



U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

ODI RESUME

Investigation: PE 22-014
Date Opened: 12/12/2022
Investigator: Thomas Haugh
Approver: Stephen Ridella
Subject: Autonomous Driving System
Reviewer: Sharon Yukevich

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: Cruise LLC
Products: 2020-2022MY Cruise AV
Population: 242 (Estimated)
Problem Description: Automated Driving System (ADS) equipped vehicles may engage in inappropriately hard braking or become immobilized while operating in the specified Operational Design Domain (ODD).

FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
Complaints:	0	TBD	TBD
Crashes/Fires:	0	3	3
Injury Incidents:	0	2	2
Number of Injuries:	0	2	2
Fatality Incidents:	0	0	0
Other*:	0	3	3

***Description of Other:** Reports of crashes involving hard braking submitted under Standing General Order 2021-01 (SGO). Table does not include reports of immobilization incidents.

ACTION / SUMMARY INFORMATION

Action: Open this Preliminary Evaluation (PE).

Summary:

The National Highway Traffic Safety Administration (NHTSA) has received notices of incidents in which Automated Driving System (ADS) equipped vehicles operated by Cruise LLC (Cruise) may engage in inappropriately hard braking or become immobilized while operating in the specified Operational Design Domain (ODD). Although the two types of incidents appear to be distinct, they each result in the Cruise vehicles becoming unexpected roadway obstacles. This may introduce multiple potential hazards such as a collision with a Cruise vehicle, risk to a stranded passenger exiting an immobilized Cruise vehicle, or obstruction of other traffic including emergency vehicles.

With respect to the incidents of hard braking, NHTSA has received three (3) reports of the ADS initiating a hard braking maneuver in response to another road user that was quickly approaching from the rear. In each case, the other road user subsequently struck the rear of the ADS-equipped vehicle. The ADS-equipped vehicles involved were operating under onboard human supervision at the time of each crash. The three (3) reports received by NHTSA were submitted under Standing General Order 2021-01 (SGO).

With respect to the incidents of vehicle immobilization, NHTSA has been notified of multiple reports involving Cruise ADS equipped vehicles, operating without onboard human supervision, becoming immobilized. When this occurs, the vehicle may strand vehicle passengers in unsafe locations, such as lanes of travel or intersections, and become an unexpected obstacle to other road users. These immobilizations may increase the risk to exiting passengers. Further, immobilization may cause other road users to make abrupt or unsafe maneuvers to avoid colliding with the immobilized Cruise vehicle, by, for example, diverting into oncoming lanes of traffic or into bike lanes. The vehicle

immobilizations may also present a secondary safety risk, by obstructing the paths of emergency response vehicles and thereby delaying their emergency response times.

At this time, the specific number of immobilization incidents is unknown. As such, the above Failure Report Summary does not include statistics for these events. However, NHTSA has learned about multiple immobilization incidents through a variety of sources, including discussions with Cruise, media reports, and submissions from local authorities, such as the San Francisco Municipal Transportation Agency (SFMTA) and the San Francisco County Transportation Authority (SFCTA).

The Office of Defects Investigation (ODI) is opening this Preliminary Evaluation (PE) to determine the scope and severity of the potential problem and fully assess the potential safety-related issues posed by these two types of incidents. ODI's assessment will include the commonality and safety logic of the hard braking incidents. ODI's assessment will also include the frequency, duration and safety consequences associated with the vehicle immobilization incidents.

Reports compiled by SFMTA and SFCTA involving vehicle immobilizations can be found at <https://regulations.gov/comment/NHTSA-2022-0066-0032>. The SGO reports cited above are available for download at <https://nhtsa.gov/SGOcrashReporting>. The related SGO report IDs are listed below.

30412-2588, 30412-3748, 30412-3801