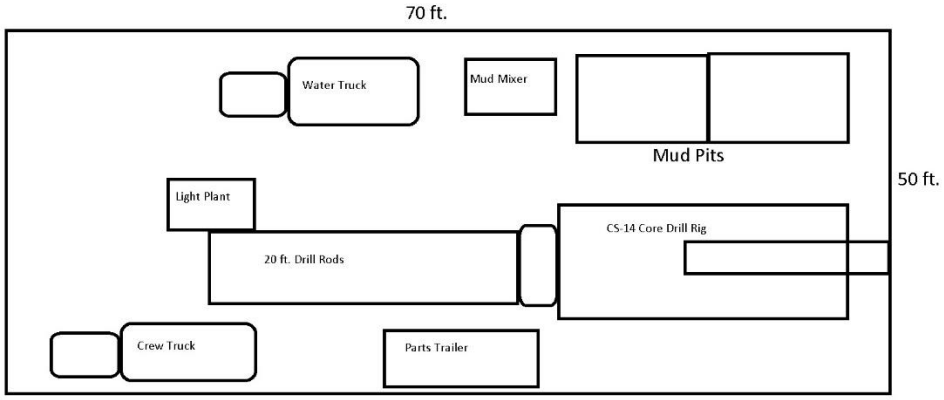
VISCOUNT MINING – ADDITIONAL NOI INFORMATION

Operations – 43 CFR 3809.301(b)(2)

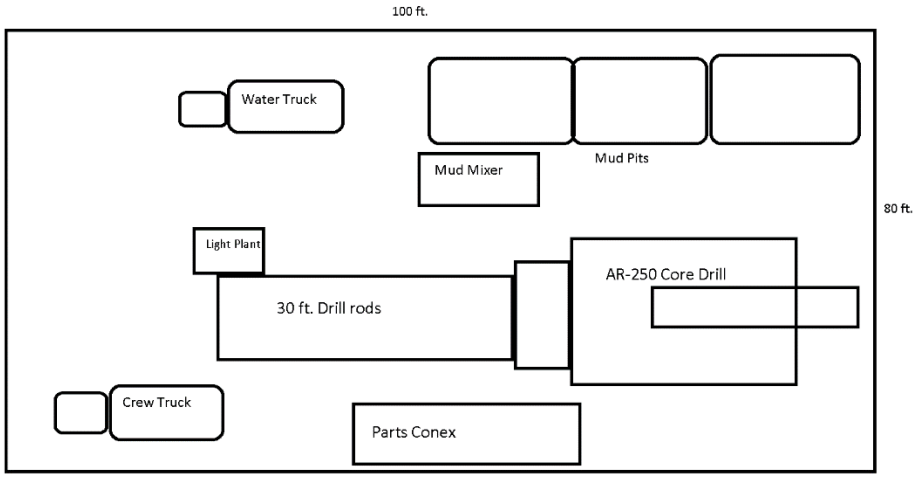
a. The objective of the upcoming drilling campaign is to determine the geochemical composition and verify the size of a conductive anomaly identified in a geophysical resistivity survey performed in July.
b. The drilling campaign is expected to start in November 2022 and last for approximately four months. During the campaign, drilling is expected to be ongoing 24-hours per day.
c. During night hours, the drill rig will be lit by a Vision X Dark Sky Compliant light which will be directed facing down at the drill rig.
d. Each of the five proposed drill hole locations is within 100 meters of County Road 240. Because of the lack of topographic variance between this road and the proposed locations, a straight path will be created and used to access each of the five drill pads.
e. Expected large equipment to be used during the drilling campaign are as follows: Cat D6 Dozer, Cat 430 Backhoe with forks, Cat Excavator, Boart Longyear AR-250 Surface Core Drill Rig (most equipment will be rented and individual model information is currently unavailable).
f. Each of the five drill holes will have a diameter of 5.5 inches at the surface to set casing. Below the surface casing to a depth of about 1500 feet, drill hole diameter will be 3.5 inches. Below a depth of about 1500 feet, drill hole diameter will 2.5 inches. Four of the five drill holes are planned to penetrate to a depth of about 2500 feet while one drill hole is expected to go to a depth of about 5000 feet. Cuttings from all drill holes will be stored at Viscount's core storage location.
g. Four of the drill pads will be 50 feet by 70 feet in size and include two mud pits as shown by the below image.

IG Drilling CS-14 Drill Site Map



One of the drill pads will be 80 feet by 100 feet in size and will include three mud pits as shown by the image below.

IG Drilling AR-250 Site Map



For each of the five drill pads, topsoil will be removed with a dozer and, if needed, placed to create a small berm around the pad. Each mud pit will be dug with an excavator, lined with sump lining, and surrounded with cow panels. Each mud pit will be sucked out by a vac truck after drill hole completion and the fluid will be disposed of in an approved disposal area. Sump lining will then be removed, and the mud pits will be filled, and drill pads covered with the native material.

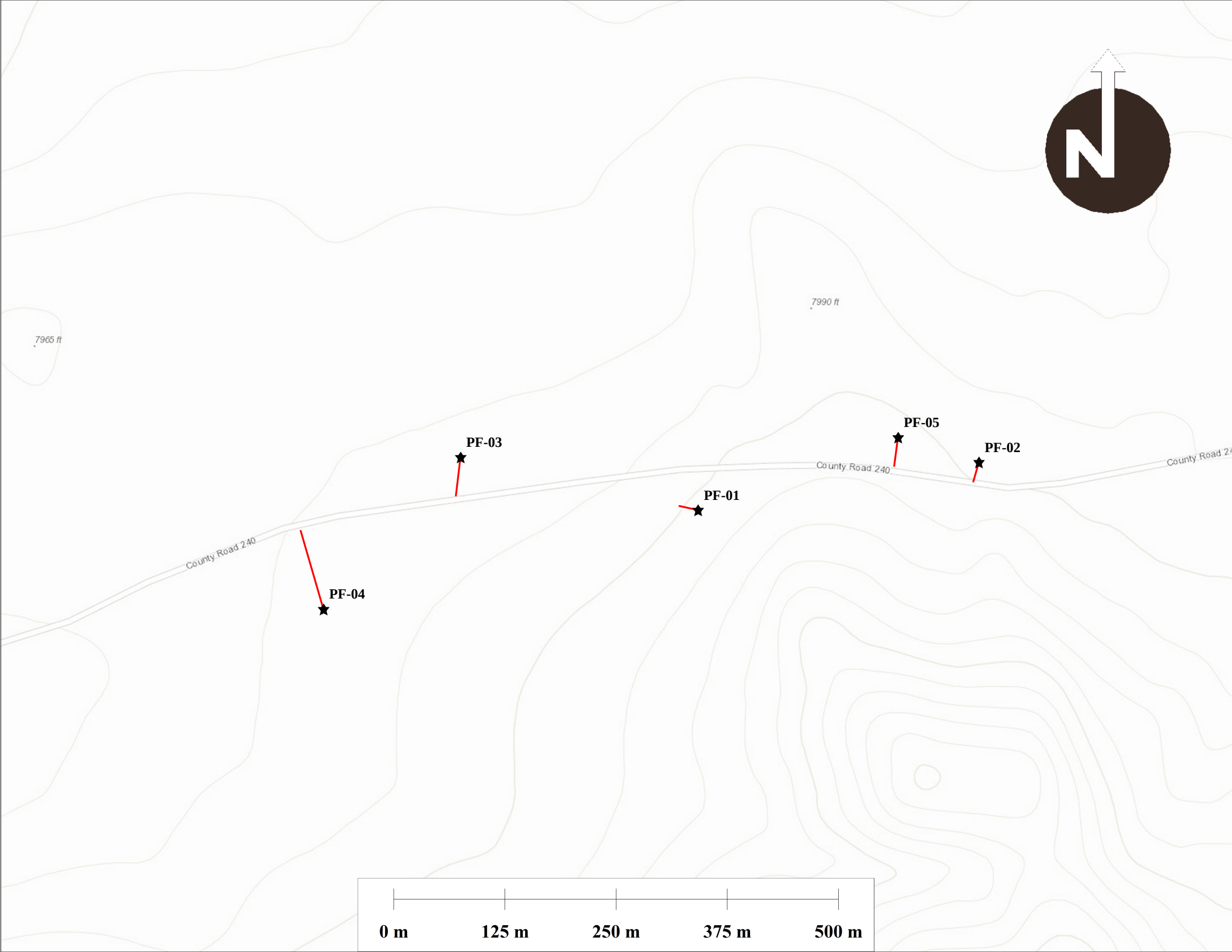
h. SDS sheets for all chemicals planned to be held on site are included in the original NOI form previously submitted.
i. SDS sheets for all lubricants planned to be held on site are included in the original NOI form previously submitted.
j. The deepest drill hole Viscount has drilled in the area has been to a depth of about 700 feet and no groundwater was encountered. It us unknown to Viscount if groundwater will be encountered when going to the expected depth of at least 2500 feet. USGS groundwater table information is unavailable/inaccurate for the area as the closest groundwater meter, located ~4 miles from the closest drilling location shows a groundwater level at ~50 feet below the surface. Viscount has drilled dozens of 100+ foot holes in the area with no groundwater encountered. If encountered at any depth for any drill location, the hole will be cased off with 4.5-inch casing, reducing to 3.5-inch casing, to prevent cross contamination. Neat cement will be used if artesian flow is encountered in the bore hole to surface.
k. Water used for drill recirculation will be gathered from a water pumping station in Westcliffe and transported by water truck to the drill locations.
l. There are no additional permits or easements required for exploration on either the federal, state, or local levels.
m. While on site, a portable toilet, provided and maintained by Oak Disposal, will be utilized for sanitary waste disposal. Solid waste will be collected in garbage bags and disposed of as needed at the local landfill.
n. Crews will wear high visibility clothing, safety signage will be present at entrance to the drill site, site inductions will be completed to new visitors to drill site, all crew members will be MSHA task trained for each piece of equipment with 5023s and continue task training for any new equipment. Attached is a complete health and safety sheet for the drilling company.
o. The attached topographic maps depict the locations of the five proposed drill holes in relation to the towns of Westcliffe and Silver Cliff, surrounding roads and structures, and the locations of access paths to the drill locations from the main road. For individual drill pad layout, refer to (b)(2)(g).

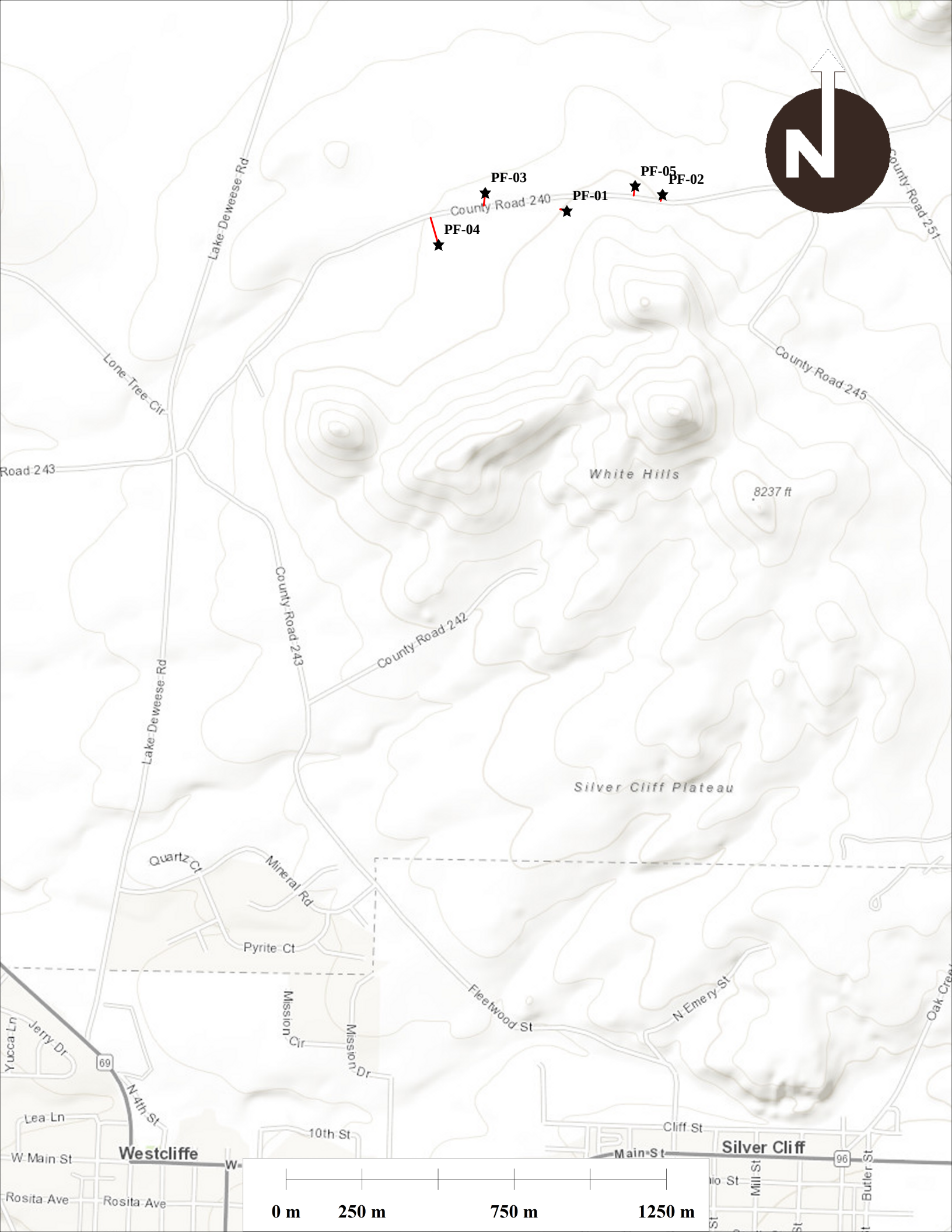
Reclamation – 43 CFR 3809.301(b)(3)

a. Final reclamation is anticipated to be initiated within 12 months of the completion of the drilling campaign.
b. Refer to (b)(2)(g) for stockpiling and replacement plans for topsoil.
c. Because of the lack of topographic variance in the area, minimal topsoil will be removed during pad creation. Any topsoil that is removed will be immediately replaced after drill hole completion using a dozer. Reclamation, including tractor grading and push-spreader seeding (using an approved seed mix; no mulch required) will take place within 12 months of the drill campaign start date.
d. Hole abandonment will be performed with tremie pipe from bottom of the hole to bottom of the surface casing in lifts using high-quality sodium bentonite-type gel. Each bore hole with have a 30-foot cement cap to two feet below the surface and topped with two feet of topsoil. Neat cement will be used if artesian flow is encountered in the bore hole to surface. A hole abandonment form will be filled out immediately after each hole is abandoned.
e. Refer to (b)(2)(j) or (b)(3)(d) for plans in case of encountering washout water.
f. All hole abandonment will be conducted in accordance with the applicable State of Colorado regulations.

43 CFR 3809.552

The expected reclamation cost is $1500 per drill pad location, or $7500 total for the entire drilling campaign.


7990 ft
7965 ft
PF-05
PF-02
PF-03
PF-01
PF-04
County Road 240
County Road 240
0 m
125 m
250 m
375 m
500 m


PF-03
PF-05
PF-02
PF-01
PF-04
County Road 240
County Road 251
Lake Dewease Rd
Lone Tree Cir
County Road 245
Road 243
White Hills
8237 ft
County Road 243
County Road 242
Lake Dewease Rd
Silver Cliff Plateau
Quartz Ct
Mineral Rd
Pyrite Ct
Mission Cir
Mission Dr
Fleetwood St
N Emery St
Oak Creek
Yucca Ln
Jerry Dr
69
N 4th St
Lea Ln
10th St
W Main St
Westcliffe
Rosita Ave
Rosita Ave
Cliff St
Main St
Silver Cliff
96
Mill St
Butler St
0 m
250 m
750 m
1250 m

IG DRILLING
YOUR PARTNERS IN EXPLORATION

PROVO
MINING & CONSTRUCTION INC.

Health & Safety Management Plan

Prepared For Use

at

IG Drilling

TABLE OF CONTENTS

Tab 1. PURPOSE and SCOPE:

Consistent with Inter-Geo Drilling's Guiding Principles, this H&S Management Plan (Plan) has been developed and implemented as a systematic means for accomplishing Inter-Geo Drilling (IGD) Management's commitment to minimizing the potential for incidents, injuries, and employee exposure to health hazards, and for promoting responsible environmental stewardship while achieving service and production targets in the most cost-effective manner possible.

IGD employees are responsible for complying with all Federal, State and Local regulations and all IGD Policies and Procedures. Requirements and responsibilities defined in the various elements of the Plan apply to all persons performing regular or contracted work for IGD. Performance relative to those responsibilities will be a condition of continuing employment or work at Inter-Geo Drilling.

Procedures and practices formulated to ensure risk avoidance or control will be reviewed by IGD Management for effectiveness and needed revisions at least annually, as changes to equipment or process occur, or reports on plan performance denote a trend indicative of less than acceptable results.

IGD's senior management will review performance relative to Risk Management responsibilities monthly and additional instruction will be provided as reviews indicate deficiencies or opportunity for continuing improvement.

An overview of the Plan and specific instruction on the value and use of risk management tools (FLRA, JHA, hazard and incident reporting, and quality inspections) will be provided to all employees upon initial employment and as changes and revisions occur. Additionally, a copy of the Plan and copies of related documents and materials will be maintained in IGD's administrative offices for immediate access as needed.

Tab 2. POLICIES and STANDARDS:

IG Drilling

Guiding Principles for Health and Safety

1. We empower our people and engage in open and honest discussions without retribution.
2. We lead by example, clearly accepting accountability and visibly putting health and safety first.
3. We openly communicate and share best practices and lessons learned to promote a no-harm culture.
4. We coach, mentor and train to continually improve health and safety behaviors in the workplace.
5. We create awareness and promote safe behavior and healthy lifestyles to extend beyond work.
6. We proactively identify hazards and assess and manage risks.
7. We proactively factor health and safety considerations into the design of all our new facilities.
8. We stay informed on emerging risks and best management practices.
9. We honestly assess our performance and compliance with individual and group responsibilities.
10. We celebrate success and reward exceptional health and safety performance and behaviors.

IG Drilling

Health and Safety Policy Statement

IG Drilling regards its employees as the most valuable asset in the organization. We are committed to providing a safe and healthy work environment through a proactive occupational health and safety improvement process.

To fulfill this commitment, everyone must work together to provide and maintain a safe and healthy work environment that meets or exceeds all legislated and industry standards. We will apply the continuous improvement process to health and safety and will strive to control or eliminate all reasonably foreseeable hazards that may result in accidents, personal injury/illnesses, fires, security losses or other property damage.

The corporation, management, employees, customers, guests, contractors, and subcontractors share responsibility. We are all responsible for accident prevention, therefore we must be dedicated to, and demonstrate behavior that supports a strong, proactive safety improvement process. We all must lead by example, placing safety ahead of everything else we do. Employees are expected to follow all safe work practices established by management.

We must all work with, and support our health and safety program, to ensure that the necessary resources are made available to the program, and to consider the safety and health impacts and opportunities in all decisions.

All members of management and all workers must join together in making health and safety an integral component of our daily activity. Health and safety is a key requirement for our success and viability.

Sincerely,

Roy Durr,

President

Date

IG Drilling
Health and Safety Standards

The following Health and Safety Standards are reflective of certain Federal, State, and other regulatory requirements, and of practices determined by IGD management as being representative of industry best business practices. The term "approved" as it appears in these standards refers to practices recognized as being compliant with those regulations and best practices.

These Standards are not represented to be inclusive of all regulatory requirements, or of additional standards and policy requirements in effect at Inter-Geo Drilling.

It is the responsibility of all individuals performing work for IGD for any purpose to be familiar with, and to comply with, those additional requirements. Persons found to have acted or worked in violation of any H&S standard will be subject to disciplinary action or exclusion from further work for Inter-Geo Drilling.

