REF: IA-A-000717

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CORRESPONDENCE CONTROL

Revised 02/03

CORRES. CONTROL
INCOMING LTR NO.

0033 5 RF 03

DUE DATE

ACTION

Department of Energy

ROCKY FLATS FIELD OFFICE
10808 HIGHWAY 93, UNIT A
GOLDEN, COLORADO 80403-8200

APR 08 2003

03-DOE-00396

DIST.	LTR	ENC
BERARDINI, J. H.	X	X
BOGNAR, E. S.	X	X
CROCKETT, G. A.		
DECK, C. A.	X	X
DEGENHART, K. R.		
DIETER, T. J.		
DIETERLE, S. E.		
FERRERA, D. W.	X	X
FERRI, M. S.		
GERMAIN, A. L.		
GIACOMINI, J. J.		
ISOM, J. H.		
LINDSAY, D. C.	X	X
LONG, J. W.		
LYLE, J. L.		
MARTINEZ, L. A.	X	X
NAGEL, R. E.	X	X
NORTH, K.	X	X
PARKER, A. M.	X	X
POWERS, K. P.		
RODGERS, A. D.		
SHELTON, D. C.	X	X
SPEARS, M. S.		
TRICE, K. D.		
TUOR, N. R.	X	X
WILLIAMS, J. L.		
NESTA, S.	X	X
FOSS, D.	X	X
BROOKS, L.	X	X
BUTLER, L.	X	X
COR. CONTROL	X	X
ADMIN. RECORD	X	X
PATS/130		

Reviewed for Addressee
Corres. Control RFP

4/10/03 lrg
Date By

Ref. Ltr. #
03RF00520

DOE ORDER #
NONE

1/1

Mr. Steven H. Gunderson
Rocky Flats Cleanup Agreement Coordinator
Colorado Department of Public Health and Environment, Region VIII
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Dear Mr. Gunderson:

Please find enclosed a completed Rocky Flats Cleanup Agreement Standard Operating Protocol (RSOP) for Component Removal, Size Reduction, and Decontamination Proposed Minor Modification, which is submitted for your concurrence. This modification addresses the use of explosives to routinely drop pipes and other interior hanging equipment from buildings being decommissioned. Unless otherwise notified, the Rocky Flats Environmental Technology Site will implement this modification in accordance with the provisions of Rocky Flats Cleanup Agreement Part 10, paragraph 125. Questions may be directed to Steve Tower, at (303) 966-2133.

Sincerely,

Richard J. DiSalvo
Acting Assistant Manager
for Environment and Stewardship

Enclosure

cc w/o Encl:
E. Schmitt, OOM, RFFO
S. Tower, AMP, RFFO
S. Nesta, K-H RISS Env.
D. Foss, K-H RISS ER
T. Rehder, USEPA

cc w/Encl:
Administrative Record

APR 2003
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RECORDS CENTER

ADMIN RECORD
IA-A-001379

KAISER•HILL
COMPANY

April 1, 2003 03-RF-00520

Richard DiSalvo
Acting Assistant Manager for
Environment and Stewardship
DOE, RFFO

MINOR MODIFICATION TO THE RSOP FOR COMPONENT REMOVAL, SIZE REDUCTION, AND DECONTAMINATION ACTIVITIES – SMN-020-03

Attached is a draft transmittal letter to the Colorado Department of Public Health and Environment for the minor modification to the *RSOP for Component Removal, Size Reduction and Decontamination Activities*. The draft transmittal letter has been prepared from DOE RFCA coordinator to CDPHE RFCA coordinator.

Please contact Steve Nesta x6386 with questions or concerns, and when the letter from DOE is sent to CDPHE.

Stephen M. Nesta
Environmental Manager
Remediation, Industrial D&D, and Site Services

Attachment:
As Stated

KLM:pvt

Orig. and 1 cc – Richard DiSalvo

cc:
W. Prymak
S. Tower

Steve Gunderson
Colorado Department of Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80222-1530

MINOR MODIFICATION TO THE RSOP FOR COMPONENT REMOVAL, SIZE REDUCTION AND DECONTAMINATION ACTIVITIES

Mr. Gunderson:

In accordance with the Rocky Flats Cleanup Agreement (RFCA), a minor modification is being submitted for the Rocky Flats Cleanup Agreement Standard Operating Protocol (RSOP) for Component Removal, Size Reduction and Decontamination Activities. This modification addresses the use of explosives inside buildings to disassemble and/or drop hanging equipment such as piping, ductwork or cranes.

