



U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

ODI RESUME

Investigation: PE 18-004
Date Opened: 04/23/2018
Investigator: Kyle Bowker
Approver: Stephen Ridella
Subject: PNDB Electrical Power Distribution
Date Closed: 11/22/2020
Reviewer: Bruce York-B

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: Daimler Trucks North America LLC
Products: 2011-2016 Freightliner Cascadia
Population: Confidential
Problem Description: Multiple alleged defects that affect the Powernet Distribution Box (PNDB) and associated wiring, which may result in disruption or loss of electrical power to the PNDB itself and other electrical circuits, thermal event and/or vehicle fire.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
Complaints:	2	19	21
Crashes/Fires:	0	1	1
Injury Incidents:	0	0	0
Fatality Incidents:	0	0	0
Other*:	0	Confidential	Confidential

*Description of Other: Warranty claims paid by manufacturer where subject component was primary causal part.

ACTION / SUMMARY INFORMATION

Action: This Preliminary Evaluation has been closed.

Summary:

On April 23, 2018, the Office of Defects Investigation (ODI) opened this Preliminary Evaluation (PE18-004) to investigate certain alleged defects affecting the Powernet Distribution Box (PNDB) and associated wiring on certain model year (MY) 2011-2016 Freightliner Cascadia (P3 platform) truck tractors that may result in disruption or loss of electrical power to the PNDB itself and other electrical circuits, thermal events, and/or vehicle fires.

On May 7, 2018, ODI sent an Information Request (IR) letter to Daimler Trucks North America LLC (DTNA). On June 19, 2018, ODI received an IR response from DTNA that included vehicle production, consumer complaint, field report, warranty, manufacturer actions, changes and other data related to the alleged defects. On April 8, 2019, ODI received a supplemental IR response from DTNA that included their assessment of the alleged defects. Furthermore, ODI engaged in discussions with the manufacturer about the alleged defects on multiple occasions during the course of this investigation.

ODI analysis of all available data indicates there is not an apparent defect trend. The most recent field report data reviewed was from 2017Q1 and the most recent complaint data was received by ODI in 2019Q1. The complaint rate is low. Most warranty claims occurred early in the vehicles' service life, and with the newest of the subject vehicles being over four years old, they are all now beyond that point. The warranty claim rates for loose input or output terminals (0.16%), loose fuses (0.25%), PNDB power (B+) supply cable corrosion or improper PNDB power (B+) supply cable routing and/ or securement (0.00%) are all low.

The most serious consequence in the warranty claim data alleged engine shutoff with a vehicle in motion. While some vehicles did experience a loss of electrical power resulting in loss of motive power with no immediate restart capability,

the bulk of the warranty claims were for vehicles equipped with an optional cab power disconnect switch solenoid with an automatic reset feature that may exhibit a brief, intermittent loss of power. If the input and output voltages differ by an unacceptable amount, potentially due to foreign object debris or corrosion on the solenoid's contacts, the PNDB senses the difference and enters an auto-reset mode in an attempt to correct the condition. The internal contacts open for one second, stopping the flow of electricity, and then close, restoring the flow for two seconds. This cycle is repeated for up to five times; after a maximum of thirteen seconds, the PNDB defaults to the on position and electrical power is restored. This condition exhibits a transient loss of power but it does not cause any permanent engine disablement. As a precaution, the solenoid-equipped PNDB part was modified in August 2017 to eliminate the auto-reset feature.

Since 2010, there has been only 1 report of vehicle fire and zero reports of crash, injury or death. Accordingly, this investigation is closed. The closing of this investigation does not constitute a finding by NHTSA that no safety-related defect exists. The agency reserves the right to take further action if warranted by the circumstances.