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Kennecott Utah Copper Corporation Safety and Health Standards		Standard No.: 16.20 Title: Fall Protection (Working at Heights)

16.20.1 **INTRODUCTION**

16.20.1.1 This standard applies to any task where a risk assessment highlights a danger of falling or where personnel are required to work at six feet (1.8 meters) or more above ground level. The purpose of this standard is to ensure that KUCC employees and contractor personnel are afforded protection in the event of a fall regardless of where, or on what job, they are working.

16.20.2 **DEFINITIONS**

16.20.2.1 An "At-Risk Worker" – means a person who is required to work at six feet or more above ground level, and is not working on a standard railed platform, or where a risk assessment highlights a danger of falling.

16.20.2.2 A "competent person" means a person who has completed fall protection training, testing, and is capable of identifying hazards or dangerous conditions in the personal fall system or any component thereof, as well as in their application and use with related equipment.

16.20.2.3 A "qualified person" means 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 specifications in the subject work, project, or product. An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties

16.20.2.4 "Anchorage point" means a secure point of attachment for lifelines, lanyards or deceleration devices that is independent of the means of supporting or suspending the person.

16.20.2.5 "100% tie-off" means that a person must be properly tied-off at all times while exposed to a fall hazard. The use of two lanyards is required if a person must move or relocate a tie-off point while exposed to a fall hazard to ensure a positive tie-off connection at all times during the move.

16.20.2.6 "Fall Protection" means a person is secured with an approved full body harness, shock absorbing lanyard, self-locking snap hooks and secure anchor points.

16.20.3 **REQUIREMENTS**

References: OSHA 29 CFR, 1910 & 1926. (www.osha.gov) KUCC Safety and Health Standards 16.3 Restricted Access KUCC Safety and Health Standards 16.5 Aerial Lifts and Platforms KUCC Safety and Health Standards Barricading /Off Limit Entry, 16.7 Scaffolds KUCC Safety and Health Standards 16.21 Ladders Rio Tinto Safety Standard C4 – Working At Heights ANSI Z359.1 – Safety Requirements for Personal Fall Arrest Systems, Subsystems, and Components					
Signatures					
Original signed by: Frank Klobchar	6/24/04	Original signed by: Chris Crowl	6/24/04	Original signed by: Bill Champion	7/02/04
Standards Committee Chairman	Date	Vice President Human Resources	Date	President, KUCC	Date

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Kennecott Utah Copper Corporation Safety and Health Standards		Standard No.: 16.20 Title: Fall Protection (Working at Heights)

16.20.3.1 A risk assessment shall be performed for any task where there is a danger of falling. All personnel

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who are required to work at six feet (1.8 meters) or more above ground level must use adequate fall prevention or fall protection.

- Whenever a risk assessment highlights a danger of falling or personnel are required to work above 6 feet a Working at Heights Permit must be completed by a competent person (See Exhibit 16.20.1)

16.20.3.2 Wherever practical, a safe working area must be provided by means of approved handrails, work platforms, or scaffolds to minimize the risk exposure. In such cases a Working at Heights permit is not required. In all other cases fall protection (100% tie-off) must be used. This includes situations in which work is being carried out from an elevating work platform or manlift.

16.20.3.3 Where overhead work is being conducted, there must be a system in place to prevent tools and equipment from falling and barricades must be erected around the work area to protect others below from falling objects. (See KUCC Safety and Health Standard 16.3)

16.20.3.4 Full body safety harnesses are required for use on KUCC property together with lanyards that provide shock-absorbing protection in the event of a fall. To ensure that all fall protection equipment is properly tested and certified, all fall protection equipment must meet or exceed OSHA and ANSI Z359.1 requirements.

