13-8-2
John Reed

September 26, 2013

Honorable Members of the California Air Resources Board:

I am Dr. John Reed. I am here today on behalf of North American Repower, a California company based in Oceanside. North American Repower specializes in Heavy Duty natural gas engine technology and consulting. We design our own products, manufacture them, and distribute for the Heavy Duty natural gas engine market.

I would like to thank the Board for the opportunity to speak to you today. In the wake of the 9th Circuit's affirmation of California's Low Carbon Fuel Standard, I can't help but feel like this is a historic time in our state's history. North American Repower would like to thank the Board for its leadership to date, and also for the critical role you will play, even today as you consider the proposals before you.

Today I am here to ask you to adopt the Proposed Amendments to Alternative Fuel Conversion Certification Procedures. ARB staff has done an excellent job throughout this process. I especially want to thank and recognize Annette Hebert and her entire team, especially Craig Duehring and Dean Bloudoff for their good work. The proposed changes, and particularly the August 7, 2013 report, show a great attention to detail and application of logic. Should you choose to adopt the proposed amendments, you will provide thoughtful and reasonable flexibility to conversion manufacturers, especially for light-duty vehicles and gasoline engine conversions.

By adopting these proposed amendments you are helping California's small business owners, municipalities, school districts, and many others, convert their existing gasoline-fueled vehicles to natural gas-fueled vehicles. With your action today, you can allow us to further participate in reaching the goals of AB 32 and the Low Carbon Fuel Standard.

I would caution however, lest we think the work can end today, that even if the Board adopts these amendments, (which I hope you will), we are still missing some critical updates to similarly address heavy duty diesel conversions. Within the framework of these new regulations, I request, and North American Repower requests, that the Board give guidance, direction, permission and funding to ARB staff to address the heavy duty diesel portion of these regulations, which have the potential, as proposed, to maintain the status quo of the outdated 1995 regulations.

Specifically, to support the conversion of California's heavy duty diesel vehicles- the legacy fleet- to the lowest carbon fuel available – Biomethane and natural gas, I request action on the following items.

**1) ASSIGN ADDITIVE DETERIORATION FACTORS (DF) FOR HEAVY DUTY DIESEL CONVERSIONS ON A CASE BY CASE BASIS.**

The number one benefit provided by the proposed regulations is the allowance for use of additive Assigned Deterioration Factors (DF, or ADF). Rather than requiring high mileage emission tests, ADFs allow small volume conversion manufacturers to determine compliance with emission standards in a more cost-effective, and less burdensome process. The emission standard is not lowered, and the product is still subject to in use testing.

The proposed amendments grant reasonable ADFs for light duty gasoline-to-natural-gas vehicle conversions and give flexibility to heavy-duty gasoline engine conversions under U.S. EPA guidance letter CD-12-07. However, the option allowed by U.S. EPA for case-by-case consideration of heavy duty diesel conversions using an additive DF is absent from the CARB proposal. Instead, the proposed rules maintain the outdated DF *multiplier* for heavy duty diesel conversions.

According to U.S. EPA in guidance letter CD-12-07:

> "A recent assessment of the ADFs contained in CCD-05-10 suggests that the use of *multiplicative* ADFs may no longer be appropriate since the original equipment manufacturers (OEMs) primarily have used *additive* DFs since the beginning of emission compliance under Tier 2 standards."

Although they note "inadequate data samples for vehicles certified on CNG, LNG, LPG and diesel fuels" they continue to affirm the use of *additive*, rather than *multiplicative* ADFs.

> "Based on knowledge of exhaust temperature development data at the catalyst inlet, it is reasonable to conclude that, in general, OEM DFs developed on gasoline would represent a *worst case DF* relative to DFs developed using CNG, LNG, LPG, and ethanol fuel types. Therefore, OEMs, fuel converters, and ICIs wishing to use ADFs on vehicles that will use alternative fuels, may use the gasoline ADFs presented in Tables 1 and 2."

Unfortunately for my company and many like us, U.S. EPA CD-12-07 Tables only list values for gasoline based engine families. There is no direct ADF for heavy duty diesel conversion. However, U.S. EPA, does allow for case-by-case evaluations for heavy duty diesel using additive DFs. Consistent with U.S. EPA practices, I request that the Board also allow for case by case evaluations of heavy duty diesel conversion using gasoline additive (not multiplier) DFs.

**2). ORGANIZE IN-HOUSE DATA TO DEVELOP A NEW HEAVY DUTY DIESEL DETERIORATION FACTOR.**

The need for case by case evaluations of heavy duty diesel conversions may only be necessary temporarily. I believe there is sufficient evidence to support using the methodology of EPA to determine an additive ADF for HD diesel conversion. By compiling existing, previously submitted OEM DFs, and combining it with CARB's own data from VDECS certification, CARB is uniquely positioned to create an additive DF for heavy duty diesel conversion. CARB has on file all the heavy duty diesel and Natural Gas OEM DF's submitted at time of EO application since 1973. CARB also has two data points for in use FTP data for every VDEC certification. Consistent with CARB's prior leadership on Low Carbon Fuels laws and regulations, I request that the Board direct staff to compile the readily available data at its disposal to create an additive DF for heavy duty diesel conversions.

**3) ALLOW HEAVY DUTY CONVERSIONS THE OPTION TO CERTIFY PRE-2004 MODEL YEAR VEHCILES UNDER THE NEWLY ADOPTED RULES.**

The proposed rules before you for consideration apply to 2004 and newer model year (MY) applications only. Since OBD is the key reference in determining the cutoff, it appears this MY restriction is meant to apply to the light duty sector. As heavy duty vehicles are much longer lived, I suggest that the language be modified to allow heavy duty converters the option to certify both pre- and post- MY2004 via the new procedures, as the older trucks and buses will give us the largest gains in emissions reductions.

**4) REQUIRE ONLY THE FEDERAL TEST PROCEDURE (FTP) FOR HEAVY DUTY DIESEL CONVERSION EMISSION TESTING.**

U.S. EPA requires only a Federal Test Procedure (FTP) for heavy duty diesel conversions emission testing. CARB requires VDECs only be certified by an FTP test. My understanding, after discussions with staff, is that there is a general feeling that heavy duty alternative fuel conversions must be tested by all

three diesel specific (FTP, SET and NTE) protocols. The additional tests may find a highly unique and specific running condition in which an engine may exceed an emission standard. Compared to the cost of the tests, and the potential loss in emissions savings from other constituents like CO2 by denying certification for failure under a testing condition that may have no basis on real world use, I believe these additional tests for a SVM are nothing more than an economic barrier to market. Requiring SET and NTE testing in addition to FTP significantly adds to the cost for the SVM and I believe would add very little benefit, if any, to the environment from SVM products.

In closing, I would like to again thank the Board for the opportunity to speak to you today. I urge your adoption of the Proposed Amendments to Alternative Fuel Conversion Certification Procedures. As a follow-up to and concurrent with your adoption, I request on behalf of North American Repower that you 1) assign additive deterioration factors for heavy duty diesel conversations on a case by case basis, 2) organize in-house data to develop a new heavy duty diesel deterioration factor, 3) allow heavy duty conversions the option to certify pre-2004 model year vehicles under the newly adopted rules, and 4) require only the federal test procedure for heavy duty diesel conversion emission testing.

Thank you for your consideration.

Sincerely,

John Reed

North American Repower

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