



**MULTI-NATIONAL FORCES-IRAQ**  
**TASK FORCE SAFE - STANDARDS & INSPECTION TEAM**  
West Camp Liberty, Building W16-2  
Baghdad, Iraq  
APO AE 09342-1400



REPLY TO  
ATTENTION OF

13-Jan-09

MNF-I TF SAFE – S & I TEAM

MEMORANDUM FOR RECORD

SUBJECT: Electrical Shock Incident Investigation

INCIDENT REPORT #: 200912011500

INVESTIGATION REPORT PREPARED BY: (b)(6)

SITE: F.O.B. Falcon (D4)

LOCATION: Baghdad, Iraq

FACILITY I.D.: 750 PAX LSA Area – ( next to C.H.U.# – 16K)

CONTRACTOR: KBR (O & M) / TRANS-ATLANTIC (Subcontractor through KBR)

INVESTIGATORS: (b)(6)

QUALIFICATIONS: Master Electricians, Task Force Safe Electrical Inspectors.

SUBMISSION TYPE: FINAL

ELECTRICAL SYSTEM TYPE (as determined by O & M): TN-C-S (British Standards 7671)

**1. Investigation; preliminary information:**

Task Force Safe heard the call come in over the radio for an emergency unit to respond to the 750 PAX LSA Area. The communication said a man had been shocked and was badly injured.

We arrived on the scene to see what had happened and observed a man being moved to an open area adjacent to Oregon St. An emergency vehicle came to the scene and headed to the area where the man had been moved. We talked to a person standing in the vicinity and he said a man had “been shocked and his heart is not beating”.

We immediately returned back to the TFSafe / DCMA office and notified our site DCMA QAR contact, Capt. (b)(6) (USAF). He was advised of the situation and an E-mail to Mr. (b)(6) (b)(6) was sent to inform him of the situation as well. The three of us then returned to the site.

**2. Investigation; Bottom line up-front:**

Upon returning to the scene we inquired as to what had happened. A person working in the area gave us the following description of what the man was doing at the time of the incident:

The person involved in the incident was apparently working with a pick-axe around a grounding electrode (rod) just outside of C.H.U. # - 16K, when the incident occurred. The man was seen

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falling backwards with the pick-axe in hand. A grey cloud of smoke was said to of have been seen in the area, at the time when the incident occurred.

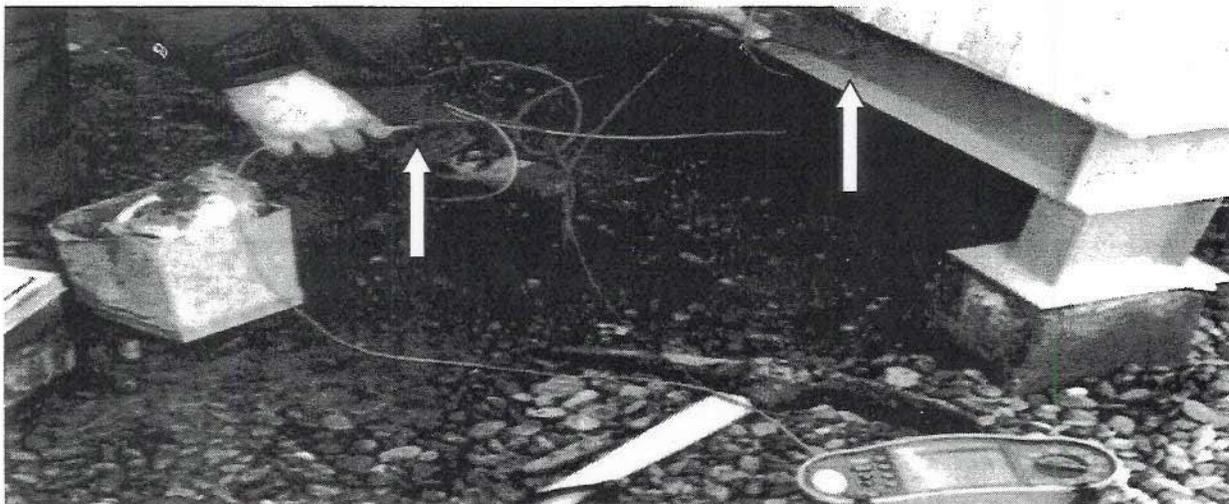


The incident site as found when the Task Force Safe team arrived. 12-Jan-2009 1530

