Monthly periodical

Queensland Mineral Mines & Quarries Inspectorate

January 2021

Mineral Mines & Quarries Inspectorate

Resources Safety & Health
Queensland

Serious Accidents

There were three serious accidents:

- An excavator operator exited his machine and slipped on the rock pile lacerating his right forearm which required surgery.
- While refitting pipework, a worker's hand was crushed between a falling pipe and the work platform.
- A worker's finger was trapped and crushed under an intermediate bulk container (IBC).

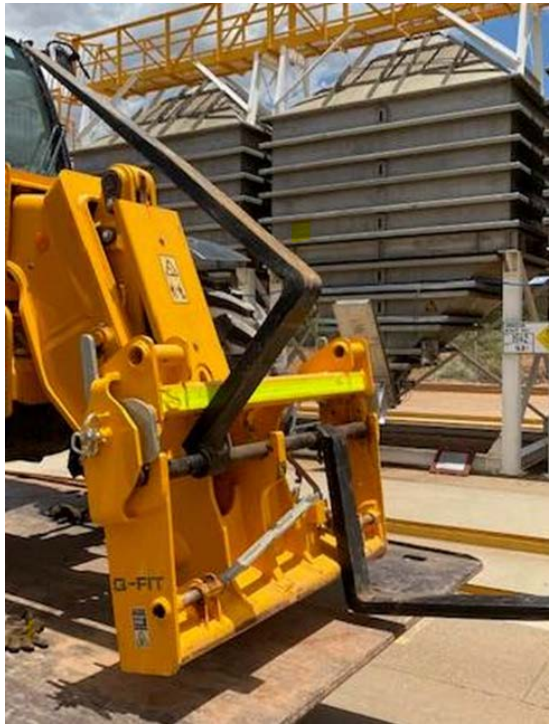
High Potential Incidents

There were 32 high potential incidents reported. The most common contributors were human error, falling or flying material or objects, electrical equipment and moving vehicles or equipment

Falling fork on telehandler strikes worker on the side of the head.

On 9 January 2021, a fork on the telehandler fell after the strap securing it, was released. The telehandler had been loaded onto the rear of the truck at another mine.

The float operator received laceration to ear and bruising to shoulder. The location of the injuries was fortunate because they were not wearing a safety helmet.



Re-enactment

Falling fork on telehandler strikes worker on the side of the head

Causes

A loader had been placed on the front half of the truck.

Once the telehandler was loaded onto the rear half of the truck it became apparent that the forks were projecting beyond the back of the truck.

The float operator wanted to transport the telehandler with the forks down but a representative of the mine persuaded the float operator to secure them folded up.

As part of preparations to unload the telehandler, as the securing straps for the forks were being removed, one of the forks fell down under gravity.

Falling fork on telehandler strikes worker on the side of the head.

Recommendations for inclusion in mining and quarrying safety and health management systems.

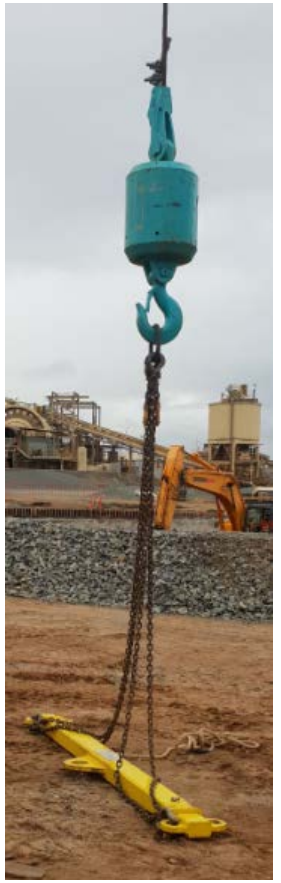
- Arrange for transport that provides adequate space on trucks for telehandlers including their attachments, so that there is no reason to fold up the forks. (Engineering)
- In the event that there is inadequate space and the forks will project beyond the rear of the truck, the original equipment manufacturer in this instance, recommends that the fork carriage should be removed and placed on the truck elsewhere. (Elimination)
- Recognise that the float operator is ultimately responsible for securing the load. (Administration)
- Mandate the wearing of safety helmets in similar circumstances as the mine have now done. (Administration)

Note: Contact the original equipment manufacturer as part of incident investigations.

Rigger struck by 100 kg spreader bar.

On 12 January 2021 a spreader bar was suspended by two pairs of chain slings on the auxiliary hook of a 250t crawler crane. The crane operator was booming up and lowering the hook simultaneously. The operator was looking around at where the spreader bar was going to be taken off the hook. The rigger was walking underneath the suspended load which brushed off the rigger's safety helmet, striking them on the shoulder and knocking them to the ground.

The rigger suffered minor injuries.



Rigger struck by 100 kg spreader bar.

Causes.

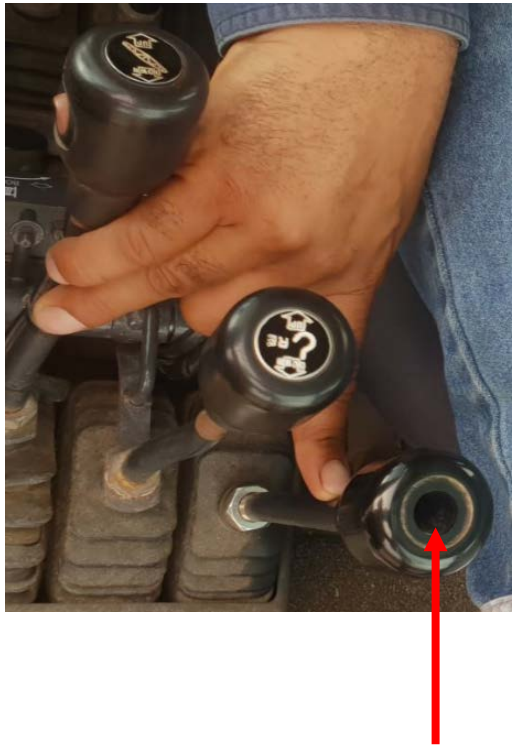
The rigger was paying attention to their path of travel to the laydown point but not to the suspended load and was in the drop zone.

The crane operator was focusing on where they were going to place the spreader bar and not its rate of descent.

The crane operator was not sufficiently familiar with the crane to understand the relationship between the position of the auxiliary hoist lever and the rate of descent of the spreader bar when the engine speed was increased.

The crew were working through their lunch break which led to haste rather than caution.

Although the verification of competency (VOC) was company and plant specific, it included items that were general in nature.



Rigger struck by 100 kg spreader bar.

Recommendations for inclusion in mining and quarrying safety and health management systems.

- A verification of competency (VOC) must primarily focus on ensuring that the operator can demonstrate a sound theoretical and practical knowledge of all the operational and safety critical functions of the specific make and model of the crane. (Administration)
- No worker should place themselves in the drop zone of a suspended load. (Separation)
- Because the hook could have struck the worker on its own, it is best practice for workers not to place themselves under the hook block and headache ball. (Separation)

Note: Variations from work schedules may influence routine tasks.

For further reading on drop zones and exclusion zones go to

https://www.rshq.qld.gov.au/safety-notices/mines/using-non-slewing-mobile-cranes

Unauthorised access to 415 V control panel

On 30 January 2021 at 3.30 am a worker was using a broom to bang on the bottom of a hopper to bring down hung up material. During this activity the worker damaged a sensor cable and this tripped out the power. An unauthorised worker then opened the door of the electrical panel to see if they could fix the problem.

The worker was not injured.

Operational controls.

Unauthorised access to 415 V control panel.

Causes

The lock on the control panel door was damaged so that a key was not needed to open it.

It was convenient to be able to open the door without a key to access the scales which have to be checked every shift.

Operational controls inside the control panel increased the likelihood that it would become a routine occurrence to access them by unauthorised workers.

Unauthorised access to 415 V control panel.

Recommendations for inclusion in mining and quarrying safety and health management systems

- Operational controls should be separated from components above extra low voltage. (Separation)
- Keys needed to access control panels must be only available to authorised workers. (Administration)
- Locks on control panel doors must be maintained so that access can only be achieved by the use of a key. (Engineering)

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Monthly periodical

Queensland Mineral Mines & Quarries Inspectorate

February 2021

Mineral Mines & Quarries Inspectorate

Resources Safety & Health
Queensland

Serious Accidents

There was one serious accident:

On 3 February 2021, a worker was making adjustments to the compressed air delivery system on a drill rig when it was engulfed in fire causing serious burns to the worker’s face, arm, chest and back. Fortunately the worker's eyes were protected from the fire by safety glasses.

