

**Quandt, Jeff (NHTSA)**

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**From:** [REDACTED]  
**Sent:** Thursday, September 10, 2020 4:03 PM  
**To:** Webmaster, NHTSA (NHTSA); Quandt, Jeff (NHTSA); Wells, LeErnest (NHTSA); Ridella, Stephen (NHTSA)  
**Subject:** Addendum to Tesla SUA Motor Vehicle Defect Petition  
**Attachments:** Sixth Addendum to Motor Vehicle Defect Petition.pdf

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Please find attached to this email an addendum to the previously-filed motor vehicle defect petition relating to Sudden Unintended Acceleration in Tesla vehicles.

Thank you,

[REDACTED]

DP20-001

ODI

MEMO

9-10-2020

SIXTH Addendum

ATTACHMENT

2020-09-10 Petitioner email  
attachment - Sixth Addendum  
to Motor Vehicle Defect  
Petition

**Sixth Addendum to Motor Vehicle Defect Petition:  
Petition to Recall Tesla Vehicles Due To SUA**

James C. Owens  
National Highway Traffic Safety Administration  
400 Seventh Street, S.W.,  
Washington, DC 20590

September 10, 2020

Dear Deputy Administrator Owens:

Thank you for receiving this addendum to the motor vehicle defect petition to recall Tesla vehicles due to Sudden Unintended Acceleration.

I include this addendum to update you on four matters relevant to the motor vehicle defect petition.

1. NHTSA is in receipt of an additional ten SUA reports since the previous update.
2. There is evidence of a SUA crash with Traffic Aware Cruise Control engaged.
3. There is evidence on social media of a SUA crash in a Tesla Model Y.
4. Tesla customers experiencing SUA report difficulties with obtaining vehicle data.

Further, I ask the National Highway Traffic Safety Administration's Office of Defects Investigation to compel Tesla to provide evidence that their EDR accelerator pedal reading comes directly from the pedal sensor output voltage readings and not from the percentage output value of the pedal map, or more accurately, the output of the "maximum" function that accepts the pedal map percentage torque output, TACC torque output, and EDR/MSR torque output as inputs.

**1. Additional SUA Complaints to NHTSA**

On July 20, 2020, NHTSA received report # [REDACTED] from [REDACTED] Michigan involving a 2018 Tesla Model 3 in an injury SUA accident. It reads:

*On 7/18/2020, I pulled into parking spot and my Tesla accelerated suddenly went over the curb, hit the wall of a business, hit the doors of a business and a person coming out of that business then it hit pole and stopped. Ambulance took a person hit to the hospital (I pray for his wellbeing), I have police reported and car towed away (totally ruined). It was like a nightmare when car sped up suddenly and you see person thrown into your windshield. Something must be done before people are hurt and lives are taken. Tesla this is serious. We just have upgraded the software, last week.*

On July 2, 2020, NHTSA received report # [REDACTED] from Frisco, Texas. This is the fifth report of Sudden Unintended Acceleration in a 2020 Tesla Model X. It reads:

*I was the fourth vehicle in line at a bank drive thru and when the vehicle in front of me moved up in line, I placed the vehicle in drive and suddenly the vehicle accelerated out of control and hit two vehicles and then went over a curb into a parking lot and crashed into two other vehicles, which resulted in a serious accident involving four other vehicles. Fortunately, no one was seriously hurt. My vehicle was a total loss.*

On July 22, 2020, in report # [REDACTED] a 2018 Tesla Model 3 owner reported two SUA problems to NHTSA.

*As I returned home from work and entered my driveway at very low speed to park, the Tesla just took off at what felt like full power acceleration. It could not be stopped and hit my two car garage. Both garage doors and the central column were damaged and an internal wall was also knocked off. The car was declared a total loss and property damage was extensive.*

*It should be noted that such sudden unintended acceleration has happened with this car a few months earlier also **and was reported to Tesla** with a request that a safety analysis be performed. They stated that there was nothing wrong with the car which I do not agree with in view of this second incident. I was lucky first time since there was no car parked on the other side of the driveway and I was able to turn right, drive on to the grassed area, and then on to the road. Tesla has a serious safety problem of Sudden Unintended Acceleration without input from the driver. It must be investigated and fixed.*

