MONTHLY ELECTRICAL INCIDENTS

ASP Manufacturing

June 2021

Date: 19/06/2021
Location: Western Port - MCL
Reference: I1935551

An operator received an Electric shock to the left hand when attempting to silence an alarm by placing a finger over the alarm buzzer to muffle noise. The Sonalert buzzer protective grill was missing, allowing the operator's finger to contact internal parts energised at 240Vac while their hand rested on the earthed control desk. A brass disc inside the buzzer helps generate sound, if depressed (as done by the operator) it may become energised at 240V ac after contacting other live parts within the unit.

The integrity of operator controls must be maintained, damaged or defective equipment must be reported and remove from service until repaired or replaced. ELV operator controls significantly reduce the risk of electric shock, and may provide the only suitable solution for harsh environments or operational exposures.

The buzzer on the operators desk with cover missing and brass plate visible

A buzzer on another desk and what it should look like

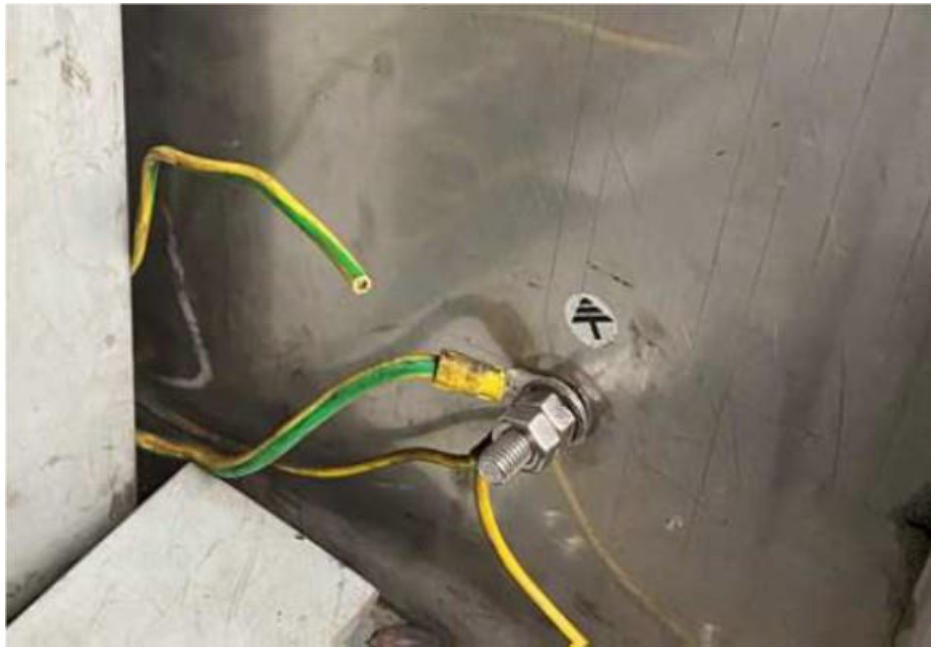
A top and side view of a spare Sonalert showing the brass plate inside the top of the unit and the terminals at the bottom

The missing broken off buzzer cover

Date: 3/06/2021
Location: PCI Plant
Reference: I1928122

An electrician working inside a field control box noticed an unterminated earth wire. The wire was adjacent to the earth stud, did not appear to be damaged nor was there evidence of a broken lug and it appears the wire had never been terminated. The wire was traced to a cable running to a sump pump motor isolator, where it was terminated to the enclosure earth stud and outgoing motor cable earth. The protective earth conductor of this motor was not effectively connected to the protective earth from the supply.

Protective earthing of an electrical installation provides essential protection to limit prospective touch voltages and allow automatic disconnection of supply. The integrity of earthing associated with a circuit must be verified in accordance with AS3000 Section 8.3.5 and recorded as part of Notification of Safety and Compliance.



