U.S. Department of Transportation

National Highway Traffic Safety Administration

OFFICE OF DEFECTS INVESTIGATION

ODI RESUME

Investigation: EA26002
Prompted By: PE24031
Date Opened: 03/18/2026
Investigator: Dylan Copestick **Reviewer:** Sharon Yukevich
Approver: Tanya Topka
Subject: FSD Collisions in Reduced Roadway Visibility Conditions

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: Tesla, Inc.
Products: 2016-2026 Model S, X, 2017-2026 Model 3, 2020-2026 Model Y, 2023-2026 Cybertruck equipped with FSD
Population: 3,203,754 (Estimated)

Problem Description: Failure of the FSD's degradation detection system, when encountering reduced roadway visibility conditions, to detect a degraded state and to warn the driver appropriately.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	EWR D&I	Other	Total	EWR Field Reports
All Incidents:	0	2	0	7	9	0
Crashes/Fires:	0	2	0	7	9	0
Injury Incidents:	0	0	0	2	2	0
Number of Injuries:	0	0	0	1	1	0
Fatality Incidents:	0	0	0	1	1	0
Number of Fatalities:	0	0	0	1	1	0

Description of Other:
Crashes reported under the Standing General Order (SGO) or media reports.

ACTION/SUMMARY INFORMATION

Action: This Engineering Analysis (EA) has been opened.

Summary:
The Office of Defects Investigation (ODI) is opening this Engineering Analysis to evaluate Tesla's Full Self Driving Beta and Full Self Driving (Supervised) (collectively, FSD) degradation detection system. The focus of this investigation will be to assess the system's ability, when encountering reduced roadway visibility conditions, to detect degradation and alert the driver with sufficient time to respond. ODI will evaluate the performance of

FSD in degraded roadway conditions and the updates or modifications by Tesla to the degradation detection system, including the timing, purpose, and capabilities of the updates, and Tesla's assessment of their safety impact.

Tesla's FSD is an advanced driver assistance system (ADAS) that relies exclusively on vision-based cameras and the related FSD software to detect and respond to the roadway ahead, projecting a path forward based on traffic control devices, vehicles, pedestrians, and the roadway itself. When Tesla began transitioning away from using both cameras and radars to an exclusively camera-based approach, known as Tesla Vision, in mid-2021, it developed and implemented a degradation detection system that it deployed by a software update to existing and new Tesla vehicles. On June 28, 2024, the day after Tesla submitted the SGO report of the November 28, 2023 fatal crash listed in this document, Tesla began developing an update to the degradation detection system. At this time, ODI does not have information on when the update was deployed and which vehicles have the updated system.

ODI discussed individual incidents and its initial findings during the PE phase of its investigation with Tesla. As part of those discussions, Tesla's post-incident analysis indicated that the update to the degradation detection system, had it been installed on the vehicles at the time, may have affected 3 of the 9 incidents identified by ODI. Tesla also described internal data and labeling limitations that prevented a uniform identification and analysis of crash events with the subject system engaged. ODI believes this limitation could have led to under-reporting of subject crashes over portions of the defined time-period.

Available incident data raise concerns that Tesla's degradation detection system, both as originally deployed and later updated, fails to detect and/or warn the driver appropriately under degraded visibility conditions such as glare and airborne obscurants. In the crashes that ODI has reviewed, the system did not detect common roadway conditions that impaired camera visibility and/or provide alerts when camera performance had deteriorated until immediately before the crash occurred. Review of Tesla's responses revealed additional crashes that occurred in similar environments and where the system either did not detect a degraded state, and/or it did not present the driver with an alert with adequate time for the driver to react. In each of these crashes, FSD also lost track of or never detected a lead vehicle in its path.

In upgrading PE24031 to an Engineering Analysis (EA), ODI will gather further information on the updated degradation detection system, including the status of updating vehicles and scope of compatible vehicles, the system's visibility degradation detection capability, and alerts or warnings to the driver. Lastly, ODI will conduct analysis on six recent potentially related incidents. These incidents can be found at NHTSA.gov under the following SGO report identification numbers: 13781-11937, 13781-13211, 13781-13569, 13781-13633, 13781-13693, 13781-13788.

The crashes included in the failure report summary can be found at NHTSA.gov under the following SGO report identification numbers: 13781-8004, 13781-7181, 13781-7381, 13781-7767, 13781-7964, 13781-8977, 13781-9267.