On the same day this report was filed, NHTSA received another, similar, report from the owner of a 2014 Tesla Model S in Warwick, Rhode Island. Complaint # [REDACTED] reads as follows:

*The accident took place on 7/9/2020 around 9:15am. Police Report [REDACTED]*

*I drove my car into the parking lot of 4519 Post Road (facing post road) and turned into the doctor's parking spot. The car had just about stopped and my foot was not yet off the brake when I suddenly felt the car accelerating.*

*It went right through the hedge in front (about 1 foot away)*

*Then went through the office marquee, over the stone wall and on to the street. My foot on the brake, I was trying frantically to stop.*

*The car stopped. Relieved, I thought I should quickly get out of the car. To my horror, it started accelerating again. In the next few seconds, it felt as though I was in a James Bond movie car chase.*

*The next thing I knew my car was tearing through the white fence of a house and then I remember trying to get out of the car. Which fortunately I was able to by opening the*

*driver-side door. Didn't know hit a tree inside breaking it into two. Found out later the yard was 4-6 feet below the street.*

*Police report is pending at this time.*

I have found photos of the crash scene using Google Maps to better illustrate what happened.



The above photo shows the doctor's office in question, including the hedge referenced by the complainant, and the marquee destroyed during the SUA incident.



The above photo includes the hedge, marquee, and stone wall. The Tesla owner was initially able to stop the vehicle on the street but was unable to exit before the car resumed its acceleration toward the house pictured below where it hit a tree, according to the complaint.



The ten SUA complaints NHTSA has received since the June 22, 2020 update are listed below.

Tesla Model	Model Year	NHTSA #	Complaint Date	Incident Date	Parking/Driving	Location
Model 3	2020	11351690	8/27/2020	8/26/2020	Parking	Texas, Alamo Heights
Model S	2020	11351336	8/26/2020	8/9/2020	Parking	California, Los Gatos
Model S	2013	11348946	8/12/2020	8/6/2020	Parking	California, Milpitas
Model 3	2018	11341143	7/23/2020	6/1/2020	Parking	Florida, Palm Beach Gardens
Model S	2014	11340986	7/22/2020	7/9/2020	Parking	Rhode Island, Warwick
Model 3	2018	11340853	7/22/2020	3/9/2020	Parking	Unknown
Model 3	2018	11340308	7/20/2020	7/16/2020	Parking	Michigan, Jackson
Model X	2020	11337072	7/2/2020	6/1/2020	Drive Through	Texas, Frisco
Model S	2013	11330774	6/25/2020	6/15/2019	Parking	Tennessee, Eads
Model S	2018	11330211	6/22/2020	6/8/2020	Parking	Georgia, Atlanta

There have been recent media reports from around the world of Tesla vehicles accelerating unintentionally. Two recent reports from The Netherlands detail crashes which appear to fit the SUA pattern. On July 27, 2020, a Tesla Model X crashed into a store in Rotterdam-Hillegersberg.<sup>1</sup> On July 31, 2020, a Tesla driver in the town of Wijchen crashed into a building.<sup>2</sup> Both news reports suggest police will look for a technical cause, as well as interviewing the driver.

Several Tesla drivers in China have complained of unintended acceleration. Chinese state media outlet Yicai Global reported a claim that Tesla vehicles “accelerate unexpectedly” in China, citing four accidents between June and September.<sup>3</sup> Yicai Global reported the most recent SUA claim is dated September 5, 2020, in Nanchong, Sichuan Province, that left two dead and six injured.<sup>4</sup>

## 2. Tesla Unintended Acceleration on Traffic Aware Cruise Control

On January 17, 2020, San Francisco resident Alan Zavari took to Twitter to report unintended acceleration while using Traffic Aware Cruise Control (TACC) on a street in heavy traffic.<sup>5</sup> Alan promptly informed Tesla of the accident, claiming that TACC had malfunctioned. However in Tesla’s written response to Alan, Tesla claims that Alan manually depressed the accelerator immediately before the crash. Alan denies doing so. This claim from Tesla moves the cause of the crash from TACC malfunction to unintended acceleration.

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1

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Dear Mr. [REDACTED]

We are responding to your inquiry regarding an incident with your Tesla vehicle on January 13, 2020. Tesla reviewed the vehicle's diagnostic log from the time of the incident, the results of which we discussed with you. As we discussed, based on this review, Tesla determined that the vehicle operated without fault and responded appropriately to the driver-supplied inputs.