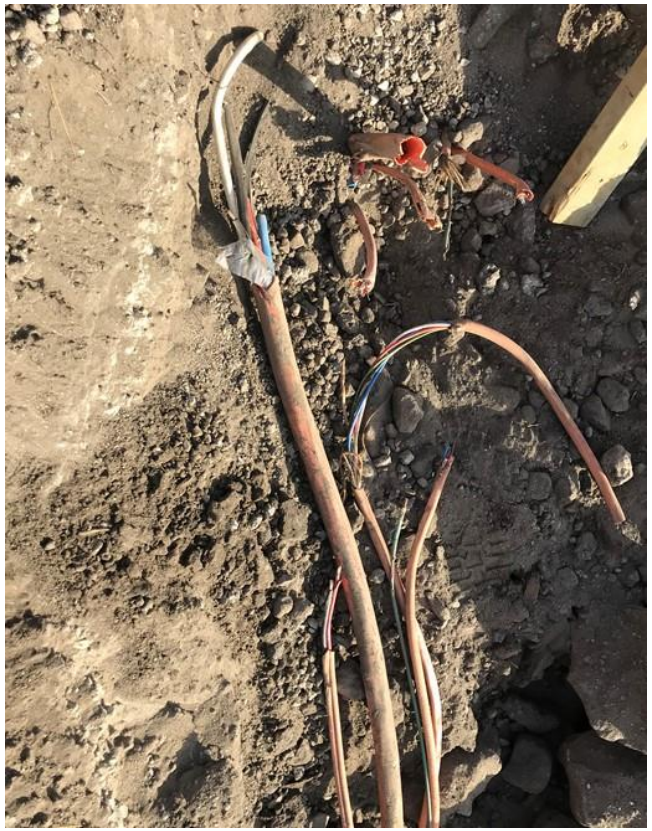
The earthing stud within the field control box.
Clearly showing the earth core of the motor cable not terminated.

The same earth core of the motor cable correctly connected inside the motor isolator

Date: 14/06/2021
Location: No.5 Blast Furnace
Reference: I1932680

A number of cables were dug up during excavation for the installation of a new rail track, five cables and an earth cable were severed by the excavator. The cables were not identified on the excavation permit and nothing was identified using non-contact tracing prior to commencing excavation. The cables installation is believed to 50 years old with the cables buried in sand and covered by timber sleepers which may have been the standard for that time. No other identification was provided to indicate cables were buried below.

As per electrical Installation manual section 4.4.10 all underground cabling is to be clearly recorded on site layout drawings, buried in sand at the correct depth, to have polymetric mechanical protection and have orange marker tape buried appropriately above the installation.



The severed cables during the excavation

A close up view of the old installation method with the cables buried correctly in sand and then protected by timber sleepers but there is no indication above the timber to indicate cables buried below.

Date: 16/06/2021
Location: Sinter Plant
Reference: I1934032

An electrician accessing a switchroom to conduct isolations has found the door of an MCC starter containing 2 by 5.5kW drives open with the main isolator in the ON position. Most MCC panels are specified and manufactured to form 3B to segregate the internal parts of each cell with respect to other cells, the busbar system and outgoing cable zone. Main isolators should only be operated with doors and covers secured to protect against arc hazards.

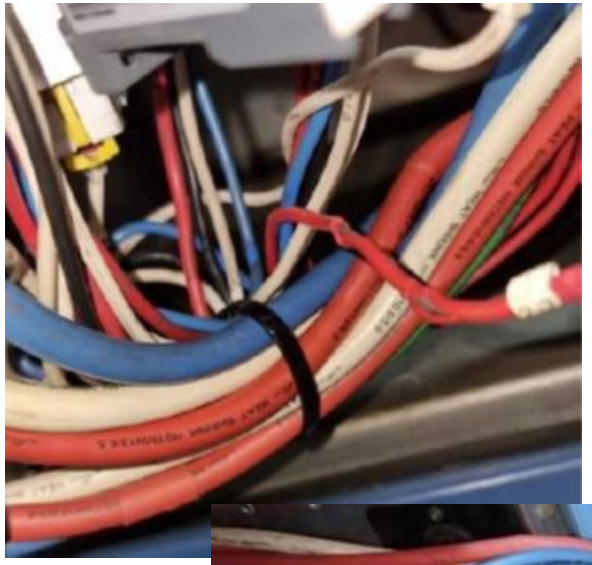
As per Electrical Safety manual 1.4.8.2 electrical stations or panels may contain equipment connected to high fault levels. To manage this risk all equipment doors and covers should be secured appropriately with the securing devices provided.

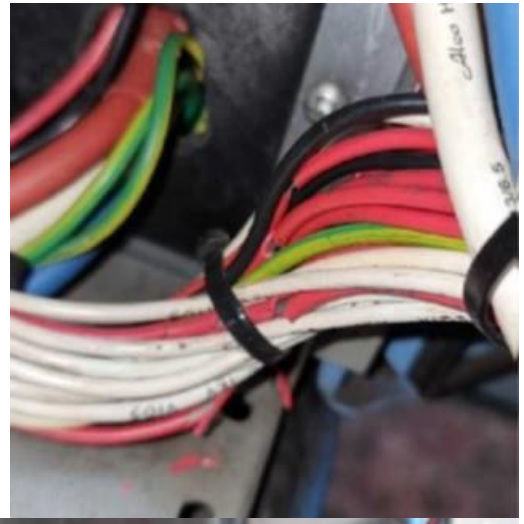
How the door of the MCC cell was found

Date: 24/06/2021
Location: Gas Processing
Reference: I1939310

An electrician was called to investigate why a dryer fan would not run in Auto and there was no feedback indication. Whilst fault finding in the MCC cell red insulated cores in a cable loom were found to be brittle and with exposed conductors. The red wires ran from the cell to a terminal strip in the cable launder for the 24V dc PLC control system. This MCC was installed in the early 1990s during a period where defective single insulated red building wire was manufactured, the defect was known as 'Red wire syndrome' as it affected red insulation and resulted in loss of plasticity and insulation becoming brittle. This issue had been identified within the MCC about 15 years ago however only the 240V ac control circuit wiring was replaced, leaving all the PLC control system 24V dc wiring in service.