Further information is available at https://www.rshq.qld.gov.au/safety-notices/mines/fire-on-rc-drill-rig-from-compressed-air-system

High Potential Incidents

There were 18 high potential incidents reported. The most common contributors were human error, falling flying material or objects and electrical equipment.

Uncontrolled release of compressed air.

On 7 February 2021, an electrician was dragging a pressurised 110 mm polyurethane pipe from inside a bunded area across the face of the high wall. They were able to do so from outside the bunded area by lassoing the pipe using a hemp rope.

During this activity the handle on the ball valve at the top of the pipe was knocked open allowing the air to discharge from a 100 m length of pipe all the way back to the compressor on top of the high wall. The pipe flayed around breaking off the discharge valve.

There were no injuries.

Uncontrolled release of compressed air.

Causes

There was no single person accountable for the installation of services at this portal and as a consequence this put pressure on the completion date.

Geotechnical reports were not taken into account when the service lines were installed.

As so often happens the workers decided to get on with an unfamiliar job with the best of intentions only to get into trouble. They did not know they were moving a pressurised line and that the pressure could not be reliably contained.

After the service line had been pressurised, the pressure could only be released by opening the valve at the end of the pipe.

The service lines were not restrained.

Uncontrolled release of compressed air.

Recommendations for inclusion in mining and quarrying safety and health management systems

- Allocate accountability for projects so that timeframes are met without putting pressure on front line workers. (Administration)
- Plan installation of services so that critical components such as isolation and bleed valves can be accessed. (Engineering)
- Recognise situations where the containment of pressure cannot be guaranteed.
- Restrain the air lines to prevent them whipping about when air is being discharged. (Engineering)
- Broadcast internal safety alerts as the mine has done in this case. (Administration)

For further information go https://www.rshq.qld.gov.au/__data/assets/pdf_file/0009/1438398/qld-guidance-note-qgn02-solation-of-plant.pdf

Rear dump truck backs into front end loader.

On 17 February 2021, a dump truck was backing up to tip its load at the overburden dump when it collided with the loader that was pushing off.

There was significant damage to the handrails on the loader and the truck had to be moved in order to get the operator out of the cab.

There were no injuries.

Rear dump truck backs into front end loader.

Causes

At the start of dayshift there was positive communication by the truck operator and acknowledgement by the loader operator.

The repetitive nature of the task led to complacency later in the day when there was no communication between the truck and the loader operator.

There was a lack of attention to their surroundings by the truck operator

Rear dump truck backs into front end loader.

Recommendations for inclusion in mining and quarrying safety and health management systems.

- Only one worker should control the work area, in this circumstance the loader operator. (Administration)
- Where practicable the tipping and pushing off activities should be separated for instance by:
  - Organising the work so that the trucks are not dumping when the loader is pushing off. (Separation)
  - Having a dividing bund down the centre of the dump when there is sufficient space. (Separation)
- Install a portable call point notice where trucks have to call up from. (Administration)
- Everyone on site, particularly supervisors, should be listening to make sure that the practice of positive communication is being followed. (Administration)
- The use of the communication system should be confined to operational matters. (Administration)

Note: There have been five vehicle to vehicle incidents in the last six months.

Telehandler strikes wall of decline and loses its load.

On 23 February 2021, a telehandler was transporting a 1.6 tonne reel of cable down a decline when it was steered into the wall due to a perceived loss of braking. On impact, the load was dislodged and travelled several metres into the back of an agitator truck also going down the decline.

There were no injuries.

Telehandler strikes wall of decline and loses its load.

Causes

The telehandler has a toggle switch that can be set to either have the transmission engaged or disengaged when the service brake is applied. When disengaged, this function is used to improve the performance of the implements.

The telehandler was travelling at a speed that required repeated use of the service brake. The toggle switch was set to be disengaged. Therefore there was a loss of engine braking requiring the service brake to do more work.

The operator was aware that the transmission was disengaging when they applied the service brake as they travelled down the decline but continued on. The operator did not fully understand why the transmission was disengaging when the service brake was applied. The operator was unaware that the switch was set to disengage.

The training and assessment package was specific to the telehandler but did not include the functions that enabled the transmission to be disengaged when the service brake was applied.

Telehandler strikes wall of decline and loses its load.

Causes

Irrespective of the lack of retarding effect that was lost due to the transmission being disengaged on application of the service brake, the service brake should still control the telehandler.

The Original Equipment Manufacturer (OEM) states that in avoiding a crush hazard, applying the park brake while travelling will cause unit to stop abruptly and could cause load loss. It also states that to stop the machine in an emergency, apply the park brake. After the incident the park brake failed the static test set out by the OEM in the Service Manual and at prestart.

The service brake passed the static brake test but the mine is still carrying out a thorough investigation to determine if the brakes were as effective as they should have been.

Telehandler strikes wall of decline and loses its load.

Recommendations for inclusion in mining and quarrying safety and health management systems.

- The outcome of training and assessment must be for workers to know how to safely operate the specific make and model of plant which includes an understanding of all safety critical functions. (Administration)
- Operators must bring plant safely to a stop if they have a concern with braking systems. (Engineering)
- The performance of all braking systems must be understood, maintained and monitored so that it is known they are capable of keeping telehandlers under control under all circumstances. (Engineering)
- Consider whether there is an alternative way of transporting loads down the decline. (Elimination)

Use Australian Standard 2550.19 for telescopic handlers as a source of information to carry out a risk assessment that covers all routine work or one that is job specific.

The risk assessment should at least include:

- how loads are to be secured to the implements (Engineering)
- which way the load should be facing while tramming downhill. (Engineering)

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Monthly periodical

Queensland Mineral Mines & Quarries Inspectorate

March 2021

Mineral Mines & Quarries Inspectorate

Resources Safety & Health
Queensland

Serious Accidents

There were two serious accidents:

- A worker reversed an agitator truck into the concrete load-out bay. They then got out of the truck to inspect the position of the load sock at the back and slipped on uneven ground breaking their leg.
- A supervisor was looking at gear in the store, tripped and fell causing injuries to their head and left arm

High Potential Incidents

There were 41 high potential incidents reported. Unplanned movement of vehicles again featured in these reports, categorised as follows:

- One vehicle to vehicle collision.
- Two vehicle to structure collisions.
- One vehicle to person collision.
- Two movements associated with park brake.

Finger crushed while changing bearing on conveyor.

On 10 March 2021 a worker came over to assist with the changing of a bearing on a conveyor tail pulley. While they were inspecting progress, the shaft of the conveyor pulley moved unexpectedly trapping their hand against the mounting plate of the plummer block.

The worker sustained a broken finger.

Finger crushed while changing bearing on conveyor.

Causes

The task was allocated to the Shift Supervisor by the Maintenance Foreman. The method of removing the load on the plummer block was to pull back the tail pulley using a lever hoist which increased the tension in the conveyor belt. As an extra precaution a bottle jack with a block of wood between the inside surface of the pulley and a conveyor cross member was put in place.

The lever hoist was removed leaving the security of the pulley entirely reliant upon the bottle jack. The bottle jack was dislodged when the worker placed their hand on the bare conveyor shaft which resulted in their fingers being trapped.

This method was considered a short cut instead of lowering the tension in the belt by using the conveyor tracking screws.

There was no Job Safety Analysis (JSA) carried out and the injured worker was not involved in securing the tail pulley.

Finger crushed while changing bearing on conveyor.

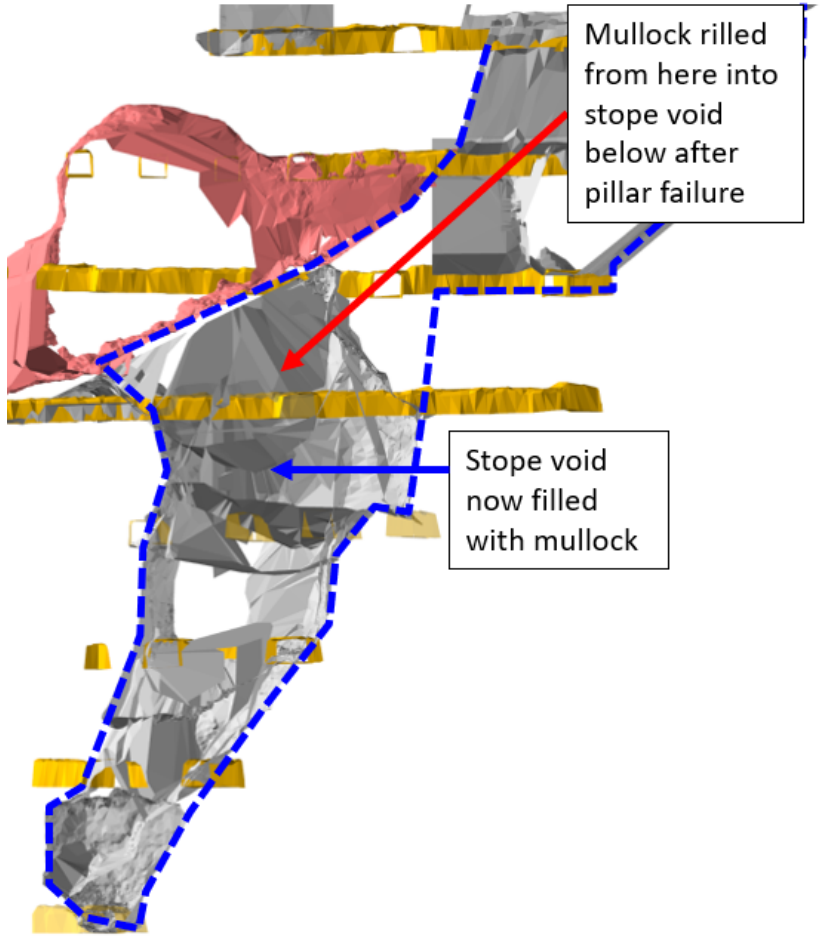
Recommendations for inclusion in mining and quarrying safety and health management systems.

