



U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

ODI RESUME

OFFICE OF DEFECTS INVESTIGATION



Investigation: PE22007
Prompted By: DP22-001
Date Opened: 07/22/2022 **Date Closed:** 10/02/2023
Investigator: Donte Kirksey **Reviewer:** Peter Kivett
Approver: Tanya Topka
Subject: Loss of motive power due to valve intake failure on Ford Bronco vehicles.

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: Ford Motor Company
Products: 2021 Ford Bronco
Population: 25,619

Problem Description: Under normal driving conditions without warning the vehicle may experience a loss of motive power without restart due to catastrophic engine failure related to an alleged faulty valve within 2.7 L Eco-Boost Engines.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	EWR D&I	Other	Total	EWR Field Reports
All Incidents:	42	110	0	261	152*	0
Crashes/Fires:	0	0	0	0	0	0
Injury Incidents:	0	0	0	0	0	0
Number of Injuries:	0	0	0	0	0	0
Fatality Incidents:	0	0	0	0	0	0
Number of Fatalities:	0	0	0	0	0	0

Description of Other: Manufacturer Warranty Claims & Engine Exchanges

*Total eliminates duplicates received by the manufacturer

ACTION/SUMMARY INFORMATION

Action: Preliminary Evaluation (PE) has been closed. Engineering Analysis (EA23002) has been opened.

Summary:

The Office of Defects Investigation (ODI) received a petition dated March 16, 2022, requesting an investigation regarding allegations of defective intake valves in model year (MY) 2021 Ford Bronco vehicles equipped with the 2.7L Eco-boost (“Nano”) engines. The petitioner alleged these vehicles are experiencing loss of motive power at any highway speeds with no-restart as a result of catastrophic

engine failures. To date ODI is aware of 42 submitted Vehicle Owner Questionnaires (VOQ's) alleging a loss of motive power.

On July 22, 2022, ODI opened a Preliminary Evaluation (PE22-007) to investigate allegations of stalling/loss of motive power on the subject vehicles. Upon receiving Ford's Information Request (IR) response, ODI learned Ford was aware of 110 consumer complaints (including field reports), 125 warranty claims and 136 engine exchanges related to the 2021 Ford Bronco. Ford's response indicated these failures are across the "Nano" engine family, which includes both the 2.7L and 3.0L EcoBoost engine variants with a total estimated population of 708,837 vehicles.

Additionally, ODI became aware that the subject engines contained intake valves that were manufactured out of a specific alloy known as "Silchrome Lite", which can become excessively hard and brittle if an over-temperature condition occurs during machining of the component. The overly brittle intake valve can fracture at the keeper groove causing the intake valve to freely contact the piston, resulting in catastrophic engine failure. A design modification was implemented in October 2021, which changed the intake valve material to a different alloy known as "Silchrome 1", that is less susceptible to over-temperature during machine grinding.

ODI is upgrading this PE to an Engineering Analysis (EA23-002) to better understand the failure mechanism identified by Ford and to ascertain the complete scope. To review the reports cited in the attached Closing Resume ODI Report Identification Number document, go to [NHTSA.gov](https://www.nhtsa.gov)