WST X-Series J1939 Communication Errors with Cummins Engine

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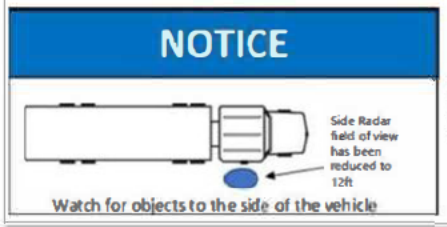
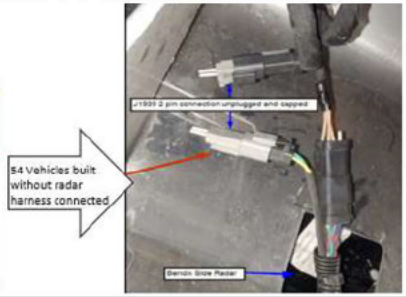
Problem Details:

- Shop call 510847 brought awareness to J1939 communications issues for vehicles built with Cummins engines, automated transmissions and Bendix side radar The CAC is also receiving many complaints of new vehicles, arriving with the side radar being unplugged and or fault codes generating when customers add components two our RP1226 customer connections.
- **Symptoms reported** when the issue is present, include **transmission shifting issues, no crank** and a common **fault code** seen includes **37/523615/31**-Received Network Data In Error -XBR

Affected Models / Truck options:

- WST X-series Vehicles with Cummins engine, Automated or Automatic Transmission and Side Radar contribute the most to the issue, however many other components or customer options connect to the J1939 backbone, also contribute to the over all issue.





Production Containment: ☑ No ☐ Yes

Creating new harnesses in parallel to field containment to optimize/reduce backbone length and breakout length.

Two step approach: ~~Dec 2023~~ – Side Radar length update (code Red EWR)

~~April 2024~~ (P4 pre-series July 25) ETA 2026 WST – New backbone designed with length optimized for all devices

Field Containment (short term): ☑ No ☐ Yes

- **Currently no field publications are available for WST**
- There have been field modifications encountered that mask the issue but should not be intended as permeant fixes. These include unplugging of the Bendix side radar or adding of additional terminating resistors. Adding of terminating resistors can mask root cause.

Root Cause: ☑ No ☐ Yes

- Investigation has confirmed that the harness physical layer is causing reflections/Error Frame in J1939 CAN network. Reflections are normally caused by harnesses with too many unnecessary stubs, stub length too long (>1.6M) and too many individual stub lengths that are the same length.
- **Direct Cause:** CAN bus signal integrity is insufficient.

Long Term Corrective Action Plan: ☑ No ☐ Yes

- Current long term corrective action is to investigate a third-party communication network that would isolate customer devices from the vehicle powertrain components.

☑ No ☐ Yes

Long Term Field Plan:

- The proposed corrective action would include providing a dash and chassis J1939 overlay harness. Western Star X-series will be addressed after P4 containment is complete.