Equipment Recall Report
(Section 573.6)

Manufacturer Name: Cruise LLC
Submission Date: November 2, 2023
NHTSA Recall No: _____
Manufacturer Recall No: 23-02

Manufacturer Information

Manufacturer Name: Cruise LLC
Address: 333 Brannan St., San Francisco, CA 94107
Company phone: 415-335-4097

Population

Number of potentially involved: 950
Estimated percentage with defect: 100%

Equipment Information

Brand/Trade 1: Cruise LLC
Model: Collision detection subsystem in Cruise driverless software ("Collision Detection Subsystem").
Part No: Collision detection subsystem in Cruise driverless software ("Collision Detection Subsystem").
Size: N/A
Function: N/A
Descriptive Information: The subject population includes driverless Cruise Automated Driving Systems ("ADS") software with the Collision Detection Subsystem. This totaled 950 ADS units, determined through a review of software release records.
Production Dates:
Begin: October 26, 2021
End: October 26, 2023

Description of the Defect

Description of the Defect: The Cruise ADS is designed to perform a maneuver to minimize safety risks and other disruption to the extent possible after a collision. Within the ADS, the Collision Detection Subsystem is responsible for detecting the collision and electing a post-collision response. In many cases, the AV will pull over out of traffic. In other cases, it will stop and remain stationary. The specific post-collision response depends on the characteristics of the collision, such as the other road actors involved in the incident, the location of impact (e.g., frontal or side), and the perceived severity.

In certain circumstances, a collision may occur, after which the Collision Detection Subsystem may cause the Cruise AV to attempt to pull over out of traffic instead of

remaining stationary when a pullover is not the desired post-collision response. This issue could occur after a collision with a pedestrian positioned low on the ground in the path of the AV.

This issue played a role in determining the Cruise AV's response to a collision on October 2, 2023. In the incident, a human-driven vehicle traveling adjacent to a Cruise AV collided with a pedestrian, propelling the pedestrian across their vehicle and onto the ground in the immediate path of the AV. The AV biased rightward and braked aggressively but still made contact with the pedestrian. The Cruise ADS inaccurately characterized the collision as a lateral collision and commanded the AV to attempt to pull over out of traffic, pulling the individual forward, rather than remaining stationary.

Description of the Safety Risk: In certain circumstances, a collision may occur, after which the Collision Detection Subsystem may cause the Cruise AV to attempt to pull over out of traffic instead of remaining stationary when a pullover is not the desired post-collision response. This post-collision response could increase risk of injury. On October 26, 2023, Cruise proactively paused operation of its driverless fleet providing the company time to further assess and address the underlying risk.

Chronology:

On October 2, 2023, a Cruise AV, operating in driverless mode, was involved in a collision in which a human-driven vehicle collided with a pedestrian and propelled the pedestrian into the immediate path of the Cruise AV. After coming to an initial stop, the AV attempted to pull over out of traffic, pulling the individual forward. Cruise immediately began an investigation of the incident.

On October 3, 2023, Cruise met with the California Department of Motor Vehicles ("DMV"), National Highway Traffic Safety Administration ("NHTSA"), and other San Francisco officials to discuss the incident, and it provided a briefing to the California Public Utilities Commission ("CPUC"). Cruise also reported the incident to NHTSA that same day, in accordance with NHTSA's Standing General Order.

In the course of its investigation of the incident, Cruise determined that the ADS attempted to pull over after the collision, rather than remain stationary, as a result of the issue described in this notice.

Cruise continued its evaluation of the AV's post-collision response to ascertain whether and under what circumstances the issue could recur by conducting a broad review of historical driving data and running extensive simulation tests to analyze the behavior of the ADS in comparable circumstances.

This review took approximately three weeks to complete due to the rarity of the circumstances being examined and the extensiveness of the review. On October 23,

2023, Cruise completed its review and immediately initiated an assessment of the safety risk associated with the findings.

On October 26, 2023, Cruise determined that a collision with a risk of serious injury could recur with the Collision Detection Subsystem every 10 million - 100 million miles of driving on average. These findings among other factors, including the recent decision by the California DMV and the desire to improve trust in the communities in which Cruise operates, led Cruise to pause operation of its driverless fleet.

On October 27, 2023, Cruise met with the NHTSA Office of Defects Investigation ("ODI") to provide additional information on Cruise's decision to pause driverless operations, including its new risk analysis. Cruise also informed ODI that it was assessing whether a voluntary recall would be appropriate and that it would notify NHTSA of that decision by Thursday, November 2, 2023.

Cruise subsequently decided to submit this voluntary recall report in an abundance of caution and in hopes of adding transparency to the public's understanding of this singular incident.

Description of the Remedy

Description of the remedy program: Cruise has developed a software update that remedies the issue described in this notice. With the new update, the Cruise AV would have remained stationary during the October 2 incident. Cruise has deployed the remedy to its supervised test fleet, which remains in operation. Cruise will deploy the remedy to its driverless fleet prior to resuming driverless operations.

How remedy component differs from recalled components: The remedy is an update to the Collision Detection Subsystem.

Identify how/when recall condition was corrected in production: Cruise has deployed the remedy to its supervised test fleet and will deploy the remedy to its driverless fleet prior to resuming driverless operations.

Recall Schedule

Description of the Recall Schedule: Cruise AVs have never been offered for sale to third parties and are solely owned by Cruise or GM. As such, there are no owners or dealers to notify under 49 C.F.R. Parts 573 or 577 and part 577 is therefore inapplicable.
Planned Dealer Notification Date: N/A
Planned Owner Notification Date: N/A

Purchaser Information

Name: N/A
Address: N/A

Country: N/A
Company Phone: N/A