



One Team. One Culture.

Administrative Procedure

PRC-PRO-FP-40421

Hot Work

Revision 1, Change 3

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- 100 K Facility :
Excluded from USQ
Exclusion Reason:
N/A per PRC-PRO-NS-53097 Table 1
- 324 Facility :
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N/A per PRC-PRO-NS-53097 Table 1
- Canister Storage Building/Interim Storage Area :
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- Central Plateau Surveillance and Maintenance :
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- Less Than HazCat 3 :
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- Plutonium Finishing Plant :
Excluded from USQ
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N/A per PRC-PRO-NS-53097 Table 1
- Solid Waste Operations Complex :
Excluded from USQ
Exclusion Reason:
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- Transportation :
Excluded from USQ
Exclusion Reason:
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- Waste Encapsulation Storage Facility :
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Change Summary

Description of Change

- Page 15 of 28, First Bullet and Second Bullet, replace “cognizant FPE” with “...cognizant

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Industrial Hygiene or Safety Professional...” • Add Bullet to end of page, o When the designated hot work area is bounded by other than non-combustible fixed partitions, arrange portable hot work partitions consisting of welding curtains shall be arranged in the following manner: ? Hot work partitions panel materials must be tested and approved in accordance with ANSI/FM 4950, American National Standard for Evaluating Welding Pads, Welding Blankets and Welding Curtains for Hot Work Operations. ? Hot work partitions shall be arranged on all four sides of the hot work and extend at least 4 ft. above the horizontal plane of the hot work, or as reviewed and approved in advance by the DFM. ? Hot work partitions panels shall be arranged, overlapped, and secured to prevent gaps from which sparks or embers may pass and to prevent toppling. (Provide at least a 6 in. overlap at the sides and at the bottom) ? Any gaps at the base or sides of hot work partitions shall be covered with FM Approved welding blanket or curtain materials or other secured noncombustible or fire resistive materials. ? Maintain a minimum 10 ft. clear space free of combustible material on the non-working side of the windscreen. Alternatively, enclosed metal cabinets and/or job boxes may be used for the storage of combustible, if reviewed and approved in advance by the FPE/DFM. Flammable liquids or combustible liquids storage in open shelving or in approved flammable liquids storage cabinets is not permitted within 10 ft. of the windscreen.

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1.0 INTRODUCTION

1.1 Purpose

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

1.2 Scope

This procedure provides instructions for all hot work performed at CH2M HILL Plateau Remediation Company (CHPRC)-controlled facilities or areas including other contractors and subcontractors performing work at CHPRC facilities or areas. This procedure also provides instruction in the safe set-up and use of welding and cutting equipment.

1.3 Applicability

This procedure applies to all facility personnel and contractors for the protection of property from damage arising from welding and cutting by both oxy-fuel and electric arc processes. This procedure covers the evaluation and permitting process for hot work activities outside established and approved designated (fixed) hot work areas. For the purpose of this procedure, hot work shall include abrasive grinding or cutting operations which liberate sparks, torch soldering or welding operations, arc welding, and any tool operations involving open flames or surface temperatures of greater than 450°F.

- NOTE:**
1. A **CHPRC Hot Work Permit** (Site Form A-6006-115) is required for ALL hot work performed outside of a “designated hot work area.” This form is prepared by the user.
 2. A **Fire Marshal Permit** (Reference: PRC-PRO-FP-40422, Fire Marshal Permit Interfaces) is required for each designated hot work area.

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.

1.4 Implementation

This procedure implements DOE-STD-1066-2012, *Fire Protection*, that requires compliance with NFPA 51B, *Fire Prevention During Welding, Cutting and Other Hot Work*, as the standard for all hot work being performed in DOE site facilities. This procedure is compliant with NFPA 51B and is effective upon publication.

2.0 RESPONSIBILITIES

2.1 Facility Manager/Building Manager (FM/BM)

FM/BM or a designated agent shall be responsible for safe hot work activity in their facilities. This includes:

- Responsible for the functional implementation of this procedure.
- Establish permissible areas for hot work.

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- Designate a permit authorizing individual (PAI).
- Ensure other work activities or operations do not pose a conflicting hazard with hot work (e.g., hot work and fire system impairments, hot work and flammable spray applications, etc.).
- Advise all contractors about site-specific flammable materials, hazardous processes or conditions, or other potential fire hazards.

2.2 Field Work Supervisor (FWS)

FWS or a designated agent shall be responsible for safe hot work activity for their work packages or designated work areas. This includes:

- Ensure craft and their supervisors are trained in the safe operation of the equipment, the safe use of the process, and the equipment procedures.
- Designate an individual to be responsible for controlling welding and cutting operations in restricted areas not specifically designed or approved for such processes. The individual shall be aware of the hazards involved and familiar with the provisions of this procedure. This includes:
 - Responsible for implementation of operational requirements of this procedure.
 - Ensure all equipment shall be examined to ensure it is in a safe operating condition.
 - Ensure unsafe equipment shall be removed from service and repaired by qualified personnel prior to its next use or be withdrawn from service and tagged out of service.
 - Ensure only approved apparatus, such as torches, manifolds, regulators or pressure-reducing valves, and acetylene generators are used.
 - Ensure all individuals involved in the hot work operations, including contractors, are familiar with the provisions of this procedure.
 - Ensure individuals involved in hot work operations are trained in the safe operation of their equipment and in the safe use of the process.
 - Ensure individuals involved in hot work operations shall have an awareness of the inherent risks involved and understand the emergency procedures in the event of a fire.
 - When identified by field workers, cease hot work operations if unsafe conditions develop and ensure management, cognizant Fire Protection Engineer (FPE), or the Permit Authorizing Individual (PAI) has been notified for reassessment of the situation.
 - Ensure that all persons are equipped with the proper personal protective equipment (PPE) for their tasks.

Hot Work**Published Date: 07/23/19****Effective Date: 07/23/19****2.3 Permit Authorizing Individual (PAI)**

The PAI in conjunction with the FM/BM shall be responsible for safe hot work activities by ensuring that other work activities or operations do not pose a conflicting hazard with hot work. This includes, but is not limited to, the following:

- Coordinate work packages and other Hanford Fire Marshal (HFM) Permit activities (e.g., fire system impairments, flammable liquids operations, etc.) on the day of hot work to prevent hazardous conflicts.
- Provide approval to workers before the start of hot work operations.
- Where a fire watch is not required, conduct a final check 1/2 hour after the completion of hot work to detect and extinguish smoldering fires.
- Field Work Supervisors (FWS) are not to function as PAIs. Instead, the PAI is to coordinate with the FWS to ensure their hot work activities do not conflict with other potentially hazardous operations.
- The PAI may be any individual (and alternate to provide consistent coverage) within the FM/BM organization who has received fire prevention permit coordination training, is familiar with the subject facility operations and hazards, and is authorized by the FM/BM as a single point of contact.

