

# STANDARD OPERATING PROCEDURE LIGHTNING EVENT

Effective Date: 10/8/2018

Document Number: MNSOP103-0006

Rev: 2



## PURPOSE:

The purpose of this document is to outline a plan for Bingham Canyon Mine production control to coordinate the initiation of various department lightning response plans in the event of lightning strike(s) being detected by the perimeter detection system. This procedure defines what action(s) production controllers are to take when a lightning strike has occurred. The important components of any storm management procedure include: vigilant monitoring of local weather conditions; monitoring and maintenance of the lightning detection system and delivery of the warning message in the event of a lightning strike.

## SCOPE:

The procedures should be understood and followed by all Bingham Canyon Mine employees' and contractors. The seemingly random nature of thunderstorms cannot guarantee the individual or group absolute protection from lightning strikes, however, being aware of, and following proven lightning safety guidelines can greatly reduce the risk of injury or death.

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**PROCESS:****This policy/procedure will address:**

- Early recognition of lightning via mine lightning detection system and observation.
- Notification to all mine employees and contractors at risk from lightning strikes.
- Evacuation of workers in higher risk jobs such as mine blast crews, electrical line crews and other operating crews whose work may present a higher risk of harm from lightning.

**HEALTH AND SAFETY CONSIDERATIONS:**

This SOP was created to reduce the risk to employees who work outdoors in open spaces, on or near tall objects, with explosives or with conductive materials such as metal which have a greater exposure to lightning. Workers listed below are deemed higher risk at the mine:

- Explosive handling or storage / blasting crews
- Power utility field repair / Electrical line crew
- Geologist /Surveyors
- Pipeline installers / Water service
- Field Maintenance Crews

Compliance with this procedure will not necessarily prevent personal injury due to lightning, but will reduce the probability of injury.

It is the responsibility of all personnel on mine property to keep safety in mind at all times. Part of that is general awareness of lightning. If a lightning strike is seen in or near the mine a call to production should be made to ensure they are aware of the situation.

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**DEFINITIONS:**Electrical Storm:

One or more sudden electrical discharges manifested by a brief, intense illumination, lightning.

Lightning:

A flash of light in the sky caused by an electrical discharge between clouds or between a cloud and the Earth's surface.

Thunder:

The crashing or booming sound produced by rapidly expanding air along the path of the electrical discharge of lightning.

Lightning Strike Detector:

A strike detector is designed to allow real-time localized lightning strike warnings to be detected at a distance of up to 20 miles away. There are two of these detectors located at the perimeter of the mine.

Safe Shelter:

Designated place for protection of employees and personal. A building or a fully enclosed vehicle, bus, car truck, dozer, loader ETC with the windows rolled up and all doors shut.

**REFERENCES:**

NLSI- National Lightning Safety Institute

NWS (National Weather Service)- Lightning Safety

Risk Assessment #6695 & # 8969

**PROCEDURES:**DETECTION:

Lightning conditions are to be monitored continuously through the perimeter detection system. Production control will monitor a real time screen in dispatch for

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any alarms. In the event of an alarm production control will initiate the notification process for the alert levels.

## LIGHTNING ALERT LEVELS:

Two stage lightning alert levels will be used: ORANGE AND RED. The responsibility and activities by alert level for the production controller are listed below.

### **Orange Alert Level:**

- Lightning is detected within 10 miles of the lightning detection monitor.
- Production Control will communicate an Orange Alert twice within the first 2 minutes instructing mine personnel to follow their established area SOP's and communicate Orange Alert in half hour intervals.
- Protected/unprotected personnel working outdoors, (surveyors, geology, drilling, contractors, etc.) must be alerted by radio to the warning(s) communicated by the production controller.
- Non-essential personnel must seek shelter inside a shelter or a safe location.
- Area Supervisors must be ready to evacuate unprotected personnel in case weather conditions change escalating to a RED ALERT. Personnel close to a shelter should be prepared to move into it.
- **Blast Crew** prepare Blast Exclusion Zone and/or Equipment Exclusion Zone areas.
- **Field Maintenance / Mobile Maintenance** do not commence any further crane lifts or loads when the ORANGE ALERT is notified. Retract booms of cranes and position in cradle. Place all loads on the ground. Demarcate crane work area and drop zones to prevent access by unauthorized personnel. Lower any EWP and scissor lifts.
- Production Control will announce when the ORANGE ALERT is terminated.
- The ORANGE ALERT threat has passed when a lightning strike has not registered within 10 miles during the past 45 minutes.
- Production controller will deliver a message over the mine ALERT radio channel similar to this: "Attention all mine personnel, Orange Alert level for lightning has been initiated. Please activate your department specific Lightning Response Plan." \*Repeat once more\* Contact area supervisor for additional information if needed.

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Lightning Alert Termination: "Attention all mine personnel, Orange Alert level for lightning has been terminated." \*Repeat once more\*

## Red Alert Level:

- Production control will communicate the red alert twice within the first 2 minutes of detection and will in addition, send a text via Modular and Terrain instructing all mine personnel to follow their established SOP's for the area. Communication of Red Alert will continue in 15 minute intervals until all clear.
- Lightning is within 5 miles of the lightning detection unit.
- At risk, outdoor activities should cease.
- Employees may travel between safe shelters. Transition must be made without undue delay. (Building to building, building to bus, vehicle to building, etc.)
- Personnel must remain in the equipment or buildings with windows and doors completely closed until RED ALERT has been cleared.
- Operations such as loading, hauling, dumping and auxiliary service can continue as conditions warrant.