- Before each use, the harness and lanyard must be inspected by the user for cuts, breaks, loose rivets, torn threads, excessive wear, etc. Fall Protection equipment that has shown evidence of excessive wear or mechanical malfunction or has been exposed to a fall must be removed from service in a manner to ensure it cannot be used again. At no time shall a harness or lanyard that appears unsafe be used.
- A properly sized and approved full body harness must be worn tight enough to prevent the wearer from slipping out. The lanyard should be adjusted so as to restrict any fall to no more than a six-foot vertical drop and must ensure that in the event of a fall the worker will not contact any lower level.
- Lanyards must be attached to a secure anchorage point. There must be a system for ensuring that anchorage points are tested and approved by a qualified person to ensure that they are secure and can take the required load. Anchorage points should, where practical, be above the head of the at risk worker, and ensure that in the event of a fall the worker will neither swing nor contact any lower level. Handrails that are not designed to anchorage point specifications may not be used as an attachment point.
- With regard to testing, approving, and certifying anchorage points and fall protection these functions must be carried out by a qualified person or authority who has received appropriate training or who is suitably certified / qualified. This may include engineering analyses to verify that support structures can support the necessary loads; routine inspections and re-certification of anchorage point commensurate with the environment and the duty of anchor point installations; and sample testing of anchor points to confirm integrity. The results of such inspections and tests should be documented.
- Regular inspection of the complete fall protection system, including the anchorage points, remains the responsibility of the users of fall restraint systems and competent inspection / testing personnel.

16.20.3.5 Work platforms and scaffolds must have complete floors, guardrails and toe-boards and safe access and egress must be provided. All scaffolds must be installed by competent persons who follow the requirements listed in OSHA 29 CFR 1910, 1926 and KUCC Safety and Health Standard 16.7.

- Personnel engaged in assembling scaffolds shall wear approved fall protection equipment (safety harness and lanyards) when working six feet or more above ground level. Fall protection will be used until work platforms with proper handrails are installed. Safe access (ladders, etc.) to upper levels will be installed as part of the assembly process.

- 16.20.3.6 A person may climb or descend a ladder without Fall Protection provided that they use both hands and legs, face the ladder, and use one step at a time. Straight ladders must be located so as to prevent slipping and must be lashed or secured. (See KUCC Safety and Health Standard 16.21). Employees on ladders working six feet or more above ground level must wear appropriate fall protection equipment and must be tied off prior to starting their task. When ascending or descending a ladder, tools must not be carried by hand.
- 16.20.3.7 Suspended work platforms and manbaskets shall be used only when all other means of access are determined to be less effective. The use of manbaskets is permitted only in unique work situations where their use results in the least hazards. Joint approval must be obtained for each use of a manbasket and a "Personnel Hoisting Permit" must be completed and approved. (See Exhibit 16.20.2)
- Personnel working from a suspended platform or manbasket must wear approved fall protection equipment and must be tied off to a lifeline attached separately from the work platform, hoisting cables or attachment, also there must be systems in place to prevent tools and equipment from falling.
- 16.20.3.8 Personnel working from platforms or buckets on any vehicle-mounted manlift, boom, JLG, scissors lift, etc., shall wear an approved safety harness with the lanyard attached to the platform, or platform / boom attachment point. A person must be designated to control the work platform, scissor-lift or man-lift (the basket), who is trained and competent to do so and qualified as required under local regulations. Where practical, the designated person should be in the 'basket'. There shall also be a system for ensuring the design, construction, certification, maintenance and inspection of elevating work platforms and man-lifts. (See KUCC Safety and Health Standard 16.5)
- 16.20.4 **TRAINING**
- 16.20.4.1 In order to effectively implement the fall protection program, in-depth training is required. There are three types of training: The At-Risk Worker, The Competent Person, and The Qualified Person.
- All training shall be documented. Re-training is required whenever there is a change in the fall protection system or equipment.
- 16.20.5 **RESPONSIBILITIES**
- 16.20.5.1 Each individual is responsible for using adequate fall protection equipment as described in this standard.
- 16.20.5.2 The Area Supervisor must:
- Complete a Working at Heights Permit whenever a risk assessment highlights a danger of falling or personnel are required to work above 6 feet.
 - Completed all provisions set out in "Personnel Hoisting Permit" prior to using a suspended work platforms or manbaskets.
- 16.20.5.2 Each Area Manager is responsible to ensure that the provisions of this standard are met including ensuring:
- There is a practice in place for properly identifying and approving anchor points.
 - That a competent person provides fall protection training for all personnel exposed to a fall hazard.
 - That there is a system in place for providing emergency rescue for fall victims.

