

HSEQ Procedure

01-HSEQ-PR-G	
Mgt. System Element #:	MS Element 3 Hazard Identification and Risk Management
Value Functions (HSEQ):	Safety
Document Type:	C-4 Standard Procedure
Site(s):	RTB California Operations (Boron, Owens Lake, Wilmington)
Department(s):	All
Hard copy control:	

Purpose

This document follows the Rio Tinto C-4 Standard to prevent a fall from height while working

Scope

These standards and procedures apply to any task where the risk assessment highlights a danger of falling.

Procedures apply to all persons that are performing elevated work, including:

- Borax employees
- Contractors
- Vendors
- Haulers or anyone else performing elevated work on site

Definitions

Competent Person

A person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as their application and use with related equipment.

Qualified Person

A person with a recognized degree or professional certificate and extensive knowledge and experience in the subject field who is capable of design, analysis, evaluation and specification in the subject work, project or product. A qualified person would design, select, inspect and approve of anchor points and would evaluate equipment after a fall.

Fall Prevention

Providing a safe work area at an elevated level by use of work platforms or scaffolds, with complete floors, guardrails and toe-boards and provisions for safe access and egress.

Fall Arrest

Providing a system to protect employees working at elevated levels where safe work platforms are not available. Such a system stops or shortens any fall.

A fall arrest system is used when the person is wearing an approved full body harness, shock absorbing lanyard or Self Retracting Lifeline (SRL) where the potential to fall is greater than 6 feet. The person must use self-locking snap hooks (or carabineer-type rings) and have secure anchorage points with a load rating of 5000 lbs. **Snap hooks will have a load rating of 3600lbs stamped on the gate**

Fall Restraint

Providing a system to hold a person in position for working so they cannot walk to or reach the location of a fall hazard.

A fall restraint system uses an adjustable lanyard with or without a shock absorber.

Requirements

A safe working area must be provided by means of fall prevention. Fall arrest or fall restraint must be used where prevention proves impractical.

General Requirements

The following general requirements apply to all overhead work, or work done at heights:

Barricades must be erected around an elevated work area to protect those below from falling objects.

Makeshift devices shall not be used to elevate a worker in place of an appropriate ladder or platform. For example, buckets, chairs, or crates are not correct or safe elevation devices.

Fall protection procedures must be used when work is being carried out from any working platform that is being elevated, including aerial lifts when persons in the basket are stretching or climbing out of the confines of the basket.

When any work is taking place at or near an open edge a Working at Height Permit must be in place

Emergency procedures for rescue of fall victims must be prepared and tested.

Fall Prevention

Whenever practical a safe working area will be provided by means of stationary work platforms or scaffolds.

Work Platforms and Scaffolding

The following requirements apply to all work platforms and scaffolding:

Complete floors, guardrails, toe-boards and provisions for safe access and egress must be provided.

Scaffolding must be erected by a qualified person or persons.

Persons erecting scaffold may connect to the rosette during construction as means of fall protection

Any electrical apparatus must be grounded and must comply with an assured grounding program.

No hoisting devices shall be attached to the work platform or scaffolding except a simple pulley for raising personal or hand tools only.

Any materials or tools stored on the floor must be guarded against falling.

All ladders must be secured.

Scaffolding must be used following the steps detailed in the "Procedures" section of this document.

Fall Arrest and Restraint

Fall Arrest and/or Fall Restraint must be used where elevated work is carried out and fall prevention is not possible.

Fall Arrest must be used in all elevating work platforms or aerial lifts when stretching or climbing out of the basket.

The following requirements apply to all fall protection equipment and measures:

All employees required to use fall protection shall be trained in the proper use of fall protection devices and inspection methods. Records of the training will be kept.

All employees will complete a “Pre-job Rescue Plan” and a “Critical Control Checklist” prior to utilizing fall arrest equipment. This will be completed each shift, unless conditions change during the shift. If any changes occur that impact possible rescue efforts, a new plan will be reviewed and a new “Pre-job Rescue Plan” filled out. These forms can be found on the Usbshare ‘K’ drive under “Working at heights” and will be retained in the individual departments.

When utilizing Fall Arrest systems, an observer, camera or check-in procedure must be used to monitor the employee(s).

