December 30, 2016

Paul A. Hemmersbaugh
Chief Counsel
National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE
Washington DC, 20590

RE: PE16-007 Special Order

Dear Mr. Hemmersbaugh,

On behalf of Tesla Motors, Inc. ("Tesla" or "the Company"), this submission responds to the National Highway Traffic Safety Administration's ("NHTSA" or the "Agency") Special Order related to PE16-007. We note that this Special Order was provided to Tesla on December 15, 2016, seven weeks after Tesla's October 27, 2016 submission answering what were at the time characterized as NHTSA's final PE16-007-related questions. Regardless, Tesla produced the answers set forth below during the holiday period. As requested, Tesla repeats the applicable request verbatim above each response. Tesla is providing responsive answers dated, up to and including, December 15, 2016.

Additionally, before providing its responses, Tesla wishes to provide some introductory remarks. Throughout the PE, NHTSA has sought information about accidents that occurred while Autopilot was in use, but has never sought information about Autopilot's positive impact, including instances when Autopilot either prevented an accident or mitigated its consequences, or where Autopilot would have prevented an accident or mitigated its consequences had it been in use at the time.

To be clear, Autopilot has had a significantly positive impact. It has prevented countless accidents and almost certainly saved lives. Moreover, by any measure, our customers overwhelmingly love and feel protected by it. Every independent study that we are aware of has shown Autopilot to be the most advanced such system on the road; here are just some of the third-party reviews that Autopilot has received:

- *Car & Driver: ~2x better than the next closest competitor (29 interventions vs. 56 for the BMW 7-Series)*[1]
- *Autofil: ~10x better than the next closest comparison (3 interventions on the Model S vs. 31 for the E-Class)*[2]
- *Motor Trend: 6-9x better than the next best system (12 interventions for the Model S vs. 113 for the S-Class)*[3]
- *The Drive: "Without a doubt, [Autopilot] is the best ADAS system on the market."*[4]

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[1] http://www.caranddriver.com/features/semi-autonomous-cars-compared-tesla-vs-bmw-mercedes-and-infiniti-feature-2015-tesla-model-s-p85d-page-5

[2] http://www.autofil.no/936897/hands-off

[3] http://www.motortrend.com/news/testing-semi-autonomous-cars-tesla-cadillac-hyundai-mercedes/

[4] http://www.thedrive.com/tech/4591/the-war-for-autonomous-driving-2017-mercedes-benz-e-class-vs-2017-tesla-model-s?xid=the-drive_socialflow_twitter

Tesla recognizes the very clear and natural sampling bias that inherently skews any comparison of incidents vs. "saves" caused or contributed to by a driver assistance system. The few incidents of misuse that Autopilot was not able to prevent have garnered far more attention than the many examples that demonstrate the efficacy of the system. Below are three (of undoubtedly countless) examples in which Autopilot and the suite of active safety and driver assistance features it entails likely saved a life or, at a minimum, prevented a collision:

- In July 2016, a Model S driver in Washington, DC was driving manually at night and failed to notice a darkly-dressed pedestrian jaywalking across the street. Autopilot detected the hazard, alerted the driver, and applied the brakes, avoiding a collision that almost certainly would have resulted in serious injury or death.[5]

- In July 2016, a Model X driver in Missouri suffered a pulmonary embolism while driving; Autopilot assisted him in maintaining control of the vehicle and safely reaching a hospital.[6]

- In December 2016, a Model S driver using Traffic-Aware Cruise Control ("TACC") and Autosteer avoided a high-speed collision with a car in front of the box truck he was following when the car (but not the box truck) suddenly stopped. Autopilot detected the car stopping, abruptly applied the brakes and alerted the driver long before the box truck suddenly veered off the road and revealed the hazard.[7]

In addition, below are three of the countless real-world examples where Autopilot likely would have prevented or mitigated accidents had it been in use at the time of the incident:

- In July 2016, a Model S driver in China failed to remain in the lane while driving manually and crashed into a fence, narrowly avoiding pedestrians on the other side.

