

## **Chronology of Defect / Noncompliance Determination**

**Provide the chronology of events leading up to the defect decision or test data for the noncompliance decision.**

### October 2020 – May 2021

On **October 22, 2020**, an issue pertaining to interior fires originating in the vicinity of the front blower motor was brought to Ford's Critical Concern Review Group (CCRG) for review. The National Highway Traffic Safety Administration (NHTSA) had shared with Ford five (5) HVAC blower related complaints (VOQs) they had received on 2016-2017 model year (MY) Expeditions: intermittent/inoperative blower operation (2), melted wiring harness to blower controller (1), and fire under dash/glove box (2). Of the five complaints to NHTSA, only one customer had also contacted Ford regarding their concern.

CCRG's review identified sixteen (16) interior fire allegations in the vicinity of the blower motor spanning 2012-2017 MY Expedition and Navigator vehicles, with 14 of those reports on 2015-2017 model year vehicles.

Previously in 2018, CCRG investigated reports of melting blower motor components and allegations of five interior fires in the vicinity of the blower motor on 2012-2017 MY Expedition and Navigator vehicles. Those reports primarily indicated that there was an inoperative blower with melted Variable Blower Controller (VBC) connectors or burnt terminals. Bench testing found no evidence that a malfunctioning VBC could develop into a fire. A Special Service Message (SSM) and service part kit were developed and published to address the VBC quality concern. No pattern or cause was identified regarding the fire allegations that had been received at that time.

Consistent with CCRG's 2018 investigation, no evidence of VBC contribution to the more recent blower motor fire allegations was identified. CCRG and NHTSA worked to obtain parts from a more recent fire complaint vehicle for analysis.

### May 2021 - August 2021

In May and August of 2021, Ford obtained parts from two fire complaint vehicles, which were analyzed by the supplier. One was too damaged to determine a root cause and the second indicated a shorted brush; however, it was inconclusive whether this contributed to initiation of the fire or instead resulted from fire-related damage.

### September 2021 – December 2021

Ford and NHTSA conducted a joint inspection of a complaint vehicle on September 15, 2021. The blower motor was analyzed by the supplier with no cause of fire determined.

### January 2022 – June 2022

CCRG's investigation continued, including discussions with NHTSA on March 1, April 20, and June 9, 2022, regarding their internal analysis of the concern. Ongoing monitoring of potentially related reports found a disproportionate number from the 2015MY through 2017MY, indicating a unique population and potential special cause as compared to 2009 MY through 2014 MY that used the same blower motor design. Based on the inconclusive evidence and analyses to date,

Ford obtained additional parts for analysis, including obtaining parts from scrap yards, internal company and employee vehicles, and vehicles at dealerships for repair.

In June 2022, based on component analysis, Ford Engineering theorized that a mispositioned blower motor brush holder spring could cause an internal short or localized heating of the brush spring or holder. It is believed that when a fire initiates on the blower motor, it does so at the positive brush holder location. The VBC would remain operational and there would be no signs of an overheated relay. Field data indicates that this concern typically occurs at a higher time in service, and on vehicles with higher mileage.

#### July 2022 – August 2022

Ford reviewed its investigation steps to date:

- Review of blower motor usage, vehicle line changes, supplier design and manufacturing changes from 2009-2017 MY have not determined any contributors to potential root cause.
- 2015 MY coincided with a reduction in blower motor production volumes from the supplier. The supplier has not informed Ford of any associated motor production process, design, or material changes.
- Review of buyback, similar vehicles and system analysis have not found any contributors to part failure or root cause.
- Returned parts and warranty part analysis shows evidence of positive brush overheated and loose, broken or missing positive brush spring.
- The blower motor supplier confirmed no substantive changes in blower motor material throughout the 2009-2017 model years relative to this investigation.
- Based on blower motor testing to-date, reports may be due to an internal short or localized heating of the brush spring or holder.

Ford also reviewed the design history of the blower motor. This blower motor design was installed on Expedition/Navigator vehicles from 2009-2017 MY. As of August 12, 2022, Ford is aware of twenty-five (25) fire allegations, including five (5) VOQs, potentially related to the blower motor on 2015-2017 MY Expedition and Navigator vehicles received between July 24, 2017, and July 25, 2022. Of the twenty-five reports thirteen (13) were localized fires in the blower motor area. The remaining twelve (12) reports involved more extensive damage to the vehicle with three (3) instances of property damage to structures and one (1) to nearby vehicles. It remains unclear in the more extensive fires whether the incident was caused by a blower motor concern. These reports on 2015-2017 MY vehicles coincides with a reduction in blower motor production volumes from the supplier. The supplier has not informed Ford of any associated motor production process, design, or material changes for the 2015 MY. A statistical 2-proportion test found the field data for 2015-2017 MY Expedition/Navigator population to be statistically different from 2009-2014 MY vehicles that used this blower motor design.

No cause of these vehicle fires has been identified to date; however, they are believed to originate in the blower motor which is located on the passenger side interior behind the glovebox.

On **August 19, 2022**, Ford's Field Review Committee reviewed the concern and approved a field action.

Ford is not aware of any reports of accidents related to this condition. One claim alleges injuries to the customer's hand and fingers. All fire reports indicate vehicles were running at the time of the incident.

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