

Desert Research Institute
Hot Work Permit Program

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this policy is to prevent any fires that may result from "hot work" processes.

1.2 SCOPE

- 1.2.1 For the purposes of this policy, "hot work" is defined as any temporary operation involving open flames or producing heat and/or sparks. This includes, but is not limited to, grinding; cutting, brazing, soldering; thawing frozen pipes by torch; torch applied roofing and welding.
- 1.2.2 This policy applies to all personnel (including contractors) who are involved with in construction and maintenance activities and/or who may be involved in "hot work" activities at any DRI site, including field projects.
- 1.2.3 DRI employees working on DOE or other agency sites may have additional site-specific procedures provided by the site management to follow in addition to the general requirements listed here.

2.0 RESPONSIBILITIES

2.1 Division Director

The ultimate responsibility and authority for compliance with the DRI hot work permit program rests with the Division Director. It is their responsibility to ensure that the hot work permit program is carried out within their area of authority.

2.2 Supervisors, Principal Investigators, Project Leaders

Individuals who have supervisory responsibility play a key role in the hot work permit program. It is their responsibility to ensure that

- 2.2.1 Individuals working under their direction are trained and understand the applicable provisions of the hot work program and that all requirements of any hot work permit is fulfilled before work is performed.
- 2.2.2 An approved Hot Work Permit is obtained
 - 2.2.2.1 from the Facilities Department for any hot work (except lab use involving hand held torches, see 2.2.2.3. below) conducted on DRI property, or
 - 2.2.2.2 from the site safety officer if working on DOE or other agency projects, or
 - 2.2.2.3 for field projects or for the use of hand held torches (propane, butane, etc.) in the laboratory, for issuing a hot work permit for the work to be conducted.
- 2.2.3 Properly trained fire watches are assigned when required by the Hot Work Permit.

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2.3 Individuals Performing Hot Work

Individuals performing the hot work play what is perhaps the most important role in the program. They are responsible for:

- 2.3.1 Obtaining written approval from DRI Facilities for the hot work to be conducted on DRI property, from site safety officer for hot work to be conducted on DOE or other agency projects, or from their supervision for hot work conducted on field projects or using hand held torches in laboratory projects.
- 2.3.2 Ensuring that conditions are safe before commencing the hot work.
- 2.3.3 Being prepared to contact their supervisors should conditions change or warrant reassessment during the hot work project.
- 2.3.4 Using appropriate personal protective equipment (PPE) while performing hot work (welding helmets, gloves, jackets, etc.).
- 2.3.5 Completing the appropriate section(s) of the hot work permit.

2.4 Firewatches are responsible for:

- 2.4.1 Being aware of the inherent hazards involved in the hot work.
- 2.4.2 Ensuring that safe conditions are maintained during the hot work.
- 2.4.3 Ensuring that appropriate fire extinguishers are readily available.
- 2.4.4 Knowing how to report a fire or other emergency situation.
- 2.4.5 Maintaining the watch for at least 30 minutes after the work is completed.
- 2.4.6 Using the appropriate PPE.
- 2.4.7 Completion of the appropriate section of the hot work permit.
- 2.4.8 Returning the completed hot work permit.

2.5 Facilities management shall recognize its responsibility for the safe usage of cutting and welding and other spark or flame producing equipment on Institute property and shall be responsible for:

- 2.5.1 Establishing designated areas for welding, cutting, brazing and torch soldering and grinding operations where the potential fire danger is limited. (At the Facility Department's discretion, hot work conducted in these areas may occur under a general hot work permit, to be reissued monthly.)
- 2.5.2 Establishing procedures for hot work in other areas.

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- 2.5.3 Designating at least one trained individual responsible for authorizing (i.e., issuing) the hot work permit in areas not specifically designed for such operations.
- 2.5.4 Requiring employees performing hot work (and their supervisors) to be suitably trained in the safe operation of the equipment.
- 2.5.5 Advising all contractors about flammable materials or hazardous conditions of which they may not be aware in areas where they will be working.
- 2.6 Facilities supervisors are responsible for:
 - 2.6.1 Maintaining cutting or welding equipment in a safe operation condition.
 - 2.6.2 Issuing a Hot Work Permit for any cutting, welding, brazing, torch soldering, grinding or open flame, heat or spark producing operations occurring outside of the designated area(s). (See Attachment A for a listing of designated areas and the permitted operations for each.)
 - 2.6.3 Ensuring the precautions listed on the Hot Work Permit are understood by the person(s) performing the permitted cutting, welding or brazing operations.
 - 2.6.4 Informing outside contractors and service personnel of the expectation that they will follow all OSHA requirements, including obtaining a hot work permit, if applicable to the job being performed.
 - 2.6.5 Verifying that outside contractors have a Hot Work Permit if required one is for the work being conducted.

3.0 HOT WORK PROCEDURES

3.1 Hot Work Permit Forms

The DRI Hot Work Permit located in Attachment B (or equivalent) shall be the permit system of choice.

3.2 Prior To Hot Work several tasks shall be performed. The include, but are not limited to:

- 3.2.1 Inspect the hot work area to identify any fire hazards.
- 3.2.2 Remove all flammable or combustible materials within a thirty five-foot radius of the hot work.
- 3.2.3 Properly shield combustibles that cannot be removed from the area with non-combustible blankets or other non-combustible materials.
- 3.2.4 Seal all cracks and openings through which hot sparks or slag may enter. As an alternate means, a fire resistant shield may be used to block the openings.
- 3.2.5 Sweep floor of all loose combustible debris.