According to the vehicle's diagnostic log, shortly before the incident, Traffic-Aware Cruise Control and Autosteer were engaged, Traffic-Aware Cruise Control was applying the vehicle's brakes, the vehicle was at a standstill, the steering wheel was turned slightly to the right, and the driver's hands were not detected on the steering wheel. The driver's hands were not detected on the steering wheel for approximately the previous 30 seconds immediately prior to the incident. Less than one second later, Traffic-Aware Cruise Control released the vehicle's brakes, and over the next 4 seconds, while the steering wheel remained turned slightly to the right, Traffic-Aware Cruise Control gradually increased the vehicle speed. In the next second, as the accelerator pedal was manually pressed, multiple crash-related alerts and signals were triggered. In the following second, the brake pedal was manually pressed, followed immediately by the accelerator pedal being released, Traffic-Aware Cruise Control and Autosteer cancelled, and the vehicle came to a stop.

Tesla has consistently made clear that the Autopilot system does not make your vehicle autonomous, capable of avoiding every possible obstacle on its own, and that the driver is always responsible for the safe control of the vehicle. The driver must always pay attention and be ready to take control of the vehicle at all times. Tesla reminds users of this when they enable the feature and in the Owner's Manual. Every time the Autopilot system is engaged, the pop-up message "Always keep your hands on the wheel. Be prepared to take over at any time" appears to remind the driver of this responsibility.

In addition, the Owner's Manual contains numerous warnings and notifications stating that the driver must remain in control of the vehicle and keep his/her eyes on the road at all times, and that the Autopilot system, including Autosteer and Traffic-Aware Cruise Control, should not be relied upon to prevent or avoid a collision. Here are a few examples:

*Warning: Autosteer is a hands-on feature. You must keep your hands on the steering wheel at all times.*

*Warning: Autosteer is intended for use only on highways and limited-access roads with a fully attentive driver. When using Autosteer, hold the steering wheel and be mindful of road conditions and surrounding traffic. Do not use Autosteer on city streets, in construction zones, or in areas where bicyclists or pedestrians may be present. Never depend on Autosteer to determine an appropriate driving path. Always be prepared to take immediate action. Failure to follow these instructions could cause damage, serious injury or death.*

*Warning: Autosteer is not designed to, and will not, steer Model 3 around objects partially or completely in the driving lane. Always watch the road in front of you and stay prepared to take appropriate action. It is the driver's responsibility to be in control of Model 3 at all times.*

*Autosteer requires that you pay attention to your surroundings and remain prepared to take control at any time.*

*Warning: Many unforeseen circumstances can impair the operation of Autosteer. Always keep this in mind and remember that as a result, Autosteer may not steer Model 3 appropriately. Always drive attentively and be prepared to take immediate action.*

*Traffic-Aware Cruise Control does not eliminate the need to watch the road in front of you and to manually apply the brakes when needed.*

*Warning: Traffic-Aware Cruise Control is designed for your driving comfort and convenience and is not a collision warning or avoidance system. It is your responsibility to stay alert, drive safely, and be in control of the vehicle at all times. Never depend on Traffic-Aware Cruise Control to adequately slow down Model 3. Always watch the road in front of you and be prepared to take corrective action at all times. Failure to do so can result in serious injury or death.*

Regardless of the results of our investigation, we recognize how upsetting an incident like this can be. We hope that the above information is helpful in helping you understand what happened immediately prior to the incident. We recommend that you review the Owner's Manual to familiarize yourself with the specific conditions for the proper usage of the Autopilot features, including Autosteer and Traffic-Aware Cruise Control, and remember to remain attentive and in control of the vehicle at all times.

Thank you very much for giving us the opportunity to investigate your concern.