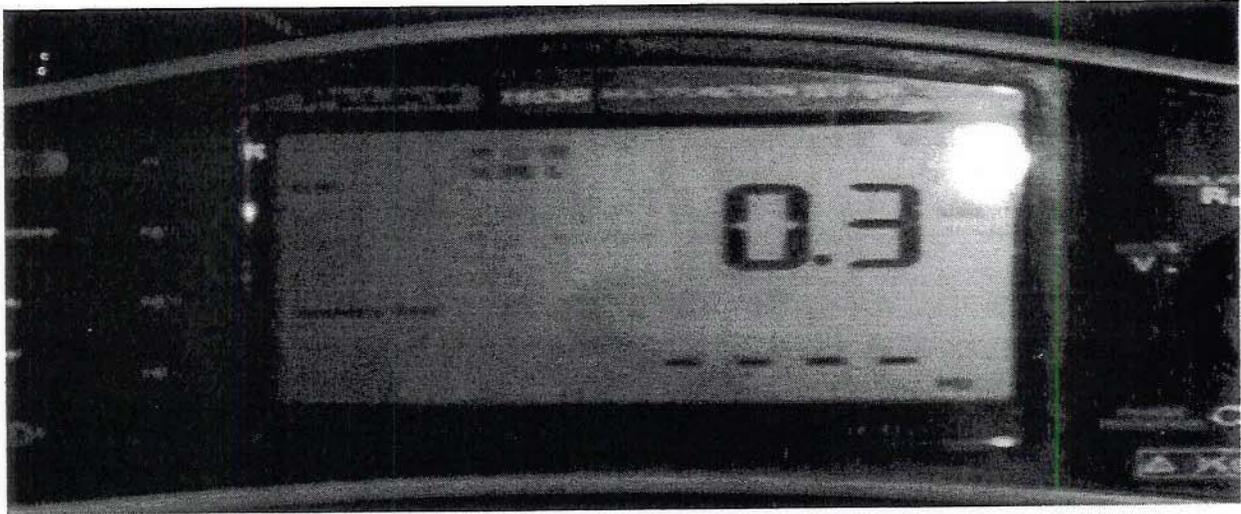
**3. Inspection results as performed by the Task Force Safe Electricians:**

The investigation into the incident started at approximately 1530. The photo above shows the area where the incident occurred. To our knowledge, nothing had been disturbed prior to our arrival.

The first test performed was a voltage test between the wire left attached on the ground rod and the frame of the C.H.U. This would show us if a voltage potential existed between the two objects mentioned above. A negligible voltage was registered on the Fluke 1653B Multi-meter used for the test. This result is consistent with a correctly wired electrical system.



