

11kv Cable Strike Case Study

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- Incident Information –
- Service Strike On 30th June 2014
- 11kv Cable Struck By A Toothless Ditching Bucket On An 8t Kubota Excavator

Incident Information – Leading Up To

- Trial holes had to be dug to identify the recently installed 11kv cable crossings for the temporary north bound on-slip. When the cables were found it was identified they were too high. The Agent reported the findings to the Construction Manger & Stats Co-ordinator. A meeting was held with Western Power Distribution to discuss a solution, the plan was to lay ducting at 1.3m along the hoarding at the required level for the temporary on-slip road & Western Power to supply the cable for the works.
- The trial holes dug previously had also revealed rogue unidentified cables near to where the joint was needed. Arrangement was made by the Agent to get the electricians out to assess these cables on he 27th June 2014.

During the new ducting installation the drainage team met up with the general foreman on 27th June 2014 & informed him that the duct installation was clashing with a 375mm drainage pipe being installed. The drainage team insisted that the ducting had to be lowered to 2.3m. With this information the earthworks team had to arrange for a drag box & 13 tonne excavator to lower all the ducting the team had just installed at 1.3m.

The weather on the 27th June 2014 was heavy rain, and therefore, the gang backfilled the area covering the trial holes to ensure no water pooled keeping mud to a minimum in preparation for the 30th June 2014.

Incident Information – Day Of Strike

30th June 2014

- The ganger informed his foreman about requiring a new permit to dig as the one in his possession was going to expire by 07:30am that morning. They both discussed the day's works activities & the foreman instructed his ganger to make his way out to site & that he would be along soon with his new permit for the works to proceed.
- The section engineer presented the new permit & accompanying drawing & briefed the general foreman on the permit. The section engineer & the general foreman then reviewed the risk assessment for the operation. The planned activity was for the excavation of A trench to install BT & power ducts along the side of the site boundary, including the area where the cables run over where the ducting had to be lowered.

Incident Information – Day Of Strike

30th June 2014

- The general foreman then met with the earthworks agent for A discussion on the day's work activities. During the conversation the agent discussed that the cables found were three redundant communication cables & would need to be exposed at some point that day so that an electrician could inspect them as the weather on friday had prevented the planned inspection taking place.
- The general foreman arrived on site & handed the permit & risk assessment to the ganger, no detailed briefing took place. As the resources had not arrived for dropping the ducting down to the changed level of 2.3m, the general foreman instructed the gang to carry on & expose the three redundant communication cables which were running through the work area.

The ganger was banking the machine during the excavation whilst his operatives were well out of the way of the excavator when there was a flash & a bang.

The ganger immediately instructed the machine to move back & moved his gang away from the excavation, during which the cable gave a further 2 bangs. The ganger then contacted the general foreman to report the incident.

Incident Information – Basic Cause Of The Event

- Permit controller did not brief the restrictions to the supervisor
- Section engineer did not re visit site & re mark services on the ground
- General foreman did not challenge the briefing on the buried services, he signed the permit & handed it to the ganger with no proper instructions on the control measures for digging the ground.
- The gang were put to work without proper planning for uncovering the cables that were previously found the following week.
- No method statement was produced to plan out the works activity, a risk assessment was rushed & did not follow the hold points within the project instructions for a safe system of work (ssow) with approval

Human Failure Analysis Chart

Name	Error	Routine Violation	Situational Violation	Exceptional Violation
General Foreman	Yes - Put The Gang To Work With Little Information About The Cables & Standards Expected Of Them	Yes - Previously Been Told On Site About Scrapping With Machine Over A Communications Duct	Yes - New To The Company Just Following The Team & Trying To Do His Best	
Ganger				
Agent				
Section Engineer				
Earthworks Team				
	Yes - Did Not Ensure His Team Followed The Correct Control Measures For Buried Services	Yes - No Strong Conviction In The Team To Stop Work Having Experienced A Similar Incident Previously On 1 st June 2014		

Basic Risk Factors (BRF)

BRF	Definition	Incident details	Actions to be taken	Action assigned to	Action by date
Design	Poorly Designed Equipment That Is Not User Unfriendly	It Is Unclear Why The 11Kv Cable Was Positioned Originally	Check All Works Carried Out By Western Distribution Power To Ensure Future Clashes Have Been Ruled Out With Temporary & Permanent Works. Review Project BIM Process, Can The Tool Be Used More Effectively		
Tools And Equipment	Poor Quality, Condition, Suitability Of Materials, Tools, Equipment & Components	Drag Box Ordered Is Incorrect For Excavating The 2.3m Excavation. The Safe System Of Work Had Not Been Planned Correctly	Project Briefed On Correct Process For Risk Assessment And Method Statement Document Approval & Suitable Time Lines To Correctly Plan Resource		
Housekeeping	No Or Insufficient Attention Given To Keeping The Work Floor Clean Or Tidy	N/A			
Maintenance Management	No Or Inadequate Performance Of Maintenance Tasks/ Routine Testing & Repairs	N/A			
Error Enforcing conditions	Unsuitable Physical Conditions & Other Influences That Have A Disadvantageous Effect On Human Functioning	Weather Drove The Team To Backfill The Trial Hole Previous Weeks Markings & Pegs Missing	Before Breaking Ground Teams Must Ensure There Are Adequate Trial Holes Exposed For The Run Of An Excavation Training Given On Site Standards Expected For Buried Services & Operations	Utilities Coordinator	

Basic Risk Factors (BRF)

BRF	Definition	Incident details	Actions to be taken	Action assigned to	Action by date
Procedures	Insufficient Quality Or Availability Of Procedures, Guidelines, Method Statement, Risk Assessment & Manuals	Procedures Sufficient, But Not Adequately Understood	Immediate Supervisory Team Briefed On Buried Services Procedures, Permits & The Buried Services Prompt Card	Health & Safety Manager	03/07/14 Closed
			Brief The Other Permit Co-Ordinators To Ensure That The Procedures Are Understood	Health & Safety Manager	
Training	No Or Insufficient Competence Or Experience (See Training Strategy / MCG Requirement)	Section Engineer Has Identified That He Is New To The Company & Feels That He Needs Assistance To Ensure That He Is Competent To Work To The Best Of His Abilities	CAT & Genny Works To Be Mentored To Give Confidence That His Checks Are Being Done Correctly Feedback From CAT & Genny Users About Confidence In Cable Detection	Construction Manager	
Communication	No or Ineffective Communication Between The Various Employees, Sites Sub Contractors & Departments	Supervisors Did Not Communicate Or Follow The Procedure	Change Control Training For Supervisors At All Levels Employed On The Project: Ganger Foreman Engineer	Works Manager Health & Safety Manager	
Incompatibility Of Goals	Safety Verses Production, Incentives, Political, Social Or Individual Goals	Team Were Under Time Constraints To Provide A Quick Solution Before Earthworks As The Prime Objective & The Planned Outage On The 5/6 July 2014			
Organisation	Shortcomings In An Organisations Structure, Philosophy, Management Strategies Resulting Inadequate Or Ineffective Management Of The Company	11kva Cables Not Monitored To Ensure They Were Installed At The Correct Level			

Lessons Learnt

- Briefings to be given when a new permit is issued to gangs including plant/machine operators
- Ensure good communication & planning of works prior to putting gangs to work
- Always brief any new restrictions/changes to a permit or risk assessment
- Ensure engineers & new staff are well aware of the sites rules & procedures prior to writing any permits
- Challenge supervision & be sure to fully understand the work to be carried out
- Ensure good communication with workforce prior to starting works
- Stop works if there is a change in the method or if you feel something is unsafe