

EXPLOSIVES USAGE/SURFACE HIF AUDIT - 17/06/2003 02:56:25 PM

1. RECORDS

Point	Standard	Guideline
1.1	Blasts are planned and designed to ensure required blast results eg good fragmentation, displacement of muck pile etc	Intent : To verify that blast parameters such as burden, spacing instantaneous charge, and stemming requirements are predetermined and documented. Personnel : Blasting engineer, pit planning engineer etc. Method : Interview persons responsible for blast planning and view a sample of blast records.
1.2	Drilling patterns are laid out in accordance with the design.	Intent : To verify that blast patterns are marked out in accordance with the design Personnel : Blasting engineer, surveyors and drilling crews. Method : View a sample of blast records and plans. Inspect current shots in progress to observe the pattern layout. Interview the persons responsible for marking up the pattern.
1.3	Survey records of blast are kept.	Intent : To verify that the limits of shots in 3 dimensions are determined pre and post blast. Personnel : Surveyors and blast engineer etc. Method : Inspect the blast records that are kept including the survey plans.
1.4	Records of every blast are kept including key blasting parameters.	Intent : To verify that records of shots are detailed. Personnel : Surveyors and blast engineer etc. Method : Inspect the blast records that are kept.
1.5	There is a system in place to assess and deal with dangers from fly rock to any person, property and public property	Intent : To verify compliance with MSIA regulation 8.30. Personnel : Quarry Manager and blast engineer etc. Method : View the procedures and blast records that are kept.
1.6	Occurrences such as any accident or damage to property by fly rock (or close calls) are recorded.	Intent : To verify that records of blasting mishaps are detailed. Personnel : Surveyors and blast engineer etc. Method : Inspect the blast records that are kept.
1.7	Where airblast overpressure or ground vibration could be a problem, records are kept including complaints.	Intent : To verify that records of blasting and complaints are detailed. Personnel : Surveyors and blast engineer etc. Method : Inspect the records that are kept.

2. DRILLING PRECAUTIONS

Point	Standard	Guideline
2.1	Drilling is not carried out on a face or bench until it has been checked for misfires	Intent : To verify compliance with MSIA regulation 8.22.1 Personnel : Drilling personnel. Method : Interview drilling personnel , inspect current drilling and view procedures.

2.2	Drilling is not carried out in a quarry operation where a portion of the hole is closer than 6 metres to a hole containing explosives or blasting agent except for clearing a misfire as per the instructions of the quarry manager or a competent person authorised by him	Intent : To verify compliance with MSIA regulation 8.22. Personnel : Drilling personnel. Method : Interview drilling personnel , inspect current drilling and view procedures.
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3. CHARGING OPERATIONS

Point	Standard	Guideline
3.1	Before charging commences personnel and machinery not required for charging operations are removed from the area.	Intent : To verify that during charging operations only essential personnel and machinery are present. Personnel : Production personnel in general. Method : Interview general mine personnel. View written procedures.
3.2	Warning signs that charging operations are in progress are displayed.	Intent : To verify that warning signs are used during charging operations. Personnel : Charging personnel in general. Method : Interview charging personnel. View written procedures and inspect charging in progress.
3.3	Cartridges of explosives are not forced into holes.	Intent : To verify that compliance .MSIA regulation 8.24.2(b). Personnel : Charging personnel in general. Method : Interview charging personnel. View written procedures and inspect charging in progress.
3.4	Only those holes that are intended to be blasted in that blast are charged	Intent : To verify compliance with MSIA regulation 8.24.4. Personnel : Charging personnel in general. Method : Interview charging personnel. View written procedures and inspect charging in progress.
3.5	Polythene lay flat blasthole liners are not used where loose ANFO is poured on top of a primer.	Intent : To verify safe charging procedures are used when using polythene liners. Personnel : Charging personnel in general. Method : Interview charging personnel. View written procedures and inspect charging in progress.
3.6	The depth and condition of blastholes are checked prior to charging.	Intent : To verify that drill holes are checked prior to charging for correct depth, blockages temperature etc as applicable. Personnel : Charging personnel in general. Method : Interview charging personnel. View written procedures and inspect charging in progress.
3.7	No persons smoke while handling explosives or charging.	Intent : To verify compliance with MSIA regulation 8.13. Personnel : Charging personnel in general. Method : Interview charging personnel. View written procedures and inspect charging in progress.
3.8	Any blast hole that is hot from previous blasting, drilling or any other cause is not charged until sufficiently cool.	Intent : To verify compliance with MSIA regulation 8.54 & 8.55. Personnel : Charging personnel in general. Method : Interview charging personnel. View written procedures.
3.9	A sufficient depth of each blasthole is left uncharged to permit adequate stemming.	Intent : To verify that adequate stemming is used when charging holes. Personnel : Charging personnel in general. Method : Interview charging personnel. View written procedures and inspect charging in progress.

