Queensland Government

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Mine Name	Mine ID	Operator	Activity Type	Activity Date
Grosvenor Coal Mine	MI02976	Anglo Coal (Grosvenor Management) Pty Ltd	Inspection	13/03/2019

Our Vision: **Zero Serious Harm**

Mine Record Entry

This report forms part of the Mine Record under s68 of the Coal Mining Safety and Health Act 1999. It must be placed in the Mine Record and displayed on Safety Notice Boards.

Note that inspection or audit activities conducted by the Mines Inspectorate are based upon sample techniques. It remains the primary responsibility of Mine Personnel to identify hazards, and risks associated with Operations and ensure those risks are at an acceptable level.

Today Mines Inspector Paul Sullivan conducted an inspection of Grosvenor Coal Mine. I was met by Electrical Engineering Manager (EEM) Mr Ian Bailey. Prior to conducting an inspection of the underground workings there was a review of the last electrical MRE, HPIs and recent safety alerts as well as a general discussion of various topics. Mr Bailey provided an overview of the mine's projects, infrastructure, production levels, mining conditions and sequences as well as the equipment / fleet in use with the salient points being:

- Longwall 103 is 650 m into production and there is an active heat management TARP in place.
- Development panel 105 has ceased production while the mine work through floor heave / gas release issues. It is expected to restart in April.
- There are two Continuous Miners and three shuttle cars in the Mains Driveage
- Continuous Miner CMK09 is onsite after an overhaul and is yet to go through its introduction to site process.
- Continuous Miner CMK10 and Scuttle Car HUK03 are being sent for overhaul. We discussed the mine is taking the pro-active step of installing a gas monitoring system onto the shuttle cars when they are being overhauled. This is an industry leading practice and the mine is to be commended for it. We discussed the application / requirements of s 239 *"Other Explosion-protected electrical plant"* and s 250 "*Action to be taken if methane detector activates or is non-operational"* of the CMS&H Regulations 2017 in detail and how it would be applied to Shuttle cars.
- The "Shaft 16" project involves the installation of bulk air chillers and associated high voltage infrastructure and reticulation.

I was introduced to Gas Compliance Co-Ordinator Mr Graham West. We discussed that Australian Standard/ New Zealand standard "AS/NZS 2290.3:2018 *Electrical equipment for coal mines—Introduction, inspection and maintenance. Part 3: Gas detecting and monitoring equipment"* had been published and the Inspectorate had notified industry that a gap analysis between the previous version of the standard and this one should be undertaken. I was informed that a gap analysis had been undertaken and actions created from this comparison. Mr West explained the who undertook gas monitor installation and maintenance as well as

the work order system on which it is based. The electricians are trained and authorised to conduct installation and maintenance / span tests on the monitors. This training is undertaken by an OEM of one of the gas monitor systems / equipment and we discussed this training in general terms.

A review of the following safety alerts / bulletins was undertaken:

- NSW Safety Bulletin SB17-04 "Uninterruptable power supply (UPS) installations at mines" - I raised a recent issue that has been identified at some sites, in relation to compliance of installations containing an uninterruptible power supply (UPS). Specifically, compliance with section 28 of the Coal Mining Safety and Health Regulation 2017 (CMSHR) which relates to electrical protection for power outlets for low voltage electrical equipment. Mr Bailey was aware of this bulletin and has conducted an audit to determine if there were any issues. He stated that one problem was identified and rectified.
- Electrical Safety Office “Test before you Touch” & Mines Inspectorate correspondence – I informed Mr Bailey that in December 2018 at an underground coal mine a CMW received an electric shock on a three phase nominal AC Bus supply of 1050 volts. The incident is still being investigated however it is expected that electrical CMWs will have reinforced to them that they are to follow the site's SOP for accessing exposed electrical conductors. Also before work is carried out on an exposed electrical conductor, at above extra low voltage, it must be positively isolated from the electricity source and tested for zero potential and if it is a high voltage conductor, earthed.
- Mines Safety Alert 351 "Welding machine incidents" - This safety alert raises two concerns regarding the non-compliance of a welder to Australian or International Standards AS/IEC 60974.1 and also an issue regarding the auxiliary power output frequency being 60 hertz. It was highlighted that the mine's introduction to site process for welders should be reviewed against the recommendations. The introduction to site and welder inspection documents have been changed to cover the recommendations of this safety alert.

Accompanied by Mr Bailey an inspection of the underground workings took place and the following was noted:

Muster Area - Examining the TARP board I was introduced to (acting) Undermanager Mr Adam Kruse and Operations Manager Mr Rob Nowell. We discussed the various TARPs that were active on the board and the management of them with a focus on the Longwall heat management TARPs in particular as most were Level 3. I raised a concern about restricting access to the Tripper drives as there would be daily maintenance checks / inspections required. I was informed that these were checks were being done and that if scheduled checks were not done then the equipment would be isolated. They were preparing for a ventilation change which is expected to improve the heat problem.

