Event 1232895 Te Apiti Dropped Power Cable

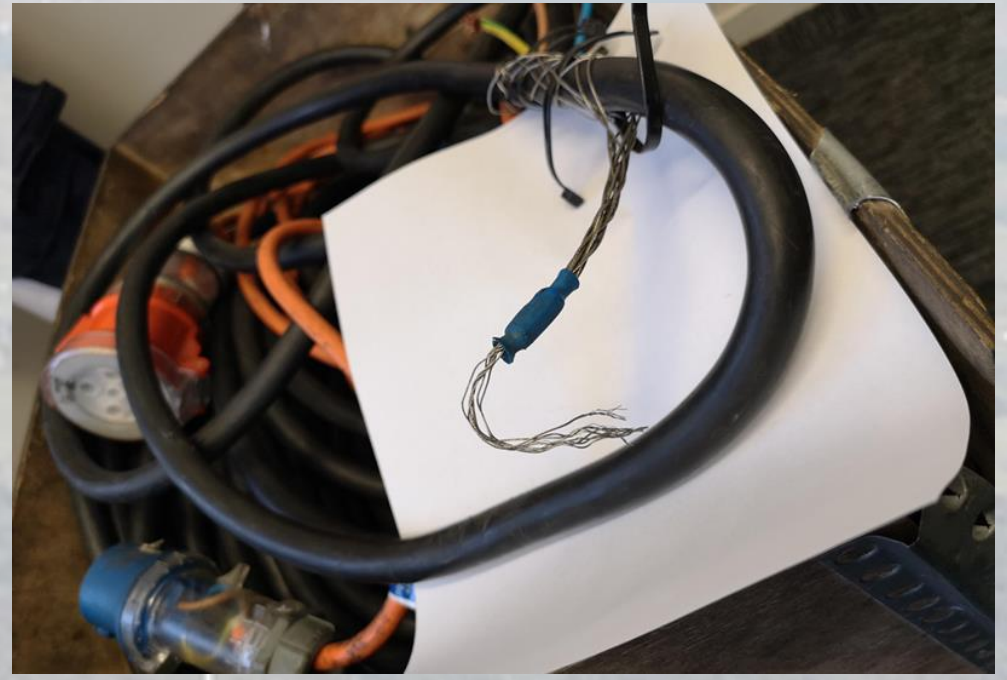
Two Meridian wind technicians accessed a turbine to remove equipment following maintenance work. The equipment included an electrical cable that had been craned up and secured in the yaw area to provide a power supply from a generator at ground level. The cable was fitted with a braided sock with an eyelet to both enable lifting and then securing once in place. The cable had been in situ for 2 days while the work was completed and left in place over a weekend.

When the technician accessed the Yaw deck the eyelet on the cable failed and it fell to the base of the turbine. The second technician at the base had established a drop zone and was waiting in the safe area to receive the equipment being craned down.

Conditions leading up to the event:

The turbine had sat for 2 months due to a loose nose cone frame, repairs required old steel to be removed and new steel to be welded in place. Welding required establishing an external power supply by means of a generator and cable, the cable being craned up to the yaw deck and secured in place.
The work on the turbine was completed late on a Thursday afternoon and the turbine was put back into service. The technician left the gear and cable in situ and went home, they didn't come in on Friday due to a family illness. On the following Monday they returned to do a little bit of electrical work and pack up their gear.

The cable had been in service for as long as anyone could remember. It was used infrequently, only for when a power supply of more than 10 amps was required in a turbine. This was generally to undertake welding, or to power induction heaters used for bearing removal. The cable was inspected and tested and tagged annually for electrical integrity.
The braided sock and eyelet weren't registered as lifting devices and hence weren't subject to annual inspection.
It also isn't clear if the device was rated for the weight of the cable.
While subject to visual checks the heat shrink prevented the integrity of the feral and join from being inspected.



Learning Team discussion:
Communication – the technician on the yaw deck had not communicated his position as per standard protocols however the technician at ground level had followed procedure and was stationed in the drop zone.
Should the cable have been left hanging once the Turbine was put back in service? There was an unwritten rule that nothing should be left hanging own through the hatches if the turbine was running, this was more specifically applied to the lifting chains so that they didn't rub on the hatches or any steelwork.

Learning Team discussion continued:
While there wasn't clarity if this advice was just about the chains most team members accepted that they would have left the lead hanging while the plant was shut down but believed it should have been removed once the turbine became operational.
It was agreed the attachment could have failed at any time and that a secondary attachment should be used as a failsafe device once the lead was in place, this would also help with handling the cable once it was brought up.
There was discussion relating to the way the permit was managed, should alerts have been raised when TOC (transfer of control) was handed back (this is normally the case), should the permit be able to be retained at the end of the day and general frustrations with the TOC process. The TOC process is currently under review.

Learnings:

All lifting devices must be included in a register, rated correctly and subject to annual inspection and inspection pre use.
When equipment is left suspended it must be subject to a secondary anchoring system.
Due to movement and vibration equipment must not be left in a suspended state if the turbine is operating.
Always observe protocols around communication and drop zones.

Recommended actions:
Issue Safety Alert regarding uncertified or makeshift lifting points.
Formalise the other findings into AWP's