2.4 Cognizant Industrial Hygienist

- When reviewing and considering precautions for hot work, consider the safety of the hot work operator and fire watch with respect to PPE for other special hazards beyond hot work. The CHPRC Industrial Hygienist is responsible for the evaluation of industrial hygiene hazards and associated selection of PPE for hot work activities. The hot work permit is intended to ensure that an Industrial Hygiene Exposure Assessment is performed. To do this, Safety Data Sheets (SDS) of the welding rods, fluxes, base metals, and other products to be used must accompany the hot work permit to ensure an accurate review.

2.5 Cognizant Fire Protection Engineer (FPE) and Field Work Supervisor (FWS) or Work Planner

Cognizant FPE and FWS or Work Planner, when reviewing and considering precautions for hot work shall:

- Determine site-specific flammable materials, hazardous processes, or other potential fire hazards that are present or likely to be present in the work location.
- Ensure protection of combustibles from ignition by the following means:
 1. Considering alternative methods to hot work
 2. Moving the work to a location that is free from combustibles

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3. If the work cannot be moved, moving the combustibles to a safe distance or having the combustibles properly shielded against ignition
4. Scheduling hot work so that operations that could expose combustibles to ignition are not begun during hot work operations

If (2) through (4) cannot be met, hot work shall not be performed.

- Determine that fire protection and extinguishing equipment is properly located at the site.
- Where a fire watch is required, ensure a fire watch is at the site.

2.6 Fire Watch

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. Duties include:

- Must stay alert at all times for the possibility of a fire, and maintain particular vigilance to elevations beneath the work area.
- Perform only fire watch duties when assigned to the task. Assignment to areas during welding/cutting/burning when combustible material cannot be removed from the area and/or the possibilities of fire exist.
- Remain on site for a minimum of 30 minutes after all welding/cutting/burning has ended to ensure no smoldering debris ignites.
- For torch-applied roofing operations, be posted for at least 2 hours following completion of the operation.
- 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.
- Fire extinguisher shall be provided for the project.
- Do not take a mounted extinguisher in the facility from its storage rack, except in case of fire. Wall-mounted fire equipment is for emergency use only.

Additional 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 (requires a Hot Work Permit)

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 where 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*

Since hot work located outside of a designated area is by its nature a major injury or ignition source to surrounding personnel and operations, particular care must be taken to ensure both the hot work and its effects are isolated. The permit associated with this process provides a method for tracking hot work activities in an effort to ensure they are properly monitored, secured, and that no potentially hazardous conflicting operations are permitted in the immediate area. Use of a Hot Work Permit is a requirement of NFPA 51B.

A Hot Work Permit shall be completed for each hot work operation (i.e., abrasive grinding or cutting operations which liberate sparks, torch soldering or welding operations, arc welding, or any tool operations involving open flames or surface temperatures of greater than 450°F) prior to the actual work. In the case of contractor/vendor hot work operations, these shall be subject to the same evaluation and permitting as those conducted by CHPRC staff.

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

Cognizant FPE approval shall be required on all Hot Work Permits.

A fire watch shall be established before starting hot work. The work area shall be inspected to ensure compliance with the following:

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- The job relocated to avoid exposure if possible.

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

- Combustibles moved at least 35 ft. 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.
- 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.
- 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 heat conduction through the metal does not present the threat of ignition.
- Hot work areas requiring scaffolding for access shall be constructed of metal planks or shall be approved by 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, automatic fire suppression systems shall be operable unless concurrence is obtained from the cognizant FPE.

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

- If installed, the Hanford Fire Department (HFD) 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). **This action will require completion of a Fire Protection Impairment Permit.**
- From a fire protection perspective, 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*. Other industrial hygiene and safety precautions pertaining to confined spaces shall be applied in accordance with established CHPRC safety procedures with the assistance of a qualified safety and/or industrial hygiene professional.
- Prior to hot work on small tanks, containers or piping, the FPE shall evaluate the hazard based on NFPA 326.

NOTE: *The following process steps may be performed in any order as needed to conduct work safely.*

Actionee	Step	Action
Responsible Manager/ FWS	1.	ENSURE hot work is identified during work planning.
	2.	ENSURE compliance with hot work requirements in accordance with PRC-PRO-WKM-079, <i>Job Hazard Analysis</i> .
	3.	COMPLETE the Hot Work Permit.
	4.	CONDUCT physical review of the proposed hot work area to determine necessary precautions and identify potential hazards to hot work workers, surrounding personnel, fire hazards, combustible or flammable materials in the area, and equipment that may need further protection or isolation.
	5.	REVIEW the proposed work with the area supervisor to coordinate activities, IDENTIFY further precautions, <u>AND ARRANGE</u> for safe arrangement of the Fire Watch.
	6.	SCHEDULE the cognizant FPE review and approval at least 24 hours in advance for new projects.

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Actionee	Step	Action
Cognizant FPE	7.	REVIEW <u>AND</u> APPROVE all Hot Work Permits.
	8.	Physically REVIEW the proposed hot work area with the FWS. (If the FPE determines that adequate feedback is provided to confirm that the work site is compliant with the limitations of the Hot Work Permit, they may consider waiving the individual site inspection.)
	9.	IDENTIFY other potential or fire hazards to the hot work FWS <u>AND</u> RECOMMEND corrective action.
	10.	ENSURE specific additional controls, if identified, are documented in the Hot Work Permit form.
FWS	11.	APPROVE the Hot Work Permit.
	12.	COORDINATE the relocation, covering, or other protection of equipment and material within the proposed hot work area.
	13.	COORDINATE the designation of qualified Fire Watch for the area.
	14.	COORDINATE safe relocation of personnel from the proposed hot work area and personnel traffic control throughout the permit operation.
NOTE:	<i>The PAI shall not be the hot work foreperson/supervisor.</i>	
PAI	15.	REVIEW precautions and safety equipment selections of the Hot Work Permit with the FWS.
	16.	REVIEW coordination of the proposed hot work to prevent conflicts with other work activities that may increase fire or personnel hazards.
	17.	RETAIN one copy of the completed Hot Work Permit throughout the duration of the hot work task.
FWS	18.	Physically REVIEW <u>AND</u> ENSURE all physical barriers, weld curtains, ventilation, and/or warning signs are posted for the work area.
	19.	SIGN the Hot Work Permit <u>AND</u> RETAIN one copy throughout the duration of the hot work task.
Area Supervisor	20.	Physically REVIEW <u>AND</u> ENSURE all relocation, covering, or other protection of equipment and storage within the proposed hot work area has been completed.