## OPERATIONS /Red Alert Level:

**Front line Operations Supervision** will use computer generated information along with onsite evaluation to determine whether an operations stand down of trucks and shovels is required. If so the supervisor will monitor conditions until operations can resume.

- **Blasting** In the event that the loaded blast site is not completed and ready for blast initiation, the blast exclusion zone will be cleared out 1500 feet standoff and guarded until the RED ALERT is cleared. If the blast site is complete and ready for the blast initiation sequence will commence. (Only hand held radios will be used during the RED ALERT.)
- **Drills** will continue to operate as normal during RED ALERT; operators are to stay in cabs with windows closed/up and doors closed until RED ALERT is lifted. Activities that require the operator to exit the cab should not be completed during RED ALERT (e.g. refueling, watering).
- **Shovels** will continue to operate during RED ALERT; operators are to stay in cabs until the RED ALERT is lifted

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- **Haul Trucks** will continue to operate as normal; operators are to stay in cabs with windows closed/up and doors closed until RED ALERT is lifted. Activities that require the operator to exit the cab should not be completed during RED ALERT (e.g. refueling, equip inspections)
- **Fuel Island Activities** Fuel Island Attendants take cover in Fuel Island shed. No fuel / lube allowed during RED ALERT. Fuel Island Attendant waits for RED ALERT to end before returning outside for Fuel Attendant duties
- **Line Crew / Water Service** operators and craftsman to take cover in vehicles or buildings until RED ALERT is over

## ASSET MANAGEMENT/Red Alert Level:

- **Field Maintenance / Mobile Maintenance** During RED ALERT maintenance activities will cease and craftsman will take cover inside of equipment or vehicles until RED ALERT is over
- No contact should be made with truck decks, tag lines or load restraints.
- If the boom of the crane has not been retracted, it is to be left extended with the load in situ. Notification to the entire work area via radio communication about unaccompanied suspended load shall be completed. The load shall remain under the control of the crane operator until the all clear has been given by the crane operator.
- Maintenance activities taking place in workshops and under shelter can and should continue during the RED ALERT.

The RED ALERT threat has passed when a Lightning strike has not registered within 5 miles during the past 30 minutes.

Production controller will deliver a message over the ALERT channel similar to this: "Attention all mine personnel, Red Alert level for lightning has been initiated. Please activate your department specific Lightning Response Plan. All personnel on the ground must get to a safe location immediately." \*Repeat once more\* "Contact area supervisor for additional information if needed."

Alert Termination: "Attention all mine personnel, Red Alert level for lightning has been terminated. It is safe to resume normal mining activities." \*Repeat once more\*

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## PERSONNEL WORKING OUTDOORS:

No place outdoors is 100% safe from Lightning. If caught in the open during a lightning and thunder storm you need to seek appropriate shelter immediately! If no shelter is available, you should crouch down immediately in the lowest possible spot and roll up in a ball with feet together on the ground. - **DO NOT** lie down.

## PRECAUTIONS IF OUTDOORS DURING A LIGHTNING THUNDER STORM:

- Stay off and away from anything tall or high, including rooftops, scaffolding, utility poles and ladders.
- Stay off and away from large equipment such as bulldozers, cranes, backhoes, track loaders, shovels and tractors. If operating this equipment remain inside with all doors and windows shut.
- Do not touch materials or surfaces that can conduct electricity, including metal scaffolding, metal equipment, utility lines, water, water pipes and plumbing.
- Leave areas with explosives or munitions.
- Avoid hill tops and open spaces
- Avoid standing in groups; maintain a distance of at least 15 feet to other people.
- Do not stand under or on top of bridges
- Do not carry out any repair work on overhead aerials or metallic structures EG Electric shovels, drill mast, power polls etc. during lightning and thunder storms.
- If your equipment or vehicle has been struck by lightning remain inside until the RED ALERT has been terminated. In the event of an emergency such as fire call in a mayday and get to a safe location, adopt the crouch position.

## WORKING INDOORS DURING LIGHTNING / THUNDER STORM:

- Avoid contact with water
- Stay away from doors or windows
- Do not lean against metallic doors and window

## Production Control Lightning Response Plan:

### If Orange Alarm Sounds:

- Acknowledge alarm by entering in log-in information.

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- Call Blast supervisor (if during dayshift) and alert them to the alarm.
- Make a call out over radio ALERT channel about Orange Lightning Watch Alert.
- Have departments activate their lightning response plans.
- After 45 minutes of no additional alarms terminate Orange Lightning Watch Alert over ALERT channel.

## If Red Alarm Sounds:

- Acknowledge alarm by entering in log-in information.
- Make a call out over the radio ALERT channel about the Red Lightning Alert.
- Advise all cranes to lower their booms and all personnel on the ground to seek shelter.
- Have departments activate their lightning response plans.
- After 30 minutes of no additional Red alarms terminate Red Lightning Alert over ALERT channel.

## REVISION/REVIEW HISTORY:

MOC#	Description of Change	Prepared By	Date
21109	Implementation	Jesse Memales	12/15/2012
No MOC	Adding a review schedule. No MOC needed	Shawn Bateman & Lisa Jansson	1/9/2014
26526	Revised. Next review by 7-2019.	Robert Robles	7/2014
53066	Updated SOP to allow drillers to continue work in cab during lightning.	Sarah Schwarz	10/2018