

December 11, 2019

Mr. James C. Owens
Acting Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE
West Building
Washington, DC 20590

The attached letter from the NTSB Chairman provides information about the NTSB's November 19, 2019, report *Collision Between Vehicle Controlled by Developmental Automated Driving System and Pedestrian, Tempe, Arizona, March 18, 2018*, NTSB/HAR-19/03. The details of this accident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendations by number (for example, H-19-47 and -48). We encourage you to submit your response to ExecutiveSecretariat@nts.gov. If your reply exceeds 20 megabytes, including attachments, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.



Executive Secretariat-LRM
Office of the Managing Director
National Transportation Safety Board
490 L'Enfant Plaza SW
Washington, DC 20594
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Email: ExecutiveSecretariat@nts.gov



Office of the Chairman

National Transportation Safety Board

Washington, DC 20594

December 11, 2019

Mr. James C. Owens
Acting Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE
West Building
Washington, DC 20590

Dear Acting Administrator Owens:

This letter provides information about the National Transportation Safety Board's (NTSB) November 19, 2019, report *Collision Between Vehicle Controlled by Developmental Automated Driving System and Pedestrian, Tempe, Arizona, March 18, 2018*, NTSB/HAR-19/03. The details of this accident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

As a result of this investigation, we identified the following safety issues:

- Uber Advanced Technologies Group's inadequate safety culture.
- Need for safety risk management requirements for testing automated vehicles on public roads.

Accordingly, the NTSB makes the following safety recommendations to the National Highway Traffic Safety Administration. Additional information regarding these recommendations can be found in the noted sections of the report.

- Require entities who are testing or who intend to test a developmental automated driving system on public roads to submit a safety self-assessment report to your agency. (H-19-47) (See section 2.3.2.2.)
- Establish a process for the ongoing evaluation of the safety self-assessment reports as required in Safety Recommendation H-19-47 and determine whether the plans include appropriate safeguards for testing a developmental automated driving system on public roads, including adequate monitoring of vehicle operator engagement, if applicable. (H-19-48) (See section 2.3.2.2.)

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendations by number (Safety Recommendations H-19-47 and -48). We encourage you to submit your response to ExecutiveSecretariat@nts.gov.

If your reply, including attachments, exceeds 20 megabytes, please e-mail us at the same address for instructions. Please do not submit both an electronic copy and a hard copy of the same response.

Sincerely,

[Original Signed]

Robert L. Sumwalt, III
Chairman

December 11, 2019

The Honorable Doug Ducey
Governor of Arizona
State Capitol
1700 W. Washington St.
Phoenix, AZ 85007-2812

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. We determine the probable cause of the accidents and issue safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters.

The attached letter from the NTSB Chairman provides information about the NTSB's November 19, 2019, report *Collision Between Vehicle Controlled by Developmental Automated Driving System and Pedestrian, Tempe, Arizona, March 18, 2018*, NTSB/HAR-19/03. The details of this accident investigation and the resulting safety recommendation may be found in the attached report, which can also be accessed at <http://www.nts.gov>. For more information about NTSB and our recommendation process, please see the attached one-page summary.

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendation by number (for example, H-19-49 and -50). We encourage you to submit your response to ExecutiveSecretariat@nts.gov. If your reply exceeds 20 megabytes, including attachments, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.

All communications regarding safety recommendations will be stored by the NTSB and viewable by the public. Please do not send privileged or confidential communications in response to this recommendation. Responses marked as confidential or privileged (or similar designations) will be considered nonresponsive. If you have concerns about this protocol, please contact us at ExecutiveSecretariat@nts.gov or call (202) 314-6290 and ask to be directed to the Safety Recommendations Division.



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Office of the Chairman

December 11, 2019

The Honorable Doug Ducey
Governor of Arizona
State Capitol
1700 W. Washington St.
Phoenix, AZ 85007-2812

Dear Governor Ducey:

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. We determine the probable cause of the accidents and issue safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to assist victims and their family members affected by major transportation disasters.

We are providing the following information to urge the state of Arizona to act on the safety recommendations in this letter because we believe your organization can help reduce the risk of future accidents. For more information about the NTSB and our recommendation process, please see the attached one-page summary.

This letter provides information about our November 19, 2019, report *Collision Between Vehicle Controlled by Developmental Automated Driving System and Pedestrian, Tempe, Arizona, March 18, 2018*, NTSB/HAR-19/03. The details of this accident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

As a result of this investigation, we identified the following safety issues:

- Uber Advanced Technologies Group's inadequate safety culture.
- Need for safety risk management requirements for testing automated vehicles on public roads.

Accordingly, the NTSB makes the following safety recommendations to the state of Arizona. Additional information regarding these recommendations can be found in the noted section of the report.

- Require developers to submit an application for testing automated driving system (ADS)-equipped vehicles that, at a minimum, details a plan to manage the risk associated with crashes and operator inattentiveness and establishes countermeasures to prevent crashes or mitigate crash severity within the ADS testing parameters. (H-19-49) (See section 2.3.4.3.)
- Establish a task group of experts to evaluate applications for testing vehicles equipped with automated driving systems, as described in Safety Recommendation H-19-49, before granting a testing permit. (H-19-50) (See section 2.3.4.3.)

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendations by number (Safety Recommendations H-19-49 and -50). We encourage you to submit your response to ExecutiveSecretariat@ntsb.gov. If your reply, including attachments, exceeds 20 megabytes, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.