All fall arrest / restraint equipment, must be tested and certified for use and must be:

- Inspected twice per year by a competent person
- Inspected by the user before use
- Must have trauma straps attached to the harness
- Must be treated per the following when involved in any fall situation:
 - a) Immediately taken out of service and tagged as such until a Qualified Person determines if the equipment can be re-certified or must be destroyed.
 - b) All lanyards, ropes, rope grab systems, pass-thru adapters; harnesses, carabineers and snap hooks must be de-certified and destroyed.
 - c) Self-Retractable Lines (SLR), D –rings, Horizontal Lifelines, and any equipment, which does not fall in any of the above categories, must be inspected by a qualified person and re-certified or destroyed.
 - d) Re-certification will include written documentation of the inspection and re-certification.
- Destroyed where inspection has shown evidence of excessive wear or mechanical malfunction

Anchorage points must, where practical, be above the head of the worker, and must be at or above the shoulder of the user to ensure that in the event of a fall the worker will not swing excessively or touch the ground. Free fall must be limited to 6 feet or less.

Total length of a lanyard with a shock absorber must not exceed 6 feet.

When utilizing an SRL, follow the 30 degree rule: For every 2 feet of line or lanyard used, do not travel more than 1 foot to the side. This will allow the unit to operate properly.

Anchorage points must be certified annually by a competent person or company to ensure that the anchorage points are secure and strong enough to bear the required load.

Weight limit for utilizing a fall protection harness is:

- a. 310 lb. Body weight
- b. 360 lb. Total weight

Movable Working Platform and Man lift

The following requirements apply to all work done from a movable working platform or aerial lift

1. A person must be designated to control the working platform or aerial lift (“the basket”).

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2. The individual designated to control the working platform or lift must be trained, competent and qualified to do so.
 3. The designated operator must be in the basket unless this proves impractical or impossible.
 4. Every person in the basket must be secured at all times with proper fall restraint.
 5. **Persons may use a self-retracting lifeline provided it is approved for use in a lift**
 6. Adjustable shock absorber can be used for fall restraint.
 7. If the operator will be stretching or climbing out of the confines of the basket, fall arrest must be in place.
 8. The basket must have provisions to prevent tools and equipment from falling.
 9. Records shall be maintained that contain data regarding the design, construction and maintenance of elevating work platforms and aerial lifts. Refer to the Procedures sections for the US Borax Owned Equipment, Rental Equipment and Contractor Equipment Procedures.
 10. Any US Borax owned movable working platform or aerial lift shall be inspected by the Truck Shop at least once a year, and an inspection record must be filed in permanent records.
 11. All movable working platforms and aerial lifts shall be inspected each shift prior to use using a safety checklist specific to that type of model of equipment.

Fall Protection Tie-Off to Structural Sections

Tie-off to existing structures is permissible as long as certain restrictions are followed. These restrictions have been defined by the structural engineer and are:

1. Structural sections must be in good condition (less than 10% corrosion).
2. The structural member must be supported at both ends by columns or other beams of equal or larger size.
3. Connections at ends minimally must be with ¼" gusset plates, and must be welded all around, or have 2- ½ "diameter bolts.
4. The maximum allowable span between supports listed in the following table is not exceeded.
5. Only approved tie-off slings, cables, or beam clamps around structural sections are to be used.
6. Worker shall not exceed 310 LB.
7. It is not permissible to tie-off to the following members:
 - a. Electrical conduit
 - b. Pipe of less than 4-inch diameter
 - c. Pipes that carry acids
 - d. Pipes that carry hot liquids over 120 F, (Can be used if under 120F or if the system has been isolated, drained and neutralized)
 - e. Steam lines
 - f. Handrails
 - g. Angles

h. Ducts

The following table displays approved structural sections and maximum allowable spans based on 5000 LB load for one person:

Structural Section	Thickness	Maximum Unsupported Span	
		One Person	Two People
I Beam W8x	¼" flange	20 feet	10 feet
I Beam W6x	¼" flange	15 feet	7 feet
I Beam W5x	3/8" flange	10 feet	5 feet
I Beam W4x	3/8" flange	8 feet	4 feet
Channel 6x	all sizes	6 feet	3 feet
Channel 4x	¼" flange	3 feet	N/A
T Sections 8"	5/8"	8 feet	4 feet
T Sections 6"	5/8"	6 feet	3 feet
T Sections 4"	½"	4 feet	N/A
4" Pipe	Schedule 40	8 feet	4 feet
6" Pipe	Schedule 40	15 feet	7 feet

A D Ring can be welded to large tanks and vessels and used to support a 5000 lb. load as long as the vessel plate is at least ¼" thick.