Basic Personal Protective Equipment:
The following items are to be considered Basic PPE and must be worn by all on-duty employees:

- Approved safety footwear (Must meet ANSI Z41 Standards with tops that extend at least 6 inches above sole.)
- Approved safety helmets (Must meet ANSI Z89.1 – 2014 Class G or E Standards.)
- Approved safety eyewear (Must meet ANSI Z 87 Standards and have side shields.)
- Approved high visibility garments. (Must meet ANSI 107 – 2004 Standards.)

NOTE: Basic PPE use is not required in office or other areas where no identified hazard exists. Safety helmet and safety eyewear use is not required inside the cabs of light vehicles.

Additional PPE and Requirements:
Additional PPE will be required when performing any task, or entering any area, which has been identified as presenting a potential health or safety risk requiring protection beyond the use of basic PPE.

Persons requesting or required to use respirators must be enrolled in IGD's Respiratory Protection Program.

Persons required to use hearing protection must be enrolled in IGD's Hearing Conservation Program.

Clothing, hair, or adornments that represent a catching or tripping hazard are not allowed. Shirts with sleeves and full- length pants are required in all work areas where use of Basic PPE is required.

General Safety:
DO NOT attempt to assume your duties if your abilities or alertness are impaired by fatigue, illness, or any other disability or distraction that might unnecessarily expose yourself or others to injury.

The use of cell phones or other electronic devices must not distract an employee from the proper performance of his/her assigned duties, or in any manner interfere with their ability to perform those duties safely.

The use, possession, or presence in the system of alcohol or controlled substances is prohibited.

Firearms or other potentially lethal weapons are prohibited on Inter-Geo work sites

Incidents, including injuries and spills, must be reported to IGD supervision as soon as possible.

Workplace hazards must immediately be reported to IGD supervision, and when safety allows, action must be taken to isolate others from exposure to the hazard.

Do not enter areas where cones, caution tape, berms or other barriers are placed without proper authorization.

Material Handling, Use and Storage:
Materials must be stacked/stored in a manner that does not create a hazard from tipping or falling or create slip/trip/fall hazards.

Seek assistance when attempting to lift and maneuver heavy (over 50 pounds) or unwieldy objects. Never overextend or overexert your reaching or lifting capabilities.

Flammables and other hazardous materials must be stored in containers or cabinets approved for the use, must be properly labeled, and must be used and disposed of in accordance with manufacturer's directives.

Materials requiring a SDS must be reviewed and approved prior to introduction to the work site. Employees must be trained on the hazards of harmful chemicals before performing any work, including cleanup, presenting the potential for exposure to those chemicals.

Oily rags must be disposed of in covered metal containers. Other hazardous materials must be disposed of in accordance with Inter-Geo environmental guidelines.

Inspections and Housekeeping:
Each working place must be inspected at least once each shift before work begins, or as people begin work in that place, for conditions that may adversely affect safety or health. Inspections must be documented, and workers informed of hazards that are not yet corrected or managed.

Employees must perform a pre-operational inspection on each piece of equipment they operate each shift. Inspections must include a thorough visual inspection and an operating-systems check. The pre-operational inspection must be documented on the appropriate form and be readily available for audit.

- Defects affecting the safe operation of equipment or machinery must be reported immediately. Unsafe conditions must be corrected before that equipment or machinery is placed in operation. If the defect cannot be immediately corrected, the equipment must be visibly tagged or locked out of service.

Travel ways and work areas, including cabs of vehicles and equipment, must be clean, orderly, and free from slip/trip/fall and other hazards. Flammables and other waste materials must not be allowed to accumulate.

Lifting/hoisting equipment and devices must be inspected before each use. Devices that cannot be verified as being in good repair must be removed from service and locked or tagged out. All components of lifting hoisting equipment must be rated for the work/load and be appropriately matched for rated SWL.

Equipment Operation:
Seat belts must be worn by all persons, when operating or riding in all vehicles and equipment.

Operators must maintain control over their equipment and vehicles, with consideration to road and weather conditions, traffic controls, and manufacturer's recommendations.

Speed limits, specific to the site, must be adhered to at all times. Follow posted controls and reduce speed (5 mph) when entering congested areas, including shops and other areas where persons may be walking or working.

Communicate your intent and gain positive confirmation before approaching, or passing near, operating equipment.

Mobile equipment must have park brakes set and be blocked against movement when controls are unattended. Buckets, forks, blades, and other tools and implements must be lowered to the ground before dismounting. Lowering of buckets, forks, or blades does not constitute appropriate blocking.

Never allow tools, implements, or any part of equipment within 10 feet of a high voltage (.6 – 50KV) power line. Always consult with experienced and authorized personnel prior to working near high voltage lines.

Hand and Power Tools:
Hand and power tools must be inspected prior to use, maintained in an acceptable condition, rated for the work performed and used in accordance with manufacturer recommendations.

Hand-held power tools must require constant finger pressure on trigger controls to operate. Trigger locks are never allowed on any power tool.

Electrically powered tools and cords must be checked annually by a qualified person for continuity of grounding and must be marked with the appropriate color of tape for that year.

Any defect of any power cord including fraying, broken grounds, or exposed wires requires taking that piece of equipment out of service. Ensure visible tagging out of that power tool or cord until appropriate repairs are made or the device is determined unrepairable and discarded.

General Safe Work Standards:
No work other than troubleshooting may be performed on operating machinery, and then only after appropriate precautions are taken to provide for worker's safety. Do not work on, or close to, any machine that has not been stopped and blocked, or isolated and locked out, to make it safe from movement or discharge of harmful agents.

Prior to starting, or placing any machinery/equipment in operation, employees must first ascertain that all persons are free from harm and must sound warning alarms if provided.

Provisions of IGD's Working at Heights Program will be adhered to when working at any elevation where there is a danger of falling, and in all instances when working or walking at heights greater than six feet where passive protective measures are not in place.

Approved Lockout/Tag Out/Try Out (LOTOTO) procedures must be followed when working on machinery or equipment where the unexpected/unplanned release of stored energy or materials, or the accidental starting of machinery represents the potential for harm to persons. (Refer to IGD's Lockout/Tagout/Tryout Policy)

Work areas with limited or difficult ingress and egress (including bins, chutes and open top vaults or vessels more than 4" in depth), with a potentially hazardous atmosphere, or with a potential for entrapment or engulfment should be treated as a "confined space" and may only be entered by persons trained on IGD's Confined Spaces Program.

No one may operate any mobile equipment, or to perform other work with the potential of a health or safety hazard, until trained on such in accordance with PMC approved task training procedures. All training must be documented.

Vehicles and equipment must have park brakes set, wheels or tracks blocked against movement, and the operator must dismount before any service work commences.

When operation of controls is necessary during repairs to equipment/machinery all persons must be visible to, or able to be heard by the operator, or a third person (spotter) must be utilized.

Spotters must be used when moving equipment in instances where impaired visibility or the proximity of structural objects or other equipment represents the potential of incidental contact. The person operating the equipment is responsible for the safe movement of it.

No work shall be performed on components of machinery or equipment in a raised or open position until those components have been securely blocked against movement.

Stay out from under suspended loads. A tag line must be used when maneuvering hoisted loads. No part of your person should ever come into direct contact with a suspended load other than guiding it a final short distance for placement.
Never work or walk under an area where overhead work is being performed unless adequate safeguards are in place. Persons working at heights must ensure safeguards are in place to prevent harm to persons below.

Barriers and signs stating the nature of the hazard must be placed at areas where potential exists for exposure to falling to a lower level, where harmful chemical or environmental agents may exist, or where other physical hazards may exist. Those barriers must restrain against encroaching nearer than six feet of the hazard.

Individuals must maintain 3 points of contact when ascending or descending ladders or stairs. When mounting or dismounting equipment, employees must face the machine.

Guards capable of preventing incidental contact by persons, or by tools and implements they use, must be provided where moving machine parts may be exposed to that incidental contact. Guards must be kept securely in place whenever machinery or equipment is running, except when troubleshooting or testing.

Only trained and approved persons may perform work on electrical circuitry.

Welding areas must be adequately ventilated and screened or shielded with flash protection when arc welding. Respiratory protection must be used where adequate ventilation cannot be achieved. (See IGD Welding Safety)

Approved procedures for “hot work” must be followed when performing work where ignitable materials are present within 35 feet of tools or equipment that represent a potential ignition source. (See IGD Hot Work Policy)

Open flames, smoking, or the presence of other potential sources of ignition is not permitted within 50 feet of flammable storage areas or fuel dispensing points.

Hydraulic lines and connections must be properly secured. Never disconnect from a hydraulic line until pressure has been bled off.

Compressed air and gases:
Never allow compressed air or gas to be directed at your person or at others.

Air lines and connections must be properly secured. Never disconnect from an airline until pressure has been bled off.

Compressed gas cylinders must be stored and secured in an upright position. Place valve protection caps on compressed gas bottles when stored and before transport.

When moving cylinders by hand, tilt and roll them on bottom edges. Do not lay them down and roll them.

Valves on compressed gas bottles must be closed and pressure bled from hoses when bottles are unattended.

Tab 3. PLAN IMPLEMENTATION and ADMINISTRATION:

All members of the IGD management team will receive specific instruction on the intent of the Plan and the means to accomplish the processes and procedures contained in the Plan elements upon initial employment, or upon promotion to a management/supervisory position. Refresher training on program responsibilities, requirements, and procedures will be provided to all employees on a periodic basis and as performance monitoring indicates the need.

Employees will receive training on; responsibilities for following safe work procedures, hazard recognition and reporting, incident reporting, conducting proper work area inspections and conducting proper equipment inspections. This training will be conducted during initial orientation and task trainings and will be reinforced during daily lineout/safety meetings, during refresher safety trainings, and during job task observations.

H&S Management Plan revisions and enhancements will be implemented consistent with needs and improvements identified through audits, monthly reporting, and other reviews.

The President or his designee will assign Site Management and certain other Senior Staff to serve at various times and in various capacities in this review and evaluation.

Performance Standards relative to required type and frequency of inspections, employee observations/contacts, incident investigations/remediation and safety interactions will be included in these reviews.

Management will ensure attainment of objectives and targets for completion and quality of work area inspections, job task observations, management team inspections, oversight inspections, incident investigations and safety meetings.

Tab 4. PLAN PERFORMANCE STANDARDS:

Individual Responsibilities:

All IGD employees must remain ever alert for issues of health, safety, and environmental concerns and assume personal responsibility for:

- Reporting issues of health, safety, and environmental concern immediately.
- Never allowing work to commence or continue under unsafe conditions or in an unsafe manner.
- Never allowing any person to report for work, or work, in an unfit condition.
- Accurately completing any required documentation required in the performance of their duties.

Responsibilities by position include but are not limited to:

Drillers/Lead Persons:

- Conducting initial review of reports with identified risk (hazard reports, workplace inspections, equipment inspections, FLRAs, JHAs, other) and process for additional analysis if required.
- Refer MAJOR and CRITICAL level risk, and uncontrolled MODERATE level risks to higher authority.
- Ensuring prescribed controls or protections against hazards/risks are implemented.
- Monitoring controls for continuing effectiveness.
- Ensuring completeness and quality of daily inspections of their area of responsibility.
- Conducting daily lineout/safety meetings with discussion on issues of pertinent and immediate concern.
- Observing employees at their tasks and intervening as necessary to ensure safe work practices.

Field Supervision/Management:

- Reviewing JHAs with residual MODERATE risk to ascertain adequacy of analysis and controls.
- Referring residual risks assessed at MAJOR or CRITICAL levels to the Operations Manager or President.
- Providing adequate resources for conducting hazard assessments and implementing controls.
- Ensuring adequate training is provided to Supervisory and Lead personnel.
- Conducting safety talks, JTOs and inspections consistent with current Plan requirements.
- Ensuring completion of Plan requirements for work area inspections, observations, and incident investigation/remediation in their area(s) of responsibility.

Health and Safety Manager:

- Monitors and audits the effectiveness of the Plan and recommends change when deemed necessary.
- Implements change to the Plan as indicated by management review.
- Regularly reviews and updates the PMC Critical Task Inventory to ensure inclusion of all tasks with potential risk of MAJOR or CRITICAL levels, records measures taken to control those risks, and records revision to those controls.
- Ensures adequate training on Plan performance requirements is made available to all mine personnel.
- Ensures timely reporting on performance relative to Plan requirements and assignments.

Operations Manager:

- Approving measures to protect against hazards when controls are ineffective in mitigating risk to a MODERATE or LOW level.
- Responsible for ensuring compliance with regulatory and Plan requirements.
- Conducting safety talks, job task observations and inspections consistent with current Plan requirements.

Group Responsibilities:

At least monthly, a team(s) assigned by the Operations Manager will conduct a Planned General Inspection(s) of a pre-determined work area(s) in review of workplace conditions and current procedures and processes to ensure that maximum safe efficiencies and optimal workplace conditions are being achieved. Teams will consist of a member of Senior Management, an area Supervisor, and at least two hourly employees, with at least one of those being assigned to the area being inspected.

Tab 5. MANAGEMENT of CHANGE

Any changes planned to the company's organizational structure or management systems, or to physical facilities, personnel, processes, or practices must first be evaluated for the potential effect on all other business systems that may be associated with and affected by those changes.

Potential H&S, Environmental and Process impact will be evaluated through hazard identification and risk assessment processes that must determine:

- What new hazards may be created.
- If risk associated with any new hazards can be effectively controlled.
- If risk levels and effectiveness of controls on any existing hazards will be affected.
- Whether measures required to affect control of new risk are cost effective and will gain user acceptance.

When identification of hazards and definition of risk and controls are determined and deemed acceptable, planning on strategies and tactical means of implementing change may continue.

IGD management has developed a formatted process for planning, developing, and implementing approved change. This begins with procedures for initial request and review, continues through identification of hazards and determination of risk and acceptable controls, and ends with defining the strategies for accomplishing the change and the tactical means of implementing them.

Tab 6. CONTRACTOR MANAGEMENT:

No work, to include repairs and maintenance performed in support of mining and processing activities, repair and maintenance of physical facilities and related systems, utilization of technical or special services, or new construction will be contracted for or otherwise agreed and committed to except by the following procedure(s):

- The respective department (requestor) requiring contracted services will prepare a scope of work providing adequate information for prospective bidders to adequately offer best services and costs.
- Quotes may be solicited from prospective or preferred bidders based on potential considerations including the quality of services previously provided to PMC, capabilities and availability of various potential providers as determined through research by the affected department, and by publishing of an invitation to bid.
- Supply Chain will handle a formal bidding process to ensure that all prospective bidders are kept to level footing. All communications throughout the bidding process will flow through Supply Chain as needed, to more fully define the scope of work, or to better ascertain capabilities of various prospective providers. Authority for formal commitment to award work or solicit binding agreements will rest solely with Supply Chain.
- Supply Chain will provide prospective providers with representative sample documents detailing:
    - H&S requirements and responsibilities
    - Performance expectations
    - Billing and payment for services
    - Submitting proposals

Management oversight responsibilities relative to work performance and compliance will rest with the requestor. The requestor will also be responsible for conducting a pre-work inspection and informing the contractor of all hazards in the work area. Caution must be exercised to limit intervention and providing direction in such a manner that IGD Management actions cannot be construed as to have assumed direct supervision over work activities.

Prospective providers will be informed that prior to an award for work for IGD they may be required to provide:

- Certification of General Liability Insurance naming IGD as additional ensured for the duration of the contract.
- Proof of current Workmen's Compensation Insurance coverage.
- Financial and technical resources to accomplish the scope of work or the ability to obtain them. Depending on the scope of the work, an assurance bond may be required.
- References upon request.

In addition to the above requirements, the contractor must maintain compliance with the requirements of IGD Health and Safety Plan, and:

- Ensure employees receive all required safety orientations and training prior to reporting for work.
- Ensure that all employees have all appropriate PPE for the tasks they will be performing.
- Ascertain all equipment and tools are in a safe and serviceable condition.
- Ensure that workers are adequately qualified to safely perform their assigned tasks.
- Ensure that no individual works alone, unattended, and unsupervised without IGD approval.
- Ensure that during all working hours, a responsible person is on-site to supervise work activities and assure that all safety and other issues are promptly and properly addressed.
- Ensure that employees are capable of communicating in English, or that a bi-lingual individual fluent in English remains continually in attendance of any/all employees not fluent in English.
- Provide for water, ice, sanitary facilities, and trash removal unless otherwise agreed upon.

Individual workers contracted for through an employment agency will be considered IGD employees in all matters related to Health and Safety and will be subject to all the requirements and provisions of IGD's Health and Safety Management Plan.

Tab 7. RISK MANAGEMENT:

This Risk Management Plan provides guidance for a systematic process of identifying the potential for exposure to physical, chemical, and environmental hazards in working areas, prior to commencing work at tasks for which no procedures or controls exist.

The level of risk associated with each potential hazard will be assessed, and measures will be developed and implemented to eliminate, manage, or control that risk at an acceptable level.

Definitions:

The following are briefly descriptive of the various processes and methodologies utilized in Risk Management.

Controls/Measures: Actions implemented to eliminate risk, or to reduce risk to an acceptable level.

FLRA (Field Level Risk Assessment): Tool Utilized by an employee or group of employees to identify potential hazards and determine proper controls prior to commencing work when not trained for the task, where no SOP exists, or the task presents a greater than usual degree of risk.

Hazard Identification: Identification of hazards or potential for hazards through various means including observations, inspections, and incident investigations.

Hierarchy of Controls: The accepted order in which certain types of controls; (Elimination, Substitution, Engineering, Administrative, PPE) are implemented to Terminate, Treat, Tolerate or Transfer risk.

JHA (Job Hazard Analysis): A format used for a more defined analysis of hazards and development of controls than can be accomplished with use of the FLRA Card.

Risk Analysis: The process of defining and analyzing the steps of a task or components of a process, of identifying and assessing any risk associated with each, and of determining the most effective means of controlling each identified risk.

Risk Assessment: With the use of the risk matrix, the process of evaluating the likelihood that an event will occur and the potential for loss.

Risk Level/Ranking: A value (Low, Moderate, Major, Critical) representing the assessed potential impact or consequences of an uncontrolled hazard.

Task: An identifiable unit of work, normally one of various inter-related units that serve as a whole to comprise a job, a process, or a project.

Hazard Identification:
Identifying a hazard can be the result of findings from conducting a FLRA, completing a JHA, completion of Work Area or Equipment inspections, through a Job Task Observation or through incident investigations.

Once identified, immediate action must be taken to protect workers against harm through use of PPE or other protective or shielding means, and to communicate the hazard to all potentially affected individuals. Steps must then be taken to assess the risk and implement effective corrections and/or controls in a timely manner.

Risk Assessment:
A current Risk Assessment Matrix (see example which follows) will be utilized to evaluate the potential risk of an uncontrolled hazard for the purposes of determining appropriate controls. A risk assessment will always be conducted prior to, and after, all changes to equipment or processes.

Risk Assessment → ↓		**POTENTIAL CONSEQUENCE**			
		First Aid < $5K Damage < 1 Hrs. Prod. Loss Low Env. Impact	Reportable Injury $5 – $25K Damage 1– 8 Hr. Prod. Loss Minor Env. Impact	Restricted/Lost Days $25 - $100K Damage 8 – 24 Hr. Prod. Loss Impact Beyond Site	Disabling/Fatal >$100K Damage >24 Hr. prod. Loss Maj. Off-Site Impact
POTENTIAL EXPOSURE	**PROBABLE** >80 % chance				
	LIKELY 50-80 % chance				
	POSSIBLE 5-50 % chance				
	UNLIKELY <5% chance				

TREAT THE RISK	
Low Risk	Correct or protect against substandard conditions and monitor for changes.
Moderate Risk	Initiate JHA –--- Requires Driller or Lead Person review and approval
Major Risk	Initiate JHA ---- Requires Field Supervisor/Manager review and approval
Critical Risk	Requires Senior Management review and approval

Risk Analysis:
Risk will be analyzed for the purpose of development and implementation of acceptable controls as follows:

- **Level 1:** Hazards identified during daily workplace inspections or pre-work FLRA assessments, and that can be immediately controlled or eliminated, require no further analysis or action other than monitoring.
- **Level 2:** Hazards that cannot be immediately and safely controlled at Level 1 will be further analyzed utilizing Job Hazard Analysis processes. Level 2 (JHA) analysis may be initiated and directed by a Lead Person or Supervisor. If Residual Risk of a MAJOR or CRITICAL level exists following controls prescribed at this level, Senior Management must determine if the risk is acceptable or if further analysis (Level 3) is required.
- **Level 3:** Hazards with a Residual Risk of MAJOR or CRITICAL levels may be analyzed utilizing processes which may include mathematic profiling of probability and consequence and research of industry experience and practice. Level 3 analyses will be initiated by Senior Management.

