

REMEDIATION MANAGEMENT HSSE COMMUNICATION Lessons Learned One-Pager



Type of Incident: Underground cable (22kV) strike
Business Unit: Remediation Management
Location of Incident: Port Hedland, WA, Australia
Date/Time: 8 October 2008, 10:20 am

Brief Account of Incident: On 8 Oct 2008, a drilling crew conducting offsite environmental drilling works in Port Hedland, Western Australia, struck an underground high voltage 22kV electrical service at 1.6m depth.

There were no injuries to either the driller or his assistant, who were the only people in the immediate vicinity. At the time of the incident, there were no physical signs that the electrical cable had been struck due to being protected by a highly sensitive circuit breaker, which tripped immediately when the conduit was struck, and prior to the augers contacting the cable. Adjacent businesses who had lost electrical services, first notified the drillers of the incident, at which time work was immediately ceased.



Actual Outcome: Electricity to the area was restored within two hours and Horizon Power advised that a single phase from one of two high voltage cables was struck, causing physical damage to the cable. The damaged cable was permanently repaired the following day.

What Went Well:

- Drill rig was isolated immediately and local power authority contacted;
- Protective cable screen and sensitive circuit breakers at the sub-station operated as designed;
- Electricity to the area was restored within 2 hours.

What Went Wrong:

- Underground electrical cables shown on plans were not located by a professional cable locator;
- Unaware the cable was installed by directional drilling, when shallow natural soils were encountered, it was assumed no services could exist below;
- When not located, liaison with the local power authority asset owner for confirmation was not undertaken;
- A single phase from a high voltage cable was damaged and power to a number of customers was interrupted.

Possible Immediate Causes:

4.6 Routine Activity without Thought: After successfully locating numerous services in other areas, at this location the cable locator made assumptions on the service location.

1.4 Procedure Not Available: There is no consistent procedure which details the minimum requirements and expectations from cable locators.

1.6 Procedure Inadequate: Although borehole clearance procedures exist, with the introduction of underground utility installations via directional drilling, these procedures are now inadequate.

Possible System Causes:

11.7 Incorrect Judgement: When anticipated services were not located, the cable locator made some assumptions and exercised poor judgement.

23.3 Communication between different organisations not effective: When anticipated utilities were not located, communication with the local utility owner was not undertaken.

22.2 Development of Standards / Policies / Procedures (SPP) not effective: With the existence of underground utility installation techniques such as directional drilling, current policies, procedures and training programs need to be updated to incorporate additional control measures.

Corrective actions:

- Update RM Ground Disturbance Procedure to include details on:
 - A "minimum requirements" checklist for cable locators to ensure high quality & consistency;
 - Clear guidance on actions to take when borehole clearance depth cannot be reached;
 - Improved ground markings and documentation of identified services, and;
 - Liaison with local asset owners to gain their knowledge / experience of the area;
- Training, communication & implementation of updated RM procedures.

Lessons Learned:

1. Service plans are not always accurate and when anticipated services cannot be located, assumptions should never be made – verify location;
2. Site supervisors and/or relevant contractors should confirm the location of services with cable locators and ensure they are adequately marked out on the ground;
3. For off-site drilling, liaison with local asset owner should always be undertaken;
4. Due to the presence of services installed by new techniques such as directional boring, when natural underlying soils are encountered during the borehole clearance process, it can no longer be assumed that there is no underground service below.