

**EXPLOSIVES USAGE U/G HIF AUDIT - 17/06/2003 02:14:22 PM****1. RECORDS**

Point	Standard	Standard Met	Comments
1.1	The manager has appointed a person to train and assess the competency of persons who handle, charge and fire any explosive or blasting agent at the mine.		
1.2	Persons who handle, charge or fire any explosive or blasting agent have been trained, and assessed by written test and found to be competent.		
1.3	A book (or register) is maintained at the mine which contains a list of those persons who have been trained and deemed competent to use explosives.		

**2. DRILLING PRECAUTIONS**

Point	Standard	Standard Met	Comments
2.1	Prior to drilling, the work face is washed down and butts are cleaned and examined for misfires.		
2.2	No hole is drilled in any butt or within 15cm of the edge of any butt.		
2.3	Drilling is not carried out in a face containing a charged hole or misfire unless the person is instructed to do so by the U/G Manager or his representative.		

**3. WORKINGS APPROACHING EACH OTHER (MSIA REG. 10.27)**

Point	Standard	Standard Met	Comments
3.1	There is identification of development and stoping workplaces which may intersect any existing excavation. This includes pillar formation.		
3.2	Check surveys are carried out.		
3.3	Probe drilling ahead of the advancing face is carried out to check for the proximity of the excavation and the presence of any accumulated water.		
3.4	Checks for misfires are made in the opening ahead of the advancing face.		
3.5	A record of this check is made.		
3.6	The breakthrough round is only fired when persons who may be affected by the blast have moved to a safe position.		

#### 4. CHARGING OPERATIONS

Point	Standard	Standard Met	Comments
4.1	Only the equipment and personnel required for the charging operation are present in the workplace.		
4.2	Each hole is cleaned out before it is charged.		
4.3	Only wooden or other non-metallic tamping rods are used.		
4.4	Cartridges of explosives are never forced into blast holes.		
4.5	Only those holes that are intended to be fired in that blast are charged.		

#### 5. ANFO CHARGING

Point	Standard	Standard Met	Comments
5.1	Manufacturer' s or suppliers literature setting out the safe use of each type of pneumatic loader in use at the mine is available.		
5.2	Users of the pneumatic loaders have been trained in the correct method of operation in accordance with the literature.		
5.3	Pneumatic loaders are free from defects.		
5.4	Pneumatic loaders are effectively earthed via an earth cable when in use.		
5.5	The earth cable is not connected to any water line, compressed air line or electrical earthing system.		
5.6	The charging hose is semi-conductive with a resistance of not less than 15000 ohms/metre and not more than 2 megohms for its total length.		
5.7	The charging hose is free from defects.		
5.8	Each person charging anfo removes their gloves and earths themselves before touching any electric detonator.		
5.9	Earth continuity tests are done on the pneumatic loaders.		

#### 6. FIRING WARNINGS

Point	Standard	Standard Met	Comments
6.1	A person who intends to fire a blast warns all persons in adjacent workplaces.		
6.2	Firing only occurs when all persons who are likely to be affected by the blast fumes have moved clear of likely affected areas.		
6.3	All entries to the place of firing are guarded, or firing warning notices are erected.		

#### 7. FIRING TIMES (MSIA REGULATION 8.27)

Point	Standard	Standard Met	Comments
7.1	Firing times are designated by the underground manager.		
7.2	Firing times are prominently displayed in conspicuous places at the mine.		
7.3	The firing times are made known to persons employed underground		
7.4	There is a procedure for the removal of obstructions in ore passes etc using explosives outside of the designated firing times.		
7.5	There is a procedure for the firing of independently ventilated headings outside of the designated firing times.		

**8. POST FIRING INSPECTION**

Point	Standard	Standard Met	Comments
8.1	There is a written procedure that provides a safe system of entry and inspection before resuming normal work after blasting.		
8.2	Re-entry times are calculated and monitored by the Ventilation Officer.		
8.3	Underground employees are trained in that procedure.		
8.4	The procedure is adhered to by employees.		

**9. MISFIRES (MSIA REGULATION 8.43 8.44 8.46 TO 8.48)**

Point	Standard	Standard Met	Comments
9.1	There is a written procedure in place for dealing with misfires.		
9.2	Underground employees have been trained in the procedure.		
9.3	A person who confirms or suspects a misfire makes a report to the U/G Manager or supervisor.		
9.4	The relieving person is notified of a misfire if it occurs at the end of the shift.		
9.5	Inspections carried out for misfires and any actions taken as a result of a misfire are recorded in the Record Book or a register kept for that purpose.		

**10. ELECTRICAL BLASTING ACCESSORIES (MSIA REG. 8.32 TO 8.36)**

Point	Standard	Standard Met	Comments
10.1	All electric blasting accessories including exploders, circuit testers, and detonators are of a type approved by the Chief Inspector of Explosives.		
10.2	The exploders and testers are tested and maintained in good condition.		
10.3	Dedicated shot firing cables are used.		

10.4	The shot firing cables are positioned such that they are not likely to come into contact with lighting or power cables.		
------	---	--	--

### 11. ELECTRIC FIRING

Point	Standard	Standard Met	Comments
11.1	There is a procedure in place that provides for safe connecting up, testing and firing.		

### 12. MAINS FIRING

Point	Standard	Standard Met	Comments
12.1	A procedure for mains firing system is in place at the mine.		
12.2	All persons are cleared from the underground workings prior to any blast being fired via a mains system.		
12.3	The voltage and current used are adequate for the number of detonators and type of circuit.		
12.4	The voltage used does not exceed 415 volts.		
12.5	The firing and isolating, short circuit and lockout system is in accordance with the recommendations of the detonator manufacturer or supplier.		
12.6	Current flow in the circuit is limited to 25 milliseconds via a cut-out relay.		
12.7	The authorised shot firer has personal custody of the keys to the firing, isolating and short-circuiting boxes.		
12.8	The shot firing cables are disconnected immediately after firing any charge.		
12.9	The firing box is locked at all times except at the time of firing.		

### 13. NON-ELECTRIC FIRING

Point	Standard	Standard Met	Comments
13.1	There is a written procedure in place that provides for a safe system of hook-up, connection and initiation that is in accordance with the manufacturer' s or supplier' s instructions.		

### 14. FIRING WITH SAFETY FUSE

Point	Standard	Standard Met	Comments
14.1	The underground manager has designated in writing the location where fuse capping can be carried out.		
14.2	There is a procedure to be followed in carrying out capping of fuses.		

14.3	The minimum length of safety fuse used for firing a charge is 1 metre.		
14.4	The length of a safety fuse used to fire a charge is sufficient to enable the person firing the charge to reach a place of safety without undue haste.		
14.5	The burning rate of the fuse has been verified.		
14.6	The burning rate is made known to persons using the fuse.		
14.7	The burning rate is posted on a notice board located at a conspicuous place at the mine.		
14.8	The firing procedures designate the maximum number of fuses that can be lit individually as a maximum of four using a fuse lighter only.		

### 15. EXTRANEOUS ELECTRICITY PRECAUTIONS

Point	Standard	Standard Met	Comments
15.1	Hazards which may cause the premature initiation of electric detonators are identified.		
15.2	Written procedures are in place to ensure that persons are not exposed to those hazards.		