Controlling / Managing Hazards:
Following the philosophy of Terminate, Treat, Tolerate or Transfer, all practical means of terminating risk through elimination or change of a process, or substituting with a safer alternative must be explored and considered.

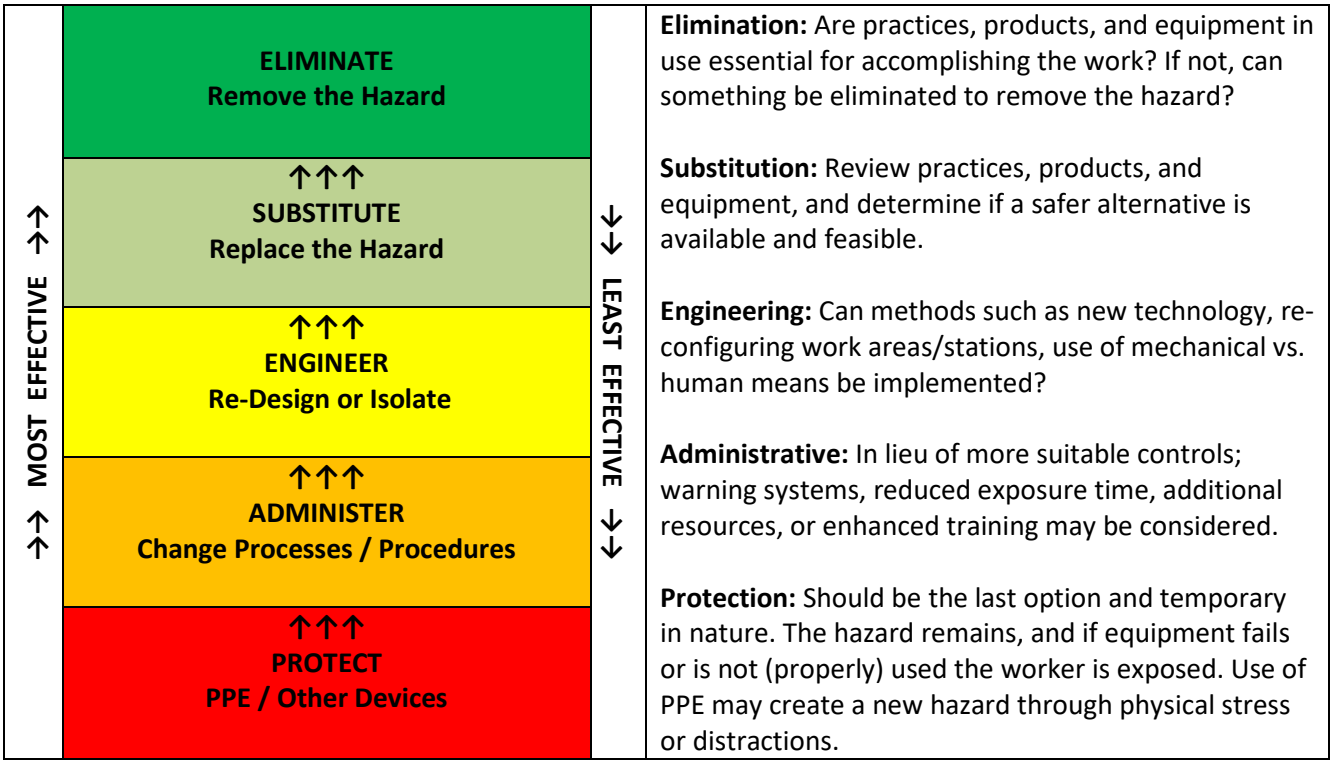
Treatment of a hazard through engineered change or administrative controls may accomplish reduction of risk to a safe or tolerable level. Examples of these types of control might include:

- Implementing new or changed technologies.
- Reconfiguring work areas or workstations to redirect or lessen potential for exposure.
- Implementing use of mechanical devices to assist with or replace human efforts.
- Reducing exposure time/potential through scheduling changes.
- Providing enhanced training to key employees or utilizing the services of specialized contractors.

The least acceptable means of treating exposure involves the use of personal protective equipment or devices. PPE and other means of shielding against exposure are totally dependent upon proper use and maintenance to ensure acceptable protection, and if equipment fails, the hazard still exists, and exposure is certain.

PPE or other protective treatments may be considered only when exploring or attempting all other practical means of control have been exhausted and the application of the control is closely monitored, or when the control is implemented for the purpose of temporarily providing protection during emergency or other crucial operations.

In exploring all reasonable means of Terminating or Treating an identified hazard following the order of effectiveness, IGD will defer to means described in the Hierarchy of Controls illustrated below.



After controls to reduce risk to the minimum extent practical are identified, risk levels will be reassessed to ascertain that risk is controlled at a level which cannot be reduced further within practical means and may be tolerated. Previously implemented controls will be periodically reviewed to ascertain the continuing effectiveness of controls.
Standard Operating Procedures:

Standard Safe Operating Procedures will be developed for tasks which are performed on both a routine and non-routine basis and which might present a potential for loos/harm if not performed in a defined manner. SOPs may be developed through review of JHA Worksheets, performing Job Task Observations or other means.

FLRA: (Field Level Risk Assessment)
All work must be assessed for hazards with the potential for harm to persons, process, property, or the environment prior to commencement of work activity. If the work is other than that of a routine/repetitive nature in which an employee is trained or experienced, or for which a currently reviewed and approved SOP exists, or if there has been a change to equipment or processes since the work was last performed, the Risk Matrix must be utilized to determine the level of risk associated with the work.

If the risk assessment indicates that level of risk is LOW and sub-standard conditions have been corrected or protected against, work may proceed. If the level of risk is greater than LOW a JHA must be completed before work proceeds.

Job Hazard Analysis: (Level 2 Risk Assessment)
When using a JHA for further analysis of hazards, each step of the work activity must be determined and assessed individually to ensure that all hazards are identified, and that following the Hierarchy of Controls, a means of eliminating or controlling hazards and risk will be accomplished.

Tasks with a continuing risk level of Major or Critical following Level 2 (JHA) analysis and controls must be further analyzed using the Risk Analysis Worksheet. Work at tasks with a residual risk level of MAJOR or CRITICAL must be approved by the Operations Manager.

Safety Meetings:
Prior to the start of work each shift, Supervisors or a Lead Person will review with employees; issues found during pre – shift work area inspections and additional issues pertinent to work assignment(s) for that shift. Hazards discussed during that review, that cannot be immediately controlled or eliminated, must be appropriately addressed prior to commencing any activity which might expose an individual to that hazard.

Weekly, a member of the IGD Field Supervision/Management team will lead a meeting in which a work crew/group will be advised of any safety matters related to their tasks and/or work areas, and of other matters of interest related to company activities.

Job Task Observations (JTO):
JTOs should be utilized to accomplish a number of objectives, including observation of work practices and intervention as appropriate, surveying employee understanding and/or concerns relative to a company policy or practice, culture building through demonstration of philosophy and beliefs, and exchange of information on additional topics or issues.

JTOs are best accomplished in a one-on-one setting, preferably in the employee's work area. Sufficient time should be allowed to observe the individual at work and with information gained through discussion with the worker, determine if intervention in the form of positive recognition/affirmation of practices observed, suggesting additional coaching/training, or recommending review and possible revision to procedures is appropriate.

A JTO form must be completed noting observations, topics discussed and any follow up actions necessary and submitted to the appropriate department for review. Reports will then be forwarded to the Safety Department for further review, logging, and tracking.

Workplace Inspections:
A mandatory inspection of all active work areas where employees may be assigned to work will be conducted each shift prior to work commencing in those areas. Conditions noted during the inspection that may adversely affect the safety or health of workers will be promptly communicated to potentially affected persons. Immediate action will be taken to isolate the hazard and protect workers against exposure, and to initiate appropriate corrective actions. Those actions must be tracked to timely completion.

Daily work area inspections by a Competent Person will be maintained in company files for at least one year.

Oversight Inspections:
Field Supervisors/Managers are required to conduct oversight inspections in their respective areas of responsibility at a frequency consistent with current Plan Performance Standards requirements. The Operations Manager or Safety Manager may initiate, or participate in, an oversight inspection as requested or as performance indicates a need.

When possible, the Individual last performing an inspection of the area selected should accompany the individual performing the oversight inspection, and the record from that prior inspection should be utilized as a comparative reference.

Results of oversight inspections will be utilized to identify opportunities for improvement in inspection techniques, to determine if ample time and/or resources are available to supervisors performing mandatory inspections, and to ensure that deficiencies are being corrected in a timely manner.

Planned General Inspections:
At least monthly, a team(s) assigned by the Operations Manager will conduct comprehensive inspections of various work or process areas for the purpose of identifying potential loss exposures and opportunities for improvement. Teams will; observe employee work practices, identify potential hazards to people, property or process, measure effectiveness of implemented change and controls, identify and assess potential for new change, and review special systems to ensure adequate contingencies exist.

Conditions or practices with the potential for adversely affecting the safety or health of workers will be addressed in the same manner as hazards identified during all other workplace inspections. Procedures, practices, and other items representing the potential for loss to process, or property, will be assessed, analyzed, and prioritized, and actions will be assigned and tracked to completion. Logs for tracking corrective actions addressing all issues will be reviewed periodically by the Safety Manager to ascertain satisfactory performance.

Hazard Reporting:
A hazard may best be defined as “An unsafe behavior, condition or procedure which could cause injury to persons, damage to equipment, loss to process or damage to the environment”. Hazards may be present through inherent association with certain materials/substances, practices, or conditions; or can occur/be induced through inattention or complacency, distraction from personal stressors, or failure to follow procedures.

Most hazards should be identified during the different inspection processes, however, when a hazard is identified independently of an inspection it must be reported as soon as discovered to Lead Personnel. Hazards representing the potential for causing immediate harm must be protected against immediately.

Recurring hazards of a like or similar nature and hazards of Major or Critical risk must be investigated and remediated in the same manner as an incident.
Incident Reporting/Investigation/Remediation Guidelines:

For the purpose(s) of administering this element of the Risk Management Program, an Incident will be defined as "an unplanned event resulting in harm or loss to persons, property, production, or the environment, and a near miss will be defined as "an event where under slightly different circumstances harm or loss may have occurred".

Responsibilities relative to Incident Investigation are as follows:

Driller/Lead Person of the Affected Work Group will:

Immediately upon establishing control over all events related to an incident the Driller/Lead Person will:

- Notify required management.
- Initiate investigation procedures to include collecting sketches, pictures, and witness statements, and completing Supervisor's portion of investigation report.
- Submit initial report to department management and Safety by the end of the shift.

Field Supervision/Management will:

- Review the Driller/Lead Person's incident report and ascertain that immediate corrective actions are sufficient to prevent further harm until final corrective actions are defined and implemented.
- Serve as Leader of the Investigation Team for incidents with a risk level of Low or Moderate potential.
- Ensure corrective actions defined by the investigation are completed.

Safety Dept. will:

- Prepare materials required for use by investigator(s).
  - Findings and remedies from investigations of previous incidents of a similar nature.
  - Policies and procedures related to actions or conditions associated with the event.
  - Industry and/or regulatory criteria related to actions or conditions relevant to the event.
- Serves as Leader of Investigation Team for incidents with Major or Critical risk.
- Advise and assist in investigation of all incidents as requested.
- Enter statistics and other data into H&S information systems and generate monthly reports on completion of corrective actions, cause and effect of incidents and effectiveness of remedial or control measures for management review and actions.

Investigation Team:

- Will consist of at least three persons including a Team Leader from the affected work group, an hourly rated employee from the affected work group, and a representative from the H&S Department.
- Will:
  - Review of information detailed in the Incident Report and all statements, sketches and other investigative materials presented by the Supervisor,
  - Review materials prepared by the H&S dept.,
  - Conduct further interviews, visit the scene of the event, review damaged equipment, review medical reports and pursue additional investigative methodologies as necessary,
- Will determine Basic Cause(s) and Lack of Control(s) that precipitated the event.
- Will determine appropriate Corrective Action(s) and assign responsibility for completion.
- Will conduct a final risk assessment after completion of remedial actions.

NOTE: Field level investigations will commence by no later than the start of the first business day following the incident.

Operations Manager

- Conducts final review and approves acceptability of final risk assessment. (Major or Critical risk)

Tab 8: Critical Risk Standards

Procedures and programs for controls over Critical Risk activities will be contained in separate program documents. Procedures and controls over these activities will be approved by Senior Management and will be reviewed at least yearly and more often as necessary to ensure their continuing effectiveness.

Work activities considered to be of Critical Risk and requiring individual treatment include:

- SC Drilling Safety *
- Confined Spaces
- Electrical Safety
- Excavations
- Hot Work
- Lifting Rigging and Towing
- Lock Out, Tag Out and Try Out
- Welding Safety
- Working at Heights
- Working During Electrical Storms

*See IG Drilling Safety Manual

IGD Confined Space Program

PURPOSE:

This program has been developed to ensure the safety and health of all employees required to enter areas that meet the definition of a confined space. The program will detail the policies governing confined space work, and procedures to follow when performing this work.

SCOPE:

This program applies to all confined space entry /work atIGD work sites. No individual will be allowed to participate in any confined space entry until that person has successfully completed the training requirements of this or an equivalent and approved program.

Exceptions for the purpose of a non-work-related entry into a confined space by may be approved by the respective Field Manager and HSE Manager after a JHA or the Pre-Entry Evaluation show that all hazards are eliminated or acceptably controlled and the non-program trained individual is trained on the use of fall protection, on entry procedures for the event and accompanied/escorted by a trained and qualified IGD employee with an experienced attendant in place.

DEFINITIONS:

Confined Space: An area where an employee may be assigned work duties that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work.
- Has limited or restricted means of entry or exit.
- Is not designed for continuous employee occupancy.

Permit Required Confined Space: A permit is required to enter a confined space if the:

- Space contains, or has the potential to develop, a hazardous atmosphere.
- Space contains or otherwise presents potential for exposure to a material that might engulf an entrant.
- Work to be performed includes welding, cutting, or grinding.
- Internal configuration of the space such that entrant could be trapped or asphyxiated by inwardly converging walls or downward sloping floors that taper to a smaller cross section.
- Space contains an obstacle(s) with the potential of hindering retrieval /rescue in the event of an emergency.
- Space contains the potential for any other serious safety or health hazard which may include:
    - Fire and explosion hazards, the presence of mechanical, electrical, hydraulic, and pneumatic energy, temperature extremes, radiation, noise, corrosive chemicals, and biological hazards such as venomous animals or insects.

NOTE: All confined spaces will be treated as permit required unless verified or signed otherwise. Confined spaces at IGD work sites known to require permits will be posted as Permit Required Confined Space. A master register of confined spaces will be maintained in Safety Department files.

Non-Permit Required Confined Spaces:

If a confined space poses no actual or potential atmospheric hazards, and if all identified hazards within the space are eliminated or controlled prior to entry, a permit is not required. A permit required space may be reclassified to a non-permit space if a previously identified hazard is eliminated. (Providing forced air ventilation does not satisfy the requirements for achieving a non-hazardous atmosphere and non-permit required status.)

Changes in use or configuration may cause a space previously identified as a non-permit required space to be re-evaluated for re-classification to permit required. Any change in use or configuration will be considered cause for re-testing and/or re-evaluation.

IDLH: (Immediately Dangerous to Life or Health): is an acronym that refers to "an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere."

PRE – ENTRY/PERMIT FORM:

Before entry into any confined space, a systematic review shall be conducted using the evaluation/permit form. The following information must be documented on the form prior to permit or non-permit required entry:

- Location of the confined space.
- Reason for entry.
- Start and end dates and times for the entry.
- Names of entrant(s).
- Names of attendant(s) and entry supervisor(s).
- Identification of emergency services/personnel.
- Method(s) for communication between entrant(s) and attendant.
- Initialed results of atmospheric testing (when applicable) and requirements for additional monitoring.
- Hazards present in the confined space and measures taken to eliminate, isolate, or otherwise control each hazard.
- All equipment, including PPE, needed for entry, including emergency equipment.
- Pre-entry meetings with entrants, attendants, emergency personnel and entry supervisor.
- Verification by entry supervisor that conditions are acceptable for entry.

For confined spaces determined as not being Permit required, the permit form may be used in lieu of completing a JHA. That space will not be subject to Permit requirements including mandatory use of an attendant.

Permits must be posted in a prominently displayed location and will be made available for review and signature to all entrants, attendants, and emergency personnel.

Permits must be issued to expire after not more than 12 hours. If work continues beyond the normal end of the supervisor, entrants, or attendants shift, the permit will continue in effect until work is completed. If a new individual joins the entry in progress, the entry is suspended until all conditions and provisions of the permit are reviewed with that individual. If work is not yet completed when an entire crew is relieved, that permit is cancelled, and a new permit must be completed.

If emergency conditions require withdrawal or evacuation from an entry due to a breach of controls over an identified hazard, the permit is immediately suspended until appropriate management has ascertained that the condition is corrected. If the emergency is the result of hazards not previously identified or control measures that have proven to be inadequate, the permit is cancelled, and a new permit must be completed and implemented.

TRAINING AND PROFICIENCY:

Additional training and proficiency requirements are as follows:

- Rescue and emergency personnel must have documented training on First Aid/CPR/ AED, on Fall Prevention and Protection and on the use of rescue and retrieval equipment. If the potential exists for a rescue requiring entry into a hazardous atmosphere, rescuers must also have training in the use of SCBAs.
- Rescue and emergency personnel must participate in at least one confined space rescue training yearly.
- Individuals operating atmospheric testing equipment must have training on proper use of that equipment.

ROLES AND RESPONSIBILITIES: All persons who perform pre-entry evaluations, perform work in a permit required confined space, who attend or supervise a confined space entry, or who may be called on to make entry for rescue or any other purpose, must first have received training on all the requirements and procedures of this program and must be physically capable of performing the requirements of their assigned duties. The various roles and responsibilities of administering and performing confined space entry are as follows:

Program Administrator: Duties of the Program Administrator will include:

- Periodically monitoring confined space entries to ensure compliance with program procedures and updating the confined space entry program as necessary.
- Providing advice and/or assistance to an Entry Supervisor as necessary.
- Maintaining records of confined space entries. And updating the confined space entry program as necessary.

Entry Supervisors: Are responsible for the safety of all employees involved in the entry. Duties of the Entry Supervisor include:

- Ascertaining a thorough review has been completed for hazards that may potentially be encountered with each entry, including hazards associated with materials that may previously have been stored in the space, and familiarizing themselves with signs, symptoms, and consequences of exposure to those hazards.
- Verifying that all tests specified by the evaluation/permit form have been performed and documented.
- Verifying that all procedures and equipment specified on the evaluation/ permit form are in place prior to entry.
- Reviewing the hazards that may be faced during the entry including information on any material previously used or stored in the space.
- Verifying that rescue services are available and that means for summoning them are operable.
- Ascertaining that the permit form is fully and properly completed.
- Removing unauthorized individuals entering or attempting to enter the permit space during entry operations.
- Ensuring that acceptable entry conditions are maintained during the entire duration of the entry, and if not that all entrants exit the space until acceptable entry conditions can be met and maintained.

