



**TESLA MODEL X MAINTENANCE AND SERVICE HISTORY
FACTUAL REPORT**

Mountain View, CA

HWY18FH011

(6 pages)



**NATIONAL TRANSPORTATION SAFETY BOARD
OFFICE OF HIGHWAY SAFETY
WASHINGTON, D.C.**

**TESLA MODEL X MAINTENANCE AND SERVICE HISTORY
FACTUAL REPORT**

A. CRASH INFORMATION

Location: Southbound US Highway 101 (US-101) south of North Shoreline Boulevard at the exit ramp transition to State Route 85 (SR-85), milepost 48.38, Santa Clara County, Mountain View, California.

Vehicle 1: 2017 Tesla Model X P100D

Vehicle 2: 2010 Mazda 3

Vehicle 3: 2017 Audi A4

Date: March 23, 2018

Time: Approximately 9:27 a.m. PDST

NTSB #: **HWY18FH011**

B. CRASH SUMMARY

For a summary of the crash, refer to the *Crash Summary Report* in the docket for this investigation.

C. DETAILS OF THE VEHICLE MAINTENANCE FACTUAL REPORT

- Section 1 of the report will describe the maintenance and service history of the Tesla Model X.
- Section 2 of the report provides a description of the driver facing alerts regarding GPS/navigation and cruise control operation prior to the crash.

1. Maintenance and Service History

This section of the report will discuss the maintenance and service history of the Tesla. The following table summarizes the service history and complaints made by the driver since delivery of the Tesla Model X in November 2017.¹

Date	Odometer	Service Facility	Service / Complaint	Remedy
11-16-17	269 mi.	Fremont, CA	Driver received Tesla Model X	NA
11-19-17	361 mi.	Call-in complaint	Unable to update firmware at home	Service visit scheduled for 11-24-17
11-24-17	542 mi.	Santa Clara, CA	Unable to perform wireless over-the-air (OTA) updates of firmware at home	Hammered previous firmware download and manually downloaded new firmware onto vehicle and verified proper operation.
11-24-17	567 mi.	Call-in complaint	Vehicle speed limited to 85 mph	Education on vehicle features provided and speed limiter setting removed
1-19-18	3690 mi.	Call-in complaint	Alert appeared: Cruise control not available. Owner advised that earlier in the day the driver assistance features were working properly.	Service reviewed logs including customer facing alerts. Engineering support explained to driver how to perform a power cycle of vehicle and reset the _das (driver assistance) command and restored driver's use of DAS.
1-19-18	3690 mi.	Call-in complaint	Alert appeared: Navigation system needs service – incorrect maps are loaded.	Service explained to driver how to perform an IC reboot and a touchscreen reboot. Follow-up on 1-31-18 confirmed that navigation is working as designed.
2-1-18	4129 mi.	Call-in complaint	Alert appeared: Automatic Emergency Braking is disabled.	Service explained how to complete a power cycle. Alert was cleared. Driver advised to call back if issue arises again.
2-5-18	4324 mi.	Call-in complaint	Alert appeared: Navigation needs service.	Driver questioned about the alert and advised that the alert started 3 weeks previously. Customer directed to schedule a service appointment.

¹ Refer to Vehicle Maintenance and Service History Attachments 1 and 2.

3-2-18	5408 mi.	Appointment scheduled	Right side falcon door not detecting open garage door ceiling. Door damaged. Customer also advised he was having issues with GPS.	Service appointment scheduled for March 6 th . Driver asked service to review Carlogs to identify any firmware to alleviate problem.
3-6-18	5581 mi.	Sunnyvale, CA	Passenger Falcon door opened and contacted overhead garage.	General diagnosis of sensors conducted. Performed testing and found capacitive sensor to be failing. Replaced rear right side cladding with capacitive sensor and verified proper operation after repairs. Body work completed to perform work.
3-6-18	5595 mi. ²	Sunnyvale, CA	Alert navigation needs service. Service paperwork read: "Issue with GPS/Navigation, causing cruise control to not function and alert "Maps not loaded."	Service advisor wrote "Unable to duplicate concern at this time. Advised to perform bug report if issue occurs again." Service advisor only recalled information provided by the driver regarding the damage to the Falcon doors. Service advisor and other service staff reported having no recollection of what the driver told them about problems with the navigation or cruise control system. The service advisor said he also had no recollection whether the driver told him about problems encountered while driving vehicle in the vicinity of the gore area on US-101. The service advisor said he could only go by what was written on the service paperwork. ³

² During March 6 -12 Sunnyvale service visit the Tesla was transported to a body shop for repairs to the Falcon door. The roundtrip mileage for the auto body shop trip was 14 miles (5581 mi. – 5595 mi). A test drive of the Tesla was not completed as part of the service visit.

³ Refer to Witness Group Chairman’s report for results of interviews with Tesla service personnel.

2. Driver Facing Alerts

Based upon the driver's March 6, 2018, service visit complaint regarding the GPS/Navigation and cruise control not functioning, Tesla was asked to provide a list of all driver facing alerts related to any issues related to navigation system and cruise control. Between January 1, 2018 and the date of the crash, driver-facing alerts regarding problems with the navigation system and the cruise control not operating appeared 15 times. Tesla was questioned regarding the meaning of the alerts and how they may relate to the crash on March 23, 2018. Tesla advised the following:

These alerts appear consistent with what prompted Mr. Huang to bring the vehicle in for service on March 6. However, the prior errors relating to the navigation system would not prevent Adaptive Cruise Control (ACC) or Autosteer from activating or operating and were not present during the trip on March 23, 2018. These prior errors had nothing to do with the crash.

Additionally, if there is an adaptive cruise control (ACC) fault when the driver tries to initiate Autosteer, the system will not allow either feature to operate and will send customer-facing audible and visual warnings. The same is true if a fault is detected while Autosteer is active. If an ACC fault is detected while using Autosteer, both ACC and Autosteer will deactivate along with customer-facing audible and visual warnings. No such faults appear in the logs.

The table below reflects the dates and times of the alerts:

Date	Time	Driver Facing Alert
01-02-18	8:34 a.m.	Cruise is not available
01-03-18	12:03 p.m.	Cruise is not available
01-09-18	3:30 a.m.	Maps missing: premium navigation maps are not installed
01-19-18	7:05 p.m.	Cruise is not available
01-19-18	7:08 p.m.	Maps missing: premium navigation maps are not installed
01-19-18	7:08 p.m.	Cruise is not available
01-25-18	8:38 a.m.	Maps missing: premium navigation maps are not installed
02-01-18	8:57 a.m.	Cruise is not available
02-01-18	8:59 a.m.	Maps missing: premium navigation maps are not installed
02-01-18	9:06 a.m.	Cruise is not available
02-05-18	8:53 a.m.	Maps missing: premium navigation maps are not installed
02-05-18	9:12 a.m.	Maps missing: premium navigation maps are not installed
02-06-18	3:23 a.m.	Maps missing: premium navigation maps are not installed
02-09-18	9:06 a.m.	Cruise is not available
03-01-18	4:55 a.m.	Maps missing: premium navigation maps are not installed

D. DOCKET MATERIAL

The following attachments are included in the docket for this investigation:

LIST OF ATTACHMENTS

Vehicle Maintenance and Service History Attachment 1 – Maintenance Records

Vehicle Maintenance and Service History Attachment 2 - March 12 Service Visit

END OF REPORT

Donald F. Karol

National Resource Specialist