Switchgear and control assemblies manufactured from the late 1980s to early 1990s should be checked for damaged insulation in red building wire. Damaged wiring must be replaced.

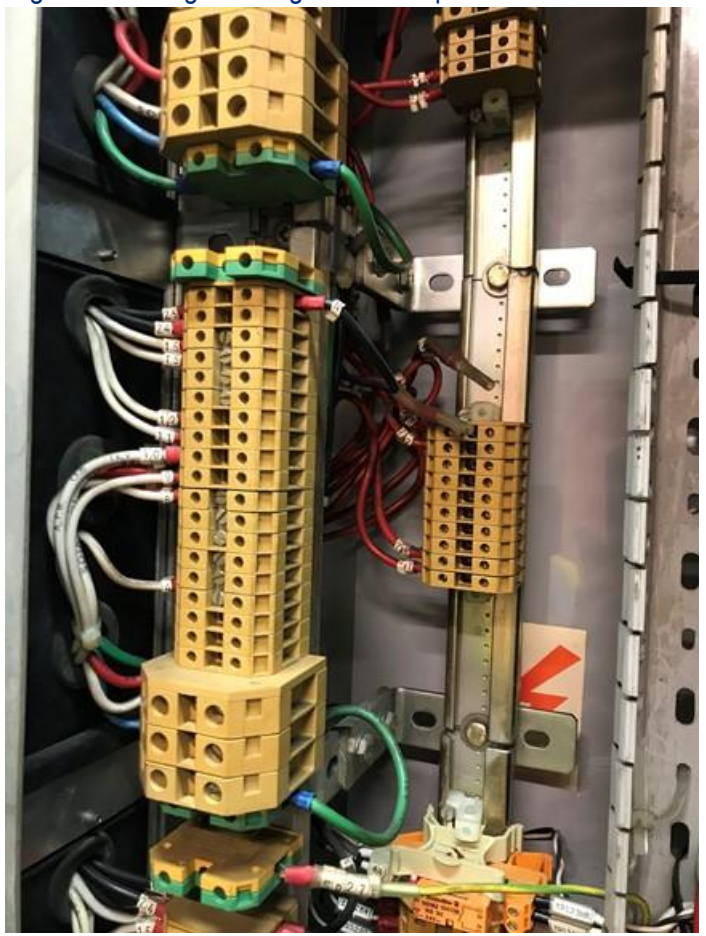




Close up views of the brittle red wire with exposed conductors

The wiring loom within the MCC cell

The terminal strip in the cable launder. The white wiring on the left is the 240V ac control circuit replaced 15 years ago. Behind is the PLC control system wiring still with red insulated wires