Confined Space Entrants: Are responsible for:

- Ascertaining that they understand potentially hazardous conditions that have been identified and precautions and safety measures taken to control them.
- Understanding signs, symptoms, and consequences of exposure to previously stored material.
- Communicating with the Attendant in accordance with the plan.
- Alerting the Attendant and exiting the space whenever the Entrant recognizes any hazard or potential for hazard, including signs or symptoms of exposure to a hazard.
- Exiting the permit space as quickly as safely possible when an order to evacuate is given by the Attendant or the Entry Supervisor.

Confined Space Attendants: Are responsible for:

- Understanding the hazards that may be faced during entry, including information on materials previously stored or used in the space and becoming informed on signs and symptoms of exposure to those substances.
- The Attendant will maintain a log of all persons entering and exiting the confined space, noting the times of each entry and exit, and ensuring no one other than persons noted on the permit enter the space.
- Physically attending the space until relieved by another Attendant, or until the entry permit is cancelled.
- Maintaining communication with Entrants to monitor their status and to alert them of any need to exit the space.
- Monitoring activities inside and outside the space to determine if it is safe for Entrants to remain in the space.
- Ordering Entrants to evacuate the space immediately under any of the following conditions:
    - A prohibited condition or hazard potential existing or developing inside or outside the space.
    - The behavioral or performance change of an entrant.

    - The Attendant can no longer effectively and safely perform his/her duties.
    - Taking the following actions when unauthorized persons approach or attempt to enter a permit space while entry is under way:
    - Warn the unauthorized person that they must stay away from the permit space.
    - Advise the unauthorized person they must exit immediately if they have entered the permit space.
    - Inform the Entrants and the Entry Supervisor that unauthorized persons have entered or attempted to enter the space.
- Notifying the Entry Supervisor of the need for emergency rescue personal.
- Directing and assisting outside emergency personnel.
- Performing no other duties that might interfere with their duty of monitoring and protecting the Entrants.

Rescue Personnel: Must:

- Become, or be made familiar with, hazards that may be encountered during entry, including hazards that may be associated with materials previously stored or used in the space.
- Be knowledgeable on the use of rescue methods and equipment that may be required.
- Remain immediately available for emergency response for the duration of the entry.

CAUTION: In the event of any IDLH entry at least 4 persons per entry must be trained on SCBA use per the Emergency Procedures section of this document. In the event of IDLH conditions, rescuers must work in pairs with one pair always remaining outside and available to assist/rescue the team working inside.

PREPARING THE SPACE AND SITE FOR ENTRY:

The following procedures and preparation must be completed before entry for any reason will be allowed.

- Electrical energy sources connected to the space or integrated machinery must be isolated and locked out in accordance with prevailing LOTOTO Policy and Procedures.
- Valves controlling the potential release of hazardous or other materials or stored energy must be closed, locked out, and monitored to ensure materials are not leaking through.
- Connecting pipes or ducts without valves or other controlling devices must be disconnected, blanked off, capped, or adequately plugged.
- When possible, vessels should be emptied of contents. Spaces having contained flammable or other hazardous material MUST be emptied and washed, steamed, purged, or otherwise rendered safe before any entry.
- Atmospheric testing must be conducted prior to entry. As necessary, appropriate measures will be taken to ensure safe entry.
- Walls or banks of unconsolidated material must be determined as stabilized before any entry.
- Adequate ventilation must be present or established.
  CAUTION: Barricade or otherwise protect fresh air sources against potential of outside contaminants reaching the source.
- Traffic controls, warning signs, and security measures which may include cones or “Danger Do Not Enter” tape must be in place.

ATMOSPHERIC TESTING:

Before any entry, testing must be conducted to determine if the space contains, or has the potential to develop, an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10 percent of its Lower Explosive Limit (LEL).
- Airborne combustible dust at a concentration that meets or exceeds its LEL.

NOTE: This may be approximated as a condition in which the dust obscures vision at a distance of 5 feet.

- Atmospheric oxygen in concentrations below 19.5 percent or above 23.5 percent

- A hazardous atmospheric concentration of any substance for which a dose has been established or for which a permissible exposure limit is published.
- Any other atmospheric condition with the potential of being immediately dangerous to life or health.
- Atmospheric testing will be conducted using a properly calibrated direct reading testing device. Testing will be conducted in the following order, and for the indicated values:
    - Oxygen Concentration (O_2) ……19.5 % – 23.5 %
    - Flammable/Explosive vapors (LEL) ... Less than 10 %
    - Carbon Monoxide (CO)……..…Not more than 25 ppm
    - Hydrogen Sulfide (H_2S) ……..Less than 10 ppm.

Testing for O2, LEL, and CO is mandatory. Testing for vapors of other materials may be required when it may be presumed that these substances have been present in the space.

NOTE: Atmospheric testing must be conducted side to side and at all levels every 4 feet during initial entry and as workers may need to move to different locations within the space. Monitoring during entry and as work continues will be done by one or more designated entrants who will have the monitoring device on their person. Given the nature of the work and the number of workers in the space performing that work, the Entry Supervisor may determine it necessary to issue personal monitors to all entrants.

Readings must be taken as stipulated on the evaluation form, or at least every 30 minutes throughout the duration of entry. Entry may not commence, or must be abandoned, if continued readings exceed any of the limits noted above.

NOTE: Respiratory protection may be sufficient for protection against certain vapors up to maximum exposure levels. If forced air ventilation is required to eliminate a hazardous atmosphere, that ventilation must be continuous throughout the duration of the entry, must ventilate the immediate area(s) where employees are present, and may not create or increase the potential of a hazard.

EQUIPMENT, TOOLS AND MATERIALS:

Equipment, tools, and other materials required for entry must be in place or ready for use at the entry site before commencing entry. Those items will include but may not be limited to:

- A properly calibrated test meter.
- Lighting adequate for employees to perform their work safely.
- All P.P.E. stipulated on the permit.
- Ladders or other devices as required for safe ingress and egress by entrants.
- Ventilating equipment as necessary to obtain/maintain acceptable entry conditions.
- Pedestrian and/or vehicle barriers as necessary to protect entrants from external hazards.

CAUTION: Tools used for work in spaces where flammable materials have been stored must be constructed of non-spark producing materials.

EMERGENCY EQUIPMENT:

ALL emergency equipment and procedures/precautions stipulated on the evaluation/permit form must be in place prior to entry. Mandatory emergency equipment for Confined Space entry includes:

- Communication means for immediate notification of emergency personnel services.
- A mechanical retrieval device for vertical entries into permit required confined spaces.
- Rescue/retrieval equipment must be ascertained as being in a state of readiness.

PREPARING FOR ENTRY:
A pre-entry meeting with Attendants, Entrants and emergency personnel will be conducted by the Entry Supervisor for review of evaluation/permit stipulations to include:

- Final inspection of entry work equipment.
- Final inspection of rescue equipment and PPE.
- Review of entry communications methods.
- Testing of emergency communication devices.

No person will be allowed to participate in a permit required confined space entry unless they have reviewed and initialed the permit and control measures have been explained to them.

ENTRY PROCEDURES:
NOTE: Entry commences when any part of the body of the first entrant breaks the plane of the opening to the entry. Entry procedures will commence under the observation and control of the Entry Supervisor. Procedures followed to ensure the safety of Entrants will include:

- Atmospheric testing at and immediately inside the point of access, side to side and forward testing after entry as Entrants proceed, as conditions require, and at least every 30 minutes as entry continues.
- Communication between the Attendant and Entrants with each advance or retreat, as conditions require, and at least every five minutes if Entrants are in such a position or performing work that they will not be seen or heard.
- Frequent rest breaks to avoid conditions of heat illness or overexertion.
- Frequent observations by Entrants of the work area, tools and equipment, and co-workers.

POST ENTRY PROCEDURES:
Immediately upon the completion of work and removal of personnel and equipment from the space, the Entry Supervisor will terminate the permit and forward it with accompanying documentation to the Safety Dept. As soon as possible following conclusion of a permit required entry, the Program Administrator, the Entry Supervisor, Attendant, Entrants, and available emergency personnel will meet in review of the entry and determine the effectiveness of, or need of revision to, program procedures.

EMERGENCY PROCEDURES:
If at any time, atmospheric conditions inside or outside the space exceed the minimum or maximum levels listed on the permit, the Attendant shall order the Entrants out of the space and the Confined Space Entry Permit will be suspended until appropriate management has determined the cause of the unacceptable levels and the condition is corrected.

If any other condition inside or outside of the space renders entry unsafe for the Entrants, the Attendant shall order the Entrants out of the space and the Confined Space Entry Permit will be suspended until appropriate management has determined; the cause of the unsafe condition, that the unsafe condition is corrected, and whether conditions are such that the permit needs cancelled, and a new permit completed. (See PERMIT PROCEDURES)

In the event of an emergency and/or the order to evacuate, entrants are to evacuate immediately and are prohibited from attempting corrective actions or attempting to remove a fallen entrant on their way out of the space.

In the event of an emergency requiring rescue, all non-rescue involved personnel must remain at least 25 feet away from the emergency area during emergency response operations.

Rescue personnel responding to emergency calls will meet at the entrance to the confined space and:

- The first emergency rescue personnel to arrive on the scene will begin preparations to remove Entrant(s) from the space.

- The Attendant will monitor conditions outside the space while assisting as necessary in the removal of Entrants from the space. The Entry Supervisor or the Attendant may summon additional personnel to assist with the rescue, however, those individuals must not enter the space.

CAUTION: If for whatever reason the rescue cannot be accomplished safely, all entry is terminated and prohibited. THINK BEFORE ACTING!!!

IGD Electrical Safety

Any service or maintenance on electrical equipment, circuitry, or parts of greater than 120V may be performed only by persons trained for that work (Qualified Persons) in accordance with IGD policy and applicable NFPA/NEC, and MSHA standards.

A Qualified Person is one who has gained the skills and knowledge to safely operate and service electrical equipment through training on recognizing and avoiding the hazards involved. That training must include approved classroom instruction and OJT.

General Safety Rules:

1. Electrical equipment of 480 volts or greater will be considered as "High Voltage" and may only be operated by individuals with proper training and authorization.
2. Warnings shall be posted where potential exists for a Shock or Arc Flash Hazard.
3. The Electrical Department shall conduct inspections on electrical equipment throughout the site and maintain accurate records of those inspections.
   - Insulation
   - Enclosure integrity
   - Resistance testing
4. An Electrical Live Work Permit shall be completed prior to commencing work on any potentially energized or otherwise hazardous circuitry or equipment.
5. Bare hand contact is PROHIBITED on energized electrical conductors or circuit parts above 50 volts to ground.
6. The IGD Lockout/Tagout/Tryout Policy must be followed when working on electrical conductors and circuitry, or on electrically powered machinery.

CAUTION: Electrical circuits must be considered as energized until proven otherwise.

7. Persons assigned to perform work on electrical equipment must wear clothing and PPE rated for the analyzed potential exposure, and use tools rated for the work.
8. All PPE, clothing and tools designed to protect against electric shock and arc flash must be tested and used in accordance with manufacturer's specifications and applicable local, state, and federal regulations.
9. Employees must ensure steps have been taken to protect against induced or stored charges before commencing work on de-energized equipment.

Arc Flash and Shock Protection Measures:

The potential for an Arc Flash hazard may exist when energized conductors or circuit parts are exposed, or when within equipment in a guarded or enclosed condition, that equipment is intervened with in certain manners.

The potential for exposure to a Shock hazard may exist when personnel approach within certain proximities to energized equipment or circuits

To protect against Arc Flash and Shock hazards, certain requirements must be met for use of protective clothing and tools, and both competent and non - competent persons may be restricted or prohibited in their approach to energized electrical conductors and circuit parts. These boundaries, PPE and clothing requirements, tool requirements and other conditions associated with each category are defined in the attached tables, and as follows:

Non - Competent Persons:

1. May cross Arc Flash Protection Boundaries ONLY when wearing appropriate protective clothing and are under the close supervision of a Qualified Person.
2. May enter Limited Approach Boundaries (see table) only when continuously escorted by a Qualified Person.
3. May NOT cross Restricted Approach Boundaries.

Qualified Persons:

1. May cross the Arc Flash Boundary as determined by the Arc Flash Analysis only if approved flash / flame protection clothing and tools are used.
2. May cross Limited Approach Boundaries if QUALIFIED for the job/task.
3. May cross the Restricted Approach Boundary as follows:
    - With an approved Electrical Live Work Permit
    - Using appropriate and rated personal protective equipment
    - Ensuring that no body part enters Prohibited space.
    - Keeping as much of the body as possible OUT of Restricted space
4. May NOT cross Prohibited Approach Boundaries without:
    - Having an approved Electrical Live Work Permit
    - Specific training on working on energized conductors or circuitry
    - Having a documented plan justifying the need for the work
    - Personal protective equipment approved / rated for work on energized conductors and circuitry.

Hazard/Risk Categories and Glove and Tool Requirements

Work on Energized Panelboards or other equipment rated 240V and below as follows:	Hazard/Risk Category	Insulating Gloves Y/N	Insulating Tools Y/N
Non-contact inspections outside restricted boundary	0	N	N
Circuit breaker (CB) or fused switch operation with covers on	0	N	N
CB or fused switch with covers off	0	N	N
Energized electrical conductors & circuit parts incl. voltage testing	1	Y	Y
Remove / install CB's or fused switches	1	Y	Y
Removal of covers exposing bare, energized conductors & circuitry	1	N	N
Opening hinged covers exposing bare, energized conductors & circuitry	0	N	N
Energized conductors & circuitry of equipment fed by branch circuits	1	Y	Y

Work on Panelboards or Switchboards Rated > 240 V & up to 600 V (with molded case or insulated case circuit breakers)	Hazard/Risk Category	Insulating Gloves Y/N	Insulating Tools Y/N
Non-contact inspections outside the restricted approach boundary	1	N	N
CB or fused switch operation with covers on	0	N	N
Remove bolted covers exposing bare, energized conductors & circuitry	4	N	N
Opening hinged covers exposing bare, energized conductors & circuitry	3	N	N
Insertion or removal of starters from cubicles of arc-resistant construction, tested in accordance with IEEE	0	N	N

Work on Metal Clad Switchgear, 1 kV through 38 kV	Hazard/Risk Category	Insulating Gloves Y/N	Insulating Tools Y/N
Non-contact inspections outside the restricted approach boundary	3	N	N
CB operation with doors closed	2	N	N
Reading a panel meter while operating a panel switch	0	N	N
CB operation with doors open	4	N	N
Work on energized conductors & circuitry including voltage testing	4	Y	Y
Work on control circuits with energized electrical conductors and circuit parts120 V or below, exposed	2	Y	Y
Control circuits with energized conductors &circuitry > 129 V, exposed	4	Y	Y
Insertion or removal of CBs from cubicles, doors open or closed	4	N	N
Application of safety grounds, after voltage test	4	Y	N
Remove bolted covers exposing bare, energized conductors & circuitry	3	N	N
Open hinged doors exposing bare, energized conductors & circuitry	3	N	N
Open voltage transformers or control power transformer compartments	4	N	N

Work on Arc-Resistant Switchgear Type 1 or 2 clearing times of <.5 sec. with prospective fault current not exceeding arc resistant rating	Hazard/Risk Category	Insulating Gloves Y/N	Insulating Tools Y/N
CB operation with enclosure door closed	0	N	N
Insertion / removal of CBs from cubicles with door open	0	N	N
Insertion or removal of CBs from cubicles with door open	4	N	N
Control circuits with energized conductors & circuitry <120 V, exposed	2	Y	Y
Insertion / removal of ground and test device with door closed	0	N	N
Insertion / removal of voltage transformers on or off the bus door closed	0	N	N
CB or fused switch operation with covers off	1	Y	N
Work on energized conductors and circuitry, including voltage testing	2*	Y	Y

Work on 600 V class Motor Control Centers (MCCs) – Note 2 (except as indicated)	Hazard/Risk Category	Insulating Gloves Y/N	Insulating Tools Y/N
Non-contact inspections outside the restricted approach boundary	1	N	N
CB or fused switch or starter operation with enclosure doors closed	0	N	N
Reading a panel meter while operating a meter switch	0	N	N
CB or fused switch or starter operation with enclosure doors open	1	N	N
Work on energized conductors & circuitry, including voltage testing	2*	Y	Y
Control circuits with energized conductors & circuitry <120 V, exposed	0	Y	Y
Control circuits with energized conductors & circuitry >120 V, exposed	2*	Y	Y
Insertion or removal of individual starter "buckets" from MCC – Note 3	4	Y	N
Application of safety grounds, after voltage test	2*	Y	N
Removal of bolted covers (to expose bare, energized conductors and circuit parts) --- Note 3	4	N	N
Opening hinged covers (to expose bare, energized conductors and circuit parts) – Note 3	1	N	N
Work on energized conductors / circuitry of utilization equip. fed directly by a branch circuit of the MCC	2*	Y	Y

600 V Class Switchgear (with power circuit breakers or fused switches) --- Note 4	Hazard/Risk Category	Insulating Gloves Y/N	Insulating Tools Y/N
Non- contact inspections outside the restricted area	2	N	N
CB or fused switch operation with enclosure doors closed	0	N	N
Reading a panel meter while operating a meter switch	0	N	N
CB or fused switch operation with enclosure doors open	1	N	N
Work on energized conductors & circuitry, including voltage testing	2*	Y	Y
Work on control circuits with energized conductors & circuitry 120 V or below, exposed	0	Y	Y
Work on control circuits with energized conductors & circuitry > 120 V, exposed	2*	Y	Y

1. For tasks not listed, or for power systems with greater than the assumed maximum short circuit current capacity, or longer than the assumed maximum fault clearing times, an Arc Flash Hazard Analysis shall be required.
2. An Arc Flash Hazard Analysis shall not be required when all of the following conditions exist:
   - The circuit is rated 240 volts or less.
   - The circuit is supplied by one transformer.
   - The transformer supplying the circuit is rated less than 125 kVA.
3. The Arc Flash Hazard Analysis shall be updated when a major modification or renovation takes place, and shall be reviewed periodically, not to exceed 5 years.

IGD Requirements for Protective Clothing and PPE in Addition to IGD Basic P.P.E.

