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Administrative Procedure

PRC-PRO-FP-40421

Hot Work

Revision 0, Change 3

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Program: Fire Protection Engineer or Hanford Fire Marshall

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Technical Authority : Anderlini, Larry

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JHA: Administrative**Periodic Review Due Date: 07/08/2017**

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USQ Screen Number:

- Solid Waste Operations Complex : **Categorical Exclusion: GCX-7 (Minor Change)**
Screener: Hicks, Jarrod
- Canister Storage Building/Interim Storage Area : Excluded from USQ
Exclusion Reason:
N/A per PRC-PRO-NS-06 appendix B, Table B-2
- Central Plateau Surveillance and Maintenance : **Categorical Exclusion: GCX-7 (Minor Change)**
Screener: Hicks, Jarrod
- Waste Encapsulation Storage Facility : Excluded from USQ
Exclusion Reason:
N/A per PRC-PRO-NS-06 appendix B, Table B-2
- 100 K Facility : **Categorical Exclusion: GCX-8 (Not in Safety Basis Compliance Matrices)**
Screener: Williams, James
- Less Than HazCat 3 : Excluded from USQ
Exclusion Reason:

- Plutonium Finishing Plant : **Categorical Exclusion: GCX-7 (Minor Change)**
Screener: Danna, Marc
- Transportation : Excluded from USQ
Exclusion Reason:
N/A per Appendix B, Bulleted List

CHANGE SUMMARY**Description of Change**

In Appendix A of the procedure two text entries "AJHA" were changed to "JHA".

In Appendix A of the procedure in the section titled "Hot Work Performed in Designated Hot Work Area" the fourth bullet was deleted because the reference it made to PRC-PRO-FP-40404 had changed.

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this procedure is to provide for implementation of the hot work requirements.

1.2 Scope

This Level 2 Management Control Procedure includes implementation requirements for hot work that is performed at CH2M HILL Plateau Remediation Company (CHPRC) controlled facilities or areas.

NOTE: *Hot Work is any temporary operation involving open flames or producing heat and/or sparks including brazing, cutting, grinding, soldering, arc or gas welding, plasma welding, or torch-applied roofing. Cutting and grinding classified as Hot Work is limited to operations that produce significant sources of heat or spraying sparks such that they are considered ignition sources to surrounding combustibles.*

1.3 Applicability

This procedure applies to all hot work performed at CHPRC controlled facilities or areas including other contractors and subcontractors performing work at CHPRC facilities or areas.

NOTE 1: A Hot Work Permit (Site Form A-6006-115) is required for ALL hot work performed outside of a Designated Hot Work Area. This document is prepared by the user.

NOTE 2: A Fire Marshal Permit (Reference: PRC-PRO-FP-40422, *Fire Marshal Permit Interfaces*, is required for each "Designated Hot Work Area" (DHWA).

1.4 Implementation

This procedure is effective upon publication.

2.0 RESPONSIBILITIES

All responsibilities associated with this procedure are identified in the process steps.

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3.0 PROCESS

3.1 Hot Work Performed Outside of Designated Areas

NOTE: *Non-Designated Hot Work Area: An area where “hot work” will be performed that generally meets the following criteria:*

- *Is not a Designated Hot Work Area*
- *An area where a “one-time” hot work evolution will occur*
- *An area that is not within a defined space that has a well quantified boundary*
- *An area where “hot work” will occur that “hot work” does not occur on a routine basis*
- *An area where specific “hot work” criteria need to be applied to ensure a safe work environment that might not meet those criteria on a routine basis.*

Actionee	Step	Action
Responsible Manager/Field Work Supervisor (FWS)	1.	ENSURE that hot work is identified during work planning
	2.	ENSURE compliance with hot work requirements in accordance with Appendix A.
	3.	ENSURE that a <i>CHPRC Hot Work Permit</i> (Site Form A-6006-115) is prepared and approved, if required. <ul style="list-style-type: none"> a. COMPLY with the requirements of the <i>Hot Work Permit</i>.
Fire Protection Engineer (FPE)	4.	REVIEW <u>AND</u> APPROVE all hot work permits.
	5.	Prior to approval, INSPECT the hot work area. <ul style="list-style-type: none"> a. ENSURE that specific additional controls, if identified, are documented in the Special Instructions/Remarks block on the hot work permit form.
FPE	6.	<u>IF</u> the FPE determines that he/she has received adequate feedback that the worksite is compliant with the limitations of the hot work permit, <u>THEN</u> CONSIDER waiving the individual site inspection.
	7.	APPROVE the Hot Work Permit.