- Remove energy rather than increasing it and then having to rely on containing it. The belt tensioning screws should have used to slacken the belt instead of increasing the tension by using a lever hoist. (Elimination)
- Maintenance work should be supervised by workers familiar with the task. (Administration)
- Taking short cuts should not be encouraged as later on it may be regretted. (Administration)
- Consider the advantages/disadvantages of carrying out a task under a JSA compiled by all the workers on the day at the location of the work as opposed to using a procedure that has been written on the basis of another previous JSA with perhaps a different set of circumstances. (Administration)

150,000 t of mullock rills into remnant stope void.

On 14 March 2021 mullock flowed into a stope void from an adjacent higher level stope. The movement of the mullock caused the reversal of the airflow in the decline and the FAR shaft.

An inspection team working under a re-entry plan, was in the upper levels of the mine looking for damage following a rock noise during the previous shift but they were not injured.



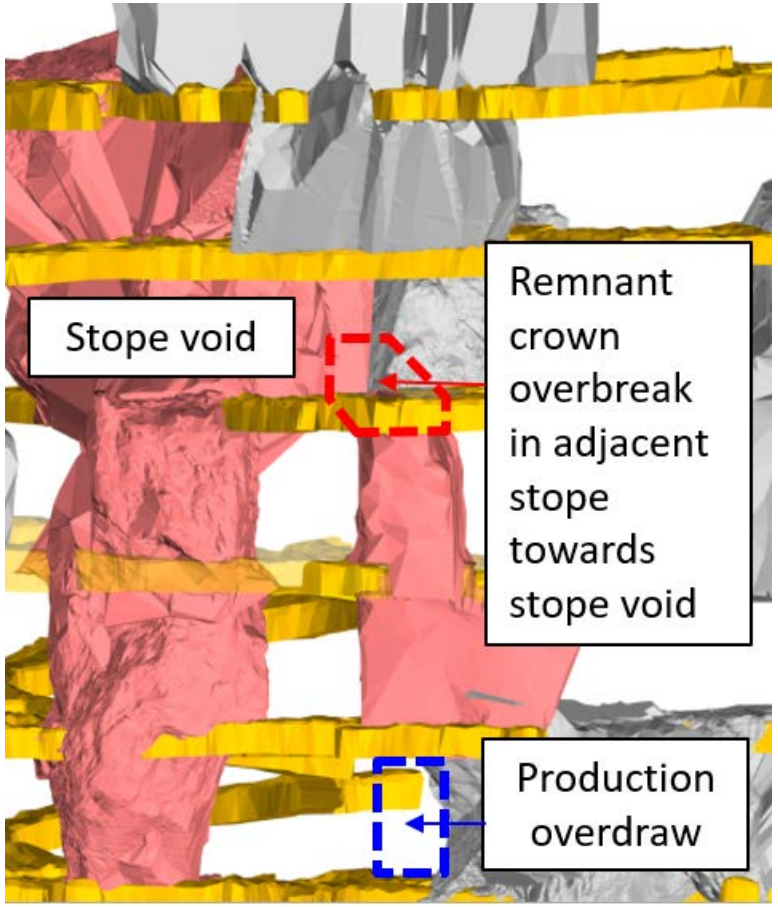
150,000 t of mullock rills into remnant stope void.

Causes

The remnant stope void and the mullock filled stope were legacies from previous mine owners and the pillar between them failed. The failure was identified as being a slip along a sub-vertical structure.

Within the Ground Control Management Plan the hazard of associated with unfilled or partly filled voids was identified. This led to the creation of a Void Management Plan and Trigger Action Response Plans for the numerous stope open voids. Some of the requirements of these plans were not kept up to date.

Another potential contributing factor was that a neighbouring inactive production stope crown had been spalling towards the adjacent remnant stope.



150,000 t of mullock rills into remnant stope void.

Recommendations for inclusion in mining and quarrying safety and health management systems.

- Avoid having a filled stope above and adjacent to a stope void below. If this cannot be achieved then take action to minimise the effect of a failure such as installing bulkheads that the mine is now doing. (Elimination or Engineering)
- Geotechnical input from the principal must be integrated into the mine plans being carried out by the mining contractor. (Administration)
- In-house geotechnical expertise may need to be supported by external advice. (Administration)
- Overbreak should be minimized by strictly adhering to drill and blast plans. If tonnes bogged out of a stope exceeds the expected amount, this must trigger a response to determine if there is any potential to impact on other adjacent areas. (Engineering)

Worker found removing blockage over running conveyor

On 16 March 2021, While the Maintenance Supervisor was reviewing video footage of another incident, he has uncovered a Maintenance Worker inside a conveyor chute over a running conveyor.

The worker was attempting to remove a blockage from the conveyor chute and to do so has positioned himself inside the chute with the conveyor belt still running to access the blockage. The surge bin was empty with flow control chains lifted.

Image 1 – Operator preparing to enter chute with conveyor running

Image 2 - Operator in chute with conveyor running

Worker found removing blockage over running conveyor

Causes

The worker did not identify the hazard of removing tramp material from the chute with the conveyor still running and did not isolate conveyor.

The worker has failed to follow site procedures by leaning over the swing chute to attach the hooks to remove a blockage whilst conveyor was operating.

The worker did not follow working in heat procedure (take heat readings and have regular breaks). The worker stated that it was hot and humid and he had become quite frustrated and dehydrated and just wanted to get the job done. Controls were put in place to manage heat (rotation of workers to allow for breaks) but the worker did not adhere to these controls.

The system at that time was running waste material from the mine. This has caused the chute to block. The chute can be easily unblocked when the belt is isolated.

Worker found removing blockage over running conveyor

Causes

When completing observations and inspections in the workplace, it has been identified some workers are not following procedures or putting controls in place to manage hazards. The culture in some areas is to prioritise job completion over safety.

The supervision on night shifts and weekends is provided by the shift supervisors from another department, therefore, observations on work tasks outside of their normal area of control are not their priority.

Worker found removing blockage over running conveyor

Recommendations for inclusion in mining and quarrying safety and health management systems.

- Investigate an engineering solution to further restrict access to the area. (Engineering)
- Provide coaching and mentoring to supervisors to work with their workforce about reinforcing safety controls and the importance of recognising hazards in the workplace.(Administration)
- Conduct a Safety Reset to reinforce expectations of safety interactions conducted by leaders in the workplace. Safety interactions must identify improvements to workplace and task completion. (Administration)
- All operators have been refreshed on the requirements for unblocking chutes and picking material from the picking belts as per the requirements in the training package. (Administration)
- Review organisational structure to ensure adequate supervisory coverage on night shift and weekend. (Administration)

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Monthly periodical

Queensland Mineral Mines & Quarries Inspectorate

April 2021

Mineral Mines & Quarries Inspectorate

Resources Safety & Health
Queensland

Serious Accidents.

There were no serious accidents this month

High Potential Incidents.

There were 36 high potential incidents reported. Unplanned movement of vehicles contributed to 10 of these reports.

- Three vehicle to vehicle collisions.
- Three vehicle to structure collisions.
- One vehicle to person collision.
- One movement due to loss of steering.
- One movement due to loss of braking
- One movement due to tip over.

Fall of ground into ore drive.

On 16 April 2021 there was a fall of ground from the hanging wall of an ore drive. The initial dimension was 4 m high X 8 m long X 4 m thick.

Looking East

Fall of ground into ore drive.

