- Were RMK MS personnel aware of the installation of the “By Pass” wires on the 24 volt and the three 48 volt Lithium-ion Battery Management Systems on board the Flagship?

  Yes – it was RMK MS personnel that installed the “by-pass” wire on the 24v and 48v BMS. Please note that we referred to this wire as a “jumper cable” because it was merely connected two terminals together creating a loop to transfer power. A “by pass” wire implies that some component/system was skipped over but the subject system did not work so there was nothing to “by pass.”

  For further explanation, here is a photograph from the 48v system:

This terminal bar/contactor was supposed to stay down to allow power from the right side of the terminal to the left (to batteries). But because the BMS was not programed (and not functioning), the bar/contactor was not staying in the down position and thus not transferring power to the batteries. It was also necessary for the bar/contractor be down for the batteries to feed power to consumers (systems). This why a jumper cable was necessary. That jumper cable served the same purposed as the terminal bar/contactor.

“By Pass” Wire

Cable from battery charger

Cables to batteries

  - If yes, who/what organization directed that these By Pass wires be installed?

The use of a “by-pass” wire was a collective idea by the manufacturer, RMK MS, a third-party electrician and the captain.

- Were RMK MS personnel involved in the installation of “By Pass” wires on the 24 volt and the three 48 volt Lithium-ion Battery Systems?

Yes.

- If yes, please describe what was done to the system to allow the wires to be attached?

The jumper cables matched drawings of the electrical system provided by the manufacturer. No modification to the system was necessary to attach the wires.

- Why were the By Pass wires installed?

The jumper cables were necessary for the external battery chargers to be able to charge the batteries which, in turn, allowed the vessel's systems to function. Please recall that the vessel was a dead ship (0% power) before installation of the wires. The jumper cables also match electrical system drawings provided by manufacturer.

- What was the intention of the By Pass Wires?

To allow the batteries to charge. Per the above photograph and comments, the terminal bar (bus) did not stay in the down position because the BMS was not functioning (never programmed). As such, the jumper cable was necessary to connect the two terminals and transfer power to the batteries.

- When, date, was the By Pass wires installed?

The "by-pass" wire was installed on the 24v system on approximately March 13, 2024, over 6-weeks prior to the fire. The "by-pass" wires (x3) were installed on the 48v system on approximately April 2, 2024.

- Did the By Pass wires allow the Lithium-ion Batteries to be charged from the shore power?

No. The shore power never provided power to the Vessel while at RMK MS. There was no frequency converter installed on this vessel and the system was 50hz, which is not compatible with North America's power. The "By Pass" wires allowed the Lithium-ion Batteries to be charged *via the external chargers*.

- Did RMK MS personnel oversee the charging of the Lithium-ion Batteries after the By Pass wires were installed?

The "by pass" wires were installed on approximately March 13, 2024, which allowed the batteries to be charged via the external chargers. The battery chargers would automatically stop when the batteries reached full charge. On top of that, RMK MS would check the charge level on a daily basis (sometimes multiple times a day) via the electronic control system screen (Bonning) located in the rear port corner of the saloon. If the charge levels reached fully charged (or near full charge), the battery charger(s) would be disconnected. If the charge level fell below 20%, RMK MS would reconnect to the charger until the charge level increased to adequate levels.