

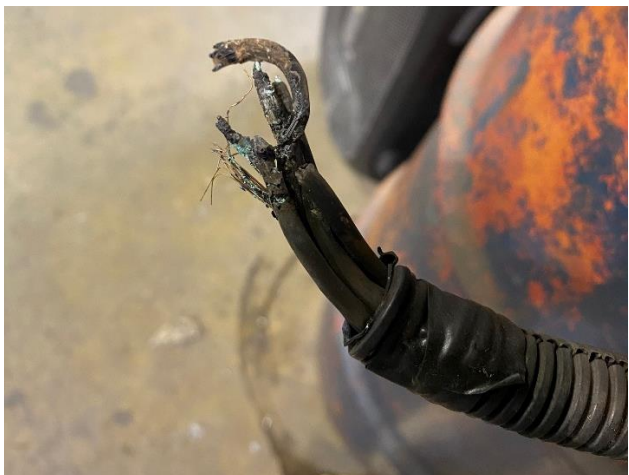
Marquette Transportation
M/V Marquette Warrior
Generator Failure Report
Reported by: Bob Harrison, Rob Warden
Warden Electric Company

November 29, 2021 – Date that generator was returned to our facility.

Upon disassembly and inspection of the generator, it was first discovered that one of the posts on the terminal block was burnt with the terminal blown off for reasons at that time which were unknown. On closer inspection of the terminal block, three of the terminal posts were found to have arcing residue, indicating an item had been coming into contact against this. This is evident in the picture below, highlighted by the yellow circles:



The harness that is present inside this terminal box was found to be blown completely in half. Pictured below, this is how it was received into our facility:



While we were unable to inspect the generator or the terminal box at the exact time of failure, it's our understanding that this harness is what was laying across the terminal posts, causing the arc'ing between terminals and ultimately, the generator to shut down.

The harness is connected to the terminal block and to the generator control panel, located on top and outside of the generator. As shown here, which is how this generator looked upon returning to our facility (the generator control panel is the black box located on top, with its own cover previously removed):



Once this repaired generator leaves our facility, the top cover (where the black control panel rests) must be removed in order to make internal connections to wire and install the generator on the vessel. If the personnel installing or wiring this generator is not careful to then replace the harness as it was, it could potentially lay across the terminal block which is what we believed happened to cause this failure.

Other instances that potentially could allow someone the need to access this terminal box would be to remove or replace components on this generator, in order to get a similar one up and going. Originally and from what we know, this repaired and completed generator left our facility on 2/3/21 and was not put into operation until after Labor Day 2021.