KENNECOTT UTAH COPPER CORPORATION
WORKING AT HEIGHTS PERMIT (Standard 16.20)

PERMIT WILL REMAIN AT JOB SITE UNTIL JOB IS COMPLETE OR A NEW PERMIT IS ISSUED. PERMIT MUST BE REVISED EACH SHIFT. EXPIRED PERMIT MUST BE SENT TO THE FACILITY RECORDKEEPING CENTER FOR FILING.

This permit is void if conditions change when working at heights.

Date and Time Issued: Expiration:

Purpose of Working at Heights:

Personnel Requesting Permit:

Permit Location:

PERMIT ISSUED BY SUPERVISOR: I have evaluated all portions of this permit and verify that acceptable working at heights conditions exist. All personnel have been instructed as to the conditions of the permit and are adequately trained to perform this job. The person issuing this permit must be Level II Competency trained (or equivalent).

Supervisor Name (Print): Supervisor Signature:

TRACK completed for this task (initials):

Yes No Can the working at heights task be eliminated by means of a work platform (i.e., scaffolding, permanent platform, aerial lift) to minimize the risk exposure? If yes, explain action taken on back of permit.

Yes N/A Should a JSA be developed for this task? If yes, explain action taken on back of permit.

Yes If you are using an aerial lift for this job, have you verified the following: (1) Has the operator been task trained and has a current certification stating such? (2) Has a pre-operational inspection been completed? (3) Is the annual inspection date for the lift current? (Refer to KUCC Standard #16.5)

Yes If you are using a ladder, do you know how to ascend and descend a ladder safely? (3-point contact) Has the ladder been tied off? (Refer to KUCC Standard #16.21)

Yes If you are using scaffolding, has it been inspected? (Refer to KUCC Standard #16.7)

If any of the below items are not marked "Yes" do not proceed with the work.

Yes Have you been tasked trained on fall protection equipment? (Worker at Risk – Level I Competency trained or equivalent)

Yes Is the annual inspection date valid or current for all harnesses and lanyards?

Yes Did you check harness and lanyard for cuts, abrasion, damage, knots, chemical attacks, heat or friction damage, UV-degradation, oil contamination, fitting damage. (Refer to the inspection instruction information packet on harness. Do not use damaged fall protection equipment.) (Any harness/lanyard exposed to fall impact will be removed from service and turned in to supervisor.)

Yes Is your lanyard length correct to minimize the fall so you will not contact the ground or other obstruction in the fall path of worker? Calculate the Total Fall Distance (Freefall Distance + Deceleration Distance + Harness Effects + Vertical Elongation + Safety Factor). (12 foot rule)

Yes Has a method of rescue been identified for fall victims? Describe:

Yes Do you know where the proper anchorage points are located? Did a competent person evaluate the anchorage point?

Yes Is there a method in place to keep tools and equipment from falling?

Yes Is the area below properly barricaded? (Refer to KUCC Standard #16.3)

KENNECOTT UTAH COPPER CORPORATION
PERSONNEL HOISTING PERMIT (Standard 16.20)

Permit will be posted at work site until work is complete or a new permit is issued. This permit must be reviewed every shift and reissued if a change in conditions or work scope has occurred. Hoisting of personnel shall be promptly discontinued upon indication of any dangerous weather conditions or other impending danger. Permit must be reissued for each new work location. Permit must be reissued if personnel are newly assigned to the work.

Expired permit must be sent to the facility Records Center for filing.

