

CARE AND MAINTENANCE OF MINING AND PROCESSING OPERATIONS

CHECKLIST FOR INSURANCE RISK MANAGEMENT

Each operation should conduct a site-specific risk assessment to identify risks and controls for an extended shutdown period.

UNDERGROUND METALLIFEROUS MINE

Ground Support

- Ground support is installed to the face in all development headings.
- Ground support is installed in all cut and fill stope backs.
- Open stope drawpoints are mucked out to prevent sulfidic ore cementation or spontaneous combustion.
- Mines utilising backfill practices should ensure open stope void inventory is minimised by backfilling stope voids wherever possible before closure. Backfill lines to be flushed out of fill material.
- All sublevel cave and block cave drawpoints remain closed and all hung drawpoints are brought down.
- Mine infrastructure development and openings are supported with long term ground support.
- Shafts, drifts and mine entrance portals, winders and hoisting machinery to be inspected, checked and tested according to the statutory requirements and appropriate C&M programs.

Ventilation

- Main exhaust fans to be checked regularly, with alarms monitored.
- Areas where ventilation is to be removed or turned off are barricaded to entry, with advice to check atmosphere before re-entry. The need to close or seal stoppings or bulkheads for inrush/ fire should be evaluated against access requirements for inspection and ventilation during closure.
- Base of all ventilation shafts and rises to be checked regularly for fall-off material.
- For sulfidic ore, clean out all stockpiles to prevent cementation or spontaneous combustion.

Pumping

- Main pumps, decline face pumps and pump lines to be checked regularly, with alarms monitored.
- Ensure spares are available for major pump stations.
- Drainholes and trash screens to be cleaned regularly.
- All pumps and equipment to be removed from areas permitted to flood.
- All service water to be turned off apart from any necessary pump gland cooling requirements.
- Clear and drain mine portals to prevent the ingress of rainwater or other flood water. Construct bunds as necessary.

Mobile Equipment

- All mobile units to be brought to the surface and parked up for C&M routines.
- Fuel and oil storages to be emptied. All hydrocarbons to be transferred to the surface.

Fixed Plant

- All areas to be cleaned and free from rubbish.
- Spillage to be cleaned out of plant areas and all structures and footings exposed.
- All materials handling conveyors, crushers, screens, bins, etc to be cleaned out of material build-up. Conveyors' tension to be released at take-up units.
- Electrical plant and transformers to remain energised where possible to limit moisture build-up.
- Regular inspections of fixed mechanical and electrical plant to be undertaken for C&M routines.
- Lighting to be turned off where possible.
- Large machinery bearings to be greased and rotated on a routine basis to prevent brinelling.
- Stores to remain well ventilated or to be cleaned out and components brought to the surface.

Explosives

- Explosives, detonators and blasting accessories to be brought to the surface magazines for storage or disposal.

UNDERGROUND COAL MINES

In addition to the above, the following arrangements should be implemented for underground coal mines.

- Review the need for and install secondary support around critical Underground (UG) infrastructure including Longwall face, maingate and tailgate.
- Inspect and maintain all gas monitoring equipment (instantaneous and tube bundle) in accordance with Ventilation, Gas Management and Spontaneous Combustion Management Plans and where possible, arrange 24-hour off-site monitoring.
- Review the mine ventilation system (development, Longwall and outbye) including fans, auxiliary fans and other ventilation appliances in accordance with the mines Ventilation, Gas Management and Spontaneous Combustion Management Plans to ensure adequate ventilation is provided to all accessible areas of the mine appropriate for an extended shutdown.
- Barricade any non-standard areas of the mine such as bulk sample areas, raise shafts, dead ends etc.
- Set up/check remote monitoring of water levels behind bulkheads.
- Flit mining equipment, including Flexible Conveyor Trains (FCT) to a secure location free of the risk of flooding. Install secondary support around the machines. Turn power off but leave cables connected.

For Longwalls to be left in situ:

- Clean face and all components.
- Cover all electronic control panels on each support to protect against water and dust ingress.
- Record all shield/roof support set pressures, when first idled, if not already monitored.
- Consider developing a longwall 'rapid start up' plan (TARP) for any adverse condition e.g. excessive face yielding, strata deterioration, spontaneous combustion, water ingress etc.

OPEN CUT MINES

- Construct buttresses of dumped material against slopes exhibiting instability. Set up remote monitoring of walls that are of concern. Remove all blasted coal from the pit prior to stoppage. Cover coal faces with clay material if necessary to reduce spontaneous combustion risk.
- All mobile, drilling and digging units to be brought to the surface and parked up for C&M routines.
- Pit pumps to be set up for long term operation and to be located on a floating barge or by having a high-lift suction capability, so the pump is protected from flooding. Utilisation of highwall (Legra) pumps is preferred.
- Regular inspections of permanent pumps to be undertaken for C&M routines.
- Remove all ore/coal stockpiles to prevent cementation or spontaneous combustion.

- Clear and drain mine access ramps to prevent the ingress of rainwater or other flood water. Construct bunds as necessary on the top of ramps and pit perimeter areas that may be susceptible to flooding.
- Draglines should be walked to high ground above the 1 in 200 yr flood level. A separate and robust C&M regime should be in place for each machine.

TAILINGS STORAGE FACILITY

- The tailings dam supernatant pond to be lowered to a level that permits capture or control of a significant rainfall event that was included in the dam's design capacity.
- Monitoring of the dam wall water pressures and the wall's phreatic surface to continue throughout the closure period, in accordance with the TSF operating guidelines.
- Clear and drain water courses that may impact the TSF in the case of a significant rainfall event.
- TSF pumps to be set up for long term operation and to be located on a floating barge or by having a high-lift suction capability, so the pump is protected from flooding.
- Downstream water collection ponds and channels to be cleared of vegetation. Permanent pumps to be maintained in an operational state.
- Inspections and reports to be undertaken on a regular basis, according to the appropriate design guidelines.

INFRASTRUCTURE

- Site entrances and underground mine portals and entrances should be secured to prevent casual access.
- Boundary fencing to be secured. Security provisions for critical surface infrastructure to be reviewed for theft and vandalism. Video and alarm systems to be monitored.
- Boreholes for fuel transport should be emptied and sealed.
- Electrical equipment to be assessed for ongoing functionality and taken off charge where appropriate.
- Flood levees to be inspected and checked for integrity according to design features.
- IT systems to be backed up, with back-up data, models and registers to be held off site in secure servers and computer hardware.
- Closure inspection plan for mine workings, plant, infrastructure and fixed protection systems defined