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Actionee	Step	Action
FWS	21.	REVIEW the Hot Work Permit precautions and task package with the hot work performer and the Fire Watch.
	22.	VERIFY that hot work equipment is in safe working order.
	23.	VERIFY that personnel have received current safety training for the task.
	24.	VERIFY that PPE and fire extinguishers required for the job have been obtained.
Hot Work Performer	25.	REVIEW the Hot Work Permit precautions and task package with the FWS.
	26.	CONFIRM that hot work equipment is in safe working order.
	27.	CONFIRM that PPE and fire extinguishers required for the job have been obtained.
	28.	CONFIRM that the work area conforms to the Hot Work Permit precautions by physical review.
	29.	INFORM the Fire Watch, FWS, and Area Supervisor or Qualified Foreperson at any time work is to be initiated, temporarily suspended, re-initiated, or terminated.
NOTE:		<i>For hot work that extends beyond one shift, the oncoming supervisor, fire watch, and worker for each shift must sign and date the hot work log sheet.</i>
	30.	<u>IF</u> hot work is to extend beyond one shift or will carry over between shifts, <u>THEN</u> UPDATE the FWS and Area Supervisor at the change in shift.
	31.	<u>IF</u> the duration of hot work is likely to exceed the estimated duration, <u>THEN</u> UPDATE the cognizant FPE and PAI <u>AND</u> REVIEW precautions.
	32.	<u>IF</u> hot work worker(s) is to change during the permit term, <u>THEN</u> CONDUCT a briefing period between hot work workers to review precautions, the permit controls, and work progress.

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<i>Actionee</i>	<i>Step</i>	<i>Action</i>
Fire Watch	33.	REMAIN in the designated hot work area or assigned segment throughout the duration of the hot work, plus 30 minutes thereafter, unless released by another qualified fire watch person.
	34.	<u>IF</u> work is to be temporarily suspended for greater than 30 minutes, <u>THEN COMPLETE</u> a thorough review of the area for potential fires and to control personnel traffic for at least 30 minutes beyond the time of hot work suspension.
	35.	During hot work activities, <u>CONDUCT</u> a thorough review of the area for potential fires <u>AND CONTROL</u> personnel traffic.
	36.	ENSURE personnel protective barriers and warning signs are maintained throughout the duration of the work.
	37.	<u>IF</u> Fire Watch(es) is to change during the permit term, <u>THEN CONDUCT</u> a briefing period between Fire Watches to review precautions, the permit controls, and work progress.
	38.	<u>WHEN</u> the hot work is completed, <u>THEN COMPLETE</u> a thorough review of the area for potential fires and to control personnel traffic for at least 30 minutes beyond the time of hot work termination.
	39.	ENSURE the final fire watch section of the Hot Work Permit is completed and signed, the FWS notified, and the area copy returned to the hot work PAI.

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3.2 In the Event of Fire or Personnel Injury

NOTE: *The following process steps may be performed in any order as needed to conduct work safely.*

Actionee	Step	Action
NOTE: <i>Whoever identifies the fire first shall notify other hot work personnel in the area.</i>		
Worker or Fire Watch	1.	<u>IF</u> a fire or smoke is seen or smelled, <u>THEN</u> PROVIDE a verbal local alarm. Personally NOTIFY the Area Supervisor if feasible for the safety of others involved. If not feasible, area personnel should be notified and requested to raise the general evacuation alarm for the area.
	2.	Immediately NOTIFY HFD to respond by pulling a fire alarm system manual pull station (located adjacent to the building exits), or by pushing the button on the front of the RFAR (red box on outside of the building), by a phone call to 911 (cell phone (509) 373-0911).
	a.	<u>IF</u> notification is by phone, <u>THEN</u> PROVIDE detailed information as requested by HFD.
	3.	Immediately PROCEED to the nearest safe exit.
	4.	<u>IF</u> the building has an active Fire Alarm System in service, <u>THEN</u> PULL the manual pull station at the exit.
	a.	<u>IF</u> there is no manual pull station, <u>THEN</u> EXIT the building <u>AND</u> PUSH the button on the front of the RFAR unit.
	5.	FOLLOW UP the fire alarm system activation with a phone call from a safe area providing HFD with requested information.
	6.	REPORT to the facility staging area for accountability. DO NOT RE-ENTER the building.

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Actionee	Step	Action
NOTE: <i>You do not have to fight a fire, but you must immediately report a fire before making any attempt to extinguish it (no matter how small the fire.)</i>		
Employee	7.	<p><u>IF</u> the fire is in the incipient stage and the choice is made to attempt to extinguish the fire, <u>THEN COMPLY</u> with the following:</p> <ol style="list-style-type: none">a. NOTIFY HFD before attempting any fire extinguishment activity.b. ENSURE a safe, clear escape route is visible and remains so throughout the attempt to use the extinguisher.c. ENSURE the type of material (A-B-C-D) burning is known to determine if the correct extinguisher is available.d. CONSIDER the following before attempting to use extinguisher:<ul style="list-style-type: none">• Location and rate of fire growth• Potential for smoke generation• Area is a potentially toxic atmosphere• Obscuration of the escape pathe. <u>IF</u> the individual still considers that the fire is at a sufficiently small stage and can reasonably be suppressed, <u>THEN USE ONLY ONE</u> fire extinguisher in the attempt.<ol style="list-style-type: none">1) IF this ONE attempt fails, <u>THEN</u> immediately EXIT the area by the safest route available.2) ONLY if safe to do so, CLOSE the doors or windows in the room of the fire <u>AND SHUT OFF</u> fire-involved equipment as you are exiting the area.