Hazard/ Risk Category	Fire Resistant Protective Clothing Required	Minimum Arc Rating	Fire Resistant or Arc Rated (AR) PPE Required
0	Shirt (long sleeve), Pants	Non-Melting	Ear plugs, Leather gloves (AN) (Note 2)
1	Shirt (long sleeve) Pants Coveralls (Note 4) Jacket/Parka/Rainwear (AN)	4 (Note 1)	AR Face shield or arc flash hood (Note 7) Ear plugs Leather gloves (Note 2) Leather work shoes (AN)
2	Shirt (long sleeve) (Note 5) Pants (Note 5), Coveralls (Note 6) Jacket/Parka/Rainwear (AN)	8 (Note 1)	AR Face shield or arc flash hood (Note 7) Ear plugs Leather gloves (Note 2), Leather work shoes
2*	Shirt (Long sleeve) (Note 5) Pants (Note 5) Coveralls (Note 6), Jacket/Parka/Raingear (AN)	8 (Note 1)	Arc flash suit hood (Note 10) Ear plugs Leather gloves (Note 2) Leather work shoes
3	Shirt (long sleeve) (Note8) Pants (AR) (Note 8) Arc flash suit jacket (AR) (Note 8) Arc flash suit pants (AR) (Note 8) Jacket/Parka/Raingear (AN)	25 (Note 1)	Arc flash suit hood (Note 8) FR Hard hat liner (AR) Ear plugs Arc rated gloves (Note 2) Leather work shoes
4	Shirt (long sleeve) (AR) (Note 9) Pants (AR) (Note 9) Coveralls (AR) (Note 9) Arc flash suit jacket (AR) (Note 9) Arc flash suit pants (AR) (Note 9) Jacket/Parka/Raingear (AN)	40 (Note 1)	Arc flash suit hood (Note 9) Fear plugs FR Hard hat liner (AR) Arc rated gloves (Note 2) Leather work shoes

AN = As needed (optional) AR = As required

Notes:

1. Arc rating for a garment or system of garments is expressed in cal/cm^2
2. If rubber insulating gloves with leather protectors are required, additional leather or arc rated gloves are not required. The combination of rubber insulating gloves with leather protectors satisfies the arc flash protection requirement.
3. The FR shirt and pants used for Hazard/Risk Category 1shall have a minimum arc rating of 4.
4. Alternative is to use FR coveralls (minimum arc rating of 4) instead of FR shirt and FR pants.
5. FR shirt and FR pants used for Hazard/Risk Category 2 shall have a minimum arc rating of 8.
6. Alternative is to use FR coveralls (minimum arc rating of 8) instead of FR shirt and FR pants.
7. A face shield with a minimum arc rating of 4 for Hazard/Risk Category 1 or a minimum arc rating of 8 for Hazard/Risk Category 2, with wrap-around guarding to protect not only the face, but also the forehead, ears, and neck (or, alternatively, an arc rated arc flash suit hood), is required.
8. An alternative is to use a total FR clothing system and hood, which shall a minimum arc rating of 25 for Hazard/Risk Category3.
9. The total clothing system consisting of FR shirt and pants and/or FR coveralls and/or arc flash coat and pants and hood shall have a minimum arc rating of 40 for Hazard/Risk Category 4.
10. An alternative is to use a face shield with a minimum arc rating of 8 and a balaclava (sock hood) with a minimum arc rating of 8 and which covers the face, head and neck except for the eye and nose areas

Shock Protection Approach Boundaries to Energized Conductors or Circuitry

Limited Approach Boundary			Restricted Boundary	Prohibited Boundary
Nominal System Voltage Range, Phase to Phase	**Exposed Movable Conductor**	**Exposed Fixed Circuit Part**	**Includes Inadvertent Movement**	
Less than 50	Not Specified	Not Specified	Not Specified	Not Specified
50 to 300	10 ft. 0 in.	3 ft. 6 in.	Avoid Contact	Avoid Contact
301 to 750	10 ft. 0 in.	3 ft. 6 in.	1 ft. 0 in.	0 ft. 1 in.
751 to 15 kV	10 ft. 0 in.	5 ft. 0 in.	2 ft. 2 in.	0 ft. 7 in.
15.1 kV to 36 kV	10 ft. o in.	6 ft. 0 in.	2 ft. 7 in.	0 ft. 10 in.
36.1 kV to 46 kV	10 ft. 0 in.	8 ft. 0 in.	2 ft. 9 in.	1 ft. 5 in.
46.1 kV to 72.5 kV	10 ft. 0 in.	8 ft. 0 in.	3 ft. 3 in.	2 ft. 2 in.
72.6 kV to 121 kV	10 ft. 8 in.	8 ft. 0 in.	3 ft. 4 in.	2 ft. 9 in.
138 kV to 145 kV	11 ft. 0 in.	10 ft. 0 in.	3 ft. 10 in.	3 ft. 4 in.
161 kV to 169 kV	11 ft. 8 in.	11 ft. 8 in.	4 ft. 3 in.	3 ft. 9 in.
230 kV to 242 kV	13 ft. 0 in.	13 ft. 0 in.	5 ft. 8 in.	5 ft. 2 in.
345 kV to 362 kV	15 ft. 4 in.	15 ft. 4 in.	9 ft. 2 in.	8 ft. 8 in.
500 kV to 550 kV	19 ft. 0 in.	19 ft. 0 in.	11 ft. 10 in.	11 ft. 4 in.
765 kV to 800 kV	23 ft. 9 in.	23 ft. 9 in.	15 ft. 11 in.	15 ft. 5 in.

I G Drilling

ELECTRICAL LIVE WORK PERMIT

Location of work: _____ Equipment Type: _____

Description of Work: _____

Work on Energized Systems? ____Y ____N (if yes, provide justification) _____

HAZARD ASSESSMENT

Potential Hazard	**Y/N**	**Nature of Hazard**
Energized Circuits	____	_____
High Voltage	____	_____
Arc Flash	____	_____
Shock	____	_____
Wet Conditions	____	_____
Poor Illumination	____	_____
Limited/Confined Area	____	_____
Other Workers	____	_____
Other_____	____	_____
Other_____	____	_____

Measures Taken to Correct/Prevent Exposure to Identified Hazards

1._____By: _____

2._____By: _____

3._____By: _____

4._____By: _____

5._____By: _____

Special Clothing/Tools/Equipment Needed

Clothing & Type: _____ Additional PPE: _____

_____ _____

_____ _____

Tools/Equipment: _____ Other: _____

_____ _____

_____ _____

_____ _____

Precautionary/Protective Measures Complete: ____Y ____N ____N/A

Permit Approved By: _____ Signature: _____ Date: _____

Permit Reviewed By: (worker's initials) _____ _____ _____ _____ _____

Work Complete and Area Released By: _____ Date: _____ Time: _____

IGD Excavation Standards

Purpose:
The procedures detailed in this document provide the means of protecting employees against engulfment or release of stored energy or hazardous substances while performing excavations, including trenching, at IGD work sites.

Scope:
These procedures apply to all persons associated with any trenching or excavating activity on the property. They are not intended to cover the production orientated excavating associated with mining.

Definitions:
Competent Person: An individual capable of identifying existing and predictable hazards which are unsanitary or hazardous to employees and who has authority to take prompt corrective measures (including stop work) to eliminate them.

Excavation: Any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal.

Excavation Permit: (Appendix A) A document completed when utilities may exist within 50 feet of an excavation, an excavation is deeper than 4 feet, or people will need to occupy the excavation. The permit is initiated by the area supervisor and must have all appropriate information included. All workers must review and initial the permit, be informed of all potential hazards, and be provided appropriate PPE.

Protective System: A method of protecting personnel from cave-in, from material which can fall or roll from the excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shields systems and other systems that provide the necessary protection.

Trench: An open narrow excavation made below the surface of the ground. In general, the depth is greater than the width and the width is not greater than 5 meters (15 feet). If forms or other structures are installed or constructed in an excavation to reduce the dimension measured from the forms or structure to the side of the excavation to 5 meters (15 feet) or less the excavation is also to be considered as a trench.

Responsibilities:
Field Lead Person: It is the responsibility of the area supervisor to ensure compliance with Excavation Standards including designating a Competent Person to direct the work who is trained on requirements of the Standards, and for reviewing and approving the excavation permit. The supervisor will determine which personal protective equipment is required and/or if there is a need to provide additional resources.

Competent Person: Is responsible for; monitoring of worker's activities, monitoring wall stabilities, monitoring proximity to hazards and stopping work if an unanticipated or uncontrolled hazard is encountered.

Excavation Guidelines:

- Prior to any work commencing at an excavation site, a thorough examination must be conducted to define the location and type of any buried utilities. Any utilities discovered during the examination must be clearly identified as to location and type.
- Excavation by mechanized means must not performed nearer than 2 feet from charged lines (electrical or liquids).
    - When possible, lines must be rendered safe through LOTOTO procedures prior to commencing excavations.
    - When excavating with hand tools within 2 feet of lines containing or having contained flammable materials, non-sparking tools must be used.

- Employees shall be protected from cave-ins by an adequate protection system unless the excavation is made entirely in stable rock.
    - Methods of providing adequate protection shall be determined based on the types and proximity of buried hazards, types of soil being excavated, and results of atmospheric testing.
    - Adequate protection may include the approved use of shields, trench boxes or supports, or may be accomplished by sloping or benching side walls.

NOTE: When benching or sloping is used. The lay back of the side wall from top of the wall to the toe may not be steeper than 1.5:1.

    - Trenches 4 feet deep require a stairway, ladder, ramp, or other safe means of exit, which requires no more than 25 feet of lateral travel for employees.
    - Excavation shall not be performed any closer to a structure footing or foundation, or retaining wall, than 1.5 times the depth of the excavation unless approved by a qualified engineer.
- Atmospheric testing is required before employees enter excavations, greater than 4 feet deep in depth, where an oxygen deficiency (less than 19.5% oxygen) or hazardous atmosphere could reasonably be expected to exist (i.e., near landfill areas or hazardous materials storage areas).
- Excavated or other materials and equipment shall be kept at least 2 feet from the edge of an excavation or retaining devices shall be used that are sufficient to keep materials and/or equipment from falling or rolling into excavations.
- Employees shall be protected from loose rock or soil by scaling to remove loose material, by protective barriers, or by other approved means.
- Where employees are required or permitted to cross over an excavation, a walkway or bridge with standard guard rails is required.
- Employees in bell-bottom pier holes or similar confined footing excavations shall wear a harness with attached lifeline.
- Employees shall not work in excavations where there is accumulated water, or where water is accumulating, unless adequate precautions are being taken to protect employees.

IGD Hot Work Procedures

Safety:

Hot Work procedures will be followed when work is being performed where there is a presence of ignitable materials within 35 feet of the area where the work is performed, and when the tools or equipment utilized to perform the work represent a potential ignition source.

When possible ignitable materials should be relocated to a safe distance from the work. When relocation is not practical, these materials must be wet down, protected by flame proof covers, or otherwise shielded by flame resistant guards.

General Procedures:

- Prior to the commencement of Hot Work, the individual completing the permit will determine if conditions may be present that require testing for flammable or combustible vapors. If required, testing must be performed prior to the start of work and as conditions warrant or change.
- All employees who could potentially be affected by interruption of work or exposure to hazards resulting from an unplanned ignition of materials must be notified prior to the commencement of Hot Work activities.
- Fire Watch responsibilities will be assigned to an individual who must remain at the ready with firefighting equipment of a size and type rated for at least 2A:20B:C (10#) to provide an adequate first response. An individual employee can serve as his/her own fire watch providing a fire extinguisher is readily accessible. (within 10 feet)
- The Fire Watch must monitor the work area throughout the duration of work activities, for at least 30 minutes following work, and again 1 hour after completion of work.
- Ducts and conveyor that may carry sparks to distant combustibles shall be suitably protected or shut down.
- Where cutting or welding is done near walls, partitions, ceiling or roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition.
- If welding is to be done on non-combustible walls, precautions shall be taken to prevent ignition of combustibles on the other side due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, a fire watch shall be provided on the side opposite from the work.
- Welding shall not be attempted on a metal partition, wall, ceiling, or roof having a combustible covering, nor on walls or partitions of combustible sandwich-type panel construction.
- Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings, or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.

CAUTION: Cutting or welding shall not be permitted in the presence of explosive atmospheres, or explosive atmospheres that may develop due to materials previously stored or used in a pipe or vessel and the nature of the work, or near large quantities of exposed, readily ignitable materials.

- New permits must be completed when there is a change of the person directing the work. All persons performing the work must be noted on the permit.

IGD
Lifting and Hoisting Safety

PURPOSE:
This document will provide guidance on safe lifting and hoisting requirements to persons working for IGD and utilizing various lifting/hoisting systems.

DEFINITIONS:
For purposes of clarification, terms used in this section are defined or described as follows:

Certified Person: Individuals approved to perform certain tasks or functions by virtue of certifications recognized by regulatory bodies.
Competent Person: An individual who has completed certain PMC approved trainings, and who has authorization to perform certain tasks and inspections.
Crane Operator: A person who has received recognized certification to operate a fixed cab or swing cab crane.
Critical Lift: Lifts that include:

- Use of two or more cranes.
- Lifting of personnel.
- Walking with a load
- Loads to be turned or flipped that weigh more than 10,000 lbs.
- Loads that exceed 75% of the crane's load capacity.
- Loads that will be lifted within 20 feet of an energized power line or electrical installation.
- Blind picks
- Lifts on poor or unknown ground conditions
- Any other lift the operator deems critical.

Lifting/Hoisting Equipment: Equipment used to lift or hoist loads including:

- **Boom Truck:** Hoisting equipment mounted on a truck chassis dedicated for that purpose and consisting of a boom of 25 feet or greater length, drum and cable operated from a detached operator's platform, and with a rated lifting capacity of 2,000 lbs. or more. Officially designated as a "fixed cab" crane.
- **Chain Fall:** Portable equipment that may be attached to a beam or other anchor rated as capable of supporting the potential load and used to accomplish a vertical lift. Normally manually operated by hand with a lever or chain but may be electrically powered. Chains and anti-reverse features must be carefully inspected with each use.
- **Come Along:** Portable device used to move an object nearer to another. Lever operated and may be spooled with chain or cable.
- **Mobile Crane:** A machine capable of traveling under its' own power and used for hoisting and moving a load by using cables which run unencumbered over the boom or jib sheave and has a usable boom length of 25 feet or greater or a maximum machine rated capacity of 2,000 pounds or greater. Referred to as a "swing cab" crane and normally rated at a much higher capacity than boom trucks.
- **Rigging:** Devices including web synthetic and wire rope slings, bridles, shackles, clevises, and hooks used to attach the load to be lifted to the equipment used to accomplish the lifting. Also refers to the act of "rigging" or coupling and attaching devices rated and approved for the application in an approved manner to the load hook of the lifting equipment.
- **Service Truck:** A truck normally dedicated to servicing equipment in the field and equipped with a boom, drum and cable controlled by a hand-held device operated by an individual on the ground.
- **Wire Rope:** Cable that is expressly intended for use on lifting equipment/devices.

Rigger: An individual who has successfully completed training by a competent person on approved means of selecting, inspecting and properly utilizing rigging devices. Also maneuvers lifted loads by use of taglines or other devices to aid in guiding and maintaining control over the load.

TRAINING – CERTIFICATION – AUTHORIZARION:

Persons operating mobile lifting/hoisting equipment with a lift capacity of more than 2,000 pounds or a boom length of greater than 25 feet must possess current certified training on that type of equipment and must also have valid task training on each piece of equipment operated.

Individuals operating service vehicles with a boom length of 25 feet or less and with a load rating of less than 2,000 pounds must have valid task training on each type of boom operated. That training can only be provided by a competent person.

Operators of "swing cab" and "fixed cab" cranes and booms on service trucks, and any individual assigned duties as a "rigger" at IGD must first have successfully completed an PMC approved training course on Safe Rigging Standards.

Employees operating an overhead crane for IGD must have valid task training on operation of the crane and on Safe Rigging Standards and Techniques.

Task training for operators of lifting equipment and for individuals working as "riggers" may only be conducted by a competent person.

Performance of persons operating lifting/hoisting equipment will be periodically observed and evaluated to determine if additional or refresher training may be required.

INSPECTIONS:

All lifting equipment and devices utilized by IGD will be inspected prior to each use by the trained individual using them.

All lifting equipment with a boom of 25 feet or greater in length or a load rating of 2,000 pounds or more must be inspected and certified to be in safe operating condition at least annually by an individual certified to perform that inspection. All other lifting equipment at PMC will also be inspected at least annually be a Competent Person.

Annual inspections of chain-falls and come-a-longs (lever hoists) will include a load test to 125% of rated capacity and will be performed by a competent person.

Records of all inspections of lifting equipment and devices will be maintained until next inspected.

SAFE USE RULES:

It is recommended that hand signals used for hoisting operations at IGD be those found in ANSI/ASME Standard B30. Use of other signals may be more safely efficient when coordinating work activities with persons trained on other signals. Signals used on any pick MUST be determined prior to the pick by the operator and signal person and COMMUNICATED to all other persons affected by the hoisting activity.

In addition to regulatory requirements and requirements provided for in the IGD Health and Safety Standards, the special use rules in this section will apply to all lifting operations performed at IGD.

Outriggers/stabilizing jacks will be fully extended and placed on a solid supporting surface and lifting equipment will be leveled prior to commencing any lift activity. When these conditions cannot be met, the manufacturer's guidelines for "lifting off rubber" for that equipment must be strictly adhered to.

Suspended loads will be guided and controlled by the use of taglines or other devices and may be guided a final short distance for placement providing NO ONE allows any part of their body to become positioned beneath a suspended load at any time.

A pick plan must be completed prior to commencing any lift with a crane. A JHA must be completed prior to commencing a lift with any other lifting equipment when more than one person (operator, rigger, spotter, signalperson, other) is required to complete the work.

Barricades and signs warning of overhead work or suspended loads will be carried on all lifting equipment and will be placed in such a manner as to prevent the potential of persons being struck by falling objects or a suspended load prior to the commencement of lift activity. Barricades and signs warning of the hazard must also be placed in a manner to keep persons a safe distance from the swing radius of a crane's counterweight.

CRITICAL LIFT PERMIT:
When any of the Critical Lift criteria are present, a critical lift permit and check list must be completed and signed by a member of PMC Senior Management.

Permits must be posted at the lift site until the lift is complete. Permits must be reissued if conditions (equipment, weather, ground, other) or scope of work changes.

IGD Lockout/Tagout/Tryout (LOTOTO) Program

Purpose:

This document establishes the minimum performance requirements for the control of hazardous energy and hazardous materials sources. Hazards must be reduced to a Zero Harm state prior to the service or maintenance of equipment or machines.

Scope:

This document covers the servicing and maintenance of machines and equipment in which the unexpected energization or startup of machines or equipment, or release of stored energy or hazardous materials, could cause injury to employees. Procedures detailed in this document will apply to all work performed at the I G Drilling work sites. This program's content will be supplemented as machine specific lockout procedures are developed.

Stored energy may exist in, but is not limited to, the following forms: electrical, pneumatic, hydraulic, mechanical, gravity, thermal, pressurized pipelines, kinetic or residual. Hazardous materials may be present in vessels, piping, and other process systems.

Procedures will address the three major components of energy isolation.

- "Locking Out" at the source
- "Tagging Out" at the source
- "Trying Out" to verify that energy has been isolated.

NOTE: Only locks, tags, and isolation devices approved by the Safety Dept. may be used for LOTOTO. Devices designated for use in LOTOTO applications may not be used for any other purpose.

Training:

All potentially affected employees will receive awareness training on the lockout program to ensure that they understand its purpose and function. Employees who will be required to perform work under LOTOTO conditions will be given the knowledge and skills required to safely apply, use, and remove Lockout/Tagout devices. The training will include the recognition of applicable potential hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means of energy isolation and control

Abbreviations and Definitions:

ECPs (Energy Control Procedures): These procedures will be developed for individual pieces of equipment in order to identify specific energy or materials sources to be locked out or tagged out for that piece of equipment.

EIDs (Energy Isolation Device): A mechanism which prevents the inadvertent transmission or release of energy or materials, and whose integrity cannot be easily compromised. Examples include: a manual circuit breaker, a disconnect switch, a manual switch by which all conductors of a circuit can be disconnected with no pole able to be operated independently, a line valve, a block or brace. Push buttons, selector switches, interlocks or other control circuit type devices are not energy isolating devices.

Affected Employee: An employee whose job requires them to operate or use a machine or piece of equipment on which cleaning, repairing, servicing, setting up, or adjusting operations are being performed under lockout or tagout, or whose job requires the employee to work in an area in which such activities are being performed under a locked out or tagged out condition.

Authorized Employee/Person: A person who has been trained on the field application of IGD's LOTOTO program. A person who locks out specific machines or pieces of equipment to perform cleaning, repairing, servicing, setting up, or adjusting operations on that machine or equipment. This individual is typically the operator or owner of the equipment. Authorized employee locks are "first on, last off".

Other Employee/Person: A person not normally assigned to work in the area, who has not had any level of LOTOTO training, and who may not be familiar with the lockout, or the potential dangers involved.

Approved Employee: This employee has received documented training on IGD's LOTOTO procedures and has had field practice with an experienced operator, trainer, or supervisor. Training for Approved and Authorized Employees is the same. An Approved Employee or person is responsible for applying his/her lock to a Lockout Box, Hasp, or device isolating means and signing in and off the Permit when work is completed.

Service Representative: A maintenance worker, other than an employee, whose job requires him to perform service, maintenance or installation of machines or equipment and is acting within his/her level of training. All servicing individuals are to follow LOTOTO procedures approved by IGD.