- In July 2016, a Model S driver in Canada, while driving manually in daylight, drifted off the road at 60 miles per hour, went airborne and landed in a field.

- In December 2016, while driving manually at night, a Model S driver in New Jersey failed to follow the road as it curved to the left following a section of straight road. The vehicle departed the road traveling 48 miles per hour and collided with a roadside barrier.

These are only illustrative examples. There are countless more.

Question 1: Describe the intended use of Autopilot by a driver of a Tesla vehicle.

Response 1: This Special Order defines "Autopilot" as "the Tesla product, including hardware and software, designed for use as an advanced driver assistance system, and it includes both Traffic Aware Cruise Control and Autosteer enabled and active." When used together, TACC and Autosteer are intended to be an SAE Level 2 driving automation system. The system executes both steering and acceleration/deceleration using information about the driving environment, with the expectation that the human driver will perform all

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[5] https://twitter.com/elonmusk/status/756004029239472132?ref_src=twsrc%5Etfw

[6] https://cleantechnica.com/2016/08/08/tesla-autopilot-helps-man-experiencing-pulmonary-embolism-make-hospital/

[7] https://teslamotorsclub.com/tmc/threads/autopilot-worked-for-me-today-and-saved-an-accident.82268/#post-1865058

remaining aspects of the dynamic driving task, including continuously monitoring the vehicle and the environment.

Question 2: Describe any and all potential driver misuse(s) or abuse(s) of Autopilot that Tesla considered or evaluated prior to launching Autopilot 7.0 in October 2015. Your response should include, but not be limited to: (i) the types of potential misuses and/or abuses considered; (ii) any related analysis or testing performed by Tesla or third parties on behalf of Tesla, and (iii) any ranking or categorization performed by Tesla as to the likelihood, nature, and/or severity of those potential misuses and abuses.

Response 2(i): [redacted]

[redacted]

Question 3: Describe any research or testing performed by Tesla, or by any third party on Tesla's behalf, prior to October 2015, regarding the impact of Autopilot on driver behavior, including, but not limited to, the potential for misuse and/or abuse, including but not limited to distracted driving.

Response 3: [redacted]

[redacted]

Question 4: Describe the steps you took prior to October 2015 to ensure the safe operation of a Tesla vehicle equipped with Autopilot. Your response should include, but not be limited to, a summary of any and all safeguards against driver misuse or abuse that were considered by Tesla, and an explanation for any safeguard that was not ultimately implemented.

Response 4: Tesla's entire conception, design, and development of Autopilot was aimed at improving safety. [redacted]

[redacted]

Question 5: Describe the development of the written warnings contained in the Tesla Model S User Manual listed in the section on Driver Assistance, which is attached hereto as Exhibit 1. Your response should include a description of any alternative language that was considered, as well as a summary of any focus group testing or other research that was conducted, before such warnings were published.

Response 5: Tesla recognizes that our vehicles contain numerous innovative features and we are dedicated to producing high quality instructional documents. Production of Tesla owner's manuals, including the sections on Autopilot, is led by a team of technical writers with decades of experience writing documentation for technology products, and is supported by many departments within Tesla.

[redacted]

Unlike other automakers, most of whom are unable to update a manual after the vehicle is sold, Tesla can and does continually update the owner's manual based on new features or customer feedback. Tesla in fact actively encourages drivers to provide feedback for improving the manual via the email address OwnersManualFeedback@teslamotors.com. This email address is monitored by a team of technical writers, and owners are made aware of this email address in three ways:

- As a link on the vehicle's touchscreen. (See Figure 1.)
- Within the full owner's manual PDF that owners can access via their MyTesla account. (See Figure 2.)
- Within the inside cover of the printed Quick Guide that is provided in the glove compartment of every vehicle. (See Figure 3.)

