SAFETY AND HEALTH STANDARD
WELDING REPAIRS and MODIFICATIONS
HOT WORK PERMIT

Effective Date: 2/4/2015	Standard: 16.1	Document Number: KUCSH0040	Rev: 06

16.1.1 **INTRODUCTION**

16.1.1.1 The purpose of this standard is to define the requirement for performing hot work operations on certain components of machinery, equipment and structures and preventing the inadvertent ignition of combustible materials when performing hot work. Detailed specifications for safe welding and cutting procedures are described in numerous publications, available within RTKC.

16.1.2 **DEFINITIONS**

16.1.2.1 **Hot work** - includes welding, using a cutting torch, grinder or other spark producing or high heat application.

16.1.2.2 **Hot Work Permit** - a written document that gives authorization to the personnel involved to perform hot work. (Exhibit 16.1.1)

16.1.2.3 **Designated Area** - an area that has been made fire safe and is designated as an approved area for hot work (i.e. maintenance shops, detached outside locations that are free of combustible materials and suitably segregated from adjacent structures etc.).

16.1.2.4 **Qualified Person** – A person who, by possession of a recognized degree, professional certificate, or who, by extensive knowledge, training, and experience in the applicable field, has successfully demonstrated the ability to solve or resolve problems and is capable of design, analysis, evaluation and specifications relating to the subject matter, the work, or the project.

16.1.3 **REQUIREMENTS**

16.1.3.1 All welders and cutters must be task trained in the safe practices that apply to their work. However, many types of welding repairs may be completed only by a properly certified welder who has successfully completed specific welding tests as designed and evaluated by a certified testing laboratory. In addition, there are certain components of machinery that may not be repaired or modified at all due to certification and engineering requirements placed on them when manufactured.

- Examples of components which **may not** be repaired or modified **under any circumstances** include such items as crane hooks, crane sheaves, scaffold tubing, wheel rims and forks on forklift trucks.

©Rio Tinto Kennecott. The standards on the KUC Intranet website are considered the standard in effect and supersede all other revisions.

16.1.3.2 Repair or modification of the following items requires manufacturer's authorization, a certified welder, engineering approval, retesting and recertification: Crane booms, rollover protection on mobile equipment, work platforms (manlifts), lift devices, fall protection anchor points, pressure vessels, boiler tubing and natural gas piping.

- With regard to testing, approving and certifying, these functions must be carried out by a competent person or authority who has received appropriate training or who is suitably certified / qualified by regulatory schemes.

16.1.3.3 Components that may be repaired or modified by a qualified welder include such items as roof support members, integral parts of building support structures, walkways, handrails and stairs. These items may only be repaired or modified with the approval of a qualified engineer and the responsible superintendent unless the repairs are of a minor nature.

- All of the examples listed are items which are most frequently encountered but are not all inclusive. Any item which may directly affect personal safety must be evaluated for compliance with the intent of this standard.
- Any modification to a piece of mobile equipment must have the manufactures approval.

16.1.3.4 A Hot Work Permit is required (see Exhibit 16.1) for all hot work. Hot work shall be allowed without a permit only in "designated areas".

16.1.3.5 Each plant will designate and train people authorized to issue Hot Work Permits. It is the responsibility of the person performing the work to comply with all recommendations made prior to the issuance of the Hot Work Permit.

16.1.3.6 Before welding, cutting, or applying heat with an open flame to containers, piping or ducting systems that have contained flammable or combustible liquids, flammable gases, explosive solids, or that has contained acid or any other chemical that can produce flammable vapors, the container or pipe shall be:

- Drained, ventilated, and thoroughly cleaned of any residue.
- Vented to prevent pressure build-up during the application of heat.
- Filled with an inert gas or water where compatible, or determined

©Rio Tinto Kennecott. The standards on the KUC Intranet website are considered the standard in effect and supersede all other revisions.

to be free of flammable gasses by a flammable gas detection device, prior to and at frequent intervals during the application of heat.