The two host rocks are rhyolite in the hanging wall and dacite in the footwall. The ore body and the dyke in the footwall are in between the two host rocks. The hanging wall shear is located between the rhyolite and orebody making the hanging wall contact weak.

The failure has occurred along the shear and the dyke contact and a flat dipping joint structure in the backs. The failure also propagated up to the floor of the drive above

Looking West

Fall of ground into ore drive.

Causes.

The location of the dyke relative to the drive was not mapped. There was a change in the position of the dyke comparative to the levels above. The dyke moved from being on the hanging wall side to the footwall side of the ore. This change did not trigger or identify an additional hazard regarding the interaction of underground stresses on the dyke.

The movement in the footwall dyke had been identified and two rehab plans were issued to mitigate the deteriorating ground. The first plan was to shotcrete the southern wall where the ground failure started, proceeding towards the east, followed by the meshing of the sprayed shotcrete. The second plan contained cable bolt instructions to be installed after the shotcrete.

The rehabilitation plans were not executed in time due to limited availability of shotcrete operators.

Fall of ground into ore drive.

Recommendations for inclusion in mining and quarrying safety and health management systems.

- Geological features that may have an impact of ground stability should be mapped and ground controls installed during the development cycle or very close behind it to ensure ground conditions do not relax and joints start to open up because of lack of cohesion forces. (Engineering)
- Geological information gained as mining progresses should be incorporated into the planning of the levels below. (Administration)
- Ensure that appropriate resources required for ground control are available which would prevent potentially unstable situations escalating - for instance shotcreting resources. (Administration)

Excavator strikes overhead power line.

On 20 April 2021 an excavator had just finished preparations for a new pad when it was trammed into an overhead power line (OHL). The operator then reversed the excavator away from the OHL and waited until he was advised it was safe to exit.

Note: There have been eight incidents at mineral mines and quarries in the last two years when mobile plant has contacted an OHL. On four occasions an excavator has been involved.

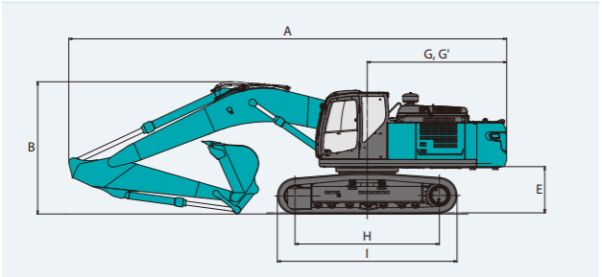
Excavator strikes overhead power line.

Causes

The operator failed to fold the excavator boom into the travel position when moving from one task to the next.

Travelling to and from the job was not considered as part of the task.

The was no warning signage at ground level or indicators on the OHL line at the chosen travelway which was the shortest route to the next task.



Note: Recent incidents show that to expect even very experienced operators to remember the presence of the OHL is an unreliable way of preventing further similar incidents

Excavator strikes overhead power line.

Recommendations for inclusion in mining and quarrying safety and health management systems.

- Eliminate the need to travel under the OHL. (Elimination)
- Determine if any mobile plant on site or coming to site is capable of breaching the minimum clearances required below the OHL. If the mobile plant cannot avoid breaching the minimum clearance, the power must be disconnected to allow the plant to travel under it. (Engineering)
- Mandate that mobile plant must travel around the site in the original equipment manufacturer's recommended travel position at all times. (Administration)
- Create designated travelways and install effective barriers to prevent alternate travelways being used. (Engineering)
- Implement and maintain specific effective controls at every designated travelways under OHLs.
- Use the link below to access guidance on preventing contact with OHLs.

https://www.rshq.qld.gov.au/safety-notices/mines/mobile-plant-contacting-energised-overhead-powerlines

Semi-tipper rolls over.

On 29 April 2021 a semi-tipper was discharging a load of concentrate on level ground when it rolled over.

The truck was stationary, the driver had not put the seatbelt back on after exiting to undo the container latch.

The driver received minor injuries.

Semi-tipper rolls over.

Causes

Hang up on one side of the container, as a result of partial material tip, caused a change to centre of gravity of the vehicle when the hoist was fully extended.

The long length of the body increases the height at which the material starts to discharge and the potential for a tip over.

Factors contributing to hang up were material compaction during load and transit, material moisture, material tackiness and container floor material/condition.

The material moisture content varied within the material due to the application of dust suppression prior to loading but was within the permissible transport limit.

The existence of material in returning containers was occurring and reported but did not require action at the time.

Semi-tipper rolls over.

Recommendations for inclusion in mining and quarrying safety and health management systems.

- Ensure that the method of transport is appropriate for the nature of the material. (Engineering)
- Install dust controls systems that do not create isolated pockets of excessive moisture. (Engineering)
- When material handling does not perform as expected, identify any potential unintended consequences and take action before they occur. (Administration)

Flashback.

On 18 September 2019 a loaded articulated dump truck (ADT) was travelled down the ramp of a tailings dam when the operator lost control and the tub overturned. It was the first trip after a water cart had watered the ramp.

The main contributing factor was that the ramp had a clay surface.

There is sometimes a misunderstanding about why ADTs have an oscillating hitch - Refer to Section 1 Introduction and scope for the answer via the link to the document below:

https://www.safequarry.com/hotTopics/qnjac%20adt%20guidance%20issue%201%20june%202018.pdf

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Monthly periodical

Queensland Mineral Mines & Quarries Inspectorate

May 2021

Mineral Mines & Quarries Inspectorate

Resources Safety & Health
Queensland

Serious Accidents.

A worker tripped on stop log and hit their head on a guardrail. An oxygen bottle they were carrying caused two broken ribs and a tear to their spleen.

A contract driller was placing a drill rod into the cradle when their right-hand little finger was squashed between the cradle and the drill.

An operator fell from a loader approximately two metres while they were setting up the teleremote.

High Potential Incidents.

There were 28 high potential incidents reported

Loader reverses into dump truck.

On 6 May 2021 a loader was feeding the fixed plant from the ROM and reversed away from the primary feed hopper colliding with a dump truck behind it.

This was a slow speed event and the damage was minimal. There were no injuries.

Note: Vehicle to vehicle collisions are a major contributor to HPIs.

Loader reverses into dump truck.

Causes

At the start of the shift there was positive communication by the truck operator entering the area and acknowledgement by the loader operator.

At the time of the incident later in the day complacency had set in and the dump truck operator failed to let the loader operator know that they had entered the ROM.

There was a designated hold point where the dump truck operator had to wait prior to receiving permission to enter the area but this was not followed.

There was no direct instruction to operators as to who had control of the area.

Loader reverses into dump truck.

Recommendations for inclusion in mining and quarrying safety and health management systems.

- Ensure that there is a prime controller of the area where there is vehicle and pedestrian movement.
- Use a fixed or portable Hold Point sign at which vehicles and pedestrians must wait until permission is given to enter the area by the prime controller.
- Consider installing proximity detection as the quarry is intending to do.
- Everyone on site, particularly supervisors, should be listening to make sure that the practice of positive communication is being followed.

Note: There was a article on a similar incident in the MMQ February Periodical (link below)

https://app2.vision6.com.au/v/91741/1318769/email.html?k=X0bWW1K4bB480yvePDLxqSobeq7M0JwgoBSXy2hieCY

Tailings slumps against excavator.

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On 8 May 2021 an excavator was removing tailings from an inactive decant pond when a slump of tailings struck the excavator. The operator managed to travel the excavator out of the area despite damage to the cab door and front window.

The operator was not injured.