Sincerely,

Tesla's description of the events indicates that the malfunction fits the unintended acceleration pattern, and is not the fault of TACC. In this case the driver is a credible individual who says he did not touch any pedal while the vehicle operated at slow speed, relying on the vehicle's partially automated driving systems. Yet Tesla accuses the driver of manually depressing the accelerator. In a Twitter post on March 6, 2020, Alan refers to Tesla's allegation of pedal misapplication coupled with "multiple crash-related alerts" being triggered as "False & False".<sup>6</sup>

Dr. Ron Belt<sup>7</sup> observed the video alongside the statements from Tesla and [REDACTED]. He added comments as follows:

[REDACTED]

[REDACTED]

We know the TACC mode behaved as designed while bringing the vehicle to a complete stop behind a vehicle transport truck because the video from the TACC mode sensor shows the vehicle stopping. In order for this to happen, the service brakes had to be applied electronically by the TACC system, which is accomplished by the TACC system activating valves in the ESP modulator that isolate the brake pads from the master cylinder and then raising the hydraulic pressure to the brake pads by turning on an electrically operated hydraulic pump in the modulator.

Now, this electric pump was originally designed to operate only while applying the service brakes during ABS activation, which is an intermittent operation having a short duration. The pump was never designed to operate continuously, which would cause the temperature of its motor windings to increase and possibly short out the windings. Therefore, when auto manufacturers began to use the ABS pump to provide continuous braking action during TACC operation, they realized that it could cause the pump to overheat if the brake was applied for too long a time, like during the waiting time for a traffic light. To prevent the pump motor from overheating in this case, they set a timer to expire after about 5 minutes of motor operation time, after which the TACC system was supposed to activate a different brake (the parking brake), and de-activate the ESP-controlled service brake. This would allow the ABS pump motor in the ESP system to cool off again while the vehicle remained stopped.

In the video for this incident, the ESP brakes were released before this timer expired. This release could have been caused by the pump reaching a critical temperature, at which time a thermal safety circuit shut down the pump to protect it from overheating before the second parking brake was activated. This abnormal heating of the ABS pump could have been caused by a higher-than-expected usage of the ESP-controlled service brakes by the TACC system during the time preceding the unintended acceleration. This is suggested by the video, which shows that the traffic condition at this time was stop-and-go traffic on a three-lane freeway, and by the driver stating that his Autopilot was on for 5 to 10 minutes prior to the incident in this same traffic condition. So, this overheating caused by a higher-than-normal TACC activation usage can explain the release of the ESP service brakes without causing the activation of the parking brakes, which made the vehicle susceptible to moving in response to an increase in the drive motor torque. This explains the first half of the unintended acceleration incident.

To explain the second half of the unintended acceleration incident, we must explain what could cause an increasing positive motor torque. Clearly, stepping on the accelerator could produce this increase in positive motor torque. But the driver is adamant that he never had his foot on either the brake pedal or the accelerator pedal. If we consider that the vehicle remained in TACC mode while it was stopped, it was likely still in TACC mode when the vehicle started to move forward. Therefore, it is possible that the positive motor torque was provided by the TACC mode itself increasing the drive motor torque. This seems to be admitted by Tesla when they told the driver in writing that "...

the Traffic-Aware Cruise Control gradually increased the vehicle speed ...". The reason for this torque increase would be that TACC noticed that no brakes were being applied, so it understood this to mean that it was supposed to increase the drive motor torque slowly in order to close the gap to the vehicle ahead. It likely crashed into the vehicle ahead before reaching the desired minimum distance.

So, how do we explain the EDR data showing that the accelerator pedal was pressed? The answer is that the EDR data for the accelerator pedal parameter is probably not taken directly from the accelerator pedal sensor voltage, but from the output of the pedal map lying between the accelerator pedal sensors and the motor torque map. This digital pedal map output is fed into a "maximum" function that compares the driver-desired torque setting with two other drive motor torque settings produced by the TACC system and the EDC/MSR function in the ESP modulator unit. Whichever of these three inputs is greater determines the input to the motor torque map, which subsequently produces the torque command to the drive motor.<sup>Note 1</sup> So if the TACC system increases the torque slowly while the accelerator pedal remains unpressed at zero percent output, a positive torque command is still sent to the drive motor. And the "accelerator pedal" EDR input taken from this torque map input signal will show an activation voltage even though the accelerator pedal has never been pressed.