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Actionee	Step	Action
Responsible Manager/FWS	8.	ENSURE that the hot work area is maintained in accordance with the conditions and controls specified on the Hot Work Permit for the duration of the hot work activity.
Worker	9.	PERFORM hot work in accordance with the requirements of Appendix A and the Hot Work Permit.

NOTE: For hot work that extends beyond one shift, the oncoming supervisor, fire watch and worker for each subsequent shift must sign and date the hot work permit log sheet.

3.2 Hot Work Performed in Designated Areas

NOTE: Designated Hot Work Area: An area where “hot work” will be performed that generally meets the following criteria:

- A fixed area that has well defined boundaries
- An area where repetitive “hot work” will occur e.g. welding area
- An area that has been set up to accommodate “hot work” i.e. is free of combustible materials

Actionee	Step	Action
Responsible Manager	1.	IDENTIFY areas requiring a Hanford Fire Marshal Designated Hot Work Area Permit.
	2.	OBTAIN a Hanford Fire Marshal Designated Hot Work Area Permit in accordance with Appendix A and PRC-PRO-FP-40422, Fire Marshal Permit Interfaces..
Deputy Fire Marshal (DFM)	3.	ESTABLISH an expiration date for the <i>Hanford Fire Marshal Designated Hot Work Area Permit</i> 1 year from the approval date
Worker	4.	PERFORM hot work in accordance with the requirements of Appendix A and the <i>Hanford Fire Marshal Designated Hot Work Area Permit</i> .
DFM	5.	REVIEW the Hanford Fire Marshal Designated Hot Work Area Permit annually.

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4.0 FORMS*CHPRC Hot Work Permit, A-6006-115***5.0 RECORD IDENTIFICATION**

All records are required to be managed in accordance with PRC-PRO-IRM-10588, *Records Management Processes*.

Records Capture Table

Name of Record	Submittal Responsibility	Retention Responsibility	
Hot Work Permit	Requesting Organization	Requesting Organization	
Hanford Fire Marshal Permit (for designated areas)	Requesting Organization	Fire Marshal's Office	

6.0 SOURCES**6.1 Requirements***CRD O 420.1C, Facility Safety**CRD O 420.1C, (Supp Rev 0) Facility Safety**10 CFR 851, Worker Safety and Health Program**NFPA 326, Standard for Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair**PRC-PRO-FP-40422, Fire Marshal Permit Interfaces**PRC-STD-FP-40404, Fire Protection Program**PRC-PRO-WKM-079, Job Hazard Analysis**DOE-0360, Hanford Site Confined Space Procedure (HSCSP)***6.2 References***PRC-PRO-IRM-10588, Records Management Processes*

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Appendix A - Hot Work Requirements**Hot Work**

A Job Hazards Analysis (JHA) **SHALL** be completed for hot work activities, when applicable, in accordance with PRC-PRO-WKM-079, *Job Hazard Analysis*

The Job Supervisor **SHALL** schedule the cognizant Fire Protection Engineer (FPE) review and approval at least 24 hours in advance for new projects.

NOTE: *When changes occur in the field which could impact the validity of the JHA, the JHA SHALL be reviewed (if necessary) and updated as required to reflect the field changes.*

Those performing hot work **SHALL** wear flame retardant (FR) Personal Protective Equipment (PPE) to at least the level determined through the JHA process to protect the worker from the effects of heat sparks and flame, unless approval to deviate is given on a case by case basis by the FPE (e.g., FR coveralls, leathers are acceptable in non-radiological areas, or FR/leather full front apron as a minimum for "low hazard" hot work).

The FR PPE requirement **SHALL NOT** be waived in a designated area if a designated fire watch is not provided.

All hot work in areas governed by an RWP **SHALL** require the use of fire retardant PPE. If the RWP requires a double set of anti-contamination coveralls, the outer set of coveralls **SHALL** be flame retardant.