Field Verify: A physical and visual walk down to validate the LOTOTO. Must be done by at least 2 people and noted on the LOTOTO Permit.

Group Lockout: In situations where a number of individuals (servicing representatives, contractors, employees) work on a job, a multi-lock device(s) may be utilized (hasps, lockout boxes, etc.).

Hazardous Energy Control Procedures: Always verify that the electrically powered equipment has been shut off before isolating it. Equipment over 480VAC shall have LOTOTO completed by a Qualified Employee. All other forms of energy such as chemical, pneumatic, thermal, hydraulic, and lower energy electrical etc. can be locked out by an Authorized Employee.

Lockout Box: A box used for LOTOTO situations that involve multiple departments or venders. The box will hold all keys from the lockout devices isolating equipment. All Lockout Boxes will be numbered to match the box with the correct Permit.
The key to the lock placed on the lockout box by the Authorized Employee will remain under control of the respective affected Lead Person unless/until passed to the oncoming Lead Person or Authorized Employee of a succeeding shift. If work is interrupted for an extended period of time, the key will be placed under control of the affected department's Manager.
If all workers leave an area and work is not yet complete, the lockout box must be taken to a designated area to be stored until work resumes.

Lockout Device: A physical mechanism that positively holds an energy isolating device in place such as a lock, or chain. (Example: A chain which prevents the operation of a valve and a lock which prevents the removal of the chain). Only keyed separately locks will be allowed for LOTOTO use. Each lock will be numbered and have one key with a corresponding number. Additional keys for each lock will maintained in a locked box in the Safety office.

NOTE: Energy isolation locks are not permitted for use on personal lockers, cabinets, toolboxes, etc. All locks utilized for LOTOTO will be individually keyed.

Lockout Tagout Tryout (LOTOTO): Lockout/Tagout refers to the physical placement of a lockout device and/or tag on an energy isolation device ensuring the energy isolation device or the equipment cannot be energized until the lockout and/or tagout device is removed. Tryout involves attempting to start equipment presumed to have been isolated or monitoring blocked or blinded lines to ensure effectiveness the isolation means.

Identification Tags: A tag attached to an energy isolation or lockout device must note the following:

- Which Lockout Permit it is associated with.
- Who applied the tag and lock.
- The date the lock and tag were applied.

Isolation Tags: Tags used with an energy isolation device not capable of receiving a lock must be treated in the same manner as a lock.

- A tag attached at an Energy Isolation point is not to be defeated in any manner and may only be removed by the person that applied the tag.
- Information entered on tags must be legible. Information must reference the Lockout Permit the tag and device are associated with, the name of the person placing the tag, and the date it was placed.
- Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.
- Tags must be securely fastened to energy isolating devices by zip-tie or other approved method (wire ties are not approved) so that they cannot be inadvertently detached during use.

CAUTION: Tags do not provide the physical restraint that is provided by a lockout device.

Training will be provided for personnel involved in any element of LOTOTO conducted in any area to ensure workers understand the practical and administrative aspects of LOTOTO. Retraining shall be provided to personnel on a specified frequency or when energy control procedures (ECPs) change, when job assignments change, when modifications are made to machinery, when equipment or process changes present a new hazard, if incidents happen, and when employee deficiencies are observed. Training consists of different levels and responsibilities- Awareness, Approved, Authorized, and Qualified. Records of training will be provided to the Safety Department for filing. Criteria for the various levels of training are:

Awareness training is presented during Orientation Training and provides an overview of the LOTOTO program used at IGD work sites. This training is not a hands-on in the field training and employees with awareness training are not permitted to lock out equipment or be in the immediate LOTOTO area. Authorized/Approved training consists of training on the IGD LOTOTO procedure and going over field practice with an experienced operator, trainer, or supervisor. This training must be documented. Training for Approved and Authorized employee is the same. The difference lies in the responsibility.

The Authorized employee is responsible for taking charge of a lockout and verifying that everything is correct. The Approved/Servicing employee or person is responsible for applying his/her personal lock to the lockout box and signing in and out when work is performed. An Approved employee may assume the role of Authorized Employee upon designation by the Authorized Employee or the respective affected department Supervisor.

The Authorized employee has the first lock on and the last lock off and makes sure that the paperwork is closed out when the LOTO is complete.

Qualified training involves an individual obtaining a certificate or degree denoting a higher level of skills and knowledge in a specific area of expertise.

Responsibilities:
Authorized Employee: This person is responsible for:

- Applying a positive lockout/tagout device(s) before work may be performed on, in, or near equipment or systems that could cause injury and/or damage to equipment and facilities due to the release of stored energy or materials.
- Completing all paperwork involved with the LOTOTO and verifying that it is closed out when the LOTOTO work is complete.
- Being the first person to attach their lock on the Lockout Box and last person to take it off when the LOTO is complete.

Field Leads: Are responsible for:

- Providing the necessary resources and materials to comply with this procedure.
- Ensuring all personnel comply with this procedure.
- Delegating as needed to make sure that there are always individuals involved in LOTOTO with knowledge specific to this program and its requirements.
- Verifying contractors under their direct supervision are trained on, and comply with, all aspects of this LOTOTO procedure.
- Ensuring that contractors supply their own locks on a job that requires LOTOTO.

Safety Department:

- Acts as a consultant and subject matter expert for the interpretation and application of this procedure.
- Ensures that potentially affected employees and contractors entering the Fort Cady facility are provided with LOTOTO awareness training.
- Performs a review of the LOTOTO program at least annually.

LOTOTO Procedures:

The Authorized Employee shall:

- Review the scope of work to be done.
- Identify energy or materials isolation points.
- With the appropriate Supervisor or designee, isolate energy or materials sources and place locks or tags as appropriate.
    - The Authorized employee and appropriate Supervisor or designee will take the proper steps (Tryout) to verify isolation is accomplished.

When LOTOTO of equipment in control systems includes interlocks, a test of the on/off switch must be done to validate the equipment is de-energized. The interlock may need to be activated or de-activated to complete this test and ensure the equipment is de-energized.

NOTE: Return all controls to a shutdown or safe position after validating isolation of the equipment.

- Note the lock or tag placement and lock or tag number on the Permit.
- With the appropriate Supervisor or designee, sign the Permit attesting that isolation was accomplished and locks or tags were placed as noted.

If neither an energy isolation nor lockout device can be installed, consult with your supervisor or post a person as close as safely possible to controls to the device to prevent its accidental start-up and release of energy.

If work is being performed solely by a Contractor (Servicing Representative) who is leaving the job for the day, but the work is not finished, then a department/company lock must be applied before the contractor's lock is removed. This department lock should also be noted on the Permit to document that there is still a lock applied. This will serve as a notice to operations, as a minimum communication, that the work is still in progress and to ensure that the equipment is not accidentally started before work is complete.

When both signatures are on the paperwork, and all that will be working on the equipment have verified that the isolation procedure is effective, then the work may begin.

Upon completion of the work performed under lockout, the Authorized Employee shall begin the process of restoring the equipment to service by:

- Ensuring that all employees have removed their locks from the lockout box and signed off on the Permit.
- Verifying that all Servicing Representatives have signed off the Permit and have removed their personal locks from the Lockout Box.
- Checking the equipment and the immediate surrounding area to ensure that it is clear of materials, tools, and people and that equipment components are operationally intact.
- Verifying that isolated equipment control systems are in an operational state.
- Removing the Authorized employee lock from the lockout box.
- Removing the Lockout/Tagout devices and preparing the equipment for service.
- Notifying affected employees that work is complete, and that the equipment is ready for use.

The Permit must be turned into the appropriate Supervisor.

After reviewing the Permit to ensure completeness, the Supervisor will forward it to the Safety Dept.

Additional Procedures:

Temporary Release:

A temporary removal (Temporary Release) of locks may become necessary during work on isolated equipment to test or position the equipment. In the event a Temporary Release becomes necessary the following steps must be followed by the Approved, Servicing and Authorized Employees signed onto the Permit.

The Authorized Employee will:

- Advise Approved and Servicing workers of the need to cease work and to remove their locks from the lockout box. (Those workers will not "sign off" the Permit at that time)
- Check the equipment and the immediate surrounding area to ensure that it is clear of tools, materials, persons, and that equipment components are operationally intact.
- Verify that the controls are in an off, shutdown and safe position.
- The Authorized Employee will then remove the energy isolation lockout and tagout devices identified on the Permit necessary to meet the need for the Temporary Release.

If the activity necessitating the Temporary Release is required to be done with guards removed, the Authorized Employee shall remain in the area and in control of it during the temporary release.

Upon completion of testing or positioning all systems must again be returned to an energy neutral condition and lockout/tagout devices re-applied to ensue isolation.

The Authorized Employee will be responsible for ensuring that Approved and Service workers who removed locks for the Temporary release re-affix those same locks.

Emergency Lock-Out/Tag-Out Removal:

In situations where an Approved Employee or Servicing Representative has left the site without removing their personal lockout device, the Field Lead or his designee(s) must authorize the removal of their Lockout/Tagout Device. This can only be done after verifying that the employee has left the site and after making a reasonable effort to contact the worker to inform him of the Lockout/Tagout Device removal.

If it becomes necessary to remove a lock the Emergency Lock Removal Form must be filled out. Location and reason the lock was removed must be recorded as well as the person that installed the lock, who removed the lock, and the signatures of a Field Lead.

Piggy Backing:

If work is to be performed on a piece of equipment that requires placing a lock or tag at an isolation point already locked or tagged for another active lockout/tagout, then a lock must be placed on the pre-existing lockout box with a tag on the lock referring to the new Permit. That lock must also be noted in the ECP section of the new Permit.

IGD Welding Safety

General Safety:

- Clothing and P.P.E. must be kept free from oil and grease.
- NEVER use Oxygen to "dust" clothing or work areas.
- ALWAYS keep/store bottles in upright position and keep properly secured.
- Work areas must have fireproof floors and be free from oil, grease and other flammable or combustible materials, or those materials must be shielded or protected against ignition sources.
- Work areas must be well ventilated.
- In addition to basic P.P.E.:
  - Lenses of goggles, glasses or hoods used for gas welding must be shade 4 or darker.
  - All body parts that may potentially be affected by exposure to hot surfaces, including spatter, must be protected by appropriate clothing (gloves, sleeves, aprons, etc.).
  - Dual hearing protection is required when air-arcing or air-chiseling.
  - Approved respiratory protection is required when any potential exists for exposure to weld fumes.

Safe Work Procedures: (Oxy/Acetylene)

Check all equipment prior to use paying close attention to:

- Condition of hoses (oil/grease, burns, other damage)
- Operation of regulators, tank valves, gauges, torch valves, condition of torch tip.
- Acetylene bottles upright for at least 1 hour.

Procedures for torch use are as follows:

- Crack cylinder valves slightly at first when opening.

Caution: Do not directly face regulator and gauges when opening.

- Open Acetylene valve no more than ¼ to ½ turn. Do not exceed 15 psi.
- Open Oxygen valve completely.
- Select proper sized tip.
  - Too large a tip can cause overheating and flashback.
  - If flashback occurs, flame may be burning inside handle. Turn off Oxygen and allow to cool.

NOTE: Never decrease pressure. If flame is too hot; use a smaller tip.

When finished with torch:

- Close tank valves
- Open torch valves and depress O2 lever.
- Release pressure on regulators.
- Close torch valves and ensure they are protected.
- Monitor regulators to ensure tank valves aren't leaking.

Safe Work Procedures: (Electric)

- Shield arc welding operations in a manner to prevent incidental exposure to eyes of others.
- Check cords to ensure integrity, clamps to ensure proper grounding, condition of stingers.
- Ensure lugs/plugs for leads are properly insulated/shielded.

Recommended Shades for Welding Glasses:

Shielded metal-arc welding ---------- 10 - 40	Light cutting (up to 1 inch) ---------- 3 - 4
Gas shielded arc welding (non - ferrous) -----11	Medium Cutting (1 to 6 inches) ---------- 4 - 5
Gas shielded are welding (ferrous) ----------12	Heavy Cutting (more than 6 inches) ----- 5 - 6
Atomic hydrogen welding ---------- 10 – 14	Gas Welding (light 1/8 inch) ---------- 4 - 5
Carbon arc welding ---------- 14	Gas Welding (medium 2 inches) ---------- 5 - 6
Soldering ---------- 2	Gas Welding (heavy over 2 inches) ------ 6 - 8
Torch brazing ---------- 3 - 4	

IGD WORKING at HEIGHTS SAFETY

Purpose:

The purpose of this program is to ensure that all persons working at IGD have knowledge of regulations and policy relative to working at heights, that all persons engaged in those work activities have knowledge of the types and proper usage of fall prevention measures and fall arrest equipment and systems required and available to them, and that they are knowledgeable on inspection and care of various protective equipment and devices.

Policy:

The standards and procedures set forth in this program document are consistent with or exceed applicable guidelines (ANSI Z359 -2007-2012), or regulations regarding required fall prevention and fall protection measures and must be adhered to in all instances except when doing so would expose the employee to a greater hazard and a Job Hazard Analysis has been developed and approved.

Protection against hazards of falling, and against harm if a fall occurs, will be accomplished through prevention, protection and positioning measures and procedures detailed in program procedures. It will be the responsibility of all persons directing or performing work which might otherwise expose an individual to risks associated with work being performed at heights, to ensure that these preventive and protective measures are strictly adhered to.

Training on proper fall prevention measures including recognition of fall hazards, and on use and care of fall prevention and protection equipment and systems will be provided to employees prior to initial use or exposure, and at least annually thereafter.

Fall prevention or fall protection measures must be utilized when an individual is working or walking at any height where there is a danger of falling, and in all instances when working or walking at heights of six feet or greater and guardrails or other passive fall prevention measures are not in place to prevent falls.

When working under conditions which require the use of PFAS a IGD Working at Heights Permit must be completed by a Competent Person.

Definitions:

Authorized Person: A person assigned to perform duties at a location where they may be exposed to a fall hazard, and who has received training on fall hazard recognition and proper inspection and use of fall restraint and fall arrest equipment.

Competent Person: An individual designated by the employer to be responsible for the immediate supervision, implementation, and monitoring of the employer's managed fall protection program and who, through training and knowledge is capable of identifying, evaluating, and addressing existing and potential fall hazards, and who has the employer's authority to take prompt corrective action with regard to such hazards.

Qualified Person: A person designated by the employer who by reason of training, experience or instruction has demonstrated the ability to safely perform all assigned duties and, when required, is properly licensed in accordance with federal, state, or local laws and regulations.

Anchorage Points: Must be either certified for use by a qualified person, or evaluated by a competent person, and deemed unquestionably strong enough to withstand 5000 lbs. of static force when used for fall arrest purposes, and 1000 lbs. when used for fall restraint. Anchorages previously assessed and deemed acceptable for use must be inspected prior to each subsequent use to ascertain that the structural integrity of the point has not been compromised.

Elevated Work Platforms: Equipment or devices worked from/on to position individuals close enough to their work so that they will be able to perform the work with their hands free. These may include:

- Step or extension ladders and mobile (wheeled) work platforms and ladder stands
- Scaffolding
- Powered aerial platforms including Scissor Lifts, Man Lifts, Forklifts with certified man baskets

Fall Hazard: Is defined as any workplace condition which represents the potential of:

- An individual falling to the same level from a slip or trip, from working off balance, or from another occurrence.
- An individual falling from any elevation to a lower one.
- Tools or materials falling from one elevation to a lower one.

Fall Prevention: Measures taken, and devices utilized, to eliminate the potential of a fall which may include:

- Workplace assessments conducted to identify potential hazards inherent in the work environment and, utilizing guidance found in the hierarchy of fall prevention, development of preventive measures.
- Workplace inspections to ensure that preventive measures are adequately maintained and that recently occurring hazards of a temporary nature are identified and corrected.
- Establishing temporary restraints such as barricades or using attendants.
- Training on regulations, policies, and hazard identification.

Fall Restraint: The act of securing an authorized person to an anchor point using a harness and fixed or adjustable length lanyard or lifeline to prevent the person's center of gravity from reaching the potential fall hazard.
NOTE: Anchor points must be of suitable enough construction and strategically placed to provide adequate restraint against the authorized person from reaching the point of fall.
NOTE: The anchor point must be able to withstand 1,000 lbs. of static force in the estimation of a competent person.

Fall Protection/Fall Arrest: The practice of utilizing equipment and systems designed to mitigate harm in the event of a fall. These practices are intended to accomplish Limiting the potential(s) of harm from a fall through the proper use of Personal Fall Arrest Systems (PFAS) such as:

- Full body harnesses.
- Energy absorbing lanyards.
- Restricting/self-retracting lifelines.
- Trauma straps.
- Use of other equipment approved by the Program Administrator.

Passive Fall Restraint: Physical isolation or separation of workers from a fall hazard. Restraints must be constructed in such a manner that a worker cannot reach the point of falling, or barriers such as cones, barricades, or Do Not Enter tape, and signs warning of the nature of the hazard, must be placed at least six feet from the fall hazard.

Responsibilities:
Employer: Will maintain on staff, or otherwise ascertain, an adequate number of individuals who possess the knowledge and skills to provide Authorized User Training, and who may conduct certain types of inspections on specified equipment and devices.

Program Administrator: An individual appointed by management who is knowledgeable on ANSI Z359 Fall Protection Code requirements and Federal and State regulations, and who will ensure records of training and inspections are adequately maintained, and who will be responsible for periodic review and revision of the program.

Field Supervision/Management: Will be responsible for ensuring that all required training is conducted for employees in their respective departments, and all additional program requirements are complied with.

Field Leads: Will receive Competent Person training and will be responsible for ensuring proper pre-work fall hazard assessments are conducted, ensuring appropriate preventive measures are implemented, ensuring that rescue planning is conducted, ensuring equipment inspections are completed, assigning proper PFAS, directing and monitoring workplace activities to ensure compliance with program requirements, and taking prompt corrective measures to provide protection against identified fall hazards.

Authorized User: Any person assigned to duties which may expose them to the potential of a fall hazard will receive Authorized User training prior to commencing those duties and annually thereafter. This level of training provides the knowledge and skills necessary to recognize fall hazards and protect against them, how to properly inspect, use, and care for fall arrest and fall restraint systems, and the proper use of positioning systems. Persons using powered positioning systems such as a man-lift or scissor-lift must first receive documented task training on that equipment.

Equipment Use and Care:
Personal fall prevention or arrest equipment must be properly stored after each use in a location where it will not be exposed to harmful agents, and in a manner that prevents physical damage. Equipment must not be stored in direct sunlight or under hot/humid conditions for extended periods.

Fall prevention and protection equipment must be utilized in accordance with manufacturer recommendations and regulatory stipulations, and consistent with training provided by a Competent Person. Fall protection equipment must not be used for any other purpose.

Physically damaged or otherwise compromised equipment must not be used under any circumstance and must be destroyed or rendered inoperable/unusable immediately.

Inspections:
All fall protection and fall prevention equipment and devices must be visually inspected prior to each use by the respective Authorized User. Equipment with loose, missing, damaged or potentially compromised components must be immediately removed from service and properly repaired or destroyed.

A documented monthly inspection of PFAS shall be performed by a person(s) designated by the Program Administrator.

Annual inspections shall be completed and documented by a competent person. Records of annual inspections will be maintained for review until the next annual inspection is completed.

Elevated Work Platform Safety:
Responsibilities:
It will be the responsibility of all persons directing or performing work which might otherwise expose an individual to risks associated with working at heights and utilizing elevated work platforms to ensure that these preventive and protective measures are strictly adhered to.

Elevated Work Platform Use and Care:
Approved fall prevention measures must be practiced when working from any elevated work platform.
NOTE: Devices utilized to accomplish fall restraint while working from an elevated platform must restrain an individual from reaching the point of exposure to fall hazards.

Passive Fall Protection measures utilized when working from elevated work platforms must include:

- Protecting against unauthorized entry into the area beneath the work being performed.
- Protecting against hazards of the work platform being struck by persons, vehicles, or equipment.
- Protecting against tools or materials from falling on persons walking or working below.

