation, Storage, and Use"; Mill Safety Manual
7	Does the task require work in areas or with materials subject to extreme temperatures?	SP-0012 "Guarding"
8	Does the task involve the use of fork lifts, cranes, man lifts?	SP-0003 "Cranes and Lifting Equipment"; Mill Safety Manual
9	Does the task involve the use of powered hand tools?	SP-0010 "Hand & Power Tools"
10	Does the work involve the risk of electrical shock or other forms of hazardous energy?	SP-0001 "Control of Hazardous Energy (Lock Out/Tag Out); SP-0013 "Electrical Safety"; Mill Safety Manual
11	Does the task involve working above or below ground?	SP-0002 "Fall Protection"; SP-0004 "Confined Space Entry"; SP-0011 "Trenching and Shoring; Mill Safety Manual
12	Does the task involve lifting, pulling, pushing, or carrying heavy objects or repetitive motion?	SP-0019 "Proper Lifting"; Mill Safety Manual

13	Does the task involve work with pressurized vessels or lines?	SP-0001 "Control of Hazardous Energy (Lock Out/Tag Out); Mill Safety Manual; Buidelines for Spill Notification
14	Does the task involve the use of mobile equipment such as trucks, loaders, rail cars, etc.?	SP-0003 "Cranes and Lifting Equipment"; SP-0005 "Vehicles"; SP-0015 "Shuttle Car Operation; Mill Safety Manual
15	Does the task involve the use of non-pressurized that could create spills?	Guidelines for Spill Notification
16	Does the task require any permits?	SP-0004 "Confined Space Entry"; SP-0006 "Hazardous Work Permit"; SP-0007 "Hot Work Permit"; RH-060 "Radiation Work Permit"
17	Does the task require specialized training?	SPA-0007 "Training and Education"; Mill Safety Manual
18	Will waste products require special handling or disposal requirements?	
19	Environmental releases such as spills, leaks, dusts, smoke, fumes, gases, etc.	EV-020 "Environmental Air Particulate Sampling"
20	Exposure to insects, reptiles, animals (i.e. mice), etc.?	Mill Safety Manual
21	Radioactive materials present? Uranium Ore, Caldesite Ore, other concentrates, tailings material	RH-010 "Radiological Health & Safety Training"; RH-110 "Beta and/or Gamma Exposure Rate Surveys"; RH-120 "Alpha, Beta/Gamma Contamination Surveys; RH-140 Radon-222/Radon-220 Decay Product Surveys
22	Radioactive materials present? Yellowcake	RH-010 "Radiological Health & Safety Training"; RH-110 "Beta and/or Gamma Exposure Rate Surveys"; RH-120 "Alpha, Beta/Gamma Contamination Surveys
23	Radioactive materials present? Contaminated Materials, soils, dust	RH-010 "Radiological Health & Safety Training"; RH-110 "Beta and/or Gamma Exposure Rate Surveys"; RH-120 "Alpha, Beta/Gamma Contamination Surveys; RH-121 "Alpha, Beta/Gamma Smear Sampling"; RH-200 "Personnel Release Surveys"
24	Radioactive materials present? Nuclear Density Gauges, Nuclear Level Gauges, Other Sources	RH-010 "Radiological Health & Safety Training"; RH-110 "Beta and/or Gamma Exposure Rate Surveys"; RH-120 "Alpha, Beta/Gamma Contamination Surveys; RH-170 "Industrial Device Installation"
25	Is there a possibility of exposure to gaseous or particulate concentrations that are Immediately Dangerous to Life or Health (IDLH)?	Monitor for gaseous or particulate concentrations

26	Does the task involve work with or around moving machinery or conveyor belts?	SP-0012 "Guarding"; Mill Safety Manual
27	Any other hazards that have been overlooked with this list?	

Appendix C**Radiation Work Permit (RWP) Items**

Item	Pre-Demo	Who	Prep	Transport	Disposal
YC Bird and Venturi Scrubber	X	Cotter	Washdown. Disconnect and remove. Transport intact. YC to remain intact and Scrubber to be crushed for disposal.	Cotter	Kessler. Primary Impoundment
YC Calciner	X	Cotter	Wash outside. Fill internal with foam, remove, and transport intact.	Cotter/Kessler	Cotter/Kessler Primary Impoundment
YC Baghouse		Cotter	Wet internals and external, remove, and transport intact.	Cotter/Kessler	Cotter/Kessler Primary Impoundment
Redler Baghouse		Cotter	Wet internal and external, remove, transport intact.	Cotter/Kessler	Cotter/Kessler Primary Impoundment
Redler Conveyor		Cotter	Place banding on conveyor to secure conveyor cover. Support and shear conveyor (Kessler). Transport intact.	Cotter/Kessler	Cotter/Kessler Primary Impoundment
YC Storage Bin		Cotter	Rinse. Transport intact. Shear at Primary Impoundment (Kessler).	Cotter/Kessler	Cotter/Kessler Primary Impoundment
YC Ducting		Cotter	Unbolt flanges and dampen with water. Cut ducting with shear. (Kessler)	Kessler	Kessler Primary Impoundment