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Sincerely,

[Original Signed]

Robert L. Sumwalt, III
Chairman

December 11, 2019

Ms. Anne S. Ferro
President and CEO
American Association of Motor Vehicle Administrators
4401 Wilson Boulevard, Suite 700
Arlington, VA 22203

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. We determine the probable cause of the accidents and issue safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters.

The attached letter from the NTSB Chairman provides information about the NTSB's November 19, 2019, report *Collision Between Vehicle Controlled by Developmental Automated Driving System and Pedestrian, Tempe, Arizona, March 18, 2018*, NTSB/HAR-19/03. The details of this accident investigation and the resulting safety recommendation may be found in the attached report, which can also be accessed at <http://www.nts.gov>. For more information about NTSB and our recommendation process, please see the attached one-page summary.

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendation by number (for example, H-19-51). We encourage you to submit your response to ExecutiveSecretariat@nts.gov. If your reply exceeds 20 megabytes, including attachments, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.

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Office of the Chairman

December 11, 2019

Ms. Anne S. Ferro
President and CEO
American Association of Motor Vehicle Administrators
4401 Wilson Boulevard, Suite 700
Arlington, VA 22203

Dear Ms. Ferro:

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. We determine the probable cause of the accidents and issue safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to assist victims and their family members affected by major transportation disasters.

We are providing the following information to urge the American Association of Motor Vehicle Administrators (AAMVA) to act on the safety recommendation in this letter because we believe your organization can help reduce the risk of future accidents. For more information about the NTSB and our recommendation process, please see the attached one-page summary.

This letter provides information about our November 19, 2019, report *Collision Between Vehicle Controlled by Developmental Automated Driving System and Pedestrian, Tempe, Arizona, March 18, 2018*, NTSB/HAR-19/03. The details of this accident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

As a result of this investigation, we identified the following safety issues:

- Uber Advanced Technologies Group's inadequate safety culture.
- Need for safety risk management requirements for testing automated vehicles on public roads.

Accordingly, the NTSB makes the following safety recommendation to the AAMVA. Additional information regarding this recommendation can be found in the noted sections of the report.

- Inform the states about the circumstances of the Tempe, Arizona, crash and encourage them to (1) require developers to submit an application for testing automated driving system (ADS)-equipped vehicles that, at a minimum, details a plan to manage the risk associated with crashes and operator inattentiveness and establishes countermeasures to prevent crashes or mitigate crash severity within the ADS testing parameters, and (2) establish a task group of experts to evaluate the application before granting a testing permit. (H-19-51) (See section 2.3.4.4.)

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement the recommendation. When replying, please refer to the safety recommendation by number (Safety Recommendation H-19-51). We encourage you to submit your response to ExecutiveSecretariat@ntsb.gov. If your reply, including attachments, exceeds 20 megabytes, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.

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Sincerely,

[Original Signed]

Robert L. Sumwalt, III
Chairman

December 11, 2019

Mr. Eric Meyhofer, CEO
Uber Technologies, Inc.
Advanced Technologies Group
50 33rd Street
Pittsburgh, PA 15201

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. We determine the probable cause of the accidents and issue safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters.

The attached letter from the NTSB Chairman provides information about the NTSB's November 19, 2019, report *Collision Between Vehicle Controlled by Developmental Automated Driving System and Pedestrian, Tempe, Arizona, March 18, 2018*, NTSB/HAR-19/03. The details of this accident investigation and the resulting safety recommendation may be found in the attached report, which can also be accessed at <http://www.nts.gov>. For more information about NTSB and our recommendation process, please see the attached one-page summary.

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendation by number (for example, H-19-52). We encourage you to submit your response to ExecutiveSecretariat@nts.gov. If your reply exceeds 20 megabytes, including attachments, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.

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Office of the Chairman

December 11, 2019

Mr. Eric Meyhofer, CEO
Uber Technologies, Inc.
Advanced Technologies Group
50 33rd Street
Pittsburgh, PA 15201

Dear Mr. Meyhofer:

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. We determine the probable cause of the accidents and issue safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to assist victims and their family members affected by major transportation disasters.

We are providing the following information to urge Uber Technologies, Inc., Advanced Technologies Group to act on the safety recommendation in this letter because we believe your organization can help reduce the risk of future accidents. For more information about the NTSB and our recommendation process, please see the attached one-page summary.

This letter provides information about our November 19, 2019, report *Collision Between Vehicle Controlled by Developmental Automated Driving System and Pedestrian, Tempe, Arizona, March 18, 2018*, NTSB/HAR-19/03. The details of this accident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

As a result of this investigation, we identified the following safety issues:

- Uber Advanced Technologies Group's inadequate safety culture.
- Need for safety risk management requirements for testing automated vehicles on public roads.

Accordingly, the NTSB makes the following safety recommendation to Uber Technologies, Inc., Advanced Technologies Group. Additional information regarding this recommendation can be found in the noted section of the report.

- Complete the implementation of a safety management system for automated driving system testing that, at a minimum, includes safety policy, safety risk management, safety assurance, and safety promotion. (H-19-52) (See section 2.2.3.2.)

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement this recommendation. When replying, please refer to the safety recommendation by number (Safety Recommendation H-19-52). We encourage you to submit your response to ExecutiveSecretariat@ntsb.gov. If your reply, including attachments, exceeds 20 megabytes, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.

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Robert L. Sumwalt, III
Chairman