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- 3.2.6 Placing non-combustible or flame resistant screens so as to protect personnel in adjacent work areas from heat, flames, radiant energy and welding splatter.
- 3.2.7 Protect conveyer systems that may carry sparks of slag to other parts of the building.
- 3.2.8 Mark the area so as to warn nearby personnel of the danger.
- 3.2.9 Cover sprinkler heads directly above the hot work area with wet rags or other non-combustible materials so they will not be triggered during the work.
- 3.2.10 Cover smoke detectors located in close proximity of the work area.
- 3.3 During Hot Work there are other precautions that must be taken:
 - 3.3.1 Appropriate fire extinguishing equipment shall be maintained in close proximity to the hot work for its entire duration, plus 30 minutes.
 - 3.3.2 Combustible floors shall be kept wet during the hot work.
 - 3.3.3 Store acetylene and other fuel cylinders in a secure and upright position.
 - 3.3.4 Place hoses so that they will not be crushed or damaged.
- 3.4 After Hot Work there are some responsibilities that must be undertaken after hot work is completed:
 - 3.4.1 The firewatch shall be maintained for at least 30 minutes following the completion of the hot work.
 - 3.4.2 Fire extinguishing equipment must remain accessible in the area until the firewatch is secured.
 - 3.4.3 Remove any covers from sprinkler heads immediately upon immediately completion of the hot work.
 - 3.4.4 Remove covers from any smoke detectors immediately upon completion of the hot work
 - 3.4.5 Completion of the appropriate section(s) of the hot work permit and the return of the completed form to the supervisor.
- 3.5 Prohibited Hot Work Areas
 - 3.5.1 Areas equipped with sprinkler systems that are out of order.
 - 3.5.2 Areas, including those with confined spaces, where atmospheres of explosive gases, vapors, or dusts exist or could accumulate.
 - 3.5.3 On metal walls, ceilings or roofs built of composite, combustible, and sandwich-type panel construction or having combustible coverings.

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3.5.4 On containers where flammable liquids, solids or vapors may be present.

3.5.5 On pipes that are in contact with combustible walls, ceilings, roofs or partitions where heat by conduction can cause ignition.

4.0 RECORD KEEPING

4.1 Hot Work Permits

All hot work permits shall be returned to the issuing supervisor for their record retention. Records of hot work permits should be maintained for one calendar year. Hot work permits on file should be reviewed for program improvement or modification purposes prior to disposal.

4.2 Training

Copies of records of all program related training should be maintained in the department personnel files. Copies of training records should be sent the Environmental, Health and Safety Office.

5.0 REFERENCES

5.1 Title 29 Code of Federal Regulations, Subpart Q, Welding Cutting and Brazing (1910.250).

5.2 State of Nevada Occupational Safety and Health Standards for General Industry, Subpart Q.

5.3 1997 Uniform Fire Code, Article 105.8.h.3.

ATTACHMENT A
Designated Hot Work Areas for which a
Monthly Hot Work Permit is Issued

Building /Area or Room Number	Permitted Operations
NNSC 243 (Machine Shop)	Grinding
NNSC Courtyard outside NNSC Machine Shop	Welding, Cutting, Brazing and Torch Soldering
SNSC Physical Plant and adjacent courtyard	Welding, Cutting, Brazing and Torch Soldering
SNSC garage area?	Grinding?
Welding Shop Area, Hangar 2, Stead Airport	Welding, Cutting, Brazing and Torch Soldering
Machine Shop Area, Hangar 2, Stead Airport	Grinding

ATTACHMENT B
DRI Hot Work Permit Form

<p style="text-align: center;">DRI Hot Work Permit</p> <p>Date _____ Bldg. _____ Floor _____ Nature of Job _____</p> <p>_____</p> <p>The above location has been examined. The precautions checked (✓) on reverse of card have been taken to prevent fire. Permission is granted for this work.</p> <p>Signed: _____</p> <p>Permit Expires: Date _____ Time _____</p> <p>Time _____ Time _____ Started _____ Finished _____</p> <p>Final checkup Work area and all adjacent areas to which sparks and heat might have spread (such as floors above and below and on opposite side of walls) were inspected for at least 30 minutes after the work was completed and found fire safe.</p> <p>Signed _____</p> <p>After signing, return permit to person responsible for Hot Work safety to file for review by Risk Management and Insurance Company.</p>	<p style="text-align: center;">RECOMMENDED PRECAUTIONS</p> <p>Before signing this card authorizing the job, the person responsible for Hot Work Safety should inspect the proposed work area and check (✓) below the precautions taken.</p> <ul style="list-style-type: none">ø Fire Sprinklers in service.ø Cutting and welding equipment is in good repair. (Same for brazing, etc.) <p>Precautions within 35 ft* (11 m) of work</p> <ul style="list-style-type: none">ø Floor swept clean of combustibles.ø Combustible floors wet down or covered with damp sand, welding drop cloths, or metal shields.ø Flammable liquids removed; other combustibles protected with welding drop cloths or shields.ø All wall and floor covering covered.ø Welding drop cloths suspended beneath work <p>* for grinders within the marked off areas in the shop</p> <p>Work of walls or ceilings</p> <ul style="list-style-type: none">ø Construction is noncombustible and without combustible covering or insulation.ø Combustibles moved away from other side of wall. <p>Work on enclosed equipment</p> <ul style="list-style-type: none">ø Enclosed equipment cleaned of all combustibles.ø Containers purged of flammable liquids. <p>Fire Watch</p> <ul style="list-style-type: none">ø Fire watch will be provided during and for 30 minutes after work.ø Fire watch is supplied with extinguishers and/or hose.ø Fire watch is trained in use of this equipment and in sounding alarm.
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FRONT SIDE

BACKSIDE