Adapting to BEV Troubleshooting Requirements

Objective

Adapt troubleshooting and maintenance processes to BEV technology requirements.

Justification

With the adoption of early BEV models, the root causes of faults weren't always apparent or easy to diagnose. The source of maintenance issues varied, including errors of operation, damaged components, hard-to-locate loose connections, or a simple lack of experience with new equipment.

Occasional operator errors, like not paying close enough attention to the battery gauge, could lead to draining the battery in a difficult location, e.g. on the ramp. Unfamiliar equipment warnings, such as a thermal cutback from elevated coolant temperatures, often lead operators to avoid using available BEVs because of perceived unreliability.

> "We had our fair share of mechanical issues, for sure, but I think the larger portion of attention that had to come to these early BEV units was electrical. I don't know if you would have seen that coming"
>
> *Mobile Superintendent*

Integrating BEV maintenance into the mobile maintenance resource planning and scheduling process was complicated by BEV issues being more electrical than mechanical, hence, requiring input from more stakeholders than typical for mobile equipment.

Implementation

Technicians were equipped with the tools needed to troubleshoot BEVs, primarily laptops, and were trained on the OEM diagnostic software. Vehicle diagnostics may not always indicate the exact cause of the problem, but they provide enough system information for technicians to determine the source of issues. Some BEVs provide access to data over Wi-Fi, while others require a physical link.

New processes for safely removing a BEV from the ramp were introduced, working with the OEM technicians and factory support, to avoid expensive production downtime.

Progress to Date

The electrical and mobile maintenance planning teams engage in more frequent communication when handling BEV issues. Through regular coordination of resources, they schedule BEV maintenance to minimize downtime.

Charging and maintenance bays being located near one another lead to quick feedback loops between operators, technicians and OEM staff on maintenance issues and common failure points.

Plans are underway to add telemetry to chargers to provide more insight into the equipment's performance. BEV management will also be centralized within the incoming Integrated Operations Center (IOC), to support coordination between technicians, supervisors, planners and schedulers.

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