Health & Safety ALERT

Alert Title:	**Fatality – Electrocution**
Alert Category(ies):	**Electrocution**

1.0 BACKGROUND

On July 29, 2018, around 11:15 AM a fatal accident occurred at a CCC Project in Qatar when an electrician was electrocuted to death while interchanging the phases of an energized female socket coming from a live Control Panel (CP).

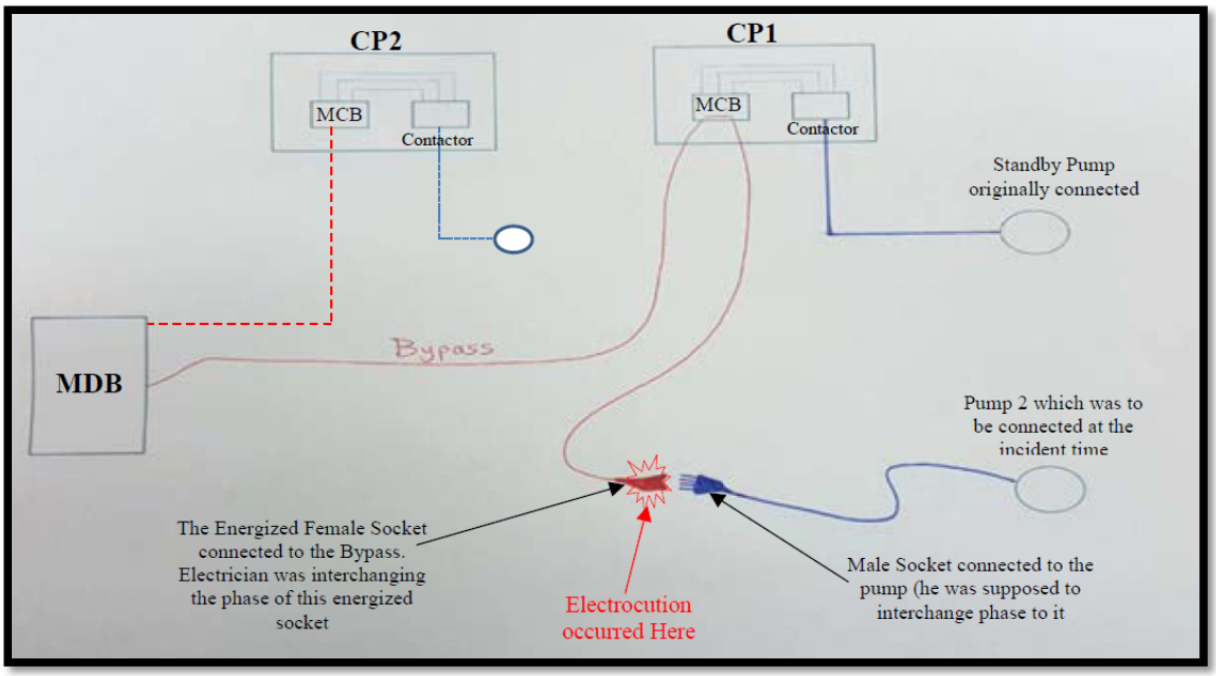
A subcontractor-supervisor instructed his electrician (the victim later) to connect a water pump to a certain control panel (CP) but the electrician ignored the instructions and took a shortcut by doing a bypass cable to an adjacent CP as the first panel was not ready for connection, i.e. it needed more time and work to install the *Glands, Round lag, and the earthling Cable to it*.

When the pump was connected through the bypass, it operated in Opposite / Reverse Direction for which the electrician (victim) decided to interchange phase/ swap wires.

Instead of interchanging the phase of the **dead male socket** coming from the Pump, the electrician (victim) worked on the **energized female socket** coming from the bypassed cable he made previously. During the wire swapping, he received an electrical shock and was immediately killed.

Emergency Vehicles and Medical Teams arrived at the incident scene but unfortunately the victim was announced dead

2.0 SUMMARY OF FINDINGS & PICTURES



1. **Overconfidence & Taking Shortcut to save time & effort**

   - Due to **Overconfidence**, the victim-electrician who had 16 years of experience, decided to work and interchange phase of an energized female socket **without using proper PPE** and tools (insulated gloves and insulated screwdriver)

2. **Failure to implement the LOTO (Lock-Out/ Tag-Out) Safety Procedure**
   - The electrician (victim) failed to implement the LOTO procedure when he worked with