In accordance with RFCA Part 10 §125, there is no formal requirement that the LRA approve minor modifications. Therefore the affected pages, which are included, will be incorporated into the RSOP in seven days.

If you have any questions regarding this, please contact me at (303) 966-4765.

Richard Disalvo
U.S. Department of Energy

RECORD OF MODIFICATIONS

[illegible]	[illegible]	[illegible]
1	08/30/2002	Addition of language to address "Los Alamos" glovebox windows.
2	11/4/2002	Field modification documented in Contact Record dated 10/16, 2002, between J. Brothers, DOE, C. Gilbreath, K-H, and D. Onyskiw, CDPHE. Change of language to footnote on Table 9 concerning containment.
3		**Modification to add the use of explosives as a component removal technique. This technique was tested in Building 125 and successfully demonstrated as a safer more cost effective technique for dropping overhead equipment.**

Table 8. Wall, Floor, and Ceiling Removal Activities, Environmental Hazards, and Associated Controls

[illegible]	[illegible]	[illegible]
Decontaminate wall, floor, and/or ceiling, if necessary (see Section 3.4)	Radioactive and chemical liquids and air emissions released into the building and/or to the environment	Conduct ES&H reviews prior to activity (see Section 2.0). Isolate work area from surrounding environment by sealing cracks and floor drains, placing layers of heavy-duty plastic on floor, and/or using secondary containment. Collect liquids in approved containers. Use building or temporary air filtration system and project-specific and/or Site-wide air monitoring network (see Sections 3.5 and 3.6).
Dismantle wall, floor, and/or ceiling (see Section 3.3.1)	Radioactive air emissions released into the building and/or to the environment	Conduct ES&H reviews prior to activity (see Section 2.0). Isolate work area from surrounding environment by sealing cracks and floor drains, placing layers of heavy-duty plastic on floor, and/or using secondary containment. Use building or temporary air filtration system and project-specific and/or Site-wide air monitoring network (see Sections 3.5 and 3.6).
Haul away sections using mechanical lifting and hauling devices such as hoists and cranes (see Section 3.3.1)	Radioactive air emissions released into the building and to the environment	Conduct ES&H reviews prior to activity (see Section 2.0). Package property for reuse or recycle in accordance with receiving facility WAC and DOT shipping requirements. Package waste in accordance with disposal facility WAC and DOT shipping requirements. Conform with the requirements of the RSOP for Recycling Concrete.

3.3.1 Component Removal and Size Reduction Techniques

Techniques used to disassemble and size reduce facility components may be categorized as mechanical disassembly and cutting techniques, ~~and~~ thermal cutting techniques, **and explosives to disassemble, and/or drop hanging equipment (piping, ductwork and cranes)**. Mechanical techniques employ manual, electrical, pneumatic, and/or hydraulic forces (e.g., shear forces) and motions (e.g., reciprocating, circular motions) to cut, disassemble, and/or break equipment or systems into pieces. Thermal techniques produce a flame or electrical arc to cut and/or break the equipment or systems by melting them. **Explosive techniques produce a linear uniform cutting action at the point of equipment contact.** Techniques used to remove facility components may involve the used of common construction equipment, including excavators (e.g., backhoes), hoists, and cranes.

Mechanical techniques include disassembly using hand tools or power saws and shears, circular cutters, abrasive cutters, diamond wire cutters, paving breakers (i.e., jackhammers), pulverizers, grapples, rams, and non-explosive cracking agents. Thermal techniques include plasma arc, oxygen-burning, laser cutters, and arc saws. **Explosive techniques may include the use of linear shaped charges, explosive rock bolt cutters, or other explosive**

techniques deemed appropriate. In general, mechanical techniques are most appropriate for cutting wood, plastic, glass, concrete, and thin metal (i.e., < 3/8" thickness) systems and components, such as piping. Thermal techniques are most often used

to cut thicker metal, such as gloveboxes, chainveyors, heavy equipment, and tank systems. **Explosive techniques will be used on pipe and ductwork hangers or overhead cranes.** Most of these mechanical and thermal techniques may be hand-held, stationary, or configured for remote control. **Explosive techniques will be configured for remote control.**