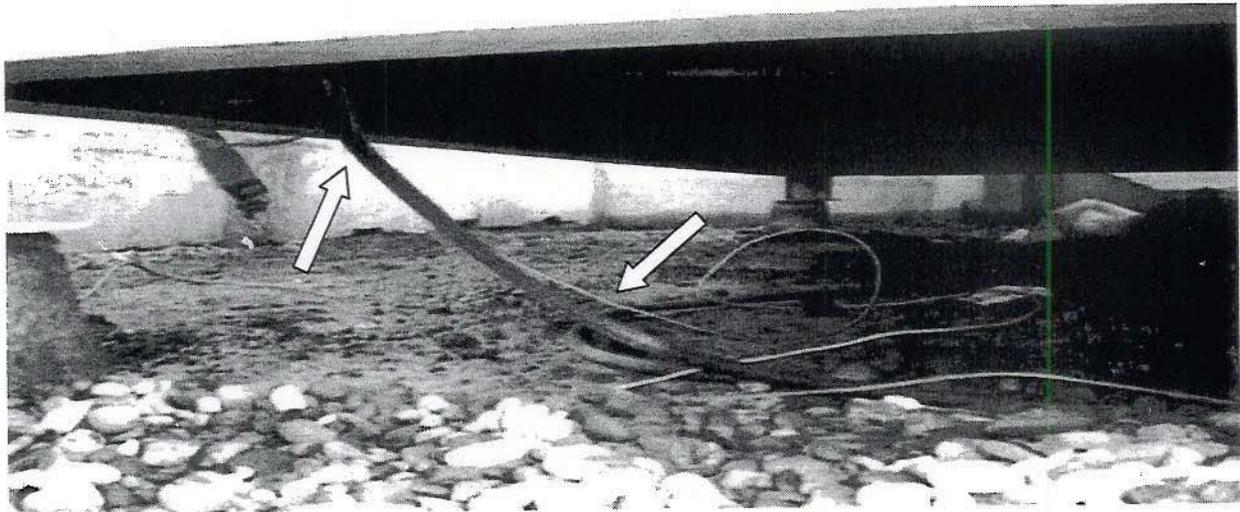
The test as performed with the Fluke Model 1653B Multi-meter. 12-Jan-2009 1545  
The arrows show the testing points.



The results of the voltage test. 12-Jan-2009 1545

At this time, the distribution panel (b)(2)High that provides power for this area was shut-down. The main distribution panel (b)(2)High that provides power for the distribution panel was also shut-down as an added safety precaution.

After this was done, a visual inspection of the feeder cable to the Containerized Housing Unit (C.H.U.) was inspected for possible cuts or abrasions from the pick-axe. The cable was closely scrutinized from the point of entry to the C.H.U. and, to the point where the cable becomes buried under the C.H.U. No cuts or any other noticeable abrasions could be found.