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3.3 Hot Work Performed in Designated Areas (requires a Fire Marshal Permit)

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*
- *Signs shall be posted designating hot work areas as deemed necessary by the cognizant FPE*

This section covers the evaluation and permitting process for hot work activities within established and approved designated fixed hot work areas. 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 Deputy Fire Marshall (DFM) to ensure it qualifies for a designated hot work area and establishes any applicable controls.

The Job Supervisor and cognizant FM are responsible to ensure the area is maintained in accordance with the requirements in this document and the Fire Marshal Permit. 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:

- Physical location and arrangement of the hot work area
- Types of equipment, gases, tools used
- Protection provided
- Criteria to which the area shall be maintained
- PPE requirements for fire related hazards, per the direction of the CHPRC Industrial Hygienist
- Whether a fire watch is required
- Expiration date, not to exceed one year from the time of issuance

NOTE: *A general arrangement drawing may be used to provide specific details of the arrangement (particularly where it is desirable to set up and break down the hot work area frequently).*

Criteria that would require a new permit, includes, but is not limited to facility modifications, change in locations, and additions or deletions of hot work associated equipment or supporting materials.

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A review of the designated hot work area and Hanford Fire Marshal Permit shall be conducted by the cognizant DFM at least annually or as part of Facility Fire Protection Assessments (FFPA), whichever comes first.

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

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.*

- The Job Supervisor shall schedule the cognizant Industrial Hygiene or Safety Professional review and approval of the JHA at least 24 hours in advance for new projects.

NOTE: *Red flame retardant (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.*

- Those performing hot work shall wear FR 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 cognizant Industrial Hygiene or Safety Professional (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 a radiological work permit (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: *A dedicated fire watch is not required in a designated hot work area unless otherwise specified by the cognizant FPE.*

- 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.) This analysis should be conducted by a qualified industrial hygienist.
- Designated hot work areas shall be evaluated by the cognizant 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 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 CHPRC Industrial Hygiene). Inside buildings, the designated hot work area shall be provided with visual protection, i.e., surrounded by a booth or screen.

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- When the designated hot work area is bounded by other than non-combustible fixed partitions, arrange portable hot work partitions consisting of welding curtains shall be arranged in the following manner:
 - Hot work partitions panel materials must be tested and approved in accordance with ANSI/FM 4950, *American National Standard for Evaluating Welding Pads, Welding Blankets and Welding Curtains for Hot Work Operations*.
 - Hot work partitions shall be arranged on all open sides of the hot work and extend at least 4 ft. above the horizontal plane of the hot work, or as reviewed and approved in advance by the DFM.
 - Hot work partitions panels shall be arranged, overlapped, and secured to prevent gaps from which sparks or embers may pass and to prevent toppling. (Provide at least a 6 in. overlap at the sides and at the bottom)
 - Any gaps at the base or sides of hot work partitions shall be covered with FM Approved welding blanket or curtain materials or other secured noncombustible or fire resistive materials.
 - Maintain a minimum 3 ft. clear space free of combustible material on the non-working side of the hot work partition. Alternatively, enclosed metal cabinets and/or job boxes may be used for the storage of combustible, if reviewed and approved in advance by the FPE/DFM. Flammable liquids or combustible liquids storage in open shelving or in approved flammable liquids storage cabinets is not permitted within 10 ft. of the hot work partition.

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.*

The Job Supervisor and cognizant FM shall perform quarterly visual surveillances of the designated hot work area to ensure:

- Location, arrangement, equipment or processes are authorized.
- Precautions remain consistent with the permit criteria.
- Personnel working in the area have been trained and perform related duties safely.

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

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Actionee	Step	Action
Responsible Manager/PAI	1.	IDENTIFY areas requiring an HFM Designated Hot Work Area Permit.
	2.	OBTAIN an HFM Designated Hot Work Area Permit in accordance with PRC-PRO-FP-40422, <i>Fire Marshal Permit Interfaces</i> .
	a.	<u>IF</u> current HFM Designated Hot Work Area Permit already exists for required hot work, <u>THEN</u> GO TO step 4.
DFM	3.	ESTABLISH an expiration date for the HFM Designated Hot Work Area Permit 1 year from the approval date.
Worker	4.	PERFORM hot work in accordance with the requirements of PRC-PRO-FP-40422 and the HFM Designated Hot Work Area Permit.
DFM	5.	Annually REVIEW <u>AND</u> RENEW the HFM Designated Hot Work Area Permit.

3.4 Non-Permissible Areas

Hot work shall not be permitted in the following areas:

- In areas not authorized by management
- In sprinklered buildings where sprinklers are impaired, unless the requirements of NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, are met
- In the presence of explosive atmospheres (i.e., where mixtures of flammable gases, vapors, liquids, or dusts with air exist)
- In the presence of uncleaned or improperly prepared equipment, drums, tanks, or other containers that have previously contained materials that could develop explosive atmospheres
- In areas with an accumulation of combustible dusts that could develop explosive atmospheres

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3.5 Setup and Use of Welding and Cutting Equipment

3.5.1 Operating Requirements

- The use, storage, and maintenance of gas cylinders shall be in accordance with PRC-STD-FP-54135, *Control of Compressed and Flammable Gases*.
- All oxy-fuel and electric welding and cutting equipment shall be kept in good working condition. If found by pre-work inspection or general usage to be defective (incapable of reliable safe operation), it shall be promptly withdrawn from service.
- All equipment shall be operated in accordance with manufacturer's recommendations and instructions.
- All compressed gas cylinders shall be properly labeled with the type of gas used including the hazard identification information.
- Oxygen shall be called by its proper name "oxygen," not by the word "air."
- Fuel gases shall be called by their proper names such as: acetylene, propane, MAPP, natural gas, and not by the word "gas."

3.5.2 Equipment Details

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.

Hot work curtains, blankets, and pads shall be listed or approved by UL, Factory Mutual, or other NRTL when tested in accordance with ANSI/FM 4950. The manufacturer of curtain, blanket, and pad materials shall prominently label their products so that they contain the NRTL agency name and performance rating (i.e., "Curtain," "Blanket," "Pad") on the packaging and along the entire length of material on each roll.

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

1. Cylinders and Equipment

a. General Cylinder Provisions

- i. All portable cylinders used for storage and shipment of oxygen, fuel, and welding gases shall be constructed and maintained in accordance with regulations of the U.S. Department of Transportation (DOT). Such compliance shall be recognized by markings on the cylinder, usually on the top shoulder with the applicable DOT specs.
- ii. No one except the owner of the cylinder or persons authorized by the owner shall fill a cylinder.