Figure 1. Link to owner's manual feedback email address provided on touch screen

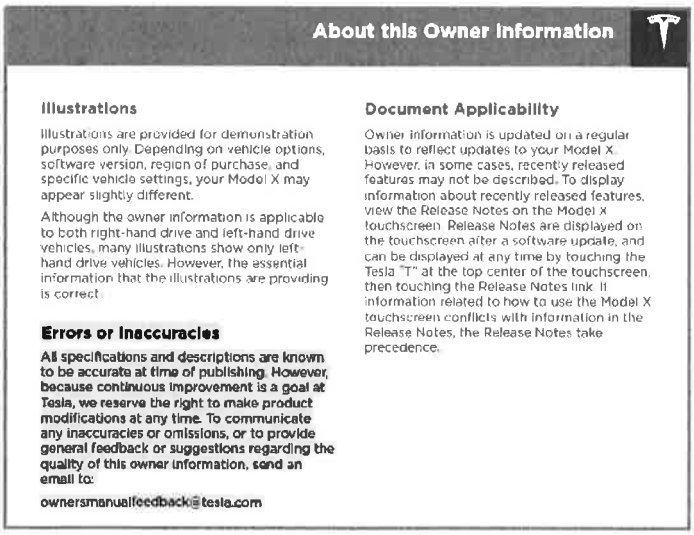

Figure 2. Reference to owner's manual feedback email address included in pdf of owner's manual

Figure 3. Reference to owner's manual feedback email address included on inside cover of the Quick Guide

[redacted]

Question 6: Describe the development of the Hold Steering Wheel message on a Tesla vehicle's instrument panel and accompanying audible chime warning that was part of Autopilot 7.0. Your response should include any focus group testing or other research conducted by Tesla or any third party on Tesla's behalf in connection with the development of these in-vehicle warnings, as well as any alternatives that Tesla considered implementing to monitor or influence driver attentiveness and hands on the wheel.

Response 6: The Hold Steering Wheel message and accompanying chime were designed to clearly communicate necessary actions to the driver, without adding additional distraction. [redacted]

[redacted]

[redacted]

Question 7: Describe any knowledge you have of driver misuse or abuse of Autopilot since October 2015, including when you gained that knowledge and whether the misuse or abuse resulted in a death or injury. Your response should also describe any efforts by Tesla to monitor for Autopilot misuse or abuse on social media (including, but not limited to, YouTube, Facebook, Snapchat, Twitter) and elsewhere.

Response 7: [redacted]

Question 8: Describe in detail all modifications or changes made to Autopilot from October 2015 to date. For each such modification or change, provide the following information:

a. The date or approximate date on which the modification or change was incorporated into Autopilot;
b. A detailed description of the modification or change;
c. The reason(s) for the modification or change;
d. A description of any testing or analysis done before instituting the modification or change;
e. When the modification or change was made available to consumers; and
f. How the modification or change can be interchanged with earlier versions of Autopilot.

Response 8: Tesla previously answered many of these questions in response to PE IR question 6, and for clarity the table provided in Appendix A lists all Autopilot software updates to the subject vehicles.

[redacted]

[redacted]

Response 8.a: See Appendix A.

Response 8.b: See Appendix A.

Response 8.c: See Appendix A.

Response 8.d: [redacted]

Response 8.e: See Appendix A.

Response 8.f: [redacted]

Question 9: Describe the steps (other than those described in your response to Request No.8) that you have taken since October 2015 to ensure the safe operation of a Tesla vehicle operating in Autopilot mode. Your response should include, but not be limited to: (i) a summary of any additional safeguards against driver misuse or abuse that were considered by Tesla, but were not ultimately implemented, including the rationale for the decision not to implement a safeguard; (ii) a summary of any and all driver education or monitoring that Tesla performs or has performed to confirm whether Autopilot is being used as intended; and (iii) a detail of any research performed by Tesla or by any third party on Tesla's behalf regarding the impact of Autopilot on driver behavior, including distracted driving.

Response 9: As far as Tesla is aware, ***Autopilot has the most robust set of warnings against driver misuse and abuse of any feature ever deployed in the automotive industry***. The forms in which Autopilot limitations are conveyed to owners are described in Response 14 below.