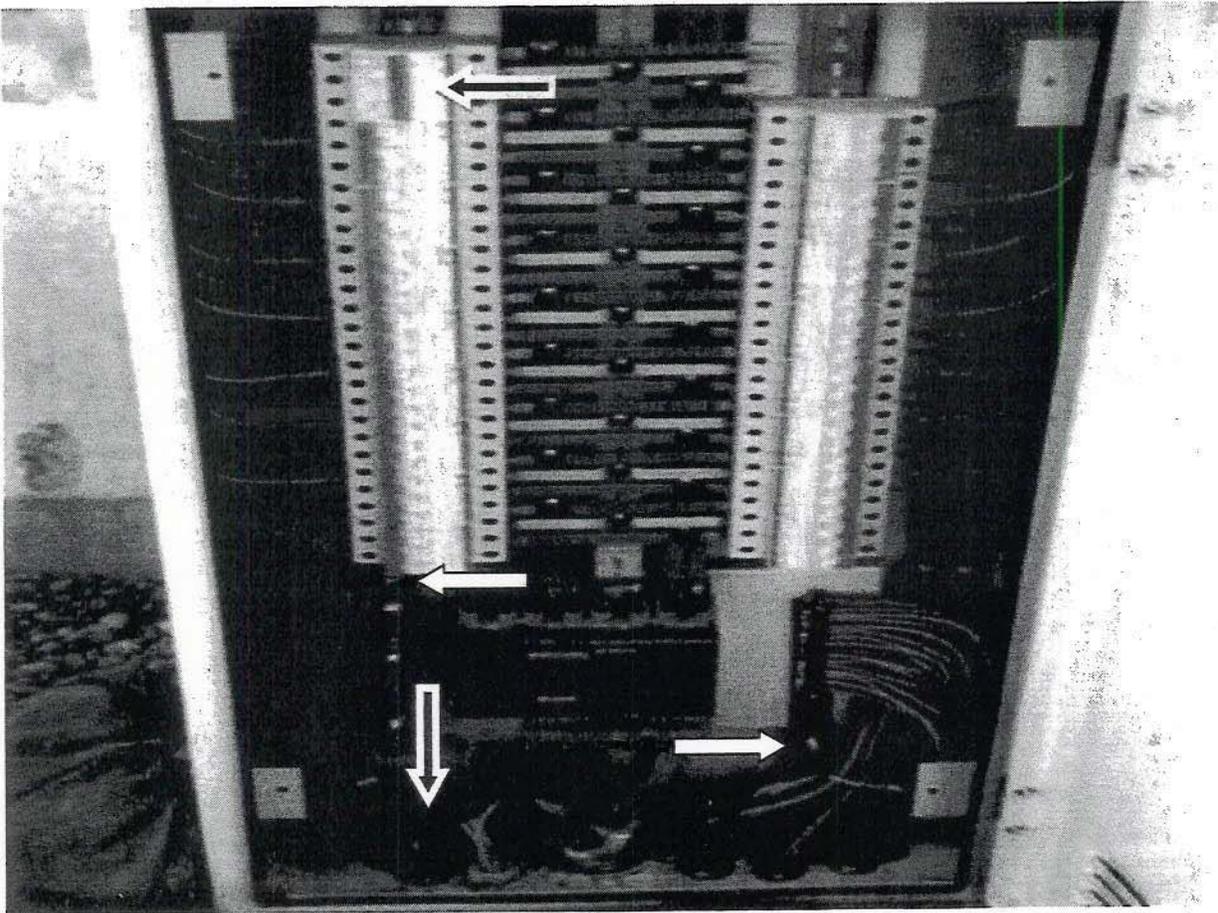


The arrows point to the feeder cable and to the equipment grounding conductor for the C.H.U.  
12-Jan-2009 1600

After the visual inspection of the cable, the equipment grounding conductor was traced back to the distribution panel (b)(2)High. This conductor was added by the O & M after the C.H.U.'s electrical system was incorrectly installed by the subcontractor (TRANS-ATLANTIC). This is

an acceptable means of repair. The conductor is in close proximity to the feeder cable, which is actually buried under all the other C.H.U.'s in the area. This is compliant to the British Standards for the TN-C-S Electrical System. The investigation then proceeded to distribution panel number - (b)(2)High

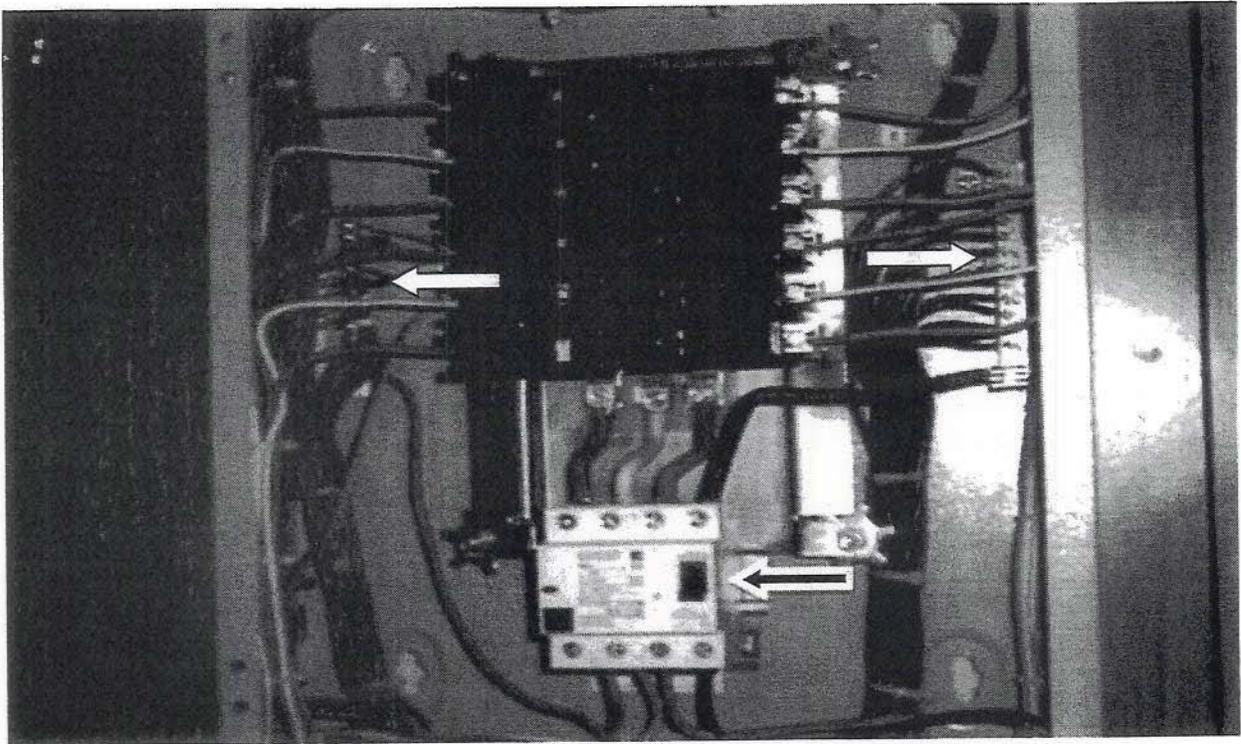
The distribution panel was opened and the dead-front was removed to expose the internal wiring components of the panel. The panel was found to be correctly bonded and grounded.