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- iii. No person other than the gas supplier shall mix gases in a cylinder or trans-fill gases from one cylinder to another. (American National Standards Institute/American Welding Society [ANSI/AWS] Z49.1-88, *Safety in Welding, Cutting, and Allied Processes*)
- iv. Compressed gas cylinders shall be legibly marked with either the chemicals or trade name of the gas in conformance with the method for marking portable compressed gas containers to identify the material contained. Do not use containers on which the labeling is missing or illegible. If unable to identify contents, cylinder shall be returned to supplier.

2. Cylinder Storage and Handling

- a. Cylinders shall be stored where they shall not be exposed to physical damage, tampering by unauthorized persons, or subject to temperatures, which would raise the contents above 130°F (54°C).
- b. Cylinders shall be stored away from elevators, stairs, or gangways in assigned places where cylinders shall not be knocked over or damaged by passing or falling objects. Cylinders shall be secured in storage to prevent falling.
- c. Cylinders in storage shall be separated from flammable and combustible liquids, and from easily ignited materials such as wood, paper, packaging materials, oil, and grease by at least 25 ft. (6.1m) or by a noncombustible barrier at least 5 ft. high (1.6 m) having a fire resistance of one-half hour.
- d. Oxygen cylinders in storage shall additionally be separated from fuel gas cylinders
- e. Up to 6000 scf (600 lb) of oxygen may be stored outside provided segregation requirements from combustible and flammable gases are met. (NFPA 400, *Hazardous Materials Code*, Table 5.4.1.2)
- f. Up to 3000 scf (300 lb) of fuel gas cylinders may be stored outside provided segregation requirements from combustible and oxidizing gases are met. (NFPA 400, Table 5.4.1.2)
- g. Quantities of flammable gases and for oxygen in excess of the permit threshold limit of NFPA 400 shall be reviewed and approved by the cognizant FPE for HFM permitting.
- h. Containers in storage areas at user's facilities shall be prominently posted with the name of the gases to be stored. Full and empty cylinders shall be marked and separated.
- i. Containers may be stored in the open but shall be protected from standing in water to prevent bottom corrosion. Containers should be placed on raised platforms to prevent this condition.
- j. While in storage, compressed gas cylinders' valve protection caps shall be in place and secured.
- k. No cylinder shall be left free-standing. All cylinders shall be secured in place at all times.

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- l. When transporting, moving, or while standing-by inside the plant or other areas, compressed gas cylinder valve protection caps shall be in place and secured.
- m. A suitable cylinder truck, chain, or other steadying device shall be used to keep cylinders from being knocked over while in use or in storage.
- n. When work is finished, the cylinder valve shall be closed and valve protection caps installed.
- o. Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame shall not reach them.
- p. Cylinders containing oxygen or acetylene or other fuel gases shall not be taken into confined spaces.
- q. No damaged or defective cylinder shall be used.
- r. When cylinders are to be moved with regulators attached, the cylinders shall be secured in position and the cylinder valve closed.
- s. Nothing shall be placed on top of a cylinder when in use that may damage the safety device or interfere with the quick closing of the shutoff valve.
- t. Cylinder valves shall be closed when work is completed, or at the end of the work period.

NOTE: *Hoses must never be wrapped around neck of compressed gas cylinders; this may interfere with the quick closing of the shutoff valve in an emergency.*

3. Hoses

- a. Hose colors shall be red for fuel, green for oxygen, and black for inert gas and air.
- b. Hoses used for oxygen fuel gas welding and allied operations shall be specifically manufactured to meet American Welding Society standards for utility and safety.
- c. Hoses for oxy-fuel gas service shall comply with Specification IP 7 for rubber welding hose, Compressed Gas Association, and Rubber Manufacturers Association.
- d. Reverse-flow check valves and flashback arrestors compatible with the make and model of the torch shall be provided for all portable oxygen-fuel units. (Many flashback arrestors also contain reverse flow check valves within the same unit.)
- e. At a minimum, reverse-flow check valves and flashback arrestors shall either be built into the torch handle or be installed at the torch inlet to protect both the hose and cylinder upstream.
- f. If flashback arrestors are provided at the regulator, they must be specifically designed for low-flow restriction and oxygen-acetylene unit adjusted for the specific flow and

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pressure requirements for the torch tips used, and operating personnel trained in their limitations and associated operating requirements.

- g. Any box, container, or other device used for the storage of gas hoses shall be ventilated.
- h. Hoses shall be visually inspected prior to and at the end of hot work activities to identify defects in the condition of hose jackets and fitting.
- i. Damaged hoses shall be immediately removed from service.
- j. Hoses showing leaks, burns, worn places, or other defects rendering it unfit for service shall be repaired or replaced.
- k. If hoses are to be taped together to avoid tangling, no more than 4 in. in 12 in. shall be covered.
- l. Hose connections shall comply with CGA pamphlet E 1, *Standard Connections for Weld/Cut Equipment*.

4. Regulators and Gauges

- a. Only approved pressure-reducing regulators, as defined in ANSI Z-49.1 1983-Z.3, shall be used.
- b. Pressure reducing regulators shall be used only for the gas and pressure for which they are labeled.
- c. Regulators shall not be inter-changed among designated gas devices.
- d. Union nuts and connections should be inspected before used.
- e. Gauges used for oxygen shall be marked "Use No Oil."
- f. Regulators shall be drained before attaching to a cylinder. The outlet connection should be wiped clean and the cylinder valve shall be briefly cracked open before attaching regulator.
- g. The oxygen cylinder valve shall always be opened slowly. If high-pressure oxygen is suddenly applied, it is possible to cause ignition in the regulator and injure the operator.
- h. When regulators or parts of regulators need repair, the work shall be performed by a qualified, reputable outside agency. Gauges may be changed by a trained individual, qualified by the supervisor to perform this.
- i. The cylinder valve shall always be opened slowly to prevent damage to regulators. For quick closing, valves on fuel gas cylinders shall not be opened more than 3/4 turns. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that fuel gas flow can be shut off quickly in case of emergency.