3.10	Care is taken in charging and stemming operations to avoid damaging down lines or allowing them to be pulled down in hole.	Intent : To verify that good charging practices are used. Personnel : Charging personnel in general. Method : Interview charging personnel. View written procedures and inspect charging in progress.
3.11	Stemming is completed as soon as possible after charging.	Intent : To verify that good charging practices are used. Personnel : Charging personnel in general. Method : Interview charging personnel. View written procedures and inspect charging in progress.
3.12	Explosive in cartridge form is not dropped into any blasthole.	Intent : To verify compliance with MSIA regulation 8.24. Personnel : Charging personnel in general. Method : Interview charging personnel. View written procedures and inspect charging in progress.
3.13	No rockdrill, shovel, machine or vehicle (except the vehicle or machine used for charging operations) is operated within 6 metres from any hole containing a charge.	Intent : To verify compliance with MSIA regulation 8.24. Personnel : Mine personnel in general. Method : Interview mine personnel. View written procedures and inspect charging in progress.
3.14	Any charge in a designated blast which has not been fired or has not exploded is treated as misfire.	Intent : To verify compliance with MSIA regulation 8.24. Personnel : Charging personnel in general. Method : Interview charging personnel. View written procedures and inspect misfire record book.

4. WARNING PROCEDURES

Point	Standard	Guideline
4.1	The Quarry manager determines the zone of influence of blasting.	Intent : To verify that exclusion zones used during blasting are planned for each blast. Personnel : Quarry Manager. Method : Interview Quarry Manager. View written procedures and inspect records.
4.2	All persons in the vicinity of the blasting area are warned and moved to a safe place before the shot is fired.	Intent : To verify compliance with MSIA regulation 8.26. Personnel : Mine personnel in general. Method : Interview mine personnel. View written procedures.
4.3	An audible warning device (a modulated frequency siren) is installed and used at the mine site.	Intent : To verify compliance with MSIA regulation 8.26 Personnel : Mine personnel in general. Method : Interview mine personnel. View written procedures.
4.4	All means of entry to the place of blasting are securely guarded against entry by persons, or warning notices are erected to prevent entry.	Intent : To verify compliance with MSIA regulation 8.26. Personnel : Mine personnel in general. Method : Interview mine personnel. View written procedures.
4.5	Notices are erected warning that the noise from the audible warning device is a signal that blasting is taking place.	Intent : To verify compliance with MSIA regulation 8.26. Personnel : Firing personnel in general. Method : Interview mine personnel. View notices.

5. FIRING TIMES

Point	Standard	Guideline
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5.1	Firing times are authorised by the Registered Manager.	Intent : To verify compliance with MSIA regulation 8.28. Personnel : Registered Manager. Method : Determine the standard firing times set by the manager.
5.2	Blasting does not occur at night except for blasting to remove obstructions in crushers, making workings safe, or firing misfired holes if permission is received from the Quarry Manager or his representative in every case.	Intent : To verify compliance with MSIA regulation 8.28. Personnel : Mine personnel in general. Method : Interview mine personnel. View written procedures and the blasting records.
5.3	The manager determines blasting times and any other controls necessary, where blasting is likely to constitute a public nuisance in a built up area.	Intent : To verify compliance with MSIA regulation 8.28. Personnel : Mine personnel in general. Method : Interview mine personnel. View written procedures and the blasting records.