NOTE: *Red FR coveralls (including hoods and boots) for use in radiological areas and brown FR coveralls for use in non-radiological areas are available through the Hanford Central Warehouse.*

Hot work equipment (torches, regulators, pressure-reducing valves, and manifolds, etc.) **SHALL** be listed or approved by a nationally recognized testing lab (NRTL) for the intended use.

Oxygen-fuel gas systems (e.g., oxygen/acetylene welding) **SHALL** be equipped with listed and/or approved backflow valves, flash arrestors, and pressure-relief devices.

When welding curtains, blankets, pads or equivalent are used they **SHALL** be listed or approved.

Hot work areas requiring scaffolding for access **SHALL** be constructed of metal planks or **SHALL** be approved by the cognizant FPE.

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Fire Watch Requirements

A fire watch **SHALL** be required for all hot work outside of designated hot work areas and when required by the cognizant FPE inside designated areas.

Fire watches **SHALL NOT** be assigned other duties.

The fire watch **SHALL** have successfully completed Fire Watch Training (Course #044400), and be within the re-certification training date. The fire watch **SHALL** clearly understand the following when performing fire watch duties:

- The area to be fire watched
- Potential fire hazards (to personnel and property)
- Appropriate emergency procedures and actions
- Methods for sounding alarm(s)
- Procedure for manually activating fire suppression systems (if applicable)
- That he/she has the authority to stop the hot work operations if unsafe conditions develop

The fire-watch **SHALL** be provided with a fully charged and operable fire extinguisher at the worksite throughout the entire job. Ensure a separate extinguisher is brought to the worksite. Do not take a mounted extinguisher in the facility from its storage rack, except in case of fire.

A fire watch **SHALL** be maintained for at least ½ hour after completion of hot work operations in order to detect and extinguish smoldering fires.

For torch-applied roofing operations a fire watch **SHALL** be posted for at least 2 hours following completion of the operation.

Hot Work Performed in Designated Hot Work Area

A Fire Marshal Permit **SHALL** be required to authorize an area as a designated hot work area. The Fire Marshal Permit **SHALL** be posted at the designated hot work area. The permit **SHALL** address the following as a minimum:

- Criteria to which the area **SHALL** be maintained
- PPE requirements for fire related hazards
- Whether a fire watch is required

NOTE: *Refer to JHA for all PPE requirements*

- Special circumstances pertaining to PPE/fire watch requirements. (Example: Establishing a fire watch in lieu of PPE requirements or vice versa for specific hot work operations)
- Criteria that would require a new permit, (i.e., facility modifications, etc).

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NOTE: *A dedicated fire watch is not required in a designated hot work area unless otherwise specified by the cognizant FPE.*

Designated hot work areas **SHALL** be evaluated by the cognizant Deputy Fire Marshal (DFM) with consideration for:

- A specific area designed or approved for hot work
- Fire resistive or of noncombustible construction
- Essentially free of combustible and flammable contents
- Suitably segregated from adjacent areas

The cognizant DFM **SHALL** designate all controls in designated hot work areas

NOTE:

- *A dedicated fire watch is not required in a designated hot work area unless otherwise specified by the cognizant FPE*
- *For the purposes of this procedure, a designated hot work area is defined as a permanent location designed and approved for hot work operations to be performed regularly and suitably segregated from adjacent areas. The Fire Marshal Permit demonstrates that the area has been reviewed by a DFM to ensure it qualifies for a designated hot work area and establishes any applicable controls. The Job Supervisor and cognizant facility Manager are responsible to ensure the area is maintained in accordance with the requirements in this document and the Fire Marshal Permit*

The area **SHALL** be provided with a fully charged and serviced portable fire extinguisher (minimum 2A-10BC rating) that serves only the designated hot work area.

The area **SHALL** have adequate ventilation (consult Industrial Hygiene, if necessary). Inside buildings, the designated hot work area **SHALL** be provided with visual protection, i.e. surrounded by a booth or screen.

Designated hot work area permits **SHALL** be reviewed and renewed annually and approved by the cognizant DFM.