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5. Control of Cutting and Welding Areas
 - a. The Operations and Maintenance managers shall establish work areas for the three (3) categories of cutting and welding. These categories are:
 - 1) Unlimited welding and cutting areas. These areas must have minimal flammable materials present, floors, etc., such as a weld shop.
 - 2) Permission area. These areas must have minimal flammable materials available, but shall require protection for passersby or personnel working on floors or scaffolds below the site of welding or burning. Fire watch and/or fire protection equipment is required.
 - 3) Confined Spaces. Minimal cutting or welding permitted. Forced ventilation, fire watch, and atmosphere monitoring is required.
 - b. Permission areas and confined spaces require a Welding/Cutting Permit.
6. Protection of the General Area
 - a. Good housekeeping shall be maintained at all times. All hoses and cables shall be placed so that they do not present a hazard to personnel in the general work area, in passageways, stairs, ladders, grating, and other areas where work may be performed. Hoses are to be placed in an elevated overhead position whenever possible. This shall minimize tripping hazards as well as limit hot slag, sparks, etc., from falling on and burning into the hoses and cables. Do not hang hoses with wire.
7. Ventilation
 - a. Adequate ventilation (natural, mechanical) shall be provided.
 - b. Welders and cutters shall take precautions to avoid breathing the fume plume directly. This is done by positioning the head or the work away from the plume, or by ventilation (natural or mechanical). This directs the plume away from the face.
8. Fire Prevention and Protection
 - a. It is the responsibility of all welding/cutting operators, supervisors, and outside contractors to use precautions in the prevention of fires.
 - b. Welding and cutting should preferably be done in designated areas, which minimize fire risk.
 - c. No welding or cutting shall be done unless the atmosphere is nonflammable and unless combustibles are moved away or protected from fire hazard.
 - d. Where practical, move the work to a designated safe location.

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- e. Where the work cannot be moved, take all the movable fire hazards to a safe location outside the work area.
 - f. Use guards, fire blankets, and screens to protect the immovable fire hazards and nearby personnel from the heat, sparks, and slag.
 - g. Precautions shall be taken to protect readily combustible materials on floors and areas below from sparks which might drop through any openings.
 - h. Sufficient fire extinguishing equipment shall be ready for use where welding and cutting work is performed.
 - i. Always use fire watches where welding or cutting is done and a fire might develop, or whenever any of the following conditions exist:
 - 1) Combustible materials are closer than 35 ft. (10.7 m) to the point of operations.
 - 2) There are wall or floor openings within a 35 ft. (10.7 m) radius, which expose combustible materials in adjacent areas.
 - 3) Combustible materials are exposed and may be ignited by conduction or radiation.
 - 4) Where work is performed on opposite sides of tanks, vessels, steel decks, overhead and where direct penetration of sparks results.
9. Pressure/Flow (PF) Device (Reverse Flow Check Valve and Flashback Arrestor)
- a. A PF device shall be required on all welding and cutting hose assemblies at the site.
 - b. A PF device or assembly of devices in a fuel gas line designed to perform the following functions:
 - i. Prevent backflow of oxygen into the fuel gas supply system.
 - ii. Prevent the passage of flame into the fuel gas supply system (flashback).
 - iii. Prevent the development of a fuel gas-oxygen mixture at sufficient pressure so that its ignition would achieve combustion pressure that could cause failure to perform functions i and ii.

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NOTE: *No personally owned equipment shall be used without the express written approval of the facility supervision.*

10. Torches

- a. Only those torches and related equipment approved by the facility using ANSI Z-49.1 1983 safety in welding and cutting as guidelines shall be used.
- b. The operator shall inspect torches at the beginning of each working shift. Inspect for leaking shutoff valves, hose couplings, and tip connections. Defective torches shall not be used.
- c. Torches shall only be lighted by devices designed for that purpose. Do not use cigarette lighters, matches, or molten slag from hot work to light torches.
- d. Clogged torch tip openings shall be cleaned as needed with suitable cleaning wires, drills, or other devices designed for such purpose.
- e. Torches shall be removed immediately from confined space when work is completed.
- f. Before lighting the torch for the first time each day, hoses shall be purged individually to remove flammable mixture from the hoses.

11. Oxygen Use Precautions

- a. Oxygen will not burn, but vigorously supports and accelerates combustion causing flammable materials to burn with great intensity. Oil or grease in the presence of oxygen may ignite spontaneously and burn violently. Oxygen cylinders, cylinder valves, couplings, regulators, hoses, and apparatus shall be kept free of oil and grease substances. Operators shall not handle equipment with oily hands or gloves.
- b. Oxygen shall not be used as a substitute for compressed air. It shall not be used in pneumatic tools, to blow out pipelines, to dust off clothing, or to create ventilation for an operator at work, and it must not strike oily or greasy surfaces or clothing.

12. Facility has adopted AWS C4. 2-78, *Operator's Manual for Oxygen Gas Cutting Textbook Solutions*, as the guideline for setup and operation of oxy-fuel welding and cutting equipment.

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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
<i>CHPRC Hot Work Permit, A-6006-115</i>	Requesting Organization	Requesting Organization
Hanford Fire Marshal Permit (for designated areas)	Requesting Organization	Fire Marshal's Office

6.0 SOURCES**6.1 Requirements**

10 CFR 851, *Worker Safety and Health Program*
 DOE-0360, *Hanford Site Confined Space Procedure (HSCSP)*
 DOE O 420.1C, *Facility Safety*
 CRD O 420.1C, *Facility Safety*
 CRD O 420.1C, (Supp. Rev. 0, Chg.1) (SCRD)
 DOE-STD-1066-2012, *Fire Protection*
 NFPA 1, *Fire Code*
 NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*
 NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*
 NFPA 326, *Standard for the Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair*
 NFPA 400, *Hazardous Materials Code*
 PRC-PRO-FP-40422, *Fire Marshal Permit Interfaces*
 PRC-PRO-WKM-079, *Job Hazard Analysis*
 PRC-STD-FP-40404, *Fire Protection Program*
 PRC-STD-FP-54135, *Control of Compressed and Flammable Gases*

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6.2 References

ANSI/AWS Z49.1-88, *Safety in Welding, Cutting, and Allied Processes*
ANSI/FM 4950, *American National Standard for Evaluating Welding Pads, Welding Blankets
and Welding Curtains for Hot Work Operations*
AWS C4. 2-78, *Operator's Manual for Oxygen Gas Cutting Textbook Solutions*
CGA pamphlet E-1, *Standard Connections for Weld/Cut Equipment*
PRC-PRO-IRM-10588, *Records Management Processes*

6.3 Bases

CGA pamphlet P-1-1965, *Safe Handling of Compressed Gases*
FM Global Loss Prevention Data Sheet 10-3, *Hot Work Management*
PRC-PRO-WKM-12115, *Work Management*
PRC-PRO-QA-052, *Issues Management*

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Appendix A - Qualifications

Only qualified personnel shall be permitted to conduct hot work operations. In the case of contractor/vendor personnel, the contractor/vendor designated manager shall review this procedure and offer evidence of qualifications at least as effective as those which follow, prior to conducting work at the site. The CHPRC Construction Manager shall be responsible for coordinating contractor/vendor hot work qualifications and shall transfer evidence to the cognizant FPE prior to contractor/vendor personnel being allowed on the premises.

