Request 10

Furnish Ford's assessment of the alleged defect in the subject vehicles, including:

a. The causal or contributory factor(s);
b. The failure mechanism(s);
c. The failure mode(s);
d. The risk to motor vehicle safety that it poses; and
e. What warnings, if any, the operator and the other persons both inside and outside the vehicle would have that the alleged defect was occurring, or subject component was malfunctioning; and
f. The reports included with this inquiry.

Answer

The stated purpose of RQ24-015 is to investigate the scope of recall 24V-099 (Ford Recall 24S06). This recall encompasses 2018-2020 Ford Expedition and 2018-2020 Lincoln Navigator vehicles built between October 1, 2018, and June 30, 2019 ("Recalled Vehicles"). These Recalled Vehicles are equipped with driver and front passenger seat belt retractor pretensioner assemblies with part numbers starting with JL1Z and JL7Z. The Subject Vehicles identified in this IR were built with the same driver and front passenger seat belt retractor pretensioner assemblies as the Recalled Vehicles.

As Ford explained in its February 9, 2024 Defect Information Report ("DIR"), Ford tested several hypotheses as to how corrosion was developing on the pretensioner squib pins and why only some pretensioners in warmer climates were experiencing an inadvertent deployment while others only received an illumination of the airbag warning light. Despite extensive testing, Ford was only able to specify that the cause of the defect in the Recalled Vehicles was that "certain seatbelt retractor pretensioners may develop corroded squib pins caused by an undefined supplier manufacturing issue." Because Ford was unable to determine a precise root cause in the supplier's manufacturing that led to the corrosion, Ford assessed the rates of inadvertent pretensioner deployments and recalled those vehicles within a "spike period."

Since November 2023, Ford has shared information with NHTSA on its internal investigations, root cause, and rate analyses. Ford also provided its assessment as part of the response to PE23-021. As to the "spike period" that formed the basis of recall 24V-099, Ford reviewed this "spike period" with NHTSA prior to the opening of PE23-021 and showed that the number of pretensioner open-circuit DTCs increased starting from October 2018 and dropped back to a nominal level after June 2019. Ford did not include vehicles outside of the October 2018 to June 2019 production window because they did not exhibit a defect trend. As indicated in the November 2023 presentation, the number of retractor open circuit and inadvertent deployment repairs in the period before and after recall 24V-099 was a non-zero number.

NHTSA ODI opened this Recall Query based on three [3] Vehicle Owner Questionnaire (VOQ) reports of inadvertent deployment of the seatbelt pretensioner in model year (MY) 2019-2020 Ford Expedition vehicles that were not part of the recalled vehicle population (NHTSA Recall # 24V099). Ford believes the concerns raised in these three new reports are the same as the concerns raised for the recalled vehicles. Ford is investigating these new reports. As part of this investigation, Ford is reviewing its data for other reports, locating these

vehicles, evaluating parts, and attempting to gather more information regarding the anticipated performance of these products.

(a) The Causal or Contributory Factor(s)- Engineering evaluation of field returned retractor pretensioners included in the 24S06 population found corrosion on the pretensioner squib pins where the bridge wire (heating element of pyro-technic device) is welded, as the cause. Further testing and analysis of the field returned seatbelts and new seatbelts found that the main causal factors were likely (1) a byproduct of corrosion which requires a high moisture/water content sealed in the squibs and (2) partial separation at the weld between the inner pin and platinum bridge wire, whereby the Restraint Control Module (RCM) diagnostic signal could trigger an inadvertent deployment. To address the question on how moisture could arrive in the squibs of the pretensioner, Ford analyzed vehicle environment factors and found the drain seal change that occurred at the start of production in 2019. Although unproven, Ford theorized that a water leak related to a drain seal on the right front floor related to air-conditioning usage may increase humidity when Max air-conditioning (A/C) is used for extended periods and contribute to pretensioner squib pin corrosion. As of the date of this response, Ford does not believe that the causal or contributing factors associated with these new reports are different from the Recalled Vehicles. Ford's investigation and analyses continue regarding the new reports and its analysis as to whether other populations of vehicles are experiencing a significant number of failures.

(b) and (c) The Failure Mechanism(s) and the Failure Mode(s)- Certain seatbelt retractor pretensioners may develop corroded squib pins caused by an undefined supplier manufacturing issue. After extended corrosion and with a partial separation at the weld between the squib pin and the bridge-wire (heating element of a pyrotechnic device), high resistance or open circuit may occur, and, if not resolved, may result in a retractor pretensioner inadvertent deployment. Increased humidity inside the cab, caused by water leakage after customer air-conditioning (A/C) usage in hot temperature areas, may potentially contribute to the development of corrosion on top of the squib pins. Ford is endeavoring to confirm the failure mechanism on the seatbelt pretensioners involved in the new reports.

(d) The risk to motor vehicle safety that it poses- Inadvertent deployment of the retractor pretensioner will result in the seatbelt being locked in position and will not retract or extend, which is noticeable to the occupant. A seatbelt that does not retract or extend may result in injury in the event of a crash.

(e) Warnings, Detectability- An airbag malfunction light illuminates on the cluster preceding an inadvertent deployment of the seatbelt retractor pretensioner.

(f) US Field Data on Subject Vehicles- As of November 20, 2024, Ford is aware of ten (10) known or suspected occurrences of inadvertent retractor pretensioner deployment on subject vehicles in the US that occurred after February 9, 2024, the date Ford filed the Part 573 for 24S06. Like the vehicles included in the recall population, these were primarily in warm-weather states and most of the inadvertent deployments occurred during the summer months.

Summary- The number of incidents of seatbelt pretensioner inadvertent deployment in subject and peer vehicles for recall query RQ24-015 is lower (17 alleged incidents for a production period that spans 19 months prior to more than two years after the production period of the recalled population) than those for the recalled vehicle population (131 alleged incidents for a nine month production period). There have been no reports of injury, accidents, or property

damage for the subject or peer vehicle populations. Ford's work is ongoing and it will continue to work with NHTSA on this investigation.

This submission is the first part of Ford's two-part submission and provides responses to Requests 1 through 10 of the Part 1 Information Request. Ford's response to Part 2 will be provided no later than January 29, 2025. Ford will likely provide additional information regarding its analysis in its Part 2 response.