Date and Time Issued: Expiration:

Purpose of Work:

Personnel Requesting Permit:

Work Location:

TRACK completed for this task (Initials):

General Requirements										
<input type="checkbox"/>	The use of a crane to hoist employees on a manbasket is prohibited, except when the erection, use, and dismantling of conventional means of reaching the worksite, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform or scaffold, would be more hazardous or is not possible because of structural design or worksite conditions.									
<input type="checkbox"/>	Rotation resistant crane hoist rope is prohibited.									
<input type="checkbox"/>	Crane travel is prohibited with personnel in basket.									
<input type="checkbox"/>	Repair or modifications to the manbasket and rigging is prohibited.									
Crane Requirements										
Yes	<input type="checkbox"/>	Load lines shall be capable of supporting, without failure, at least 7 times the maximum intended load.								
Yes	<input type="checkbox"/>	The total weight of the loaded manbasket and related rigging shall not exceed 50% of the rated capacity for the radius and configuration of the crane.								
		Boom angle during lift	°	Radius			Feet			
		Crane load rating @ listed angle & radius			X	50%	=	Maximum Load		
Yes	<input type="checkbox"/>	Boom angle indicator, readily visible to the operator.								
Yes	<input type="checkbox"/>	Crane equipped with a device to indicate clearly to the operator, at all times, the boom's extended length.								
Yes	<input type="checkbox"/>	Crane equipped with an anti-two-blocking device.								
Yes	<input type="checkbox"/>	Crane equipped with a controlled load lowering system, other than the load hoist brake. Free fall is prohibited.								
Yes	<input type="checkbox"/>	Reviewed manufacturers lifting requirements as stated in crane operations manual.								
Manbasket Requirements										

Yes	<input type="checkbox"/>	The manbasket and suspension system designed by a qualified engineer or a qualified person competent in structural design.
Yes	<input type="checkbox"/>	The suspension system designed to minimize tipping of the manbasket due to movement of personnel occupying the manbasket.
Yes	<input type="checkbox"/>	The manbasket itself, except the guardrail system and personnel fall arrest system anchorages, capable of supporting, without failure, its own weight and at least 5 times the maximum intended load.
Yes	<input type="checkbox"/>	Manbasket conspicuously posted with a plate or other permanent marking which indicates the weight of the manbasket, and its rated load capacity or maximum intended load.
Basket Number		
Date of Certification (Must be Recertified Annually)		
Manbasket Loading		
Yes	<input type="checkbox"/>	The manbasket not to be loaded in excess of its rated load capacity.
Yes	<input type="checkbox"/>	The number of personnel occupying the manbasket not to exceed the number required for the work being performed.
Yes	<input type="checkbox"/>	Manbaskets used only for personnel, their tools and the materials necessary to do their work, and not be used to hoist only materials or tools when not hoisting personnel.
Yes	<input type="checkbox"/>	Materials and tools for use during a personnel lift secured to prevent displacement.
Yes	<input type="checkbox"/>	Materials and tools for use during a personnel lift evenly distributed within the confines of the manbasket while the manbasket is suspended.
Weight of Basket		
Approximate Weight of Personnel		
Approximate Weight of Tools/Parts		
Total Load		
Note: Total load not to exceed "Maximum Load" calculated above.		
Rigging Requirements		
Yes	<input type="checkbox"/>	Wire rope bridle legs connected to a master link or shackle in such a manner to ensure that the load is evenly divided among the bridle legs.
Yes	<input type="checkbox"/>	Hooks on overhaul ball assemblies, lower load blocks, or other attachment assemblies closed and locked, eliminating the hook throat opening.
Yes	<input type="checkbox"/>	Wire rope, shackles, rings, master links, and other rigging hardware capable of supporting, without failure, at least 5 times the maximum intended load applied or transmitted to that component.
Yes	<input type="checkbox"/>	All eyes in wire rope slings fabricated with thimbles.
Yes	<input type="checkbox"/>	Rigging free of kinks.
Yes	<input type="checkbox"/>	Bridles and associated rigging for attaching the manbasket to the hoist line used only for the manbasket and the necessary personnel, their tools and the materials necessary to do their work