	the Live Circuit. • Supervisors failed to enforce the implementation of LOTO (Lock-Out/ Tag-Out) Procedure although the LOTO Procedure is in place. 3. **Ineffective PTW "Permit-To-Work" Procedure** • There is no Separate "Electric-Work PTW" for working with Live Circuits or Energized Equipment nor High-Risk Activities". 4. **The Job Task Safety Instructions /Pre-briefing (STARRT Card & Talk) LTA (Less than adequate)** • Although the STARRT Card was delivered and signed by workers, the STARRT Card did not fully correspond to the content of the RA, i.e. the STARRT Card did not include all Hazards and Control Measures stated in the RA. 5. **Hazard Identification Process LTA (Less than adequate)** • The Safety Officer assigned to the area was not able to identify or observe the "Unsafe Act" committed by the electrician (victim) when he did the bypass. He also failed to observe the electrician when worked bare-handed without insulated gloves or insulated screwdriver. 6. **Initial Evaluation/ Assessment of the Subcontractor's Technicians and Supervisors LTA** • Poor Selection and Evaluation Process of the subcontractor's personnel; especially the technicians and electricians. The PMV/ or the MEP Engineer did not assess the electrician of the subcontractor upon initial employment
3.0	**LESSONS LEARNED**
	1. **All Electricians especially the subcontractors' must be re-assessed and certified** • All new electricians and who are currently employed at the project from the subcontractors' shall be re-assessed and re-evaluated. • The assessment shall be carried out by the CCC PMV/ or MEP Engineer or by a Third Party. • Electricians who are found to be incompetent shall be either trained and certified or terminated based on the assessment. • No electrician is allowed to work unless they are CERTIFIED by a Third-Party or by the CCC PMV/ or MEP Engineer 2. **Review all subcontractors' Credentials, Competence, Performance and Compliance on site and Re-consider their employment if necessary** • Conduct a thorough review and assessment over all subcontractor's credentials and qualifications of their key personnel; engineers, site supervisors, technicians to ensure that subcontractors' workforce are competent to perform the job. • Conduct a thorough inspection over all subcontractors work locations on site to check how effective they are in compliance to the required safety procedures. Check their workers, equipment, machinery, vehicles, etc. to ensure that they fully implement safety procedures. • Improve the Subcontractors' Selection process prior to employment by checking their CVs, Credentials, Safety records, Machinery, Equipment, Facilities and management capabilities. Do not employ subcontractors who do not meet the required standards. 3. **Enforce Implementation of the LOTO (Lock-Out/ Tag-Out) Procedure on site** • LOTO Procedure must be implemented during any construction activities which involve working with live Circuits/ Cables. • Safety Officers, Engineers, Foremen and Manager must enforce the LOTO implementation on site, and shall stop work immediately if the LOTO Procedure is not implemented.

4. **Periodic Monthly Inspection over all subcontractors' equipment and machinery must be conducted by the CCC PMV/ MEP Engineer**
    - Conduct a Monthly Inspection over all Subcontractors' Electric Work on site to ensure the safety of all electrical equipment, e.g. CPs, DBs, generators, machinery, etc. are in compliance to "Electrical Safety" requirements.

5. **High-Risk Activities must be well-defined and special PTW must be designated and implemented for each activity.**
- A list of High-Risk Activities must be developed including but not limited to Lifting Operation, CS, Electric Work, Hot-Work, etc.
- Ensure that PTW is issued to every High-Risk Activity before the beginning of work.
- A Safety Officer must check the work location to ensure that all required control measures are in place before he signs off the PTW.
- Implement and enforce the Policy "No Work/ or Stop work immediately if no valid PTW is in place for any high-risk activity"

6. **Provide HSE Training Course.**
- All Engineers, Site supervisors (FM & CH), Safety Officers and Workers who are involved in electrical work must receive a refreshing "Electrical Safety Training Course"

7. **Enhance "SITE SUPERVISION" especially over subcontractors' activities, and ensure that Subcontractors' supervisors have adequate supervisory skills as well**
    - Monitor all subcontractors' activities, workers and work locations continuously in the same way CCC workers and activities are monitored.
    - CCC Engineers, Construction Supervisors (FM & CH) and Safety Officers are obligated to monitor the subcontractors' activities and workers on site to ensure that they implement all required safety procedures in the same way CCC does.
    - Ensure that the subcontractors have experienced staff and supervisors who can supervise their workers effectively on site. This can be ensured through the initial assessment of subcontractors prior to employment and by continuous monitoring on site.

8. **Improve Safety Measures of the CP (Control Panels) & the Electric System**
    - The CPs (Control panels) used by the subcontractors shall be checked and certified by a third party or the CCC PMV/MEP Engineer. The initial check and certification must be documented, and an inspection sticker shall be placed on the CPs which are checked and approved by the Engineer/ or the Third Party.
    - A valid inspection sticker must posted on all CPs at all times. The inspection sticker shall be in addition to the Inspection List which is usually available at the offices.
    - A periodic "Monthly Inspection", by a certified third party or the CCC PMV/ MEP Engineer, shall be conducted over all the subcontractors' CPs and other electrical equipment. The inspection stickers shall be renewed and validated on the equipment if they pass the inspection.
    - ELCB shall be fitted to all CPs as a safety device to protect people in addition to the existing MCCB which role is to protect the equipment.
    - Try to mount/ install "built-in" female sockets on the CPs instead of the socket coming through a wire from the CP. If the female sockets are built-in, it would be hard for the electricians to interchange phase to the built-in sockets at the CPs, and therefore electricians would be forced to interchange phase at the other (dead) sockets coming from the equipment.

9. **Activate and empower "STOP UNSAFE WORK" Practices among Project Personnel and Workers.**
    - Print "Stop Work Cards" in different languages and distribute among employees to stop unsafe work activities when observed.
    - Empower employees to stop work if they observe hazards and conduct sufficient checking before allowing activities to proceed.

10. **Communicate the Lessons Learned from this incident (the content of this Alert) to the project workforce through the following:**
    - **A Stand-down** to all site workers on site (one-time Stand-down to be conducted with

	all site workers in the presence of Project Management) • **The weekly** TBT (Tool Box Talk). Designate one TBT to communicate lessons learned from the incident to all site workers. • **The weekly SSMM** (Safety Supervisory Management Meeting) for managers, engineers and senior supervisors • **The weekly SO Meeting** (Safety Officers Meeting) for all Safety Officers **The weekly CH Meeting** (Charge Hand Meeting) for all Foremen and Charge-Hands
4.0	**ACTIONS**
	As above
5.0	**CONCLUSION**
6.0	**REFERENCES**
	CCC Health, Safety and Environment Management Plan PP701-HSE **CCC (Lock-Out/ Tag-Out) Procedure PP726-LTP**