6. HANDLING MISFIRES

Point	Standard	Guideline
6.1	There is a written procedure that provides a safe system of entry and inspection for misfires before resuming normal work in an area that has just been blasted.	Intent : To verify compliance with MSIA regulation 8.42. Personnel : Firing personnel in general. Method : Interview mine personnel. View procedures.
6.2	There is a procedure in place for dealing with misfires.	Intent : To verify compliance with MSIA regulation 8.42, 8.45 to 8.50. Personnel : Firing personnel in general. Method : Interview mine personnel. View procedures and records.
6.3	There is a procedure in place that ensures that a misfire occurring at the end of a shift is reported to the relieving person as well as the Quarry Manager.	Intent : To verify that an effective communication system is in place for information about misfires. Personnel : Quarry Manager and mine personnel in general. Method : Interview mine personnel. View written procedures and the misfire record book.
6.4	Inspections carried out for misfires and any actions taken as a result of misfires are recorded in the record book.	Intent : To verify compliance with MSIA regulation 8.46. Personnel : Quarry Manager. Method : Interview mine personnel. View written procedures and the misfire record book.

7. ELECTRIC BLASTING

Point	Standard	Guideline
7.1	Only exploders approved by Chief Inspector of Explosives (CIE) are used.	Intent : To verify that only suitable exploders are in use on the site as required by MSIA regulation 8.34.2. Personnel : Firing personnel in general. Method : Interview firing personnel. View equipment used check against list of approved devices.
7.2	A system is in place that ensures that exploders are tested and maintained in good working order.	Intent : To verify that exploders are tested and maintained as required by MSIA regulation 8.32. Personnel : Blast engineer and maintenance personnel. Method : Interview personnel. View equipment used. View maintenance records.

7.3	Only circuit testers approved by CIE are used.	Intent : To verify that only suitable circuit testers are used. .in compliance with MSIA regulation 8.33.1 Personnel : Blast engineer and maintenance personnel. Method : Interview personnel. View equipment used. Check against list of approved devices.
7.4	A system is in place that ensures that circuit testers are maintained in good and efficient condition.	Intent : To verify that circuit testers are tested and maintained as required by MSIA regulation 8.32. Personnel : Blast engineer and maintenance personnel. Method : Interview personnel. View equipment used. View maintenance records.
7.5	There is a procedure in place that provides for safe connecting up, testing and firing.	Intent : To verify that there is a procedure in place that covers the tying in ,testing, and firing of shots on the site. Personnel : Blast engineer and maintenance personnel. Method : Interview personnel. View procedures.
7.6	The shot firing personnel have been trained, tested and appointed in writing.	Intent : To verify compliance with MSIA regulation 8.12 Personnel : Blast engineer and charging/firing personnel. Method : Interview personnel. View records.

8. EXTERNAL ELECTRICAL HAZARDS

Point	Standard	Guideline
8.1	There is a system in place for the ceasing of charging and firing and withdrawal of personnel in the event of a threat from an electrical storm.	Intent : To verify compliance with MSIA regulation 8.38. Personnel : Blast engineer and charging/firing personnel. Method : Interview personnel. View procedures.
8.2	There is a system in place to eliminate hazards caused by premature initiation of detonators by electro-magnetic radiation, static electricity or any other electrical apparatus.	Intent : To verify that precautions are taken to prevent blasting mishaps associated with radio and static electricity etc. Personnel : Blast engineer and charging/firing personnel etc. Method : View the procedures.

9. NON ELECTRIC FIRING

Point	Standard	Guideline
9.1	There is a written procedure in place that provides a safe system of hook-up connection and initiation.	Intent : To verify that the procedures in place for hooking up and firing work. Personnel : Blast engineer and charging/firing personnel. Method : Interview personnel. View procedures
9.2	The shot firing personnel have been trained, tested and appointed in writing.	Intent : To verify compliance with MSIA regulation 8.12 Personnel : Blast engineer and charging/firing personnel. Method : Interview personnel. View records.

10. BLASTING IN REACTIVE GROUND

Point	Standard	Guideline
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10.1	The procedures used for charging and firing in oxidising or reactive ground and the precautions taken are in accordance with the manufacturer' s or supplier' s recommendations.	Intent : To verify that there is a procedure in place that covers the use of explosives in reactive ground .in compliance with MSIA regulation 8.55 Personnel : Quarry Manager, blast engineer etc. Method : Interview personnel. View procedures.
10.2	The District Inspector is notified of any blasting that is to be done in oxidising or reactive ground.	Intent : To verify that there is a procedure in place that allows for the informing of the Inspectorate prior to the use of explosives in reactive ground. Personnel : Quarry Manager, blast engineer. Method : Interview personnel. View procedures.