



**DEPARTMENT OF MINERALS AND ENERGY
WESTERN AUSTRALIA**

SIGNIFICANT INCIDENT REPORT NO. 62

ANCHORAGE OF UNDERGROUND SCRAPER HOISTS

ACCIDENT

A trainee scraper driver in a stope received serious injuries when he was struck by a 10 HP (7.5 kW) electric double drum scraper hoist which broke free from its anchorage. The scraper hoist, had been secured using galvanised chain with a rated safe working load (SWL) of 200 kilograms. The hoist, however was rated at 1000 Kg line pull, well in excess of the rated SWL of the chain.

COMMENT AND PREVENTATIVE ACTION

Wherever possible, a scraper should be secured directly to the footwall or to a foundation by properly installed rock bolts. Where eyebolts and chain are used due to the temporary nature of the scraper positioning, the chain selected must be capable of handling all loads to which it may be subjected. Chains normally have a factor of safety of 5. This means that a chain with a SWL of 1 tonne will fail (break) when a load of 5 tonnes is applied. If a chain is used then the SWL of the chain must not be less than the maximum rated line pull of the scraper hoist.

Where a scraper is not firmly anchored (e.g. where there is some slack in the restraining chain), the dynamic load applied as a result of a whipping action will be much higher than the static pull load. Impact loads are difficult to predict and restraining chains should not be installed with any slack which could lead to a whipping action.

When installing a scraper using chains, the scraper must be secured as tightly as possible (with no slack in the chain) to eliminate impact factors during operations.

When using chain, it must be assumed that during scraper operation, a single link may experience all of the load. Double reeving the chain will not necessarily result in the sharing of the load equally between both legs of the chain.

R S Hopkins
ACTING STATE MINING ENGINEER

10 October 1995

SAFETY AWARENESS SAVES LIVES