[redacted]

As part of Tesla's commitment to educating owners, Tesla continually provides updated instructions and training to its own sales, service, and customer support teams. [redacted]

New Tesla owners receive an orientation regarding all aspects of their Tesla vehicles at the time of delivery, [redacted]

Again, Tesla is not aware of a more comprehensive, thorough, and easy-to-understand set of warnings and education protocol, including through in-car communications directly to the driver, for any feature deployed in the automotive industry—ever. We believe these efforts have been successful considering, as discussed in greater detail in Response 14, a third-party survey independently verified that our customers clearly understand what Autopilot is and how to properly use it.

Question 10: Describe in detail any and all concerns or allegations (regardless of whether or not such concerns or allegations were substantiated) raised by a Tesla employee or contractor regarding the safety of Autopilot or the potential for driver misuse or abuse. Your response should include a description of the actions you took to investigate and address each concern or allegation.

Response 10: The entire purpose – and therefore focus – of Tesla engineering during the design, development, and ongoing support of Autopilot was and is improving road safety.

[redacted]

Question 11: Describe in detail any and all safety concerns that Mobileye Inc. ("Mobileye") communicated to Tesla regarding Autopilot, as described in the September 16, 2016 press release included as Exhibit 99.1 to Mobileye's Form 6-K for the month of September 2016 filed with the U.S. Securities and Exchange Commission and attached hereto as Exhibit 2. Your response should include the date of any such communications as well as a description of the actions you took to investigate and address, if applicable, the safety concerns. Your response should also include copies of all written communications from Mobileye expressing those safety concerns and any internal Tesla communications documenting or memorializing them.

Response 11: [redacted]

[redacted]

Question 12: Describe in detail what, if any, information or guidance you received from Mobileye regarding: (i) the potential for driver misuse or abuse of Autopilot; (ii) the intended purpose of Autopilot; (iii) and the limitations of Autopilot. Your response should include the dates on which Tesla received the information or guidance from Mobileye and what, if any, actions Tesla took or decisions it made as a result of that information or guidance.

Response 12: [redacted] Specific to the evolution of Tesla's use of Mobileye as a supplier and the context in which Mobileye made its recent Autopilot comments, we released a detailed public statement on September 15, 2016, i.e., the day before Mobileye issued the public statement to which NHTSA has referred:

> *Recent statements made by MobilEye about Tesla Autopilot are inaccurate.*
>
> *Here are the facts:*
>
> *MobilEye had knowledge of and collaboration with Tesla on Autopilot functionality for the past 3 years.*
>
> *Tesla has been developing its own vision capability in-house for some time with the goal of accelerating performance improvements. After learning that Tesla would be deploying this product, MobilEye attempted to force Tesla to discontinue this development, pay them more, and use their products in future hardware.*
>
> *In late July when it became apparent to MobilEye that Tesla planned to use its own vision software in future Autopilot platforms, MobilEye made several demands of Tesla in exchange for continuing supply of first generation hardware, including:*
> - *Raising the price of their product retroactively*
> - *Demanding an agreement to extremely unfavorable terms of sale and*
> - *Demanding that Tesla not use data that was collected by its vehicles' cameras for any purpose other than helping MobilEye develop its products*
> - *Requiring that Tesla collaborate on Tesla Vision and source future vision processing from them until at least level 4.*
>
> *When Tesla refused to cancel its own vision development activities and plans for deployment, MobilEye discontinued hardware support for future platforms and released public statements implying that this discontinuance was motivated by safety concerns.*

Additionally, it is worth noting that as recently as April 2016, Mobileye's Chairman publicly praised and took credit for the capabilities of the Autopilot system, including its ability to engage in hands-free driving, something that Tesla notably instructs its customers not to do. Below is a small sampling of his public comments about Autopilot:

> *January 2015: In that way we get this environmental model to enable to do hands free driving...When is all of this coming out? This year. I'm not talking about something very futuristic. Around middle towards third quarter of 2015 a car manufacturer is going to have this kind of technology running on the car on our*