Development Mains – Mr Bailey and I spoke of the underground conveyor tramp magnet and as he was unsure if it was oil filled or not. He stated that he would investigate and inform me accordingly. ERZ Controller Mr Jamie Pree explained the current mining sequence as well as the general hazards that we may encounter in the panel. He described in detail the process that was to be followed to allow the Shuttle cars to “back-spool”. From his description the procedure appears to be quite robust and well understood. Electrician Mr Chris Kelly is relatively inexperienced in underground coal electrics and is part of the mines mentoring program. Both he and Mr Bailey explained the how inexperienced electrical tradesmen are supervised (mentored) and from their description it is one of the better programs of this nature that I have encountered. The majority of the workforce are labour hire. At my request, Mr Bailey explained that electricians are issued with arc rated PPE and that there is an expectation that this is kept in their crib tins / bags and that it is worn when gaining access into electrical enclosures where that hazard is present. There is an opportunity for improvement to have tradesmen wearing this PPE all the time when working with non-explosion protected equipment.

The housekeeping around development substation TXK06 was to a reasonable standard. The area lighting and cable identification were good and unused outlets had bungs in them. We

discussed the incident that occurred last year where the Beta Works PC display screen had shattered during normal use. These are being replaced with an improved design from the Original Equipment Manufacturer (OEM). An air venturi was set up in the cut-through to assist in ventilation over the substation. It did not have a bonding clamp attached and Mr Bailey stated he would address this accordingly. The date of manufacture was March 2015 and I was informed that the substation had been recently overhauled. Mr Bailey and I could not identify where the overhaul identification plate was located which was a concern. Mr Bailey remarked that he will investigate as to why it is not clearly displayed. The maintenance schedule does include pre-overhaul inspections (C1) and he described the equipment that this inspection regime is used on. The 11 Kv outlets are being replaced to those of a different OEM which will allow greater flexibility in the cables / plugs that can be connected and maintain compliance.

Distribution Control Box (DCB) DBK02 had good housekeeping and the signage was clear and legible. We noted that the overhaul identification plate was also not apparent on this equipment confirming there may be an issue with the overhaul workshop complying with this requirement as well as the introduction to site process not identifying it. There is a work order scheduled monthly to confirm that the protection settings are as per the mines fault study and the CMS&H 2017 Regulations. I was introduced to ERZ Controller Mr Daryn Bridgeman and provided him with an overview of my inspection focus for the panel. I was introduced to electrician Mr Sam Stenhouse and at my request he explained how he would follow to gain access into the bus section of the DCB. He did this in a competent manner, including explaining the “test for dead” process, and it was generic to the isolation steps that would be done at other mines. As he is authorised to conduct gas span tests and maintenance he explained the training that was done for this authorisation and it was as per Mr West and Mr Baileys description earlier.

The shuttle car cable rib and corner protection was to a good standard. ERZ Controller Mr Dick Hart described the functions of the “Bull gang” crew that he was responsible for and how this supervision was undertaken. He did this in a competent manner.

Longwall (LW 603) – The high voltage reticulation into the Longwall was clearly identified. Substation TXK01 had adequate ventilation across it and the housekeeping was to a reasonable standard. There was arc rated PPE readily available and Mr Bailey informed me that it was on the high voltage switching sheet for the switching officers to acknowledge that they were wearing it when required. There was an information tag that was virtually illegible and Mr Bailey said he would investigate what it was for and inform me accordingly. There were electrical locks on the reset actuators and the cable identification was clear and legible. There were out of service (OOS) tags on the parallel feeders that were connected and energised and I remarked to Mr Bailey that it may be timely to reinforce to CMWs the mines expected requirements for the tagging system.

The NERZ / ERZ boundary gas monitor (Safegas 95) was installed to a good standard and we spoke of the more detailed (informative) requirements in AS/ NZS 2290.3 : 2018. Longwall electrician Mr Mick Jackson described his general duties for the day and recent PLC issues that they were working through on the Longwall. We discussed the work orders that are issued for conducting gas monitoring span tests and from his description they have not yet been updated to reflect the latest requirements of AS/NZS 2290.3:2018 and the mines gap analysis. At my request he explained the process he would follow to conduct gas monitor span tests on the Shearer. After some prompting he did this adequately. The electrical report book was filled out as per expectations and it appears to be to a good format.

I asked electrician Mr Matt Gunn to describe how he would isolate and gain access to the high voltage terminals of the Crusher motor. This was done in a competent manner and he explained in detail the complex isolation and earthing system as well as how he would test for dead. From his description it is apparent that high voltage switching sheets are not being used for high voltage isolations on the Longwall and this was raised with Mr Bailey. Switching sheets were developed and introduced after a previous mine inspection (MRE 09/08/2016) and it appears the requirement for tradesmen to use them has not been enforced sufficiently.