- a. Hot work performer. A worker shall be considered qualified for the purposes of this procedure to conduct hot work operations when they can demonstrate through training, education, or observation by a knowledgeable supervisor at least the following:
- Familiarity with the equipment to be used.
 - Ability to inspect and evaluate the safe arrangement of the equipment, in accordance with the manufacturer's instructions.
 - Knowledge of the correct position and proper use of equipment safeguards and safety interlocks.
 - General knowledge of potential personnel, personal, and facilities hazards associated with the equipment; based upon a JHA.
 - Knowledge of general safety principles in the arrangement of hot work area precautions, physical barriers, and personnel control.
 - Ability to safely employ all required PPE.
 - Understanding of and the ability to work within the Hot Work Permit System.
 - Basic first aid.
 - Use and restrictions of portable fire extinguishing equipment (in addition to the fire extinguisher awareness education provided by this procedure and Hanford General Employee Training/CHPRC General Employee Training (HGET/CGET), individuals assigned this task shall receive physical training in the selection and use of fire extinguishers in an established training course acceptable to the HFM).
 - Importance of and effective implementation of fire watch.
- b. Fire Watch. This position must be filled by an individual familiar with the arrangement, hazards, and protective features of the facility or area in which hot work is to be completed. A worker will be considered qualified to perform this function when they can demonstrate through training, education, or observation by a knowledgeable supervisor at least the following:
- Successful completion of General Employee Awareness Orientation and Training.
 - Satisfactory foreperson evaluation of performance and general area knowledge after at least 3 months in the current job assignment.

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- Successful completion of the basic and refresher updates (as appropriate) within one year of the proposed hot work for fire watch. This training shall include knowledge and effective implementation of the Hot Work Permit, safe hot work area evaluation, personnel protection, and fire prevention.
 - Knowledge of general safety principles in the arrangement of hot work area precautions, physical barriers, and personnel control.
 - Use and restrictions of portable fire extinguishing equipment (in addition to the fire extinguisher awareness education provided by this procedure and HGET/CGET, individuals assigned this task shall receive physical training in the selection and use of fire extinguishers in an established training course acceptable to the HFM).
 - 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
- c. Field Work Supervisor (FWS). This individual shall have the identical knowledge as the hot work performer, with particular emphasis on at least the following:
- Familiarity with the equipment to be used.
 - Ability to inspect and evaluate the safe arrangement of the equipment, in accordance with the manufacturer's instructions.
 - Knowledge of the correct position and proper use of equipment safeguards and safety interlocks.
 - General knowledge of potential personnel, personal, and facilities hazards associated with the equipment; based upon a JHA.
 - Knowledge of general safety principles in the arrangement of hot work area precautions, physical barriers, and personnel control.
 - Understanding of and the ability to work within the Hot Work Permit System.
 - Successful completion of General Employee Awareness Orientation and Training.
 - General area knowledge of the proposed hot work area and associated equipment.
 - Successful completion of the basic and refresher updates (as appropriate) within 1 year of the proposed hot work for fire watch. This training shall include knowledge and effective implementation of the hot work permit, safe hot work area evaluation, personnel protection, and fire prevention.

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- d. Permit Authorizing Individual (PAI). This individual shall be familiar with the arrangement, hazards, and protective features of the facility or area in which hot work is to be completed, as well as an awareness of the operations or other work being performed in and around the hot work area. A worker will be considered qualified to perform this function when they can demonstrate through training, education, or observation by a knowledgeable supervisor at least the following:
- Successful completion of General Employee Awareness Orientation and Training.
 - Demonstrated general knowledge of subject facility operations and the facility-specific organization for notifying the PAI of work package activities and operations being conducted on a daily basis.
 - A knowledge of potential work activities or operations which may pose or be exposed by hot work activities and appropriate actions to be taken to minimize these conflicts.

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Appendix B - CHPRC Field Hot Work Form (Sample)