> *chips. So it's not very futuristic … our third generation chip launched two months ago on Tesla…*[8]
>
> *August 2015: So this is far from science fiction. It's actually unfolding as we speak. The first hands free driving on highways is coming out now. The first one is Tesla, they have already launched … and you can do hands free when driving on a highway. Unlimited speed. You can go at highway speeds and let go of the steering wheel … GM already announced that middle of 2016 … more or less the same kind of functionality. Audi already announced 2016. These are just the first comers. We are working with about 13 car manufacturers that within the next 3-4 years having this kind of capability. … the driver still has primary responsibility and has to stay alert … for the car industry this is the first step to start practicing towards reaching autonomous driving.*[9]
>
> *April 2016: So you clearly see that the woman here is driving without touching the steering wheel … one of the biggest successes of Tesla Autopilot in terms of the ability to do hands free driving comes from these types of technological components, but this is only the beginning.*[10]

Mobileye contradicted these and many of its other public statements only after Tesla informed Mobileye that the Company was going to in-source its computer vision program.

Question 13: Provide a list of every lawsuit filed on or after October 14, 2015 naming Tesla as a defendant, for which Tesla has raised consumer misuse or abuse of Autopilot as a defense. For each lawsuit, provide the full case caption (including case number and jurisdiction), the name and contact information for the plaintiffs counsel, and the current status of the lawsuit. Your response should include copies of all pleadings, transcripts, opinions, and discovery responses that discuss or concern driver misuse or abuse, with the applicable passages highlighted or flagged.

Response 13: No lawsuits responsive to this question have been filed against Tesla.

Question 14: Provide any additional information that you believe demonstrates that Tesla took appropriate action to address driver misuse or abuse of Autopilot.

Response 14: As described above, many vehicle features can be misused or abused. Unlike features in other manufacturers' cars that can be misused, Tesla has taken unprecedented steps to warn against misuse with its Autopilot system, and has demonstrated an unmatched level of post-sale commitment to product improvement. Tesla's efforts to safeguard its customers through Autopilot demonstrate how connected technology can be used effectively to address vehicle misuse and abuse.

Warnings

Tesla believes that Autopilot has the most robust set of warnings against driver misuse and abuse of any feature ever deployed in the automotive industry. Autopilot uses multiple means of conveying system limitations. The messaging is consistent and is conveyed at levels of detail appropriate for the communication method and level of driver's attention available at the time of instruction, including through easy-to-understand written, audible, and pictorial warnings that are made clearly and repeatedly to the customer directly in the car. Autopilot limitations are conveyed in the following forms:

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[8] https://www.youtube.com/watch?v=kp3ik5f3-2c

[9] https://www.youtube.com/watch?v=PhpkvuPYfn8

[10] https://www.youtube.com/watch?v=GCMXXXmxG-I&feature=youtu.be&t=32m19s

1. In the owner's manual
   The Tesla owner's manuals contain both general and detailed descriptions of the limitations of Autopilot features, including Automatic Emergency Braking ("AEB"), TACC, and Autosteer functionality. Examples of such limitations are provided in Appendix A, attached.

2. In release notes
   After installing new software, the driver is presented with release notes on the center screen that include descriptions of new vehicle features and a reminder to refer to the owner's manual for more detailed information. The release notes for Autopilot have stated, among other things, "[w]hile Autosteer facilitates basic highway driving, it is vital that you pay attention to your driving environment so you can take over if needed."

3. Before enabling Autosteer for the first time
   Autosteer is disabled by default. Before enabling Autosteer, the driver first needs to enter the "Driver Assistance" menu on the vehicle's Control Panel and agree to the following communication about the limitations of Autosteer and the proper manner for using it:

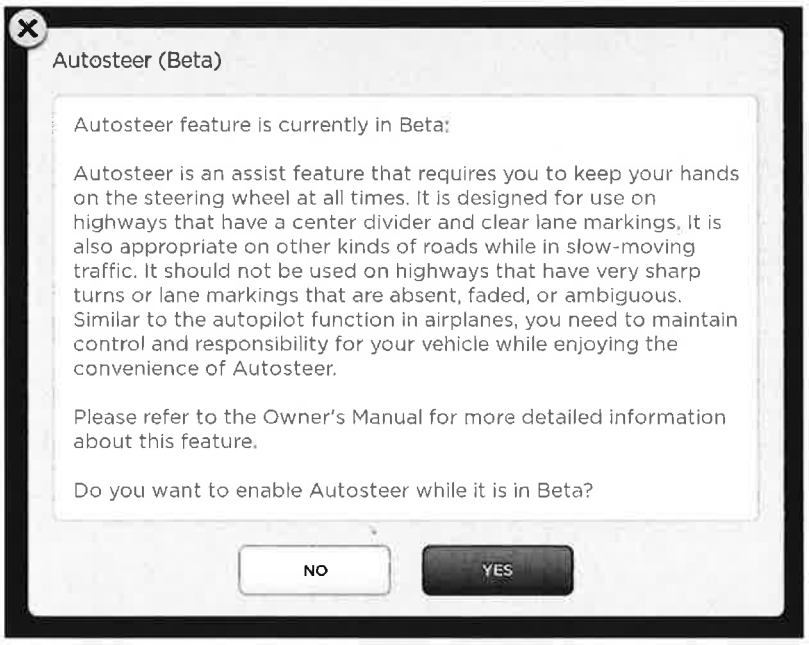


Figure 7. Dialog when enabling Autosteer

4. Every time Autosteer is activated
   Every time Autosteer is activated, a dialog appears on the instrument panel screen directly in front of the driver reminding the driver to "Always Keep Your Hands on the Wheel" and "Be Prepared to Take Over at Any Time."

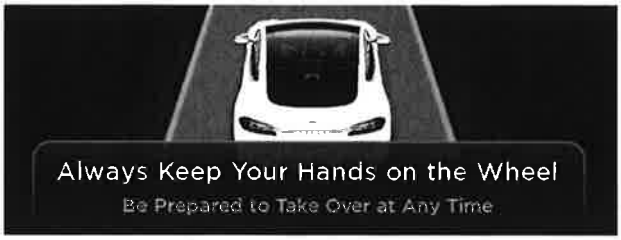


Figure 8. Dialog every time Autosteer is activated

5. At all times while driving
   Whether or not Autopilot features are engaged, the Tesla driver is presented with an intuitive user interface that displays Autopilot's perception of the world around the Tesla. This interface depicts the most important data the system uses to assist in longitudinal and lateral control: lane lines, other vehicles, and ultrasonic objects. This information conveys the core of what Autopilot sees, helps the driver understand current system limitations, and trains the driver to recognize conditions that are challenging for Autopilot to correctly recognize.

Figure 9. Autopilot user interface showing vehicle-perceived lane lines, other vehicles, and ultrasonic objects

Customer Understanding

As expected, given the extensive instructions and warnings provided, Tesla customers are very well educated about Autopilot and clearly understand the proper way to use it, including the need to maintain control at all times, as well as what Autopilot is (a diver's assistance system) and what it is not (a self-driving car). Tesla recently worked with a third-party to survey a set of Tesla owners to better understand how they perceive Autopilot. ***98%*** of customers surveyed said they understand that, when using Autopilot, the driver is expected to maintain control of the vehicle at all times.[11]

[11] A full copy of the survey can be found here: https://www.tesla.com/en_CA/blog/tesla-owners-germany

Commitment to Product Improvement

While Tesla firmly believes that Autopilot has improved driver safety since it was introduced, Tesla has introduced significant product enhancements to deter and mitigate the effects of driver misuse. These changes, including significant feature additions in version 8.0, have already been described in detail in NHTSA PE submissions.