An SCP accompanies this MRE:

1. That high voltage switching sheets are used for conducting high voltage switching for access on the Longwall.

The housekeeping around the DCB was adequate. There was a fair bit of slop and water throughout the Maingate and I did note that attempts were being made to clean this up. The cable management around the maingate was adequate. The gas monitors were within their calibration test date.Due to heat management issues access to the Longwall faceline was restricted.
The Tripper Drive at 19 c/t was inspected and the substation TXL07 was in reasonable order. The signage was clear and legible as was the cable identification. There were electrical locks on the reset actuators and live line indicators were in use. There was evidence that an incident energy assessment had been undertaken and the arc venting appeared fit for purpose. The housekeeping was good however the cut-through was quite dusty with fine coal covering the floor. At my request Mr Bailey explained how the mine manages electrical bypassing (bridging) as per s 27 "*Modification of electrical control systems".* The process he described is similar to that done at other mines and he indicated that they were going to update the current documentation to being on the SCADA (CITECT) system.
Administration - I was introduced to Shift Engineer Mr Scott Seears and he showed me the Circuit Bypass and Modification Permit book. His description of the bypassing permit was consistent with Mr Baileys'. Reviewing the record book I selected at random permits 1856 and 1842. Mr Seears described these bypass's (*monorail comms fault stopping pump & shearer oil level switch)* in detail. It was noted that these permits were authorised by Mr Bailey and the there were no issues apparent. The book was filled out in a manner that indicated that it is used consistently. Mr Bailey later showed me the electronic bypassing register in the SHMS. We discussed the bypassing of circuits in the PLC system and later PCS Engineer Mr Danny Sellen explained how they are now using a dedicated "bridging bit" to allow it to be easier to locate bypassed circuits.
The electrical incidents that have occurred since the last inspection were reviewed:
Incident 25/02/2019 - C/Miner solenoid cables damaged - Mr Bailey explained he was still investigating this incident and we spoke of it in general terms.
Incident 19/02/2019 - Laser batteries fell out of laser underground - It was later identified that there was no set procedure to undertake battery replacement highlighting to check the grub screw securing the batteries in place. This has since been developed.
Incident 05/02/2019 - LHD damaged front lighting cables on vent tube - Mr Bailey showed me the incident investigation and the low hanging vent tube was the major contributing factor.
Incident 14/11/2018 - Control cables pulled from glands on Tailgate CME - I remarked that the identification of this failure showed diligence in the electrician undertaking their visual inspections. The FRAS hose over the cables did not appear to be secured to the gland and this may have caused undue tension on the cable gland when the cables are shifted / moved.
Incident 02/11/2018 - FLP bung was found missing from a Driftrunner alternator - It did not appear that the bung had been missing for any considerable period of time. I have requested that the incident investigation be sent through to me.
Incident 03/09/2018 - Failure 'cracking" of the Beta Works PC display screen - A new design for this equipment is being sourced from the OEM.
We conducted a review of the previous electrical inspection by Senior Inspector Peter Herbert (MRE 16/05/2017) with the main points being:

- The mine have not encountered and issues with the use of the 25 mm^2 cables and they are still being monitored for wear.
- There is a greater corporate focus on re-invigorating the use of proximity detection systems on shuttle cars.
- There are no longer uncertified battery systems in use underground
- The workshop now have in its examination and testing schedule checks as per AS/NZS

3019:2007 "*Electrical installations - Periodic verification".* Mr Bailey stated that he has a critical control responsibility for these tests.

Surface - Accompanied by Mr Bailey we went to the "Shaft 16" air chiller project. I was introduced to Site Supervisor Mr Brendan Alcorn who conducted the area induction for me. This consisted of reading through the Hazard Board and being made aware of the controls in place for those hazards. There was a crane lifting task being undertaken and the area was clearly delineated with sentries in place. Mr Bailey asked for an explanation of their understanding of the Lightning TARP and was satisfied with the response. We discussed heat management in general terms and that CMWs should be constantly monitored given the exposure to the sun and high ambient temperatures.

Mr Alcorn explained the high voltage reticulation in the area and confirmed that the earth mat had been designed. He provided an overview of the equipment and the installation process / commissioning in detail. We discussed the use of remote switching as well as switching for operation through the SCADA system.

A debrief was conducted with Mr Bailey and all points raised in this MRE were noted.

As specified under section 128 (g) of the Coal Mining Safety and Health Act 1999 (if unsafe practices or conditions at coal mines are detected, to ensure timely corrective or remedial action is being taken and, if not, require it to be taken) one Substandard Condition or Practices (SCP) forms part of this MRE to address the aforementioned issues raised within this MRE.

Number	Substandard Condition or Practice	Due Date
1	**Longwall high voltage switching sheets**	**17/04/2019**

That high voltage switching sheets are used for conducting high voltage switching for access on the Longwall.

Please provide a written status report on each SCP together with the actions taken to address each item by their due dates

Paul Sullivan
Inspector of Mines