*Note 1. This maximum function is used in the control systems of all vehicles with internal combustion engines and electronic throttles, so it is likely that this same function has been carried over into the control systems of electric vehicles like Tesla vehicles.*

The above explanation is merely a hypothesis for explaining the incident, and not a proof. Experimental proof might be possible by repeating the conditions of the incident while heat is applied to the ABS pump motor using a heat tape around the motor. Assuming that the TACC brings the vehicle to a complete stop, if the ABS motor can be made to turn off quickly at some raised temperature without causing the parking brake to turn on, and if the vehicle subsequently moves forward at this time, then this would be an experimental proof of the hypothesis. This experiment might require varying the imagery from the vehicle ahead to determine the sensitivity of the TACC system to the type of imagery; e.g., whether the openness of a vehicle carrier type of truck is a factor in creating a positive drive motor torque.

As an objective person reading Tesla's statement, [REDACTED] statement, and watching video of the accident provided by [REDACTED] would conclude an accidental pedal press to be unlikely, that person must ask how Tesla could have truthfully reported to the driver that he depressed the accelerator pedal. If Alan did not manually depress the accelerator, then either Tesla's EDR reports are unreliable or they are intentionally misleading the driver.

As stated on Page 1 of this Addendum, Tesla must provide evidence that their EDR accelerator pedal reading comes directly from the pedal sensor output voltage readings and not from the

percentage output value of the pedal map, or more accurately, the output of the “maximum” function that accepts the pedal map percentage torque output, TACC torque output, and EDR/MSR torque output as inputs.

As well, it might be the case that NHTSA will need to prevent Tesla from gaining physical access to vehicles in such situations before onboard data can be read by an independent third party.

### 3. Report of Sudden Acceleration in Tesla Model Y

Tesla Motors Club member Rice&Curry reported the first instance of unintended acceleration involving a 2020 Tesla Model Y on August 7, 2020.<sup>8</sup>

*Today while my wife was parking the car at Costco, Alamden Road, San Jose, the car suddenly accelerated and hit car parked on the opposite side with such force that it pushed out a parked Kia SUB (Soul) out of its parking slot into the road used for parking. It was not in Auto pilot. The car is less than 1 month old. My wife said just before the accident, “I am not able to stop the car”. I was in the front passenger seat. My wife confirms that her foot was not on the acceleration as she had already entering the parking slot. Dashcam footage shows a sudden acceleration.*

*Fortunately nobody was hurt. Called Tesla. They immediately responded and took the details and asked for all details and said that they have opened an investigation on this.*

While the 2020 Tesla Model Y is currently outside the scope of this petition, NHTSA may find information from this event relevant to the larger inquiry.

### 4. Accessing Vehicle Data

The third addendum to this petition, dated February 21, 2020, in part related the Tesla SUA experience of Twitter user @TheDataGap’s family as reported to NHTSA in Complaint # [REDACTED] dated January 21, 2020.<sup>9</sup>

Twitter user @TheDataGap reported that a representative from Tesla called immediately following the crash, but when @TheDataGap and another family member separately attempted to contact Tesla, including by email and Twitter, to ask for the vehicle data, Tesla never responded.

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<sup>8</sup> [REDACTED]

I followed up with @TheDataGap on August 23, 2020, to check whether Tesla did eventually respond. Tesla has not responded, and has not provided the family with the requested information.

## **Conclusion**

Tesla has the relevant data which the public lacks; what can be seen from the outside are a series of red flags. Prominent among these red flags is Tesla's propensity to make unlikely assertions and contradictory statements to its customers and the public regarding SUA, but that is not all. Tesla drivers report Unintended Acceleration at a rate many multiples higher than drivers of other vehicles. If the explanation were simple pedal misapplication as Tesla implies then one would expect all vehicles to have complaints at approximately the same rate. As well, several drivers have reported multiple SUA events to NHTSA, which would be unlikely if the problem were pedal misapplication. Tesla stonewalls customers who seek their vehicle's logs before eventually telling them to obtain a court order, a step which is impractical at best and adds further delay to the process at the least. Consequently there is the appearance of a corporation covering up a defect in its product. Information critical to public safety cannot be hidden from the public or the vehicle owner by classifying it as a trade secret.

The symptoms of a vehicle defect leading to Sudden Unintended Acceleration are clearly shown in this petition. So, too, has this petition shown that Tesla must know of the defect and be unresponsive to it. This petition has also provided ideas which ODI has the capacity to test. Tesla has not refuted the statistics and has continued stonewalling customers who experience SUA.

[REDACTED]

[REDACTED]