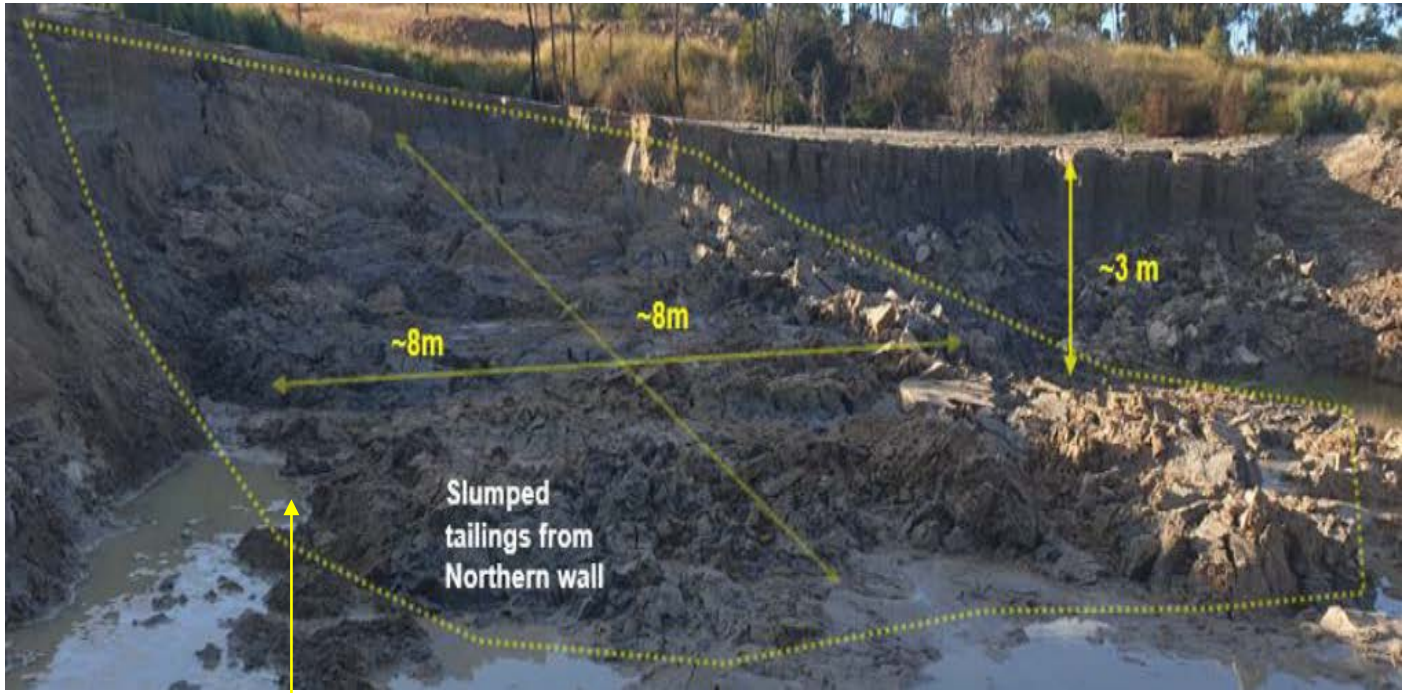
Tailings slumps against excavator.

Causes

The tailings had seeped through the tailings filter wall and had reduced the storage capacity of the decant pond.

The operator had dug a catch bund in case the tailings did slump but the catch bund was too small to contain the flow of tailings.

As the excavation progressed, the stability of the wall of tailings was diminished until the point when the toe could no longer hold it back.



Tailings slumps against excavator.

Recommendations for inclusion in mining and quarrying safety and health management systems.

- Using an excavator to extract tailings in these circumstances will no longer take place as the mine has decided.
- The depth and consistency of the material must be known before any work is undertaken in decant ponds.
- Put in place restricted access and No-Go zones.
- Geotechnical knowledge should be incorporated into planning and as work progresses when carrying out work of this nature.

Truck tyre rolls down decline.

On 9 May 2021 a new truck tyre that was being handled by an integrated tool carrier when it rolled away from the right hand tyne 13 metres down the decline. The tyre came to rest wedged between a light vehicle and the wall of the decline.

There were no injuries.

Truck tyre rolls down decline.

Causes

The Task Hazard Analysis (THA) used was for changing a tyre on level ground not on a decline.

The workers did not review the THA as they were instructed to do.

The THA was only reviewed on the surface by one of the three workers involved.

The supervisor did not fully understand how the task was going to be, or should be, carried out.

The tyre was not restrained when it was vertical as required in a procedure

There are multiple tyre changing procedures that introduce an unnecessary level of complexity.

Truck tyre rolls down decline.

Recommendations for inclusion in mining and quarrying safety and health management systems.

- Consider the purchase of a dedicated tyre handler as the mine is going to do.
- Tyres must always be restrained whilst being transported by mobile plant.
- Change tyres on level ground whenever it is practical to do so. If this is not achievable, a THA must be developed for this circumstance which will include ways of ensuring that the plant is stable and workers are positioned where they cannot be impacted by the tyre.
- Where practicable ,THAs must be developed at the scene by all those involved and always signed off by a supervisor knowledgeable in the activity.
- Identify and take precautions in case the task does not go ahead as planned and include them in the THA. In this case an LV was placed downhill from the truck.
- Make is easy for workers to understand what they should do and why.

Note: Using THAs has advantages as they take into account the specific circumstances.

Learnings from conveyor incidents.

In recent times two workers have been pulled into the tail pulley while removing spillage from the return side of the moving conveyor belt at Queensland quarries. One worker died on 15 November 2018 and the other worker sustained injuries to their arm and shoulder on 19 May 2020.

Please read the related safety alerts and the Final Report into a fatal accident on 8 February 2021 posted on the MSHA website (PDF Version).

https://www.rshq.qld.gov.au/safety-notices/mines/fatality-involving-a-quarry-plant-operator

https://www.rshq.qld.gov.au/safety-notices/mines/worker-entangled-in-conveyor-drum

February 8, 2021 Fatality - Final Report | Mine Safety and Health Administration (MSHA)

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Monthly periodical

Queensland Mineral Mines & Quarries Inspectorate

June 2021

Mineral Mines & Quarries Inspectorate

Resources Safety & Health
Queensland

Serious Accidents.

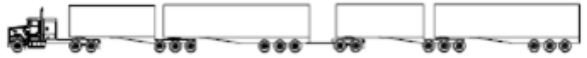
A lump of asphalt was blocking a screen discharge chute. While removing the asphalt the worker got his finger jammed between the lump and conveyor frame.

A gold room operator suffered burns to his eyes and face while inspecting a chemical process involving caustic soda.

High Potential Incidents.

There were 29 high potential incidents, 8 of them were caused by movement of vehicles

Road train rolls away.

On 8 June 2021 the quad road train 

began to roll away and the driver had to hurriedly return to the cab to apply the park brake. This action in itself could have resulted in serious consequences.

The driver was not injured.

Driver is out of cab with brakes off.

Road train has rolled five metres and driver is applying brakes

Road train rolls away.

Causes

After the driver had changed a leaking brake valve, they exited the cab with the park brake off to go and have a look to see if they had fixed the problem. Air had to be supplied to the valve, so the park brake had to be off.

There were wheel chocks available on the prime mover which were not put in place.

The driver thought that the road train was on level ground and would not move. In fact the rear trailer was on a slight incline on the exit from the weighbridge.

Road train rolls away.

Recommendations for inclusion in mining and quarrying safety and health management systems.

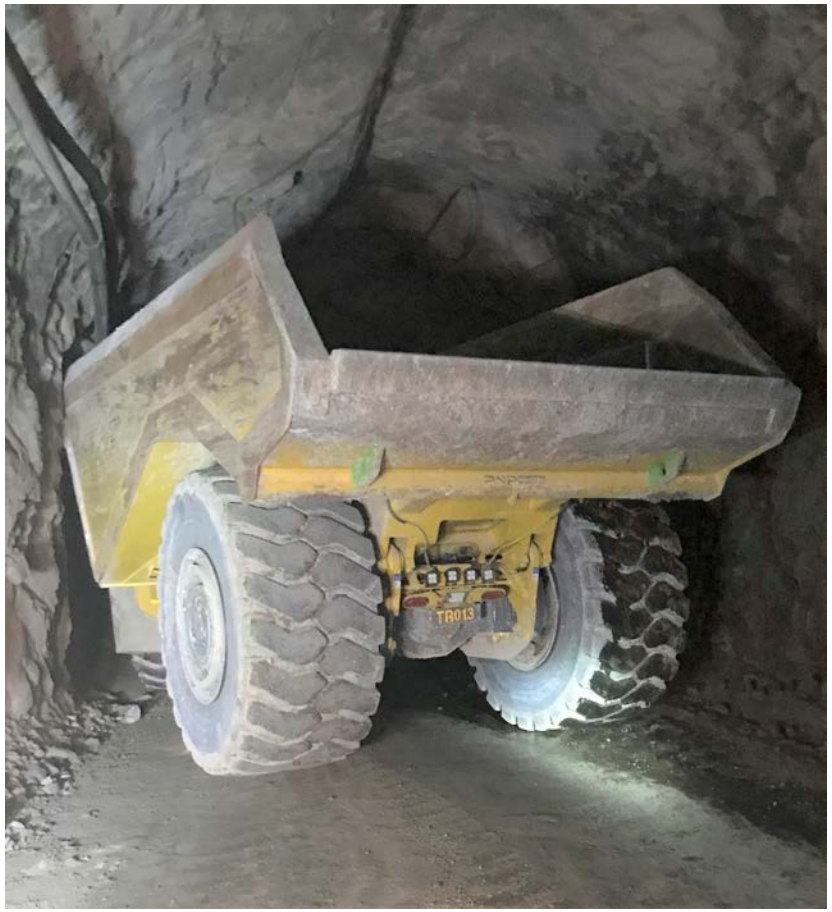
- If there is an expectation that drivers carry out running maintenance, they must be trained and assessed on how to carry them out and a record kept of the training and assessment. (Administration)
- The circumstances when and how wheel chocks should be used must be included in the training package. (Administration)
- The use of wheel chocks is usually additional to applying the park brake. If the park brake is required to be off for testing or maintenance purposes, some other back-up means of securing the vehicle may be required. (Engineering)

Note: There are frequent occasions when unplanned movements occur due to the park brake not being applied. One option that can be used as additional means of securing the vehicle, is to have a designated parking area with one or more axles in a spoon drain.

