COTTER CORPORATION

ZIRCONIUM PRODUCT BUILDING DEMOLITION WORK PLAN

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1. Zirconium Product Description

The Zirconium Product Building was part of the new construction that occurred in 2000. The building was part of the Zirconium Oxide Circuit. Attachment 1 includes a site plan of the Cotter Mill, showing the location of the Zirconium Product Building.

The building contains tanks and filters that were utilized in the filtration and concentration of zirconium solutions prior to precipitation and drying. The process required placing process solutions in tanks.

2. Demolition Objectives and Approach

Demolition of the Zirconium 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 Zirconium 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 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.

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. 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 Zirconium Product Building for demolition. The following items must be completed prior to beginning the demolition of that building.

3.1 Draining and Disposal of Solutions from Process Tanks

Currently some of the tanks in the Zirconium Product building contain solutions. Prior to demolition of the building these materials must be removed for disposal. A Hazardous Work Permit (HWP) will be issued for this operation.

3.2 Removal of Stored Chemicals

Currently the building is being utilized to store drums and totes of process chemicals. Prior to demolition of the building the drums and totes must be removed from the building. The chemicals will be placed in

an alternate storage location or disposed of in the Primary Impoundment. A Hazardous Work Permit (HWP) will be issued for this operation.

3.3 Remove Oil From Gearboxes

There are eighteen (18) 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.

4. Demolition

This section describes how the demolition will be conducted. 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.
- There were no asbestos containing materials (ACM) identified in this building.

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, dozer and dump truck(s). The demolition of the tanks may be achieved using the excavator, hydraulic shear, and dozer. Demolition of the Zirconium Product building may be accomplished with an excavator, hydraulic shear and dozer. Rubble removal may be conducted using the front end loader and dump truck(s).

4.2 Sequence of Demolition – Zirconium 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 Zirconium Product Building down, inside and outside, using water truck cannon or fire hose.
4. Work will begin with the removal of the outside tanks and structures which are located adjacent to the building.
5. Using an excavator and shear begin by removing the outer building wall (skin). This will grant access to the building I-beams.
6. Using an excavator and shear begin removing the building structure.
7. Size rubble as necessary for transport by dump truck.
8. Load rubble using the loader into the dump truck for transport to the impoundment disposal area.
9. 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. The Utility Disconnect Verification form must be completed prior to any demolition taking place.
4. Prior to starting demolition wet concrete using water truck cannon or fire hose.
5. During all phases of demolition use water to control any dusting as necessary.
6. Evaluate wind conditions at start/end of each day and periodically throughout day for dust control and safety.

7. Using the excavator with rock hammer and dozer begin demolition of the concrete. As necessary use shear to cut rebar.
8. Size rubble as necessary for transport by dump truck.
9. Load rubble using the loader into the dump truck for transport to the Main Impoundment disposal area.
10. 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 will 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 or a foaming agent prior to disposal.
4. Debris placement will be a minimum distance of 10 feet above the Main Impoundment liner.

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 Zirconium Product Pre-Demolition

Complete all information use as many sheets as necessary

Task Location	Zirconium 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	
Remove Material from Tanks	P,C,R	PPE, RH-190, RH-150, RH-060	III	B	2	1, 16, 21, 23
Remove Chemical from Building	P,R	PPE, SP-0019, SP-0005, SP-0003, SP-0014, SPA-0007	III	B	2	6, 8, 12, 14, 17
Determine where lines are routed and where they will be rerouted if necessary.		Internal review of discharge lines.	I	A	0	

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	Zirconium 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	O	12
Wash Down Equipment – Inside Building	P	Work Practice	I	A	O	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	Zirconium 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 25mph. 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	Zirconium Product Building	Task Title	Remove Rubble
Department		Prepared By	
Supervisor		Reviewed By	
		Approved By	

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.	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	Zirconium 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: Zirconium 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?	