* * *

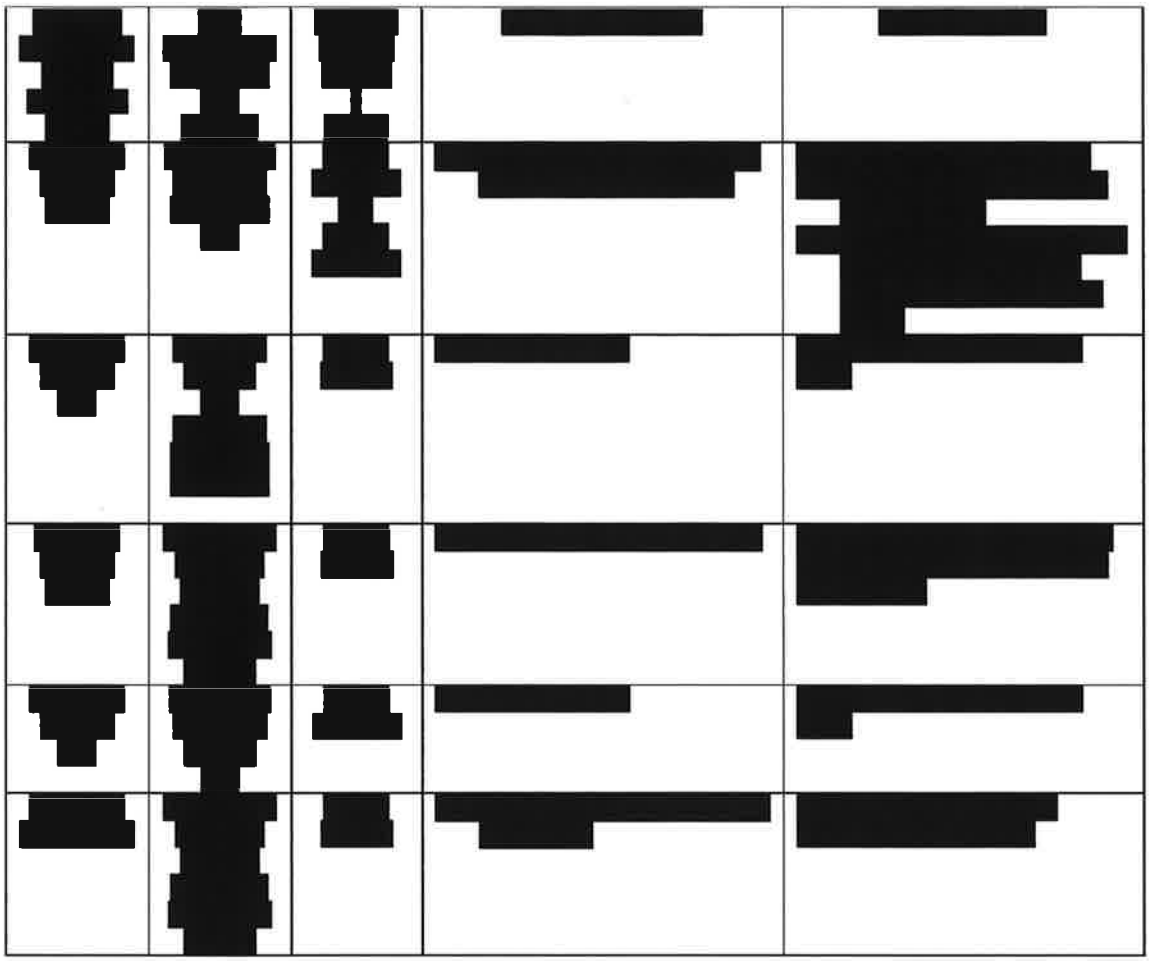
If you have any questions regarding the information provided in this response, you may contact me at (510) 946-4120 or todd@tesla.com. I have attached an affidavit as requested in Appendix B.

