Blasting-Sleeping Patterns

TASK:	Blasting-Sleeping Patterns		
DUTY:	Blast Crew		
JOB/OCCUPATION NAME:	**Blaster:**	**TASK ANALYSIS NO:**	**REVISION:** 1.0
DEPARTMENT:	**SURFACE OPERATIONS:**	**SITE:**	

Performance References:	**Development References:**
• Task Training and 5000-23 for equipment operated.	

No.	Step (What)	Explanation (How)	C	NC
1	**Demarcation of Blast Patterns (including "Sleeping" Patterns)**	1. The blast pattern will be demarcated according to the current Surface Blasting Safety Procedures 2. In addition, a minimum of two (2) red LED flashing lights shall be placed at the pattern entry to demarcate the "sleeping" pattern to ensure anyone approaching the pattern at night is aware of the associated hazard. The same type of delineators will be placed on any active location (loading or support equipment muck pile or drill pattern) adjacent to the "sleeping" pattern. 3. A minimum of two signs with *RED flashing LED* lights stating **"Loaded Blast Holes"** will be placed at the entrance to an area or bench where the sleeping pattern is located, one on each side of the entry point. 4. It will be the responsibility of the Blaster or designee to ensure adequate lighting is in place for the night shift(s); adequate lighting in support of the affective night shift pattern observation (as required in Step 5, Part 1). A minimum of one light plant will be utilized to enhance the lighting available from the pit stadium lighting (fixed location); the goal is to ensure illumination of the sleeping pattern in support of a quality, physical observation.		

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(CONT.)

No.	Step (What)	Explanation (How)	C	NC
2	**Identify Reactive Ground**	1. Reactive areas can be caused by the presence of pyrrhotite, marcasite, fine-grained sooty pyrite, sulfur, and other natural occurring sulfide minerals. 2. Geologists will be required to identify potential reactive areas in sulfide material prior to loading or priming of holes. They will supply a map of the pattern to the blasting crew showing the potential reactive ground within the pattern. 3. The blast crew and others will maintain constant awareness of possible reactive areas based on the color of drill cuttings, smells associated with sulfide mineralization, and past experience. 4. At the beginning of the blast-hole loading process, all holes in sulfide material will have temperatures taken. Any anomalous temps will be documented on the blast report for future reference. Anomalous is defined as being 10 degrees above the average hole temp of the pattern. Blast hole temperatures will be taken again prior to stemming if the holes will be part of a sleeping pattern. 5. When blast hole temperatures are measured in sulfide areas, by the blast crew, the average and low-to-high spread temperatures should be established for any given area to support the determination of “no” reactivity. 6. Reactive blast holes with an increase in temperature of 10 above the documented average will be identified and loaded and stemmed at the end of the loading cycle. For additional hazard mitigation, these holes will be sleeved and loaded with a buffered product. 7. Reactive blast holes with an increase in temperatures will be loaded and shot within 12 hours. Reactive holes will not be loaded and slept overnight, so will not be a part of a sleeping pattern. 8. General: Additional controls associated with blasting in reactive ground locations are found in the Regional Surface Blasting Safety Procedures; such reactive ground STPs apply. .		

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3	**Loading Holes for "Sleeping" Patterns**	1. All blast holes in sulfide material will be loaded with a buffered product. Buffering agents will include urea or zinc oxide (or other manufacturer approved chemicals). 2. A 5 row (not to exceed 100 holes) load and stem sequence will be utilized in reactive ground related patterns. This will facilitate the opportunity to close-off the pattern and initiate a shot should a reactive situation occur (blasting agent burn). 3. When electronic detonators are used for in-hole priming in reactive areas all measures will be adhered to for maximum protection of the blasting cap (protection from exposures to high temperatures i.e. reactive blast holes). 4. When stemming blast-holes in sulfide areas, only inert oxide aggregate material will be used. 5. Any holes containing standing water (wet holes) will not be loaded and "slept". Wet holes will be loaded, stemmed, and shot on the same day. 6. Blast-holes will not be slept for more than three (3) days (72 hours) using 4 pm as the start of the clock.		
4	**Communication of "Sleeping" Patterns**	1. The blasting Foreman or designee will inform the Mine site via e-mail notification of the specific location of a "sleeping" pattern by pit ID, cut ID, bench level, location (north, south, east, west, etc.). 2. The Blast Hotline will state if there will be a "sleeping" pattern for that day. 3. A white board in the Mine Lineout Room (admin shift change room) will provide the information of any planned "sleeping" pattern(s); specific pattern information like pit ID, cut ID, bench level, location (north, south, etc.). 4. Verbal communication, identifying any "sleeping" patterns, will occur between the Blasting Foreman or designee and the Production and Maintenance Foremen. Details shall be included in the shift-change report.		

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No.	Step (What)	Explanation (How)	C	NC
4	**Communication of "Sleeping" Patterns (Cont.)**	5. The Blasting Foreman (or designee) will assign and communicate the guarding requirements (perimeter and specific locations) in the case of lightning or reactivity on the blast site including any "sleeping" pattern(s). 6. The drill and blast Foreman or designee will inform the drillers, during their line out activities, of any "sleeping" pattern(s); associated maintenance protocol will apply such as the minimum 50 foot distance from loaded holes where welding activities are taking place.		
5	**Observation of "sleeping" Patterns at night**	1. On two hour intervals during night shift, a production Foreman or designee will observe the "sleeping" pattern for any unauthorized activity and signs of reactivity like smoking, steaming, or other visible indicators. 2. If any signs of reactivity are observed, that area of the mine will be cleared and guarded using the same process utilized for pre-blast clearing. 3. The effected blast zone perimeter will be guarded and maintained to stay clear until the smoke has subsided. Only one person shall observe this activity from a predetermined safe distance as stated in the blast design and blast crew plans.		
6	**Electrical Storms - Lightning**	1. The Electrical Storm Procedure will apply to all blast patterns including "sleeping" patterns.		
7	**All Other Blasting Procedures**	1. All other current blasting procedures will continue to be applicable; procedures presented herein (Blasting – Sleeping Patterns) are supplemental to all existing procedures.		

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Date Training Completed: _____

Trainee (print):_____ Signature: _____

Trainer (print): _____ Signature: _____