Aerial Man Lifts:

All individuals working from/with aerial work platforms such as man lifts, scissor lifts, and forklifts with approved work platforms must have received documented training on the safe operation of that equipment prior to using it. That training will include proper inspection techniques and operation of the equipment's emergency systems.

When using elevated and or rotating platforms, fall prevention equipment must be utilized when in or on the work platforms. Employees shall not sit or climb on work platform railings or extend their torso over the railings.

Scaffolds:

Scaffold use will be subject to the following qualifying conditions:

- Scaffolding must be rated to withstand a load equal to four times the scaffold's intended load.
- Scaffolds other than those manufactured for assembly and disassembly must be designed and constructed by persons qualified for that purpose.
- Scaffolding must be assembled/erected and maintained in accordance with the manufacturers or qualified person's written specifications.
- Scaffolding must be placed on level surfaces capable of supporting the scaffold and its load.
- Work platforms of scaffolding must be securely fastened in place.
- Working platforms of scaffolding more than six feet in height must be enclosed with handrails.
- Scaffolding must be securely anchored to a building, or another anchor point capable of preventing movement of the structure when in use by workers.

Scaffolding, whether components are manufactured for assembly and reassembly or constructed on site, must be inspected before each use by an individual trained on proper scaffold inspection procedures.

Care must be taken when assembling and disassembling portable scaffolding to avoid compromising the integrity of the component parts including pins or other fasteners. Damaged or missing parts must be replaced with materials approved for use by the Fall Protection Program Administrator.

Moveable Work Platforms and Ladder Stands:

Units designed for use as moveable work platforms must:

- Be placed on level, stable surfaces.
- Be rated for the combined weight of workers, tools, and materials it will be supporting.
- Be securely anchored or held in place in a manner capable of preventing movement while work is being performed.

Ladders:

Ladders must be inspected prior to each use for the following:

- Visible damage, lack of structural integrity, missing components, or loose parts
- Steps or rungs must be tight and secure to the side rails.
- Hardware and fittings must be properly and securely attached.
- Movable parts must operate without binding or without too much free play.
- All labels should be intact and readable.

- Ladders shall be free of oil, grease, or slippery materials.
- Condition of accessories such as leg levelers, paint shelves, stand-off shelves, etc.
- Ladder base is of slip resistant material.

Extensions ladders must be further inspected to ensure that:

Ropes and pulleys are in good condition.

- Ladder extension locks move freely and lock correctly
- Rung locks are on the rails of the top section to ensure the top section will not fall.
- Extension guide brackets are secure and in place

NOTE: Ladders exposed to fire or strong chemicals should be discarded.

Rules for ladder use include:

- Ladders shall be constructed of composite materials and shall not be used beyond 90% of rated capacity.
- Ladders constructed of composite materials must not be left exposed to direct sunlight when not in use.
- Ladders used when working on or near electrical equipment must be clearly labeled and rated as approved for that application.
- Portable ladders are intended for accessing elevated work areas and may only be used as a work platform when there is no other means of accomplishing the task.
- Ladders must be set on stable and level surfaces, rested securely on a surface capable of supporting the weight to be applied, and secured in a manner to prevent displacement. Ladders must not be rested against a moveable object.
- Portable ladders MUST be tended by another person unless/until firmly secured.
- Three points of contact, which may include the use of fall protection/restraint equipment, MUST be maintained at all times.
- Employees shall face the ladder and maintain 3 points of contact when going up or down a ladder.
- Leaning or overreaching must be avoided while on a ladder.
- Ladders must not be moved or shifted with a person or equipment on it. The ladder must be moved as frequently as necessary to ensure an employee can safely reach the work.
- No more than one individual at a time may work from a ladder.
- An individual must not step on the top step/rung of a ladder unless it is designed for that use and MUST NOT stand on the three top rungs of a straight, single or extension ladder.
- The base of a single, straight or extension ladder must be placed at least one fourth of its working length from the vertical surface supporting it.
- Extension or straight ladders used to access an elevated surface must extend beyond the surface accessed at least three feet to provide a safe handhold while accessing the surface.
- A self-supporting ladder (step ladder) must not be used as a single ladder or in a partially closed position. Stepladders shall be fully opened to permit the spreader to lock.
- When working near traffic areas, barricades or a watch must be set in place to ensure the safety of the individual on the ladder.
- Doors that may be immediately adjacent doors to ladders should be locked or blocked in the open position and a barrier with signage placed in a manner to prevent contact with the ladder if opened.

IGD Working During Electrical Storms

PURPOSE:
This document will provide guidance on operational requirements to persons working at I G Drilling during periods of inclement weather.

DEFINITIONS:
Be Aware: Lightning is 30 - 40 miles distant with the potential of approaching.

Take Caution: Lightning is 20 - 30 miles distant and approaching.

Seek Shelter: Lightning is10 - 20 miles distant and approaching.

All Clear: Lightning is moving away from the site and no strikes are occurring within 15 miles.

Shelter: A vehicle or equipment with a fully enclosed cab or a large permanent building.

ELECTRICAL STORM GUIDELINES:
During periods of known or predicted inclement weather conditions, a lightning strike detector with the capability or a computer or cell phone app with similar capability will be utilized to detect the approach of electrical storms.

The strike detector system will be continuously monitored by the Field Lead or his/her designee during times when electrical storms are anticipated to approach to within 40 miles of the mine site. Procedures for lightning alerts and protective action(s) are as follows:

- When an approaching weather event with lightning components is detected at 40 miles, the Field Lead or designee will communicate that information to all potentially affected persons.
  - The Field Lead or designee will ensure workers and contractors working in their areas are alerted.

- When lightning is detected at 29 – 20 miles the Field Lead or designee will communicate that information to potentially affected persons.

- When lightning from an approaching storm is detected at 19 – 10 miles away the Field Lead or designee will issue a seek shelter warning to potentially affected persons.
  - The warning will include a reminder that all employees need to remain indoors, inside closed cabs of equipment and vehicles, or in another protected location.
  - All personnel will remain indoors, inside closed cabs of equipment and vehicles, or in another protected location until the “All Clear” is announced.

When NO Lightning strikes have been detected within 15 miles for 20 minutes the Field Lead or designee will communicate an “All Clear” to the all persons in shelter.

Tab 9. TRAINING:

Mandated Training:

All IGD employees, including contracted workers, will receive comprehensive safety and health training consistent with the requirements of applicable Federal, State and Local regulations.

Methods of Instruction will include oral, written and/or presentation format instruction. Course references used for training will consist of applicable Federal and State regulations, NIOSH, ANSI, ASME, NEC, NFPA standards and IGD Policies and Procedures. When applicable, other materials and tools may be used.

Training will be prepared and presented in such a manner as to provide an effective understanding of how each topic relates to each individual's work area and work assignments.

Evaluations will be conducted in oral or written format, or by direct observation(s) of the trainee.

Task Training:

When an employee is assigned to work at any new task, or to operate new or modified machines or equipment, or to work at new or changed processes, training must first be provided on safe operating procedures related to the task or equipment, and on health and safety considerations related to the task.

Training may be provided by another employee experienced in the task or by a qualified trainer and must include review of the operator's manual or manufacturer's recommendations and any safe operating procedures related to the task, instruction on pre-work or pre-operational inspections, and practice at the task under the guidance or supervision of the trainer until the employee can demonstrate the knowledge and skills necessary to perform the task safely.

A checklist type training outline is required when training on certain tasks such as forklift safe operation and is recommended for use when training on any high-risk activity. New training must be conducted on these tasks when an employee has not performed that task within the previous 12 months period.

Certification for completion of task training can only be issued by a supervisor or trainer experienced at the task or by an experienced employee approved by the mine to conduct the training.

Hazard Training:

Visitors, Vendors, Delivery and Pick-up Drivers and others who access the site on a short term or an infrequent basis, and who are not engaged in the extraction and processing of minerals, will be informed of hazards that may potentially exist in their limited travel or access areas and how to avoid those hazards.

Site Specific Orientation:

Workers engaged in maintenance, service, production, or processing activities will receive the same Site Specific (Work Area Orientation) Training as IGD employees working at those activities or in those work areas.

Tab 10: EMPLOYEE HEALTH:

Occupational Health Program

Introduction:
Occupational safety and health is a cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment. The objective of an occupational safety and health program is to foster a safe and healthy work environment through knowledge and implementation of industrial hygiene, respiratory protection, hearing conservation, biological monitoring, hazard communication, and radiation protection.

Policy:
I G Drilling is committed to providing all resources required to implement and maintain this Occupational Health Program, and to holding all individuals' assigned responsibilities under the plan strictly accountable for properly discharging those responsibilities.

Scope:
The methods described in this document to identify measure and manage potential exposure to chemical, environmental, and physical hazards, and/or biologic agents, will extend to all areas of I G Drilling work sites. Responsibilities assigned to workers and to all levels of management will extend to contractors and all other persons performing work of any nature at IGD.

Responsibilities:
Operations Manager:

- Ensures provision of the resources necessary to implement the occupational safety and health programs.
- Ensures that appropriate levels of management implement and enforce requirements of the Occupational Health Program Plan in their respective departments.
- Directs that all relevant management decisions include an occupational health risk assessment and that Occupational Health Plan requirements are integrated where necessary into organizational activities.
- Provides the opportunity to have occupational health activity independently audited to ensure that program requirements are adequate and that health hazards are being controlled.

Field Supervision/Management:

- Ensure that means of identifying potential exposures to health hazards are incorporated into both mandatory and planned inspections of all working places in their respective areas of responsibility.
- Ensure that identifying potential health hazards is incorporated into Job Task Observations in their respective departments.
- Ensure that consideration for identifying and controlling health hazards is included in group meetings, employee interviews, and review of complaints processes.
- Will immediately implement area and/or task specific controls, including safe work procedures, to control or protect against any health hazard arising in their workplace and ensure the health of employees is not put at risk from exposure to those hazards.
- Will ensure that controls are applied to each material and chemical substance with known or suspected hazards properties with respect to acquiring, handling, storing, and disposing of those materials.
- Ensure that employees assigned to new work areas receive appropriate baseline monitoring.
- Will ensure that health hazards are communicated to appropriate management and to employees.
- Coordinate with the Occupational Health Administrator to determine that appropriate and feasible controls are implemented to reduce or eliminate occupational exposures.

Health and Safety Manager:

- Provides assistance to Field Management in reviewing report findings, and in evaluating and implementing engineering and/or administrative controls over health hazards.
- Ensures a systematic approach is used to Identify and evaluate potential chemical and physical agents and to develop appropriate controls. that will include:
    - Review of work activities,
    - Critical task analysis/procedures,
    - Hazard analysis/risk assessments/hazard controls
    - Task observation review and reporting,
    - Planned inspection review and reporting,
    - Providing input into development of operating procedures,
    - Providing input into management/employee surveys.
- Provides review of new or substituted products for potential health hazards prior to their purchase.
- Ensures a master record is maintained of the chemical composition of all substances used, stored, or transported as part of the operation and that these records are available to employees.
- Ensures that medical surveillance examinations are conducted in accordance with Company policies, regulatory requirements, and consistent with best management practices relative to specific exposures.
- Ensures occupational health reports and recommendations are communicated to all appropriate levels of the operating unit.

Employees:

- Will work in a manner consistent with Company procedures and regulations.
- Will report occupational health hazards or concerns to their supervisor.

Industrial Hygiene Sampling and Monitoring:

Regulatory Standards:

Regulatory standards affecting IGD will be the more stringent of the Threshold Limit Values for Chemical Substances in Workroom Air Adopted by ACGIH for the most current year. As need determines, additional regulatory values can be incorporated from NIOSH, OSHA, or other sources.

Health Hazard Control:

Based on monitoring results and data generated by field observations, inspections, and department input, site specific control measures may necessarily be developed and implemented at each facility, process, work location, or other source of exposure. The process of establishing acceptable controls shall be consistent with the guidelines detailed in the IGD Hierarchy of Controls.

- Elimination
- Substitution
- Design/Engineering Controls
- Administrative Controls
- Personal Protective Equipment (PPE)

The use of personal protective equipment shall only be permitted when engineering or other controls do not reduce the hazard to acceptable levels, are impractical, or in the interim while other controls are developed.

A surveillance program may be instituted as an administrative control when a hazardous agent cannot be eliminated from the work environment and early detection of an adverse health effect is possible through medical testing. Surveillance programs may include occupational history reviews, physical examinations, and biological monitoring, and will be used to determine trends in individual employee and employee population health.

Equipment and Calibration:
Sampling and monitoring equipment shall be maintained according to manufactures instructions including, but not limited to, yearly factory calibrations.

Data Management:
Results of any exposure monitoring shall be communicated in writing to the affected employee(s) within 10 working days of receipt of the laboratory report. Employees shall have access to their exposure records during the retention period as established by PMC. The Occupational Health Program Administrator shall be responsible for maintaining health hazard and exposure assessment data, and exposure monitoring results.

Biological Monitoring and Physical Evaluations:
Biological Monitoring:
A useful means of assessing certain occupational exposure to a harmful material is the analysis of biological samples obtained from an exposed or potentially exposed worker. This type of sampling is not a substitute for other means of workplace monitoring. Biological analysis may provide an indication of the body burden of the substance, the amount circulating in the blood, or the amount being excreted in urine.

Hazard Communication Program

Policy:

The purpose of this Hazard Communication Program is to ensure that all chemicals produced by, or imported to, IGD are identified and that information concerning chemical hazards is transmitted to employees. The transmittal of information is to be accomplished by means of comprehensive trainings, which are to include information on container labeling and the use of Safety Data Sheets (SDS).

Scope:

To inform each IGD employee who might potentially be exposed about chemical hazards and appropriate protective measures.

Definitions:

Chemical: A substance with a distinct molecular composition that is produced by or used in a chemical process.

Chemical Name: The scientific designation of a chemical in accordance with the nomenclature system of either the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS).

Common Name: Any designation or identification used to identify a chemical other than by its chemical name.

Consumer Product: A product or component of a product that is packaged, labeled, and distributed in the same form and concentration as it is sold for use by the general public.

Container: Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank or the like.

Exposed: Subjected to a physical or health hazard in the course of employment.

Hazard Warning: Any words, pictures, or symbols appearing on a label or other means of warning that convey specific physical and health hazards.

Hazardous Chemical: Any chemical that can present a physical or health hazard.

Health Hazard: An exposure for which there is statistically significant evidence that it can cause acute or chronic health effects in persons.

Label: Any written, printed, or graphic material displayed on or affixed to a container to identify its contents and convey other relevant information.

Mixture: Any combination of two or more chemicals which is not the result of a chemical reaction.

Ordinary Consumer Use: Household, family, school, recreation, or other personal use or enjoyment as opposed to business use.

Physical Hazard: A chemical for which there is scientifically valid evidence that it is: a combustible liquid, a compressed gas, an explosive, a flammable, organic peroxide, an oxidizer, pyrophoric, reactive, or water reactive.

Potentially Exposed: The possibility of being subjected to a physical or health hazard in the course of employment.

Safety Data Sheet (SDS): The term used to describe written or printed material providing detailed information on the properties, hazards, handling, or storage precautions, first aid measures and release response of a chemical.

Hazard Determination:

IGD will evaluate each chemical purchased to determine if it is hazardous based on the Safety Data Sheet. The chemical will be determined hazardous under the following conditions:

- The SDS states the chemical is hazardous.
- It is hazardous in accordance with 29 CFR 1910.1200.

Safety Data Sheets (SDS):

IGD will ensure an SDS is accessible to workers in paper or electronic form for each hazardous chemical before it is introduced to a work area. When a revised SDS is received from the manufacturer, any existing SDS will be replaced.

SDS for materials purchased and used by IGD and requiring one, will be maintained at each location where those materials are stored or used IGD employees will be informed of the location of SDS for materials provided by clients.

Labels:

Manufacturer's labeling will be considered adequate to comply with IGD container labeling requirements. IGD will not accept any product that is not properly labeled. If a label is missing or if the hazard information is unreadable, the label will be immediately replaced. If manufacturer labels become outdated the labels will be replaced. Replacement labels are available from the manufacturer.

Label Contents:

Labels must:

- Have a product identifier that matches section 1 of the SDS.
- Contain a signal word that identifies the potential hazard of the product.
- Display a GHS approved pictogram.
- Have a hazard statement(s) to describe the nature of hazard.
- Contain a precautionary statement to prevent or minimize adverse effects resulting from exposure or improper storage.
- List the name, address and phone number of the chemical manufacturer, distributor, or importer.
- Be prominently displayed, legible, accurate and in English.

If alternative labels are used (signs, placards, etc.) in lieu of the manufacturer's label they will:

- Identify the container to which it applies.
- Communicate the same information as required on a manufacturer prepared label.

Temporary Portable Containers:

Temporary, portable containers in which a hazardous chemical is transferred, do not have to be labeled if:

- The container is marked, clearly identifying the contents and,
- The employee knows the identity of the chemical, the hazards, and protective measures, and
- The portable container is left empty at the end of the shift

Training:

Employee education and training are required to inform employees on the nature and location of hazardous chemicals in their work area. Hazard Awareness and Avoidance Training will target new and transferred employees and will be completed before initial assignment to a work area or assignment. This training will include the physical and health hazards associated with the chemical, the need for protective measures and storage requirements.

Review of SDS and hazardous chemicals in the work area must be done on at least an annual basis to ensure all employees have current knowledge of hazardous chemicals in their work area.

In addition, whenever any new product enters the work area or new hazard information becomes available about an existing product, employees must be provided with additional training.

Further, all employees will be trained on the contents of this Haz-Com program during Orientation and Refresher Safety Training. Training will include the following:

- Haz-Com Standard requirements.
- Details of the IGD Haz-Com Program and how to access it.
- The location of the IGD hazardous chemical inventory.
- The location of SDS.
- Review of SDS format and how to find information.
- Labeling requirements.
- The potential health effects of hazardous agents.
- How to handle and use hazardous products.
- Methods to detect and control exposures.
- Potential levels of exposures
- Employee's responsibility for following established safe work practices to avoid exposures.
- Requirements for use, and limitations of personal protective equipment (PPE).

Respiratory Protection Program

Policy:

I G Drilling is committed to providing all resources required to implement and maintain this Respiratory Protection Plan (RPP), and to holding all individuals' assigned responsibilities under the plan strictly accountable for properly discharging those responsibilities. IGD will expend every effort to control employee exposures to gases, vapors, fumes, dusts, mists, and other potentially hazardous airborne contaminants through the use of feasible engineering controls and/or administrative controls.

The use of respiratory protection shall only be permitted when other controls do not reduce the hazard to acceptable levels, are not practical to implement, or in the interim while controls are being implemented.

The requirement to wear a respirator in a particular work area or at a particular task will be determined by knowledge of the hazards in an employee's particular work area as well as past sampling and monitoring data and/or industry or occupational health standard practice.

Responsibilities:

Program Administrator:

An employee trained in Occupational Health requirements and procedures will serve as Program Administrator and will:

- Be responsible for ensuring that workplace testing for the potential of exposure to airborne contaminants is conducted as required.
    - Ensure test results are communicated to workers within 10 days.
    - Recommend protective/control measures to appropriate management.
- Administer IGD's medical surveillance program.
- Recommend appropriate respiratory equipment.
- Ensure that training is conducted on respirator use and care.
- Ensure quantitative or qualitative fit testing is conducted in accordance with approved standards.
- Evaluate the respiratory protection program and recommend revisions to senior management as necessary.
- Maintain all required documentation and records.

Field Supervision/Management:

- Will ensure that this program is implemented and observed in their respective areas of responsibility.
- Will coordinate with the Program Administrator to ascertain that appropriate and feasible controls are implemented to reduce or eliminate occupational exposures.

Field Lead Persons:

- Will ensure compliance with requirements on a daily basis.
- Must monitor work and work areas to identify/monitor hazards.
- Will maintain supplies for proper respirator cleaning and storage.