In 1998, the RFETS Technology Steering Committee[31] examined a variety of size reduction techniques for use during decommissioning. Currently, advanced size reduction techniques are being evaluated, including robotics and remote-operated vehicles. Initial efforts were based on soft-sided containment tents in which size reduction activities would be performed. Subsequent efforts have focused on the development and deployment of the hard-sided Inner Tent Demolition Chamber (ITDC). Other size reduction techniques currently under consideration include the Remote Operations Size Reduction System (ROSRS) and In-Situ Size Reduction System (ISSRS), which would use mobile robots to perform mechanical and thermal size reduction operations. Brief descriptions of the size reduction techniques are provided in the following paragraphs and in **Table 9~~Table 9~~**.

After facility components have been disconnected and disassembled, they will be packaged for disposal, reuse, or recycle following size reduction and/or decontamination (if necessary). Removal of large items, such as tanks, equipment, and sections of walls and flooring, will be accomplished using mechanical lifting and hauling devices, such as hoists and cranes. Excavators, such as backhoes, will be used to excavate around and access any underground components. Such devices will be inspected and approved for the work, and operated by certified operators. If contaminated, items will be contained (i.e., wrapped, coated, or packaged) prior to removal to prevent the release and spread of contamination. Excavation work will be conducted in accordance with the OS&IH Program Manual, which includes requirements for soil disturbance permits.

3.3.1.1 Mechanical Removal and Size Reduction Techniques

Mechanical techniques include small tools, such as hand-held saws with hardened-steel blades, that cut through construction materials, including wood, plastic, glass, Plexiglas®, Benelex®, lead, and glovebox filters. Hydraulic shears are two-bladed tools that operate on the same principle as a conventional pair of scissors. Shears may be hand-held or mounted on a skid or excavator that provides hydraulic power and a mechanism for manipulating the shears. A shear baler is a device that may be used to reduce an entire glovebox into a high-density bale that will fit into a standard waste box, either without cutting or with a minimum number of cuts.

[31] The Rocky Flats Technology Steering Committee is a multi-disciplinary group of engineers and project managers tasked with evaluating new technologies for potential use at RFETS.

Table 9. Examples of Removal and Size Reduction Techniques

Component/Method	[illegible]	[illegible] Tools	[illegible]	Oxy-torch	[illegible] Cutter	[illegible] Wire Saw	Wheel Cutter	Hydraulic Shears	[illegible]	[illegible]	[illegible]	[illegible]
			A,R,H,F	A,R,H,F	A,H	C,R,S	P	R		A,C,S,H	A,H,F	
Gloveboxes												
Stainless with lead shielding		3	1		2	3		1	1	1	1	1
Stainless without lead shielding		2	1		2	3		3			1	1
Plexiglas® with lead shielding		1				3		2				
Plexiglas® without lead shielding		1				3		2				
Glass		1										
Lead		1										1
Gloves		1										
Filters		1						2				
Glovebox supports		2	1	1	1		1	2		2	1	
Shielding												
Benelex		1										
Plexiglas		1										
Pipe/Ductwork/overhead Cranes	1	2				3						
Machinery												
Tool Steel												
<½"		3	1	1	2	3		2		1	1	
> ½" but < 3"		3	1	1		3				1	1	
> 3"		3	1	1		3				3	1	
Cast iron			1		2	3				2	1	
Carbon steel equipment bases			1	1	2	3				2	1	
Aluminum		2	2		1	3		1	1	1	1	1
Stainless steel > 3/8" but < 1"		3	1		3	3				1	1	
Granite		2		2		1				1	2	

Adapted from Value Engineering Study, RFETS Building 776/777 Glovebox Size Reduction Final Report (August 1998)

LEGEND:

Blank	=	Not applicable or not recommended
1	=	Most preferred method
2	=	Medium preferred method
3	=	Least preferred method

Footnotes

A	=	Can be automated
R	=	Can utilize remote control
H	=	Containment as required by Radiological Operations
F	=	Produces fumes
C	=	Possible criticality issue
S	=	Secondary waste issue
P	=	Applies to pipe only

pulleys that draw a continuous loop of multi-strand wire strung with diamond beads and spacers through the surface to be cut. High-pressure water cutters use water mixed with an abrasive, such as garnet, to cut through steel. Typically, high-pressure water cutters are mounted on an automated, multi-axis system. Arbor presses are devices used to press odd-sized pieces of metal, such as glovebox corners and tubing, into flat pieces that will fit into a waste container.