Truck loses steering travelling down decline.

On 14 June 2021 an empty articulated contractor's truck was travelling down the decline when it lost steering and stopped against the wall.

The operator was not injured



Truck loses steering travelling down decline.

Causes

The steering system is subject to impact loading every time the tray of the truck strikes the wall.

The steering pin had broken in half and the trunnion caps did not secure the two halves. One half was found on the ROM and the other half had worked its way out of the trunnion allowing the ram to detach.

The mine's trucks had been fitted with a latched alarm that is triggered by a spike in hydraulic pressure in the steering circuit but the contractor was waiting on the parts for this. Also the mine's trucks had been fitted with keeper plates that would show if the pin was broken and stop the broken halves from falling out.

Note: The latched alarm is reset after the trunnion bolts have been checked by the shift maintenance worker.

Truck loses steering travelling down decline.

Recommendations for inclusion in mining and quarrying safety and health management systems.

- Relevant critical safety information must be shared with their contractors – For instance the installation of the latched alarm. (Administration)
- The SSE should advise the original equipment manufacturer (OEM) when critical safety features fail and the OEM should rectify design and/or maintenance problems.
- The OEM should broadcast any remedial action to all known owners of affected plant and to relevant industries. The remedial action recommended by the OEM should be available on their website and implemented by the SSE.

Note: Similar incidents have occurred which have resulted in the change out of the steering trunnion bolts at an increased frequency. Refer to our July 2020 article via the link below:

https://www.business.qld.gov.au/industries/mining-energy-water/resources/safety-health/mining/accidents-incidents-reports/serious-accidents

Excavator falls off bench.

On 28 June 2021 after loading a truck, an excavator was reversing along the top of the 3 metre high bench when it gave way.

The operator was not injured.

Note: In the last six months there have been four occasions when an excavator has rolled over off a bench or a stockpile and two occasions when an excavator has slid down unstable ground

Excavator falls off bench.

Causes

The rear of the track that was next to the edge was out of view from the operators cab.

The bench was narrow and less than 1.5 times the width of the excavator.

The operator should have slewed around so that they could see where they were going.

The bench has been undermined at this location and at other locations along this particular bench but was not recognised as a problem by supervisors.

Other undermined area

Excavator falls off bench.

Recommendations for inclusion in mining and quarrying safety and health management systems.

- Issue a Safety Bulletin as the quarry has done in this case. (Administration)
- Standard batter angles and bench width should be determined, recorded and monitored to ensure they are adhered to. (Engineering)
- Ensure training and assessment includes understanding why the task should be done in any particular way with the intention of combating complacency. For instance always face the direction of travel. (Administration)
- Make it clear to everyone that it is a collaborative responsibility to take into account the hazards that are present in any given situation. (Administration)

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Monthly periodical

Queensland Mineral Mines & Quarries Inspectorate

July 2021

Mineral Mines & Quarries Inspectorate

Resources Safety & Health
Queensland

Serious Accidents.

While operating a scraper, the operator has lost their grip on the steering wheel after hitting a bump and they hit their head on the steering wheel.

While attaching a shade sail to trees, a branch broke off, knocking off the worker's safety glasses and injuring their eye.

A snort pump on a jumbo was not working, so the operator disconnected the discharge hose and then the relief hose which ejected hot water causing first degree burns to approximately 3% of their face and 4% to their forearm.

High Potential Incidents.

There were 35 High Potential Incidents, ten of these involved vehicles.

Uncontrolled movement of roller.

On 4 July 2021 a padfoot roller was reversing along the top of the tailings dam wall when it got too close to the embankment crest which moved under the weight of the machine.

The operator exited the plant without injury.

Uncontrolled movement of roller

Causes

The operator was reversing near the edge and was intent on finishing the task in a limited timeframe.

The operator had attained the Resources and Infrastructure Industry Training Package RII MPO 317F for a roller in March 2021.

The Verification of Competency (VOC) was completed in April 2021 and was relevant for the construction of dam walls. However the contractor's Safe Work Method Statement was generic for all powered plant likely to be used during the project and the hazard of working close to the crest of the embankment was not addressed.

The operator was inexperienced at the time and not under direct supervision.

Uncontrolled movement of roller.

Recommendations

- The VOC should include the scope of work specifically for the type of plant to be used, as was done in this case. However the VOC should also include : (Administration)
  - Project hazards, such as working on an embankment, are to be kept under control and
  - The understanding of safety critical features of the plant, such as how to test the braking systems.
- The following records must be kept:(Administration)
  - The training undertaken and time spent demonstrating the skills and knowledge to carry out the task safely.
  - The name of the supervisor who supervised workers during this training and their qualifications.
- Tasks should be scheduled as part of project management in order to avoid perceived time pressures on workers. (Administration)

Structure supporting cement silo fails

On 26 July 2021 the elevated structure that supported a cement silo failed without any warning and, as it fell it, struck the side of the control room.

The silo contained approximately 30 tonne of cement.

No workers were in the area at the time.

Structure supporting cement silo fails.

Causes

24 tonne of cement had been delivered into the silo some three hours prior to the incident.

The structure failed in an area that was concealed by a cable tray and was not identified as a problem during the annual visual structural inspections by on-site management.

Corrosion in several other areas was identified in the 2020 visual structural inspection but this did not trigger a follow up external audit.

The last structural audit occurred in 2016 but did not include the support structure for the pug mill.

The design of the support structure was not available for reference during any structural audit.

Structure supporting cement silo fails.

Recommendations

- Inspections and audits must be scheduled and carried out at a frequency that will ensure the integrity of the plant. (Administration)
- The frequency of inspections and audits must be altered if environmental conditions change. (Administration)
- On-site workers carrying out structural inspections must have the skills and knowledge required. (Administration)
- Structural integrity audits must be carried out by internal or external parties who have recognised qualifications and expertise in this field. (Administration)
- Remedial actions stated in the reports generated by inspections and audits must be carried out within the recommended timeframe. (Administration)
- The design of the structures should be available on site in case anyone has a need to check the structure is being used in accordance with its design.(Administration)

Learnings.

On many recent occasions an incident, including a fatality, has occurred during the last load of the day or last task before a delayed smoko. The reasons for this may be an intent to fit in extra load in a hurry or a lapse in concentration thinking about the next activity.

A variation from the routine can create additional hazards but on the other hand routine activities can allow complacency to creep in. Awareness of both these scenarios should be incorporated into training and assessment packages.

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Safety and Health Periodical