Distribution panel number - (b)(2)High 12-Jan-2009 1615

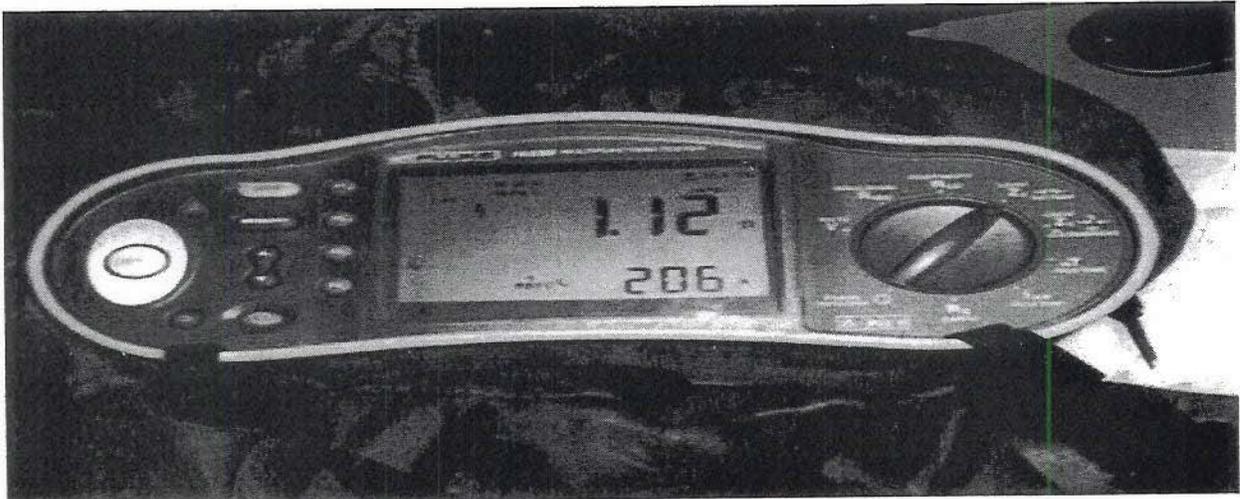
The white arrows point to where the distribution panel is bonded. The black arrow at the top of the photo points to the breaker that provides power to C.H.U. # - 16K. The red arrow points to the feeder cable for the C.H.U. where the incident occurred.

A grounding electrode conductor and grounding electrode (rod) were also correctly installed at the distribution panel. After the inspection of the previous equipment, the subpanel located inside of C.H.U. # -17K was inspected. This subpanel was found to be correctly wired and the loop impedance tests done on the outlets, had acceptable results. There were no parallel paths for neutral currents to travel on, and the frame of the C.H.U. was effectively grounded to the equipment grounding terminal strip in the subpanel.



