SUBSTATION FATALITY

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Alstom Protection and Control
Substation Fatality

• An adult male was fatally injured in an 11KV distribution substation, while cleaning inside an Oil Circuit Breaker (OCB) chamber, vertical isolation, horizontal draw out type. In the process of cleaning, he opened the cable shutters in order to clean the inside of the spouts and was fatally electrocuted.
Background

• Supervisor given task to maintain S/S.
• Textile factory near to S/S.
• Assumed it was fed from S/S.
• Could not isolate in the week.
• Circuit not checked – Assumed.
• Motive to work Sunday O/T.
Incident

- Crew arrived at S/S & found one CB open.
- Decided to maintain CB whilst waiting for S/S to be isolated.
- Authorised Person racked out & withdrew CB.
- DID NOT TEST.
- DID NOT LOCK OFF SHUTTERS.
Isolation of Supply

• The necessary operating was carried out in order to isolate the 11KV supply to the substation.

• On isolating the supply to the substation and isolating the local transformer, it was found that the textile factories still had power and were in fact not fed from this particular substation.

• The local transformer only fed street lighting circuits.
Six Ps

- PROPER
- PREPARATION
- PLANNING
- PREVENT
- POOR
- PERFORMANCE
Task

• The maintenance and oil changing in the remaining OCBs was completed and the assistants were instructed to clean the substation.

• One of the assistants went into the substation to clean the floor, panels and spouts, as he had been instructed; he had been told that the substation had been isolated.
Incident

• In the process of cleaning the chamber, he opened the cable shutters and attempted to clean inside the spout, which was alive because it was fed from a ring and was fatally injured.

• At the time of the incident, the supervisor and artisans were outside the substation.
Shutters
Ring
Cause of Incident

• The Supervisor,
• Failed to obey the HT safety instructions.
• Failed to use safety equipment provided to him by the employer.
Conclusion

• The planning of the maintenance was poor.
• The motive was to work Sunday overtime.
• The local transformer only fed street lighting.
• There was a lack of proper supervision.
• The Supervisor (Authorised Person) failed to lock off the cable and busbar shutters, in terms of the HT Safety Instructions.
• The Supervisor failed to test to ensure that the substation was isolated.
Contravention

- Failed to L/O LIVE shutters.
- Had been trained.
- Signed acceptance of S/R.
- Failed to test S/S was dead after isolation.
Contravention

• No contraventions on the part of the employer were found, in that the employees were trained in the company safety instructions and use of HT equipment and were familiar with the equipment.
Contravention

- OHSA 1993 Section 14 (c) - the employee - Supervisor failed to carry out a lawful order and disobeyed the safety rules and procedures laid down by the employer.

- OHSA 1993 Section 14(a) - the supervisor failed to take care of the assistants who were directly affected by his omission, to wit, to lock the shutters once the OCB had been withdrawn.
Contravention

• OHSA 1993 Section 38(o) – the Supervisor failed to use the safety equipment in connection with plant or machinery, which was provided to him by the employer.
Culpable Homicide

• Both the Supervisor (Authorised Person) and the Competent Person assisting the Authorised Person, were found guilty of Culpable Homicide and fined.
Duties of Competent Person

• They must be conversant with the Service Unit Safety Rules.
• They must verify that the Authorised Person is at the correct operating location.
• They must verify that the Authorised Person is at the correct isolation/earthing device.
• They must be conversant with the switching, isolating, testing and earthing principles relevant to the mains and apparatus.
Duties of Competent Person

• Observe that isolating, testing and earthing is carried out in the correct sequence.

• They must be instructed in emergency procedures, including the safe removal of a person from live mains and apparatus.

• They must have attended a Service Unit course in First Aid, which should include treatment of electric shock, CPR and how to deal with heart fibrillation or stoppage.
Duties of Competent Person

• They must be physically capable of assisting the Authorised Person to manhandle equipment.
ISITE

- IDENTIFY
- SWITCH
- ISOLATE
- TEST
- EARTH
Remote Control Panel
Remote Operating Device
Isolate & L/O
Safety Test
‘S’ Type Voltage Detector
Integral Earthing
Earthing Truck
PPE
PPE

• This is dependent on the specific hazards within the particular industry, but the employer must supply adequate protective clothing to protect the employee against the hazard.

• Normal overalls.
• Flame retardant overalls.
• Flash suit.
DOL Enquiry

• The following were among the questions asked:
• Were there rules and regulations in place for the task involved?
• Were the people trained?
• Do you have a record of their training?
• When were they last trained?
• Was the training relevant?
• What tests were carried out in order to assess competency?
Liability

• The Designated Person (Person holding the Government Certificate of Competency) produced training records of both the Authorised and Competent Persons, which satisfied the Department of Labour that the Designated Person and the company had carried out his/their duties, in terms of the OHSA 1993 and were not liable for prosecution.
Conclusion

• Onus on employer to prove training and competency.
• Maintain records.
• Properly assessed.
• Authorised & Competent Person found guilty of Culpable Homicide and fined.
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