In order to use any of these tie-off points, the worker needs to have the required vertical clearance distance. This is to be determined by a Competent Person. In addition, the worker must be attached to one of the following:

1. A shock absorbing lanyard.
2. A Self Retracting Lifeline (SRL)
3. A restraining system.

A 310-LB person wearing either a shock absorbing lanyard or an SRL will generate no more than a 900-LB load. The fall protection system contained herein will provide a factor of safety exceeding 3:1.

For other conditions, a civil or structural engineer should be contacted.

Ladders

The following requirements apply to the safe use of ladders, **consult the RTB Ladder work instruction prior to use:**

1. A person may climb or descend a ladder without fall protection provided that he or she is able to do all of the following while climbing or descending:
 - Use both hands and legs.
 - Face the ladder.
 - Use one step at a time.

2. Ladders shall be tied off above or supported below.
3. When activities are being done while standing on a ladder, the use of a fall arrest system is required when exposed to a fall greater than 6 feet.
4. All ladders must be inspected by the user before each use.
5. Employees must be trained on inspection and proper selection of ladders.

Covering of Holes and Open Constructions

The following requirements apply to covering holes and open constructions:

1. Openings in a floor or working platform greater than 12 inches in diameter must be covered.
2. The covering used must be able to sustain double the expected weight load.
3. If a covering cannot sustain double the expected weight load, it must be clearly marked such that loads must not be applied to the covering.
4. Coverings must be secured so they cannot accidentally be moved or removed.
5. All covers shall be clearly color coded or marked with the words "hole" or "cover".
6. Safety netting can be used when working on (highly) elevated levels over or around open constructions when other safety prevention or protection systems are not an option.

Records

The following records for working at heights procedures are to be maintained:

- Records of training on the use of fall protection and inspection methods.
- Records of training on working at heights procedures and instructions.
- Training records of persons designated to control working platforms, scissors lifts and aerial lifts.
- Records pertaining to the design, construction, maintenance and inspection of all elevating work platforms.
- Anchorage points, Harnesses, Lanyards, SLR's, and Tie-Off adapter inspection records. (Maintained in the fall protection database, located at [\\boraxborfs01\heights](#))
- Pre-job / Rescue plan forms maintained in each department for a period of two years.

Responsibility

PERSONNEL	RESPONSIBILITY
Managers and	Administer the working at heights program:

Safety Supervisors	<ul style="list-style-type: none"> ▪ Review and update the procedures and instructions ▪ Review and approve training with regard to working at heights ▪ Audit to ensure procedures are being followed ▪ Approve selection of fall protection devices
Management	<ul style="list-style-type: none"> ▪ Ensure compliance with US Borax Operations Working at Heights program ▪ Continuously review their areas / tasks and define which areas / tasks are to be included in these procedures and instructions ▪ Enforce and instruct employees exposed to fall hazards in proper procedure ▪ Implement this policy with the project contractors ▪ Audit this program annually and revise it as appropriate
Civil/Structural Engineer	<ul style="list-style-type: none"> ▪ Analyze and design anchor points to meet regulatory standards
All Employees	<ul style="list-style-type: none"> ▪ Communicate to management new fall hazards or conflicts with these procedures ▪ Follow the Working at Heights procedures, including completing a Pre-job Rescue Plan a Critical Control Checklist and when needed a Working at Height Permit prior to utilizing a fall arrest system.

References & supporting documents

A summary of the references and supporting documents relevant to this document is provided in the following table.

Doc Ref.	Document Title
Boron HSEQ MS Champions	Champions of Elements & Standards
Ladder Work Instruction	Ladder Work Instruction
Guidance Note	Rio Tinto Scaffold Guidance Note