C.H.U. # - 16K Subpanel 12-Jan-2009 1630

The white arrows point to the separation of the neutral and equipment grounding conductors as required for the British Standards 7671 – TN-C-S System. The black arrow points to the main circuit breaker. This breaker is an R.C.D. type. The trip rating on the R.C.D. breaker is 30 mA. The R.C.D. tripped within its designed current level and time frame. (24 mA & 17.6 mS)



Loop impedance test results for C.H.U. # - 16K 12-Jan-2009 1645

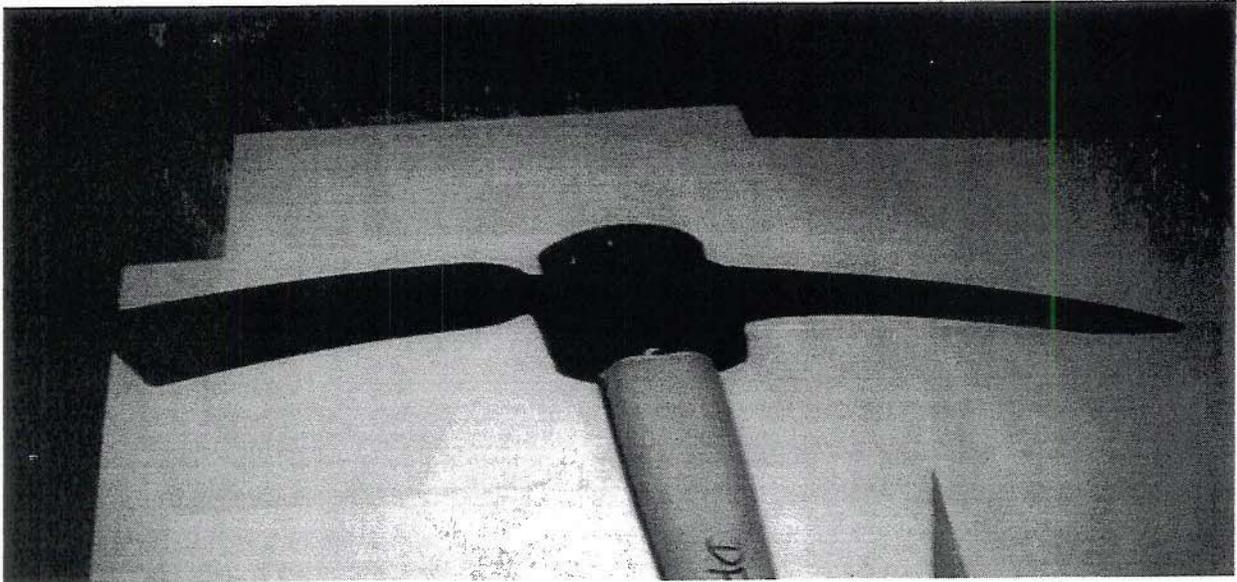
The investigation then focused on the surrounding area where the incident occurred. The only other likely possibility for the incident was an accidental contact with a buried cable. An

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underground cable detector was used. No evidence of any buried cables could be found. The Mayor Cell was informed of this, and, the possibility of an excavation of the area was mentioned.

The last area investigated by the Task Force Safe Electrical Inspections Team was the pick-axe that was being used by the injured person when the incident happened. The pick-axe was taken back to the office and sprayed off with water. No evidence of accidental electrical contact could be found on the tool.



The pick-axe from the scene. The handle is made of fiberglass. 12-Jan-2009 1700

#### 4. Investigation summation:

After all the above tests and visual inspections were performed, the Task Force Safe Electrical Inspections team could not find any improper wiring methods, or faulty equipment that could have caused the "shock". During the course of writing this report, new information had been obtained to whether or not the man involved in the incident had a medical condition. This report may be obtained through the proper chain of command. No mitigation course of action was recommended to the Mayor Cell involving this incident, by the Task Force Safe Electrical Inspections Team.

(b)(6)

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