Hot Work Performance Outside of Designated Areas

Hot work that is performed at locations other than in a designated hot work area **SHALL** require an approved *CHPRC Hot Work Permit* (Site Form A-6006-115) before each job with the exception of the following types of hot work:

- Sanding using grinders with sanding discs
- Dremel tool grinding
- Pedestal grinders
- Pedestal sanders

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- Rotary files
- Reciprocating saws
- Band saws
- Nibblers
- Electric soldering

NOTE: *The Hot Work permit will identify the fire related PPE requirements. Refer to JHA for all PPE requirements.*

Cognizant FPE approval **SHALL** be required on all hot work permits.

The following high hazard hot work **SHALL** require notification of the Hanford Fire Marshal (FAX 373-5846 copy of the permit):

- SMAW- Shielded Metal Arc Welding-Stick Welding
- GMAW-Gas Metal Arc Welding –MIG Welding (Metal Inert Gas) wire feed welding, squirt gun welding
- FCAW-Flux Cored Arc Welding-Wire feed welding with a flux core in the wire
- CAC-A - Air Carbon Arc Cutting
- CAC-Carbon Arc Cutting (no air)
- PAC-Plasma Arc Cutting
- OFC-Oxy-Fuel Cutting (Cutting torch)
- Heavy Grinding-using Bayflex grinder, side grinder, 6” to 8” grinding wheel (disc)
- Light Grinding-using 4” and smaller grinding wheel
- Cut-off Saw

A fire-watch **SHALL** be established before starting the hot work.

The work area **SHALL** be inspected to ensure compliance with the following:

- The job relocated to avoid exposure if possible.
- Combustibles moved at least 35 feet away from the work or protected by noncombustible/fire retardant covers, shields, or blankets or, if appropriate, the combustible materials may be wetted.
- Shut down ducts that might carry sparks to distant combustibles.

NOTE: *Combustible- A material that, in the form in which it is used and under the conditions anticipated, will ignite and burn.*

- All openings or cracks in walls, floors, systems, and equipment within 35 ft. of the work **SHALL** be covered or plugged to prevent sparks from reaching adjacent areas.

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- Hot work to be performed near walls, partitions, ceilings or roofs of combustible construction **SHALL** be provided with fire-retardant shields or guards to prevent ignition.
- If hot work is to be performed on a wall, partition, ceiling or roof, precautions **SHALL** be taken to prevent ignition of combustibles on the opposite side by relocating combustibles. If it is impractical to relocate combustibles, a fire watch on the opposite side from the work **SHALL** be provided.
- Every elevated hot work operation **SHALL** be evaluated on a case-by-case basis by the cognizant FPE to determine a reasonable safe distance from hot work to combustible occupancies or construction. For elevated hot work, combustible materials **SHOULD** be either relocated a minimum of 50 ft. from the hot work area; or properly protected with fire retardant welding blankets; or the hot work operation isolated with welding screens. Suspend fire-resistive welding blankets under hot work conducted near the ceiling. Place noncombustible screens around hot work at the floor to trap sparks. The physical conditions involved may dictate relocation of combustibles beyond 50 ft.
- Welding **SHALL NOT** be performed on metal partitions, walls, ceilings, or roofs with combustible coverings or with combustible sandwich-type panel construction.
- When hot work is performed on pipes or other metal objects that are, or have been, in contact with combustible materials or flammable materials such as flammable liquids the configuration **SHALL** be evaluated by the cognizant FPE to ensure that heat conduction through the metal does not present the threat of ignition.
- If installed, automatic fire suppression systems **SHALL** be operable unless concurrence is obtained from the cognizant FPE.

NOTE: *Special precautions need to be taken to avoid accidental operation of the system. Consult with the cognizant FPE for appropriate special precautions to avoid inadvertent actuation of fire protection systems.*

- If installed, the Hanford Fire Department **SHALL** bypass or protect smoke/heat detectors that may be affected by the work, before the hot work begins (and restored to service as soon as possible after the job)

NOTE: *Depending on the operation, detectors may need to be covered or removed.*

- Before initiating hot work in spaces classified as confined spaces as defined in DOE-0360, Hanford Site Confined Space Procedure (HSCSP), the cognizant FPE **SHALL** evaluate the hazard based on NFPA 326 *Standard for Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair*
- Prior to hot work on small tanks, containers or piping, the FPE **SHALL** evaluate the hazard based on NFPA 326.