Permit No.:	CH2M HILL Plateau Remediation Company FIELD HOT WORK PERMIT		Date:
NOTES: 1. Complete a Field Hot Work Permit and obtain all approvals for all Field Hot Work outside of a Fixed Designated Hot Work area, per PRC-PRO-FP-40421 . Hot Work (activities include welding, cutting, grinding, heating, spark producing, or open flame). 2. If Hot Work does not start with the same shift or is interrupted, verify conditions and permit criteria with the Field Work Supervisor (FWS) and Operations/Facility Shift Operations Manager (FSOM)/Permit Authorizing Individual (PAI). 3. Prior to the start of work, present a copy of this permit and the associated work package to the PAI for screening and verification of conditions. 4. Ensure each on coming FWS, worker, and fire watch reviews and initials this permit as the start their shift. 5. Post a copy of this permit at the Hot Work area, until work is completed and the final fire watch has finished. 6. Notify the PAI when the final fire watch is completed and to verify restoration to normal operating conditions for the facility. 7. High Hazard Hot Work conditions include electric arc, oxy-fuel gas, welding/cutting, and heavy grinding. Low hazard hot work includes brazing, light grinding, Tungsten Inert Gas (TIG) welding, or similar low energy activities. (see PRC-PRO-FP-40421 for details)			
Location (Area/Building):	Work Package/Contract:	FWS/Superintendent:	Valid Start (Date/Time):
			Valid Until (Date/Time):
Hot Work Description:		<input type="checkbox"/> High Hazard <input type="checkbox"/> Low Hazard	
FIRE PROTECTION CRITERIA			
	YES	NO	N/A
Precautions			
Automatic sprinkler protection/automatic fire suppression must be in service.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Smoke detection in area by-passed, covered, or removed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hot Work Equipment in good repair, per PRC-PRO-FP-40421 (e.g., hoses, cylinders, torches, electrical cables, weld equipment, etc.).	<input type="checkbox"/>		
Gauges, check valves, spark arrestors, back flash preventers, and caps are provided and properly arranged on Hot Work equipment.	<input type="checkbox"/>		
Proper electrical connections and grounding are provided for arc-welders.	<input type="checkbox"/>		<input type="checkbox"/>
Charged water hose provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Portable fire extinguishers are provided for each fire watch (in good condition with current monthly and annual inspections). Fire extinguishers stationed in buildings are not to be used for fire watch.	<input type="checkbox"/>		
Nearest manual fire alarm station, or other means of communication to Hanford Fire Department, are identified.	<input type="checkbox"/>		
Only Factory Mutual (FM) Approved welding blankets, curtains, pads, etc. are used.	<input type="checkbox"/>		<input type="checkbox"/>
Ventilation			
A nonexplosive atmosphere is maintained.	<input type="checkbox"/>		
Natural ventilation is provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forced Air Exhaust System(s) provided with noncombustible filters, hoses, and ducts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clear Space Separation			
Inside activities require minimum 35 feet clear space from Hot Work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outside activities require minimum 35 feet clear space from Hot Work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Welding curtains used to reduce required clear space. (detailed in Special Instructions below)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flammable and combustible liquids, materials, waste, and compressed gases relocated or protected by welding blankets or pads?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Permit No.:	CH2M HILL Plateau Remediation Company FIELD HOT WORK PERMIT (Continued)	Date:		
FIRE PROTECTION CRITERIA (Continued)		YES	NO	N/A
Clear Space Separation				
Floor, duct, and tank openings sealed with noncombustible material or covered by welding blankets or pads?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floors and other surfaces swept down, grease or oily residues removed and combustibles relocated as feasible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Combustible materials that cannot be removed are covered by welding blankets or otherwise shielded from sparks and embers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Combustible floors or ground wetted, covered with damp sand, metal, fire blankets, or pads?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicles and fuel-fired equipment located at least 35 feet away from Hot Work Area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Work on Walls/Ceilings				
Noncombustible construction and noncombustible covering?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are combustibles moved at least 10 feet away from opposite side of metal walls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wall, floor, ceiling, or duct openings sealed with noncombustible material or covered with FM Approved welding blankets or pads (for horizontal surfaces), or curtains (for vertical surfaces)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Work on or in Enclosed Spaces				
Does work involve a tank, piping, or container?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are enclosures and/or surfaces cleaned or combustible/flammable/toxic residues and materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have flammable vapors been purged?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is a flammable gas check required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the area immediately around the tank or piping free of flammable/combustible material for at least 35 feet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire Watch Responsibilities				
Are designated fire watches stationed with no other job assignments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are fire watches instructed to remain throughout entire Hot Work activity or seek qualified fire watch replacement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire watch to continue at least (30, 60, or other, per FPE) minutes after completion of Hot Work? (Any time Hot Work is interrupted or suspended, the continuous fire watch must continue for at least the period identified above) Fire watch shall notify the Facility SOM/PAI prior to leaving the Hot Work Area upon completion of the extend fire watch period.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are fire watches trained in fire extinguisher use and sounding an alarm/contacting Hanford Fire Department?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire watch instructed to investigate hidden areas where sparks and heat may extend into combustibles (above/below/other side of walls, roof, floors, etc.) and maintain line of sight to work area and Hot Work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Required Number of Fire Watch:	Location:			
Special Fire Protection Instructions/Remarks:				

Hot Work

Published Date: 07/23/19

Effective Date: 07/23/19

Appendix B - (Cont.)

Permit No.:	CH2M HILL Plateau Remediation Company FIELD HOT WORK PERMIT (Continued)	Date:		
REQUIRED APPROVALS				
Field Work Supervisor or Superintendent:				
I certify that I have reviewed this permit and confirmed that field conditions are in accordance with these requirements. I have identified all flammable materials and hazardous conditions present in or near the work area. All permit requirements are understood and will be implemented.				
_____		_____	_____	_____
<i>Print First and Last Name</i>		<i>Signature</i>	<i>Date</i>	
Responsible Manger or Facility Supervisor:				
I certify that I have reviewed this permit and confirmed that field conditions are in accordance with these requirements. I have identified all flammable materials and hazardous conditions present in or near the work area. All permit requirements are understood and will be implemented.				
_____		_____	_____	_____
<i>Print First and Last Name</i>		<i>Signature</i>	<i>Date</i>	
Permit Authorizing Individual:				
I certify that I have reviewed the precautions of this permit, confirmed that field conditions are in accordance with these requirements, and that there are no other hazardous operations or work packages that may conflict with this activity at this time.				
_____		_____	_____	_____
<i>Print First and Last Name</i>		<i>Signature</i>	<i>Date</i>	
Cognizant Fire Protection Engineer:				
_____		_____	_____	_____
<i>Print First and Last Name</i>		<i>Signature</i>	<i>Date</i>	
Industrial Hygienist:				
_____		_____	_____	_____
<i>Print First and Last Name</i>		<i>Signature</i>	<i>Date</i>	
<input type="checkbox"/> Hazard Category 2 <input type="checkbox"/> Hazard Category 3 <input type="checkbox"/> Less Than Hazard Category 3 <input type="checkbox"/> USQ Required				
USQ Reviewer:				
_____		_____	_____	_____
<i>Print First and Last Name</i>		<i>Signature</i>	<i>USQ No.</i>	<i>Date</i>
Fire Watch:				
_____		_____	_____	_____
<i>Print First and Last Name</i>		<i>Signature</i>	<i>Date</i>	
Hot Work Performer:				
_____		_____	_____	_____
<i>Print First and Last Name</i>		<i>Signature</i>	<i>Date</i>	
Deviation Approvals*				
<input type="checkbox"/> (Check if Not Applicable)				
*Approval for PPE, designated for watch, or separation distance deviation (Specified in "Special Instructions")				
Cognizant Fire Protection Engineer:				
_____		_____	_____	_____
<i>Print First and Last Name</i>		<i>Signature</i>	<i>Date</i>	
Field Work Supervisor or Superintendent:				
_____		_____	_____	_____
<i>Print First and Last Name</i>		<i>Signature</i>	<i>Date</i>	