Non-explosive cracking agents may be used to fracture concrete. The cracking agent is a powder, liquid, or putty that is mixed with water and poured into holes drilled in the concrete. As it hardens, pressures up to 12,000 pounds per square inch (psi) are exerted, causing the concrete to fracture.

3.3.1.2 Thermal Removal and Size Reduction Techniques

Thermal techniques include plasma arc cutters, which operate by establishing a direct current arc in a gas or gas mixture that flows through the cutting torch nozzle to the metal being cut. A stream of positively charged ions and free electrons is ejected from the torch nozzle at a very high velocity, which serves to melt the metal. During cutting, the molten metal is ejected in the form of fine sparks, which are blown away from the torch head. Oxygen-burning cutters use a flowing mixture of fuel gas and oxygen ignited at the torch head to heat metal to high temperatures and "burn" it away. One such system consists of a torch that feeds oxygen and electrical power to an exothermic cutting rod, which is placed in direct contact with the piece to be cut, then dragged in the direction of the cut. Laser cutting systems melt and vaporize the metal.

3.3.1.3 Explosive Removal and Size Reduction Techniques

Explosive techniques include the use of linear shaped charges, explosive rock bolt cutters or other applicable explosive techniques that will be placed on pipe angles, dowel hangers, or other types of hangers used to attach overhead fixtures. The explosives act as a linear shaped directionalized cutting explosive, producing a linear uniform cut. Upon detonation, a high velocity plasma jet is formed and impacts the hanger with pressures exceeding the metal's yield strength, thereby pushing the metal of the hanger to either side of the jet path. During the detonation the only material available for displacement is the plastic, pewter, or copper sheathing surrounding the charge.

Any activities involving explosives will employ the consultative process throughout the work planning to address the specific activities associated with each evolution. In addition, the public will be kept involved and informed of these work activities through the monthly ER/D&D Status meetings or additional meetings, as necessary.

3.3.2 ES&H Controls and Monitoring

Removal and size reduction techniques and activities may present hazards to workers and the environment. Therefore, it is critical to perform removal and size reduction planning as well

Table ~~10~~10. Component Removal/Size Reduction Hazards and Controls

Removal Technique	Potential Hazards	Hazard Controls	Comments
		Use of engineering and administrative controls, including containment and ventilation/filtration systems, postings, RWPs, and other ALARA principles, to control exposure	exposure of Site population, and off-Site releases
Linear shaped, rock bolt cutter and other applicable explosives	Use on Site of Department of Transportation (DOT) Class 1 explosives Bodily injury Damage to property by flying debris Potential releases of contamination within a building or to the environment	Preparation and use of a Demolition Work Plan, a Justification for Continued Operation, a Special Security Plan, Standing Orders and JHAs as necessary. Use of geotextile, conveyor belting or other material placed over/around the blast area Use of engineering and administrative controls, including containment and ventilation/filtration systems, postings, RWPs, and other ALARA principles, to control exposure Storage on Site of Department of Transportation (DOT) Class 1 explosives	Contamination levels will be identified prior to use (as access allows) Air and personnel monitoring will be performed as appropriate to determine the effectiveness of decontamination and controls and to monitor for potential uptakes, exposure of Site population, and off-Site releases All individuals handling explosives will be qualified/certified in accordance with OSHA and DOT
Excavators, hoists, and cranes	Bodily injury Damage to property Potential releases of contamination within a building or to the environment, including releases resulting from excavation activities conducted within IHSSs	Preparation and use of an Excavation Plan and/or Lifting Plan Training on job-specific hazards, related procedures, and the proper use of equipment PPE and personnel monitoring Inspection of equipment prior to use Coordination with environmental management SMEs (e.g., air and water quality) and implementation of additional monitoring and other controls as necessary to prevent or minimize contaminant migration	Equipment certifications will be current