Employees:

- Must wear respirators when and where required.
- Must use and care for respirators per program standards.
- Must inform management of hazards as they become aware of them.

General Requirements:
Respiratory equipment may be divided into two categories: devices placed over the nose and mouth to protect the respiratory tract by filtering out noxious particles or fumes (air purifying respirators) and devices that supply breathing air to the user (atmosphere supplying respirators).

Provisions of this program relative to medical surveillance apply to air purifying respirators only. Training on use and care of air purifying respirators is detailed in succeeding sections of this program document.
Requirements applying to all types of respirator use includes:

- Employees must be free from facial hair at point of seal.
- Employees are not permitted to wear headphones, jewelry, or other articles that may interfere with the seal of a respirator.
- Any malfunction of any respiratory equipment must be reported to IGD supervision. The equipment must be repaired or replaced prior to the next or continued use.
- Respirators are to be maintained in a clean and disinfected state.
- An adequate supply of appropriate cleaning and disinfectant material must be maintained at the cleaning station.
- Cartridges for air-purifying respirators must be changed at intervals recommended by the manufacturer or set by the Program Administrator. (See Cartridge Change Schedule Table)

Risk/Hazard Assessments:
Potential for exposure to airborne contaminants will be an integral component of all IGD risk assessment processes and approvals. Appropriate measures (engineering controls, administrative controls, PPE) will be implemented to ensure employees are protected against risk of exposure.

Hazard evaluations for airborne contaminants will include:

- Identification of hazardous substances used in the workplace.
- Review of work processes to determine potential exposures to hazardous substances.
- Exposure monitoring to quantify potential exposures to hazardous substances.

Lead Persons, Supervisors or Managers will ensure that risk assessments are conducted with all changes in equipment or to work processes may potentially affect exposure. If an employee feels that respiratory protection is needed during a particular activity, he/she is to contact IGD supervision or the Program Administrator. Supervision or the Program Administer will evaluate the potential hazard and communicate the results of that assessment back to the employee.

Medical Surveillance:
Candidates for employment who may be required to wear a respirator must undergo a medical evaluation. The employee must complete and submit a Confidential Respirator use Medical Questionnaire to a medical professional for determination and approval of the individual's ability to wear a respirator in the performance of their duties.

The Medical Professional reviewing the Medical Questionnaire and PFT will determine if an individual can wear a respirator, what type can be worn, and for what duration. Upon review of the PFT and the Medical Questionnaire, the Medical Provider will notify the Program Administrator of any limitations on respirator use and/or requirements for follow up evaluations. Once an employee is approved for respirator use, a Respirator Fit Test will be conducted, and a respirator issued.

Employees whose work assignments require continuing use of a respirator must complete a new Medical Questionnaire every three years.

Employees who elect to wear an Air Purifying Respirator voluntarily for medical or other approved reasons are subject to the same requirements as an individual required to use respiratory protection.

Additional medical evaluations may be required under the following circumstances.

- An employee develops symptoms related to his/her ability to use a respirator, such as shortness of breath, dizziness, chest pains, or wheezing.
- A change in workplace conditions may result in an increased physiological burden on the employee.

Selection and Availability of Respiratory Equipment:
The Program Administrator will select respiratory equipment based on hazard assessments or work area sampling results and ensure that an adequate supply of approved protective equipment is readily available for all known required uses and user special needs.

Respiratory equipment must be certified by the National Institute for Occupational Safety and Health (NIOSH) and shall be used in accordance with the terms of that certification. Filters, cartridges, and canisters must bear the appropriate NIOSH approval label. Labels must not be removed or defaced while equipment is in use. NIOSH approved use applications are found on the outside of respirator or cartridge packaging.

Various combinations of face pieces, mouthpieces, filters, cartridges, and canisters allowing the user to match the device to potential exposures will be considered when selecting respiratory equipment. Limiting factors of air purifying respirators will be considered when performing hazard assessments and establishing respiratory protection requirements. Those limitations include:

- Air purifying respirators cannot be used in oxygen-deficient atmospheres.
- Cartridges offer protection only for the contaminants for which they were tested and approved.
- Small absorbent or filter capacity will limit protection against contaminant concentrations.

Disposable respirators/particulate masks used to protect against identified or potential airborne contaminants are regulated in the same manner as all other air-purifying respirators and are subject to all conditions for respirator use other than positive/negative pressure field fit testing.

Fit Testing Requirements:
Fit testing is mandatory for all employees prior to issuance of respiratory equipment, whether use will be required or voluntary. Fit testing will be conducted:

- Prior to issuing an employee a respirator, and annually thereafter.
- When there are changes in the employee's physical characteristics that could affect respiratory fit (e.g., obvious changes in body weight, facial scarring, facial hair, etc.).
- With the size and type of equipment the employee will actually wear.
- In accordance with 29CFR 1910.134 guidelines for quantitative or qualitative testing.

Quantitative (QNFT) fit testing utilizing currently calibrated equipment may be used when available. Qualitative fit testing (QLFT) using Irritant Smoke (Stannic Chloride) or BITREX (Denatonium Benzoate) or equivalent will be utilized in the event that QNFT equipment is unavailable, or results are inconclusive.

Personnel required to wear a respirator other than particulate masks must perform a qualitative (positive/negative pressure) field fit test prior to each use. Employees will be trained on procedures for performing these tests.

Training:

Employees will be informed of tasks and work areas where respiratory protection is required during Orientation and Refresher Safety Training. Detailed training on the use and care of air purifying respirators will be provided each time a respirator is issued. Training will consist of the following:

- The potential health effects of specific hazards and where those hazards may be encountered.
- The importance of practicing proper respiratory protection measures when engineering or administrative controls provide only partial protection or are not feasible.
- Selection of appropriate protection devices based on risk assessments or sampling and monitoring results.
- The capabilities and limitations of respirators, cartridges and filters including:
    - APR equipment cannot be used in an oxygen deficient environment.
    - The requirements for changing out filters and cartridges based on conditions of use. (exposure, service life, humidity, particulate characteristics, resistance to breathing, other).
- Requirements and procedures for conducting daily positive and negative fit tests.
- Requirements for being clean shaven at point of seal.
- How to properly wear a respirator including head straps being in direct contact with the head.
- How to visually inspect respirators before and after each for damage.
    - Tightness of connections.
    - Condition of the face piece, headbands, valves, connecting tube and canisters.
    - Rubber and elastomer parts for pliability and signs of deterioration.
- Cleaning respirators after use, specifically:
    - Use of disposable wipes for daily or occasional cleaning.
    - Removing filters and cartridges.
    - Washing face pieces in disinfectant or detergent.
    - Rinsing completely in clean, warm water and air drying in a clean area.
    - Cleaning other respirator parts as recommended by manufacturer.
- Inspecting valves, head straps and other parts and replacing defective parts.
- Inserting new filters and cartridges and making sure seals are tight.
- Properly storing respirators in provided storage bags to prevent cross-contamination.

Respirator Cartridge Selection and Change Schedule

Contaminant	Cartridge/Filter Type	Change Schedule	Comments
Acetone	OV	A	
Ammonia	AM	A	
Asbestos	N100	A	
Carbon Dioxide	SA	N/A	
Carbon Disulfide	OV	A	
Carbon Monoxide	SA	N/A	
Chlorine	AG	A	
Ethylene Glycol	OV/P95	A (OV) / B (P95)	
Hydrogen Cyanide	SA	N/A	**NO** cartridges/filters are approved for HCN
Hydrogen Peroxide	OV	A	
Hydrogen Sulfide	AG	A	
Lead	N95	B	
Lime	N95	B	
Mercury Vapors	Hg	N/A	Change per End of Service Life Indicator
Nitric Acid	SA	N/A	
Nuisance Particulate	N95	B	
PAX	AG (Stable State) OV (Decomposing)	A A	Refer to SDS for storage and reactivity. Note conditions for respirator requirements.
Petroleum Distillates	OV	A	
Silica	N95	B	
Sodium Hydroxide	N95	A	
Sulfuric Acid	N95	A	
Weld Fumes (non-oil) Weld Fumes (oil)	N95 R95	A A	Use R95 masks/filters when welding on materials where hydrocarbon residues may be present

Cartridge Type Legend:

OV = Organic Vapors.
AG = Acid Gases.
P100 = 99.97% effective against non-oil particulate matter.
N95 = Meets regulatory requirements for most particulates w/o hydrocarbon vapors.
R95 = Meets most regulatory requirements for particulate with hydrocarbon residues present.
SA = Atmosphere supplying respiratory equipment.

Change Schedule Legend:

A = Must be changed after 8 hours of exposure or 30 days of service life.
B = Change when dirty, damaged, difficulty in breathing increases or after 30 days of use.

Hearing Conservation Program

Policy:

Workers employed by IGD, with the potential for exposure to the Action Level of a Time Weighted Average (TWA) of 85 dB or greater, will be enrolled in IGD's Hearing Conservation Program (HCP). Workers performing tasks with the potential for exposure to the Permissible Exposure Level (PEL) of a TWA of 90 dB will wear hearing protection approved for use at varying levels of exposure.

Responsibilities:

Field Supervision/Management will:

- Ensure provision of the resources necessary to implement the program.
- Ensure that program standards are implemented and enforced in their areas of responsibility.
- Ensure IGD risk assessment processes are followed for controlling noise exposures.
- Ensure that employees assigned to new work areas or tasks with identified noise overexposure potentials are enrolled in the HCP.
- Communicate identified noise overexposure potentials to the Safety Manager and to employees.
- Coordinate with the Manager of Safety to determine appropriate and feasible controls for mitigating occupational exposures.

Field Lead Persons will:

- Ensure employee compliance with requirements.
- Ensure approved hearing protection is readily available.

Safety Manager will:

- Assist in reviewing report findings and evaluating appropriate controls for over exposures to noise.
- Ensure employees enrolled in the HCP receive a base line audiometric test within 6 months of initial employment.
- Maintain a program of monitoring to measure and assess each miner's noise exposure sufficiently to determine continuing compliance with program standards.
- Ensure employees are informed on the results of monitoring and whether those results equal or exceed the Action Level, the Permissible Exposure Limit, or the Dual Hearing Protection level.
- Ensure audiometric testing is conducted by a qualified technician under direction of a physician or an audiologist.
- Ensure all employees are trained on Hearing Conservation measures, to include the following:
- Ensure audiometric test records are kept for duration of employment and six months thereafter.

Employees Will:

- Report any concern of increased noise levels in work areas to IGD supervision.
- Wear appropriate hearing protection in designated areas.
- Conduct work activity in such a way as to help reduce exposure to elevated noise levels.

Hearing Protection:

- Hearing protection use will be encouraged in areas with noise levels that exceed 85 dB TWA.
- Hearing protection use will be required in areas with noise levels that exceed 90 dB TWA.
- Dual Hearing Protection will be required when working in areas or at activities that meet or exceed105 dB TWA.
- No less than two types of plugs and two types of muffs will be made available for use by employees.
- Hearing Protection must be used and maintained in accordance with manufacturers' instructions.

Monitoring:

- Noise surveys will be conducted utilizing approved dosimeter technology and regulatory criteria to identify work areas and tasks that meet or exceed the Action Level or PEL.
- Noise surveys will be conducted on set schedules, and to address operational or equipment changes, or employee concerns.

Training:

- Hearing Conservation Program Training will be conducted within 30 days of an employee being enrolled into the program and every year thereafter. This training will include the following:
    - The effects of noise on hearing.
    - The purpose and value of wearing Hearing Protection.
    - The various types of Hearing Protection offered.
    - The advantages and disadvantages of the Hearing Protection offered.
    - The use and care of each type of protection used.
    - The general requirements of the Hearing Conservation Program.
    - Company and employee roles in maintaining noise controls or protection.
    - The purpose and value of audiometric testing and a summary of the procedures.
- Documentation will be maintained noting the date and type of training and given to each employee.

Audiometric Testing:

- Tests will be conducted by a qualified person, competent to CAOHC standards, and all tests will be reviewed under the direction of a medical professional or an audiologist.
- Testing equipment will meet CAOHC standards and perform to regulatory requirements.
- Baseline audiograms will be conducted on employees enrolled in the HCP within 6 months of being hired.
- Follow-up audiograms on HCP enrolled employees will be offered at least annually.
- Employee hearing records will include the following:
    - Name and job classification(s)
    - Copies of notification of any exposures above the Action Level.
    - Records of Hearing Conservation training.
    - Copies of all audiograms conducted at this site.
    - Evidence that the tests are valid.
    - Reports of any noise monitoring/surveys that included the employee.
    - Results of any follow up examinations...
- Employees will be provided a copy of all audiograms and results will be explained to them.
- In the event a Standard Threshold Shift is recognized, a retest will be scheduled within 30 days.
    - If the retest does not show a Shift, it will be determined to be a Temporary Threshold Shift and no further action will be taken.
- In the event a Standard Threshold Shift is confirmed by a Physician or Audiologist, the following events must occur:
    - Employee must be retrained in Hearing Conservation and Hearing Protection practices.
    - The employee may be offered alternative types of hearing protection.
    - The effectiveness of any engineering and administrative controls in the employee's work area will be reviewed, and any deficiencies corrected.
- A Standard Threshold Shift of 25 dB or greater will be reported to the appropriate regulatory agency.

Records:

- HCP records will be kept for the duration of employment and six months thereafter.
- Records are to be kept confidential and may only distributed with employees' written consent.
- Employees requesting a copy of hearing records must be provided with them within 15 working days.
- Transfer of records will be made available with written request and consent.

I G Drilling

Refusal of Offered Annual Audiometric Testing

I, _____, hereby acknowledge that I have been offered the opportunity for annual audiometric testing this date (Date) _____, and that I decline this offer for testing.

Employee Signature: _____ Date: _____
Witness Signature: _____ Date: _____

I G Drilling
Hearing Conservation Program-Questionnaire

____ Baseline Audiogram ____ Annual Audiogram Date: _____

Full Name: _____ Date of Birth: _____

1. Have you been aware of any hearing loss? Y / N **1a.** Which Ear? ____Right ____Left ____Both

2. Do you have any relatives with hearing loss? Y / N **2a.** Relationship: _____

2b. Was the loss ____sudden or ____gradual?

3. Do you have any dizziness or balance problems? Y / N **3a.** First Year? _____ Last Year? _____

3b. Frequency? _____

4. Have you had ringing or roaring in your ears? Y / N **4a.** If yes, describe: _____

5. Have you had exposure to firearms? Y / N **5a.** If yes, type? _____

5b. Rounds per year? _____ **5c**. Total Years? _____

6. Are you on any prescription drugs? Y / N **6a.** Drug Name? _____

6b. For? _____ **6c.** No. Years? _____

7. Have you served in the military? Y / N **7a.** If yes, what branch? _____

7b. Job? _____ **7c.** Year Enlisted? _____ Discharged? _____

8. Have you ever had your hearing tested? Y / N **8a.** By? _____

8b. City / State: _____ **8c.** Year? _____

9. Have you ever worked in noise? Y / N **9a.** Where? _____

9b. Job? _____ **9c.** No. Years? _____

10. Do you have excessive earwax? Y / N **10a.** Do you have your ears washed? **Y / N**

10b. If so, frequency? _____

11. Have you ever had earaches or ear drainage? Y / N **11a.** Which Ear? ____Right ____Left Ear ____Both

11b. What year? _____ **11c.** Frequency? _____

12. Please circle each activity with which you have ever been involved:

a) Loud Music/Concerts b) Power Boats/Jet Ski c) Car/Drag Races d) Artillery or Flying
e) Home Power Tools f) Motorcycles/Snowmobile g) Hunting or Shooting h) Home Tractor-Machinery

13. Please circle any ear problems or head and ear injuries that apply to you:

a) Ear Abnormality b) Head Trauma c) Skull Fracture d) Ear Surgery
e) Explosion/Blast f) Hearing Aid g) Ruptured/Punctured Eardrum

I certify that the above statements are accurate to the best of my knowledge. This information and the results of my hearing tests may be released to my employer.

Signature: _____ Date: _____

During annual hearing test employee properly demonstrated the fitting of their preferred hearing protection. Y / N

Type of Ear Plug or Muff preferred _____Employee Initial: _____ OHC Initials: _____

----------To be completed by OHC----------

Otoscope Examination:

Employee's Left Ear
□ Clear □ Wax □ Excessive Wax
□ Other: _____

Employee's Right Ear
□ Clear □ Wax □ Excessive Wax
□ Other: _____

I G Drilling
Heat Illness Prevention Procedures

These procedures define actions to be taken when temperature extremes generated by working conditions or by hot weather conditions might potentially pose a risk to the health and safety of employees.

IGD will ensure the means to maintain adequate supplies of drinking water and electrolyte replacement tablets available at all work locations for consumption by on duty employees, and will instruct workers and supervision on the causes, and signs and symptoms of heat related illness.

Supervision and employees shall practice heat illness prevention measures when conditions are such that workers may feel the onset of physical distress or start to lose excessive body liquids through perspiration. When these conditions arise, the following procedures must be implemented:

Employees:

- Must consume water often enough, and in sufficient quantities, to stay hydrated.
  NOTE: Consuming "Energy Drinks" or other beverages is not prohibited but is strongly discouraged.
- Must take breaks from work activity and/or conditions contributing to a rise in core body temperature.
- Should utilize electrolyte replacement tablets when losing body liquids through perspiration.

Field Lead Persons:

- Must remind employees each shift at line-out meetings to:
  - Drink water frequently
  - Take rest breaks per these procedures
  - Monitor their own physical condition and that of fellow workers, and to immediately notify supervision if anyone exhibits signs of heat related distress.
- Will rotate personnel through work assignments, allowing adequate time away from stressful conditions for workers to maintain safe levels of body temperature.
- Will ensure adequate supplies of drinking water and electrolyte tablets are readily available.
- Will immediately remove any person exhibiting sign of heat distress from service and request assistance from emergency response personnel as necessary.

TAB 11. EMERGENCY PREPAREDNESS:

Policy:

IGD will train all Managers, Supervisors and Lead Persons on incident response procedures and train all employees on injury / illness response. Training will include procedures and protocols for utilization of mine site emergency response systems and interaction with mine emergency response personnel.

Incident Command Protocols:

For the purposes of establishing response procedures, an incident will be defined as "an event which results in harm or loss to persons, property, production, or the environment.

Incident command responsibilities are assumed by the first person responding to an incident and are passed to each succeeding arrival with a higher level of training or authority.

Incident Response Procedures:

Immediate responsibilities in the event of an incident, in order of importance, are as follows:

- Control the scene. (Delegate responsibilities if necessary.)
  - Ensure the safety of personnel. (Evacuate the area if necessary).
  - Attempt to determine the nature of any injury and the required response.
  - Respond to small fires with extinguishers if safe to do so.
- Call for additional resources as needed.
- Notify appropriate management.
- Arrange for transport of injured individuals if necessary.
- Arrange for substance abuse testing if applicable.
- Initiate investigation procedures (If required)
- Complete required reports.

Incidents Reportable to Regulatory Agencies:

A number of incidents must be reported to MSHA <u>within 15 minutes of the first opportunity to do so</u>. It is IMPERRATIVE that appropriate management is informed of these as soon as possible to accomplish this reporting.

"Immediately Reportable" Incidents at surface mines that OMC might be required to report include:

- An injury with potential for death
- Entrapment for more than 30 min.
- Unplanned fire of more than 30 min.
- On-site death of ANY individual
- Unplanned gas or dust explosion

Names and numbers of persons to contact in the event of an immediately reportable incident are listed updated in IGD's Emergency Response Plan and are posted throughout work areas.

Environmental Incidents:

<u>Materials Release: (Spills)</u>

- Contain the release as safety and resources allow.
- Notify appropriate management

<u>Wildlife Mortality:</u>

- Notify appropriate management.

Injury and Illness:

All IGD employees will at a minimum: receive instruction on performing patient assessments, providing artificial respiration, control of bleeding and treating shock, burns, bruises, and broken bones.