

# Electrocution on board the split hopper barge "Geoworks SB-4" on 26 May 2005 causing one fatality

## 1. The Incident

- 1.1 On 26 May 2005, the split hopper barge "Geoworks SB-4" (the Vessel) was towed by a tugboat to a marine work site at north of the Port Island for loading dredged sea mud ( fig. 1). On arrival of the marine work site, water ingress was found at the port forward void space of the Vessel and resulting in the listing of the Vessel.
- 1.2 The crewmembers of the Vessel used an A.C. portable submersible bilge pump to extract out the seawater from the void space.
- 1.3 In the course of the pumping operation, a crew was electrocuted while handling the pump in the void space. He was later taken out from the void space and sent to hospital for rescue. However, he was certified dead later in the hospital.



Fig. 1: The location of the Accident

## 2. Findings

- 2.1 The electric power of the Vessel was provided by a 3-phase, 3-line 220V diesel generator which was fitted in the machinery room at the aft port side.
- 2.2 The diesel generator was equipped with a 30mA earth leakage circuit breaker (ELCB) system which provided earth fault protection for the supply of electricity. However, the ELCB system was found inoperable. Had the ELCB system functioned properly, the electricity supply would be tripped off in case of electric fault.
- 2.3 The portable submersible bilge pump took the electrical power from the Vessel in the machinery space via extension power cables. However, the polarity of the wiring connection at the multi-gang electrical connector was wrong. It was found that the 'Live' and 'Earth' poles were swapped (fig. 2). As such, the metallic enclosure of the submersible bilge pump would become 'live' during the operation.

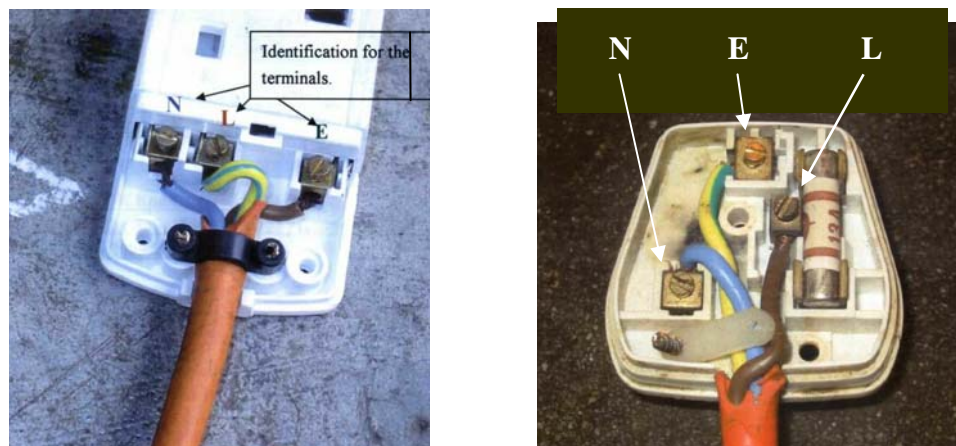


Fig. 2: The wrongly connected multi-gang electrical connector

## 3. The lessons

- 3.1 Internal connections of extension power cable should be connected in correct polarity. Such work should be done by a competent person.
- 3.2 Inspection of the electric circuit protection devices such as ELCB system should be conducted periodically by a competent person.