Queensland Mineral Mines & Quarries Inspectorate

December 2021

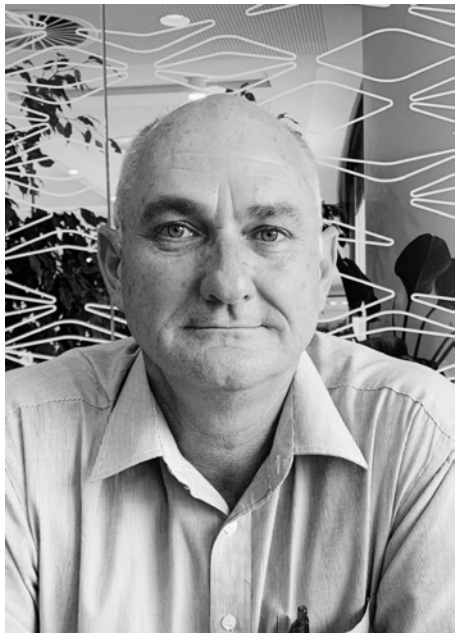
Mineral Mines & Quarries Inspectorate

Resources Safety & Health
Queensland

A word from our Chief Inspector

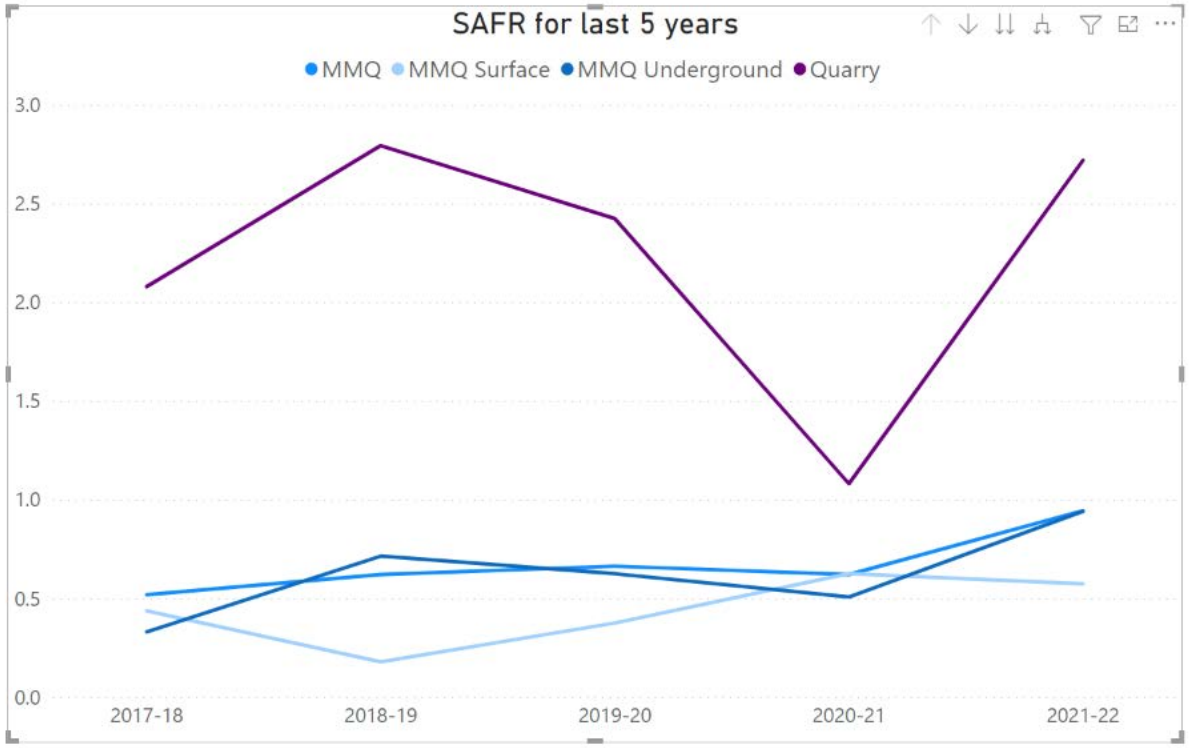
It's pleasing to note that HPIFR has been consistently increasing over the past few weeks. This is a reflection of improved incident reporting in the MMQ sector. I encourage sites to continue reporting HPI's.

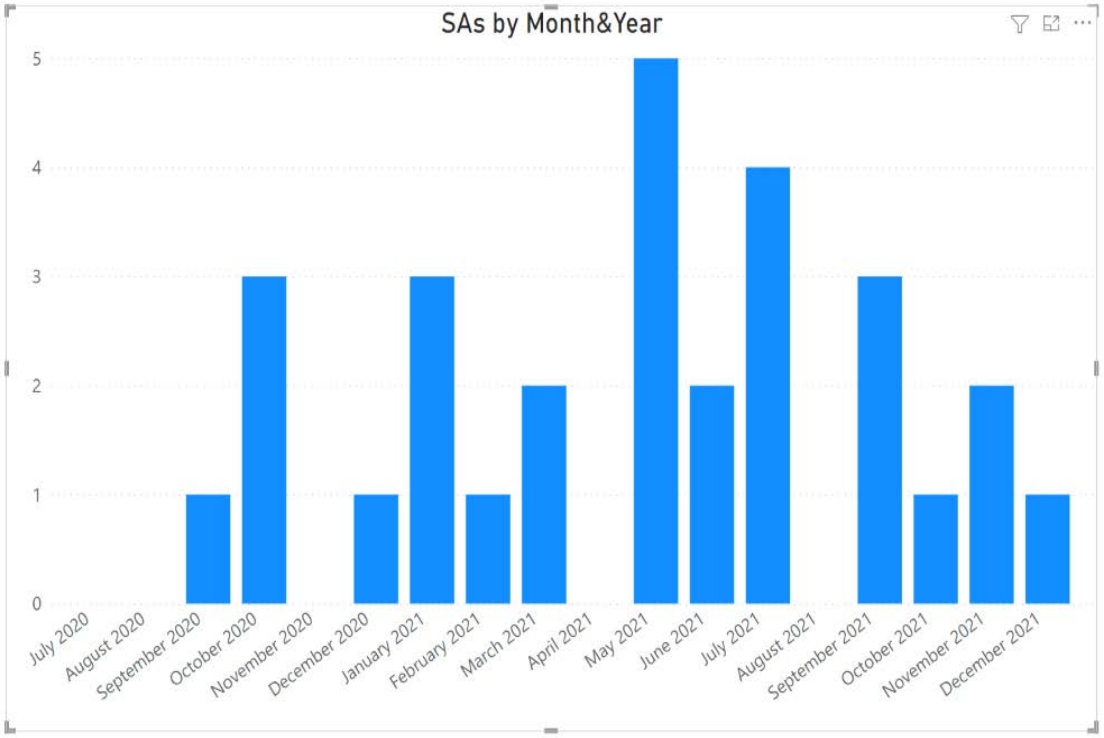
These incident periodicals will be changing in format and will be produced quarterly going forward. Our aim is to improve the quality of content and information we share with industry to improve safety outcomes.



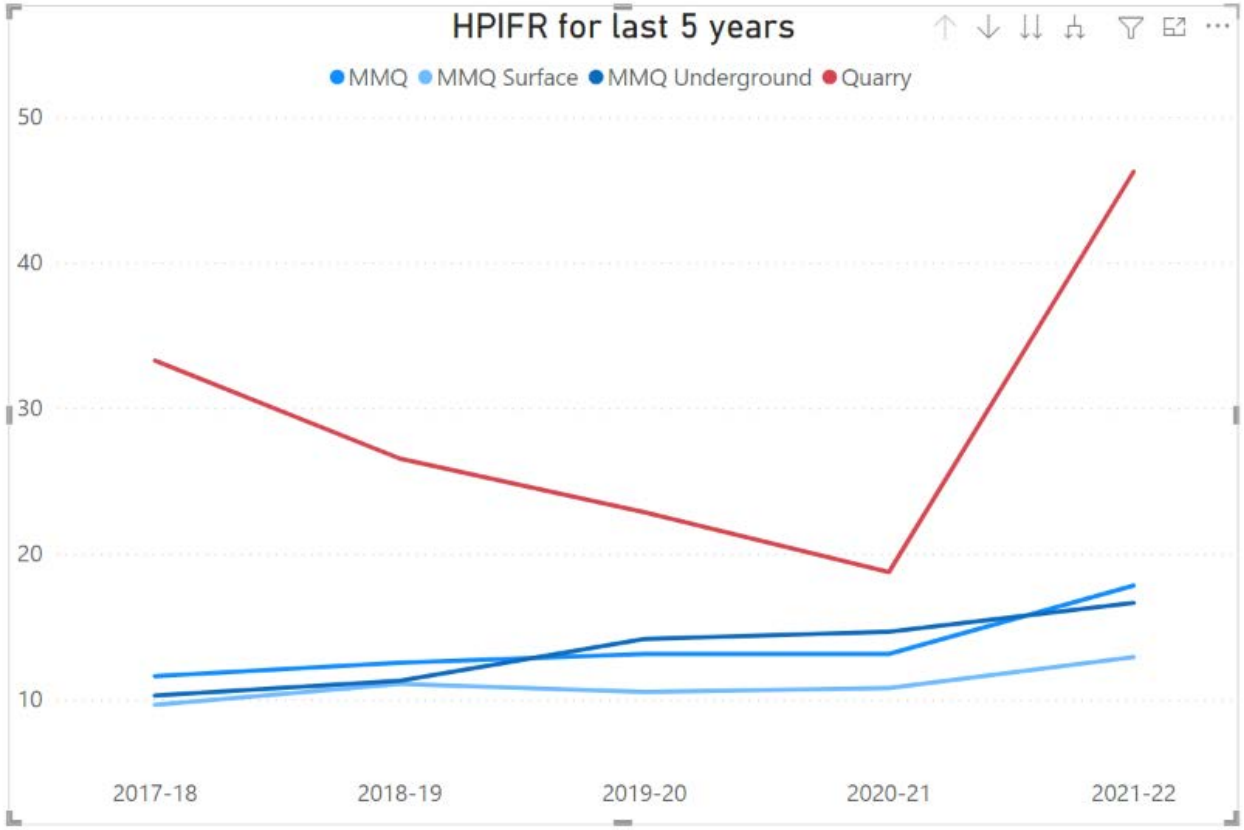
Chief Inspector, Mines and Quarries, Hermann Fasching