16.1.3.7 Before and during hot work in a confined space appropriate tests of the atmosphere shall be made by a qualified person (See Standard 16.2). A risk assessment must address the appropriate ventilation and respiratory protection.

16.1.3.8 Hot work on rubber lined vessels and pipes or directly overhead of conveyer belts require extraordinary caution to prevent ignition of the lining or belting material. Also, special precautions must be taken while performing hot work near fiberglass materials. Procedures for hot work on these types of structures must be evaluated by the Safety Department and appropriate management personnel prior to the start of work.

16.1.3.9 The employee requesting the Hot Work Permit will:

- Inspect the hot work equipment to confirm that it is in good condition.
- Remove combustible materials (where practical) for a radius of 35 feet from the point of work.
- Cover any non-removable combustible materials with flameproof covers or ensure that they are wet and there is a source of water available.
- Have a fully charged and operable fire extinguisher of the appropriate type and size available at the work site.
- Communicate to all personnel involved the location of the nearest fire alarm or procedure for reporting a fire and the evacuation procedure.

16.1.3.10 The person issuing the Hot Work Permit will:

- Inspect the site and confirm that the above items have been completed.
- Designate which (if any) additional precautions must be followed including:
  - Ventilation
  - Respiratory protection
  - Special personal protective equipment
- Sign and date the Hot Work Permit.

©Rio Tinto Kennecott. The standards on the KUC Intranet website are considered the standard in effect and supersede all other revisions.

16.1.3.11 The employee(s) performing the hot work will keep the Hot Work Permit in their possession until the job has been completed. When the job has been completed the employee in charge will inspect the area to ensure that no fires have been started.

16.1.3.12 A fire watch will be designated when the hot work has been completed or anytime the employees temporarily leave the worksite i.e. during shift changes and breaks etc. The person responsible for a fire watch will:

- Have a fire extinguisher ready and available
- Have a water hose available (where appropriate as designated by the Hot Work Permit).
- Know the location of the nearest fire alarm and / or be familiar with the procedures for reporting a fire or emergency and evacuation.
- Inspect the area for 1/2 hour after the completion of the hot work to ensure no fires start from previously undetected sources and sign the Permit verifying the time the fire watch ended.

16.1.4 **RECORDKEEPING**

16.1.4.1 Upon completion of the job the Hot Work Permit will be forwarded to the facility records retention center and retained as designated in the KUC Records Retention Schedule.

REFERENCES:

KUC Safety and Health Standard 16.2 Confined Space Entry Requirements
KUC Records Retention Schedule
MSHA 30 CFR Subpart C - Fire Prevention and Control
NFPA Standard 51.
OSHA 29 CFR Subpart Q - Welding, Cutting and Brazing
OSHA 29 CFR 1910.119, 251 and 252.

©Rio Tinto Kennecott. The standards on the KUC Intranet website are considered the standard in effect and supersede all other revisions.

SAFETY AND HEALTH STANDARD
WELDING REPAIRS and MODIFICATIONS
HOT WORK PERMIT

Effective Date: 2/4/2015	Standard: 16.1	Document Number: KUCSH0040	Rev: 06

REVISION HISTORY:

MOC#	Description of Change	Prepared By	Date
12305	Review and update including defining fire watch requirements and updating permit. Updated format and Document number added.	KUC Safety and Health Standards Committee	06/10
20406	Review and update including a requirement for the fire watch to sign the permit in response to a CRA Fire Risk Report finding- "Expand the Kennecott Hot Work Permit program to include a fire watch sign-off". Also, include the requirements from the 16.23 Welding Repairs and Modification Standards and delete the standard.	KUC Safety and Health Standards Committee	09/12
27668	Review and update – permit including language around fire watch	RTKC Safety and Health Standards Committee	12/14

©Rio Tinto Kennecott. The standards on the KUC Intranet website are considered the standard in effect and supersede all other revisions.

