ARB LETTER TO VW

Air Resources Board

Mary D. Nichols, Chair
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Matthew Rodriquez
Secretary for Environmental Protection

Edmund G. Brown Jr.
Governor

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September 18, 2015

Volkswagen AG
Audi AG
Volkswagen Group of America, Inc.
Through:

David Geanacopoulos
Executive Vice President and General Counsel, Government Affairs
Volkswagen Group of America
2200 Ferdinand Porsche Drive
Herndon, VA 20171

Stuart Johnson
General Manager
Engineering and Environmental Office
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Re: Admission of Defeat Device and California Air Resources Board's Requests

Dear Mr. Geanacopoulos and Mr. Johnson:

In order to protect public health and the environment from harmful pollutants, the California Air Resources Board (CARB) rigorously implements its vehicle regulations through its certification, in use compliance, and enforcement programs. In addition to the new vehicle certification process, CARB regularly tests automobiles to ensure their emissions performance is as expected throughout their useful life, and performs investigative testing if warranted. CARB was engaged in dialogue with our European counterparts concerning high in use emissions from light duty diesels. CARB deployed a number of efforts using portable measurement systems and other approaches to increase our understanding for the California fleet. In 2014, the International Council for Clean Transportation (ICCT) and West Virginia University (WVU) identified through their test program, and brought to the CARB's and the United States Environmental Protection Agency's (EPA) attention, concerns of elevated oxides of nitrogen (NOx) emissions over real world driving. The ICCT actions were consistent and

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complementary to our activities. This prompted CARB to start an investigation and discussions with the Volkswagen Group of America (VW) on the reasons behind these high NOx emissions observed on their 2.0 liter diesel vehicles over real world driving conditions. As you know, these discussions over several months culminated in VW's admission in early September 2015 that it has, since model year 2009, employed a defeat device to circumvent CARB and the EPA emission test procedures.

VW initiated testing to replicate the ICCT/WVU testing and identify the technical reasons for the high on-road emissions. VW shared the results of this testing and a proposed recalibration fix for the Gen1 (Lean NOx Trap technology) and Gen2 (Selective Catalytic Reduction (SCR) technology) with CARB staff on December 2, 2014. Based on this meeting, CARB and EPA at that time agreed that VW could implement the software recall; however, CARB cautioned VW that if our confirmatory testing showed that the fix did not address the on-road NOx issues, they would have to conduct another recall. Based on this meeting, VW initiated a voluntary recall in December 2014 which, according to VW, affected approximately 500,000 vehicles in the United States (~50,000 in California). The recall affected all 2009 to 2014 model-year diesel fueled vehicles equipped with Gen1 and Gen2 technology. This recall was claimed to have fixed among other things, the increased real world driving NOx issue.

CARB commenced confirmatory testing on May 6, 2015 to determine the efficacy of the recall on both the Gen1 and Gen2 vehicles. CARB confirmatory testing was completed on a 2012 model-year Gen2 VW, test group CVWX02.0U4S, to be followed with Gen1 testing. CARB staff tested this vehicle on required certification cycles (FTP, US06 and HWFET) and over-the-road using a Portable Emission Measurement Systems (PEMS). On some certification cycles, the recall calibration resulted in the vehicle failing the NOx standard. Over-the-road PEMS testing showed that the recall calibration did reduce the emissions to some degree but NOx emissions were still significantly higher than expected.

To have a more controlled evaluation of the high NOx observed over the road, CARB developed a special dynamometer cycle which consisted of driving the Phase 2 portion of the FTP repeatedly. This special cycle revealed that VW's recall calibration did increase Diesel Exhaust Fluid (DEF) dosing upon initial startup; however, dosing was not sufficient to keep NOx emission levels from rising throughout the cycle. This resulted in uncontrolled NOx emissions despite the SCR reaching sufficient operating temperatures.

CARB shared its test results with VW on July 8, 2015. CARB also shared its results with the EPA. Several technical meetings with VW followed where VW disclosed that Gen1, Gen2 and the 2015 model-year improved SCR vehicle (known as the Gen3) had a second calibration intended to run only during certification testing. During a meeting on September 3, 2015, VW admitted to CARB and EPA staff that these vehicles were

designed and manufactured with a defeat device to bypass, defeat, or render inoperative elements of the vehicles' emission control system. This defeat device was neither described nor justified in the certification applications submitted to EPA and CARB. Therefore, each vehicle so equipped would not be covered by a valid federal Certificate of Conformity (COC) or CARB Executive Order (EO) and would be in violation of federal and state law.

Based upon our testing and discussions with VW, CARB has determined that the previous recall did not address the high on-road NOx emissions, and also resulted in the vehicle failing certification standards. Therefore, the recall is deemed ineffective and is deemed unapproved. VW must immediately initiate discussions with CARB to determine the appropriate corrective action to rectify the emission non-compliance and return these vehicles to the claimed certified configuration. CARB program and enforcement staff is prepared to work closely with VW to find corrective actions to bring these vehicles into compliance.

CARB has also initiated an enforcement investigation of VW regarding all model-year 2009 through 2015 light-duty diesel vehicles equipped with 2.0 liter engines. We expect VW's full cooperation in this investigation so this issue can be addressed expeditiously and appropriately.

Sincerely,

Annette Hebert, Chief
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cc: Mr. Byron Bunker, Director
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