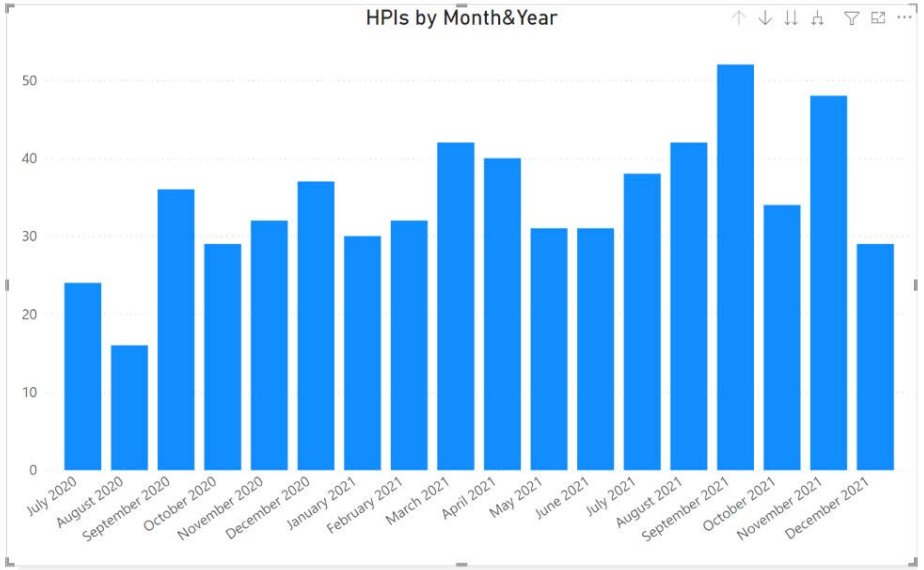
Serious Accidents





High Potential Incidents

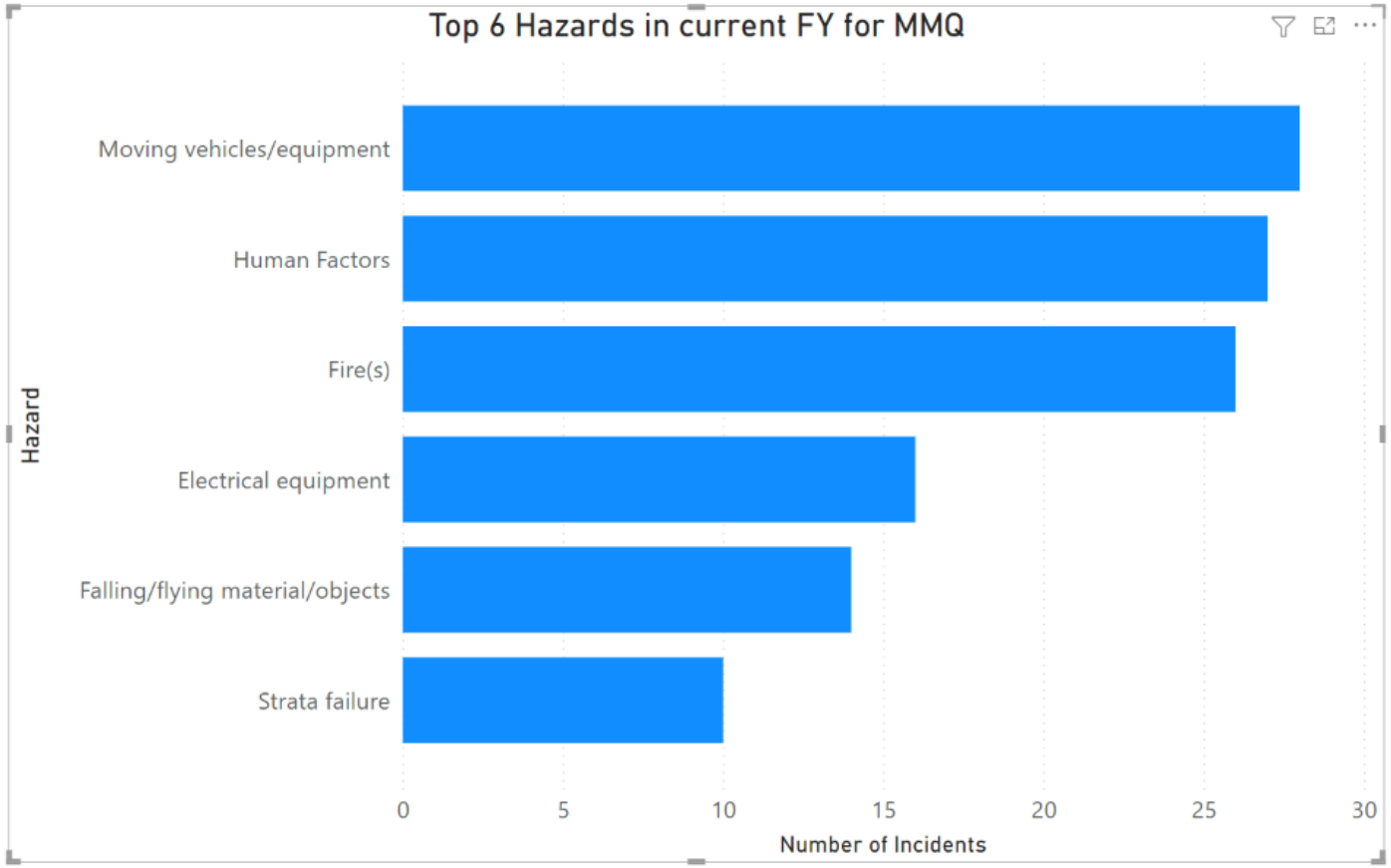




SA and HPI count for Current FY

Inspectorate	Mine Type Group Level 1	SAs	HPIs
MMQ	Metalliferous Mine - Surface	3	85
MMQ	Metalliferous Mine - Underground	6	109
MMQ	Quarry	2	49
Total		**11**	**243**

Hazards


Top 6 Hazards in current FY for MMQ
Moving vehicles/equipment
Human Factors
Fire(s)
Electrical equipment
Falling/flying material/objects
Strata failure
Hazard
0
5
10
15
20
25
30
Number of Incidents

Incidents of note since the last update

Person within blast exclusion zone

Incident

An incident occurred where a worker at a quarry was located within an exclusion zone controlled by blast guards during a blast.

Causes

The worker was operating a water cart and had entered the exclusion zone to access the water pump to refill the water cart.

The clearance check of the blast exclusion zone prior to the blast failed to identify the worker was within the exclusion zone.

The worker was outside the water cart cab at the time of the shot.

Person within blast exclusion zone

Recommendations for inclusion in mining and quarrying safety and health management systems

- All blast guards and barricades must be in place prior to the final check and clearance of blast exclusion zone. (Administrative control)
- All persons who undertake the role and function of blast guards must be trained. (Administrative control)
- All persons working at the quarry must be notified of the intended date and time of the blast. (Administrative control)
- Site Senior Executive must ensure that the activities of blast contractors are monitored to ensure they follow the agreed safety management plan.

  (Administrative control)

Burst tyre damages light vehicle

Incident details

While tramming up a decline, the front tyre of an underground articulated dump truck burst.

The air blast from the tyre, damaged the truck window and the windows of a light vehicle that was parked nearby.

The truck operator was not injured.

Causes

The tyres were only inflated to 80% of the recommended pressure.

The tyre ruptured as a result of a side wall fatigue due to being operated while underinflated.

The site was aware of the correct inflation pressure but had not amended procedures and practices to increase tyre pressure.

Burst tyre damages light vehicle

Recommendations for inclusion in mining and quarrying safety and health management systems

- Maintenance procedures and service sheets must be reviewed to ensure correct OEM tyre pressures are included. (Administrative control)
- Tyre pressures on all mobile equipment must be maintained and monitored to the correct OEM recommendation. (Engineering control)
- Discard at-risk tyres and replace with new. (Elimination control)

Generator battery explosion

Incident details:

The battery of a 90 kVA generator exploded as the operator was attempting to restart the engine following a service.

The operator was splashed with acid but not injured.

Causes

The terminals on the generator battery were loose.

The current draw during starting caused the loose terminals to spark.

The sparks ignited hydrogen sulphide gas, causing the battery to explode.

Generator battery explosion

Recommendations for inclusion in mining and quarrying safety and health management systems

- Battery terminals must be maintained in good condition and routinely checked to ensure they are tight. (Administrative control)
- Battery covers should always be in place and secure before equipment is started. (Engineering control)

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