		and not to be used for any other purpose when not hoisting personnel.
Crane Set-up Requirements		
Yes	<input type="checkbox"/>	The crane shall be uniformly level within 1% of level grade and located on firm footing.
Yes	<input type="checkbox"/>	Outriggers fully deployed.
Yes	<input type="checkbox"/>	Pre-operational check of crane completed by crane operator.
Trial Lift		
Yes	<input type="checkbox"/>	Trial lift with the unoccupied manbasket loaded at least to the anticipated lift weight made from ground level, or any other location where personnel will enter the manbasket to each location at which the manbasket is to be hoisted and positioned. Trial lift performed immediately prior to placing personnel in the manbasket. Operator has determined that all systems, controls and safety devices are activated and functioning properly; that no interferences exist; and that all configurations necessary to reach those work locations will allow the operator to remain under the 50% limit of the hoist's rated capacity. Materials and tools to be used during the actual lift can be loaded in the manbasket for the trial lift. A single trial lift may be performed at one time for all locations that are to be reached from a single set up position.
Yes	<input type="checkbox"/>	After the trial lift, and just prior to hoisting personnel, manbasket hoisted a few inches and inspected to ensure that it is secure and properly balanced.
Yes	<input type="checkbox"/>	Hoist ropes free of kinks.
Yes	<input type="checkbox"/>	Multiple part lines not twisted around each other.
Yes	<input type="checkbox"/>	Primary attachment centered over the manbasket. Hoisting system inspected if the load rope is slack to ensure all ropes are properly stated on drums and in sheaves.
Yes	<input type="checkbox"/>	Visual inspection of the crane, rigging, manbasket, and the crane base support or ground conducted by a competent person immediately after the trial lift to determine whether the testing has exposed any defect or produced any adverse effect upon any component or structure.
Yes	<input type="checkbox"/>	Any defects found during inspections, which create a safety hazard must be corrected before hoisting personnel.
Work Procedure		
Yes	<input type="checkbox"/>	Load and boom hoist drum brakes, swing brakes, and locking devices engaged when the occupied manbasket is in a stationary position.
Yes	<input type="checkbox"/>	Hoisting of the manbasket performed in a slow, controlled, cautious manner with no sudden movements of the crane, or the manbasket.
Yes	<input type="checkbox"/>	Personnel to keep all parts of the body inside the manbasket during raising, lowering, and positioning.
Yes	<input type="checkbox"/>	Tag lines used unless their use creates an unsafe condition.
Yes	<input type="checkbox"/>	Crane operator to remain at the controls at all times when the crane engine is running and the manbasket is occupied.
Yes	<input type="checkbox"/>	Personnel being hoisted shall remain in continuous sight of and in direct communication with the operator or signal person. In those situations where direct visual contact with the operator is not possible, and the use of a signal person would create a greater hazard for the person, direct communication alone such as by radio may be used.

Means of Communications		<input type="checkbox"/>	Radio	<input type="checkbox"/>	Signal Person
Yes	<input type="checkbox"/>	Personnel occupying the manbasket shall use a harness with lanyard appropriately attached to the lower load block or overhaul ball, or to a structural member within the manbasket capable of supporting a fall impact for personnel using the anchorage.			
Yes	<input type="checkbox"/>	No lifts shall be made on another of the crane's load lines while personnel are suspended on a manbasket.			
Pre-Lift Meeting					
Yes	<input type="checkbox"/>	A meeting prior to the trial lift attended by crane operator, signal person(s) (if necessary for the lift), personnel to be lifted, and the person responsible for the task to be performed held to review the appropriate requirements of this permit and the procedures to be followed.			
Approvals					

PERMIT AUTHORIZED BY: Suspended work platforms and manbaskets shall be used only when all other means of access are determined to be less safe. The use of manbaskets is permitted only in unique work situations where their use results in the least hazards.

Plant Manager	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Print Name	Signature	Date
Safety	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Print Name	Signature	Date

PERMIT ISSUED BY SUPERVISOR: I have evaluated all portions of this permit and verify that acceptable conditions exist. All personnel have been instructed as to the conditions of the permit and are adequately trained to perform this job.

Supervisor	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Print Name	Signature	Date
Superintendent	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Print Name	Signature	Date
Crane Operator	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Print Name	Signature	Date