Date: 11/06/2021
Location: No.5 Blast Furnace
Reference: I1932361

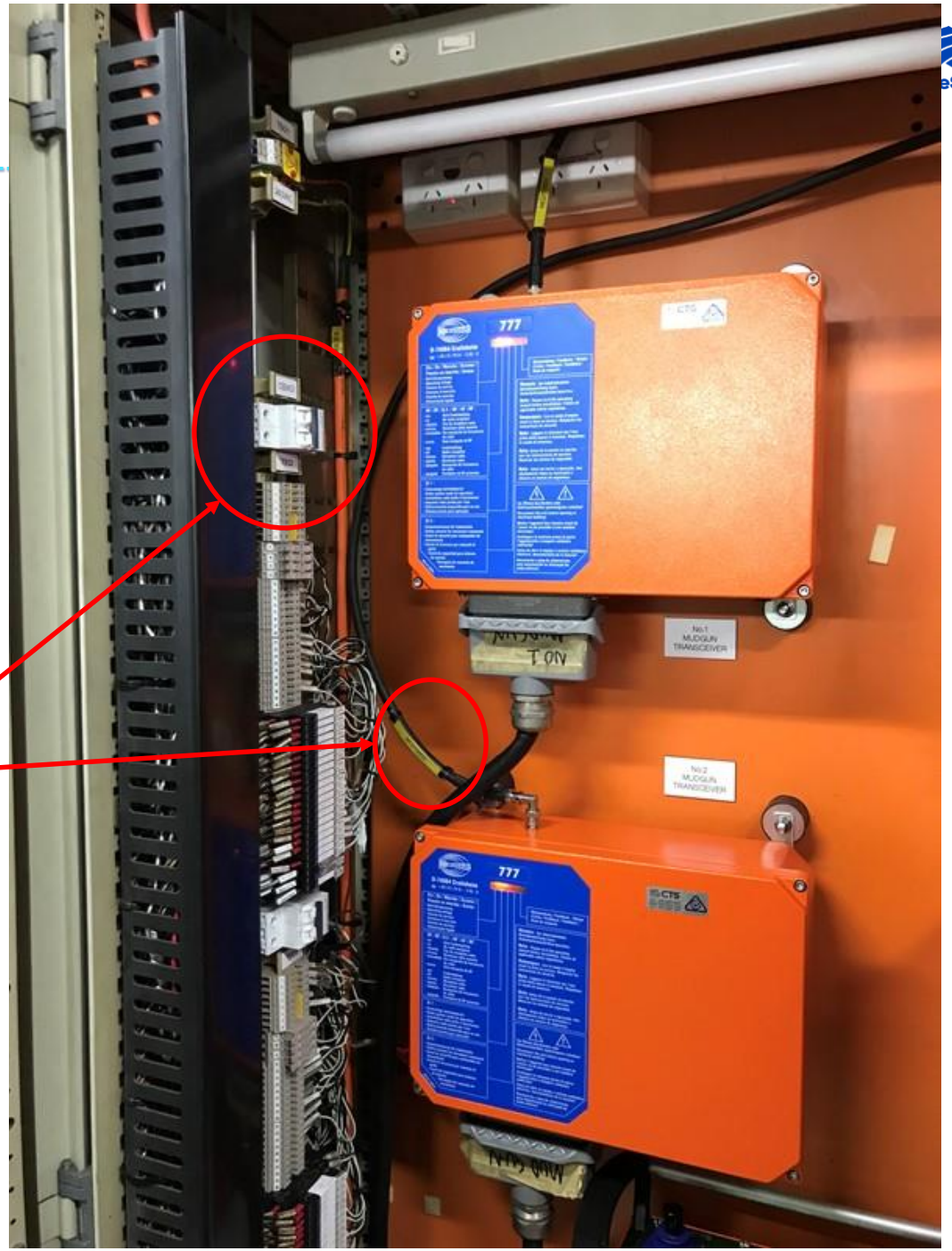
An operator trying to place the manipulator back on the mudgun near No.1 Casthouse floor taphole could not use the remote control unit (RCU). A shift electrician found the circuit breaker which supplies the receiver for the RCU to be in the off position. Once this was reset the RCU operated in the correct manor. At the same time Contract electricians were installing new equipment for upgrading the No.2 Casthouse floor RCU. The RCU control units for all three cast house floors are mounted within the one cabinet and this circuit breaker was accidently tripped by the electricians installing in a new cable within the cubicle.

As per electrical safety manual 1.3 and 2.4.5 a minimum safe working distance of 500mm must be maintained if an electrical worker is considering work near live conductors or equipment where there is a possibility the worker, or any object the worker may handling may contact live parts or initiate an arc fault. A risk assessment must be conducted and adequate controls such as protective barriers put in place before work can commence.

An example of the barriers used to cover energised terminal strips, however no consideration was given to cover over the circuit breaker

The circuit breaker which tripped

The cable which tripped the breaker



Inside the RCU control units cubicle showing both No.1 & 2 RCD receivers

Date: 2/06/2021
Location: HSM
Reference: I1927533

Unsecured brass screws were found installed in the bottom poles of a CFS switch where the internal wiring conductor cross section was considerably smaller than the terminal housing. This was identified during planned work to remove asbestos components from the switch. Remarkably the screws had remained secure and there was no evidence of high resistance.

Ensure correct lug for the conductor size is used to avoid potential hot joints.

Inside the CFS switch with the asbestos covers removed the double screwed connectors show brass screws used in an unconventional way

A close up of the brass screw in position

Date: 21/06/2021
Location: HRM
Reference: I1936514

During the inspection of the rescue kit in the switchroom the 1000V insulated gloves were found to be severely damaged from heat, partially melted together and brittle at one end. The manufactured date on the gloves was NOV 2003.

Rescue kits need to be periodically inspected as compliant and all the equipment is fit for service. In the case of an emergency the equipment has to be readily available and fit to be used for the particular purpose at that time.

The gloves as found out of their bag. Both gloves are melted together and at the end the brittle sleeve has broken off.