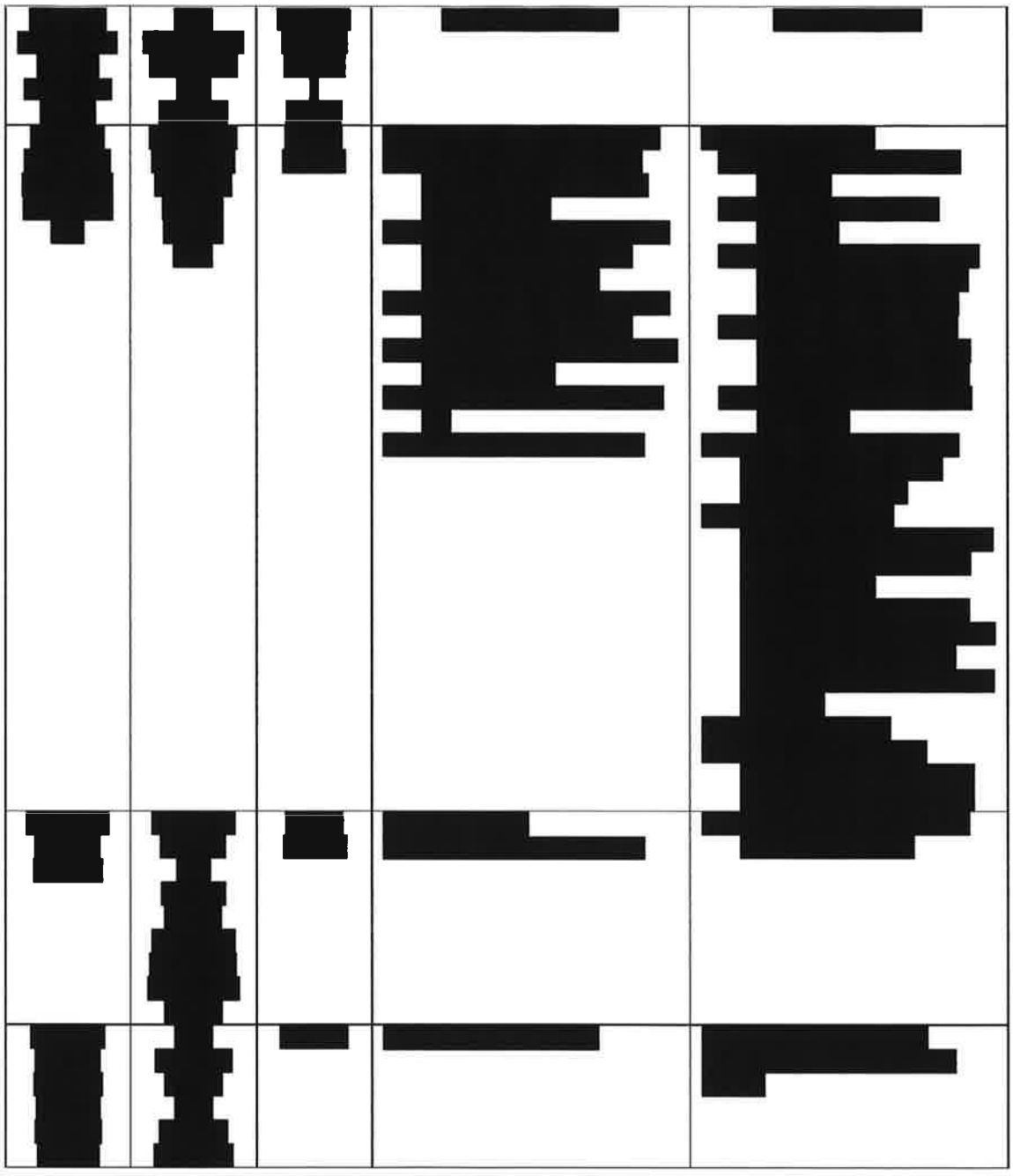
Sincerely,

Todd Maron
General Counsel

Appendix A

[redacted]





Appendix B
Declaration

I, Todd Maron, state as follows:

(1) I am General Counsel for Tesla Motors, Inc. ("Tesla Motors" or "Company"), and I am authorized by the Company to execute documents on behalf of Tesla Motors.

(2) I have undertaken and directed an inquiry reasonably calculated to assure that the answers and production of the foregoing response to the NHTSA Special Order is complete and correct.

(3) I have directed a diligent search of information and documents responsive to this Special Order and produced them to NHTSA.

(4) The answers to the inquiries provided to NHTSA respond completely and correctly to this Special Order.

(5) I certify under penalty of perjury that the foregoing is true and correct.

Executed on this the 30th day of December, 2016.

Todd Maron