SAFETY AND HEALTH STANDARD
WELDING REPAIRS and MODIFICATIONS
HOT WORK PERMIT

Effective Date: 2/4/2015	Standard: 16.1	Document Number: KUCSH0040	Rev: 06

RIO TINTO KENNECOTT
HOT WORK PERMIT (*Standard 16.1*)

PERMIT WILL REMAIN POSTED AT JOB SITE UNTIL HOT WORK IS COMPLETE OR A NEW PERMIT IS ISSUED. PERMIT MAY ONLY BE ISSUED FOR ONE SHIFT. THIS PERMIT MUST BE REISSUED IF A CHANGE IN CONDITIONS OR CHANGE IN WORK SCOPE HAS OCCURRED.

EXPIRED PERMIT MUST BE SENT TO THE FACILITY RECORD CENTER (DOCUMENT CONTROL).

Date & Time Issued: AM / PM Date & Time of Expiration: AM / PM

Work Area / Location:

Work Description:

Work Performed By: NAME | COMPANY | SUPERVISOR

Emergency Reporting Procedure:

REQUIREMENTS

TRACK completed for this task	Yes ☐		Hot work equipment inspected and in good condition	Yes ☐
RTKC Standard 16.1 understood and followed	Yes ☐		Fire extinguisher is available and inspected	Yes ☐
Fire watch designated and responsibilities understood	Yes ☐		Verified there are no openings, cracks, or holes where sparks may drop to combustible materials	Yes ☐
Emergency Reporting Procedure communicated to all personnel involved in hot work	Yes ☐		Verified hot work cannot conduct heat by radiation or conduction to unobserved combustibles	Yes ☐
Proper PPE determined and available	Yes ☐		Combustible, flammable, and hazardous materials removed (within 35 feet)	Yes ☐
Work is adequately shielded	Yes ☐		Non-removable combustibles are protected, or wetted and water hose is available with adequate pressure	Yes ☐ N/A ☐
Area flagged and barricaded – same level and levels below	Yes ☐		Shutdown ducts or conveyors that may convey sparks to distant combustibles	Yes ☐ N/A ☐

SPECIAL REQUIREMENTS

CONTAINERS / PIPES / DUCTING		
Equipment drained and cleaned of residue	Yes ☐	N/A ☐
Equipment adequately vented to prevent pressure build up from application of heat	Yes ☐	N/A ☐
Equipment filled with water or inert gas, or checked frequently to be free of flammable gases	Yes ☐	N/A ☐
Monitored (LEL) Lower Explosive Limit (<10%): ____%	Yes ☐	N/A ☐

ADDITIONAL PERMITS, APPROVALS, AND PRECAUTIONS			
Confined Space Permit issued (RTKC Standard 16.2)	Yes ☐	N/A ☐	**Describe approval or precautions for any box checked Yes.**
Manufacturer approval obtained for repairs (Clause 16.1.3.2)	Yes ☐	N/A ☐	
Engineering approval obtained for repair to building support structures and stairways (Clause 16.1.3.3)	Yes ☐	N/A ☐	
Special precautions in place for work on rubber lined vessels or pipes, or near conveyor belts or fiberglass materials (Clause 16.1.3.8)	Yes ☐	N/A ☐	

FIRE WATCH
(Designated Fire Watch must remain in place for 30 minutes after Hot Work is completed and any time workers temporarily leave the area.)

Area requires being wetted after completion of Hot Work? Yes / No

NAME of FIRE WATCH	HOT WORK START	HOT WORK END	FIRE WATCH END TIME - FIRE WATCH SIGNATURE (I maintained a 30 minute fire watch and wetted the area if required above.)
	AM / PM	AM / PM	AM / PM

Permit Approval by Authorized Person

Name:	Contact Number:

REV 7 2/4/2015

©Rio Tinto Kennecott. The standards on the KUC Intranet website are considered the standard in effect and supersede all other revisions.