



Robert L. Greco, III
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May 15, 2013

The Honorable David Vitter
Ranking Member
U.S. Senate Committee on Environment and Public Works
Minority Office
456 Dirksen Senate Office Building
Washington, DC 20510-6175

Dear Ranking Member Vitter:

The American Petroleum Institute (API) would like to correct the inaccurate and misleading statements about the research being conducted by the Coordinating Research Council (CRC) that were made by Ms. Gina McCarthy in her response to a question you submitted as part of her Senate Environment and Public Works Committee confirmation hearing for EPA Administrator. Your question, which follows, was about EPA's 2010 and 2011 approvals of E15 in 2001 and newer vehicles:

Question: Was EPA aware of ongoing CRC testing on engine durability, fuel pumps and other engine components? Why not wait until that test was complete before making a decision? Because in the aftermath it looks like the decision was, at best, premature. The CRC data shows millions of approved vehicles are in danger of engine damage.

Response: EPA has reviewed the limited portions of the CRC test program made available to the public. Unfortunately, complete information on the testing program has not been made available to the government, and the CRC expressly denied EPA or the Department of Energy (DOE) a role in the test program. As DOE has highlighted repeatedly (see for example here: <http://energy.gov/articles/getting-it-right-accurate-testing-and-assessments-critical-deploying-next-generation-auto>), the CRC E15 test programs have a number of significant scientific shortcomings, including failure to test components or vehicles on E0 and E10 to provide information on typical failure rates for baseline fuels.

Let me address the most egregious of her statements first, that "the CRC expressly denied EPA or the Department of Energy (DOE) a role in the test program". As explained below, the record shows that before and during the CRC mid-level ethanol blends research program EPA and DOE played significant roles, either directly or through the U.S. national laboratories (e.g., National Renewable Energy Laboratory (NREL)):

- First, at a June 2008 meeting with auto and oil industry stakeholders, Karl Simon of the EPA Office of Transportation and Air Quality (OTAQ), presented EPA's recommendations on the testing that needed to be done on ethanol blends like E15 in order for EPA to approve a waiver.

Attachment 1 contains the summary slide from that presentation with EPA's requirements. Because of the significant expansion of the renewable fuels mandates under the Energy Independence and Security Act (EISA) in 2007, auto and oil industry stakeholders wanted to know EPA's requirements before undertaking a mid-level ethanol blends research program. As shown in **Attachment 1**, EPA's requirements went beyond emissions and catalyst testing and included durability, materials compatibility, and operability issues. Shortly after the June 2008 meeting, the Mid-Level Ethanol Blends Research Coordination Group (Coordination Group) was formed to facilitate sharing of research plans and results among government (EPA, DOE, national labs, CARB, states, etc.) and industry stakeholders (CRC, auto associations, oil associations, ethanol associations, non-road equipment associations, etc.). The mission of the Coordination Group was to ensure data generation sufficient to allow EPA to determine if a substantially similar petition waiver can be granted on the use of ethanol blends above 10 percent by volume. The Coordination Group held seven additional meetings from 2008 to 2010 with the active participation of DOE and EPA staff and US government national lab staff (NREL actually hosted the January 28, 2009 meeting). **Attachment 2** lists EPA, DOE, and U.S. government national lab attendees at Coordination Group meetings.

- Second, as CRC undertook its research, EPA and DOE were kept apprised of research plans and results as they became available. In fact, National Renewable Energy Laboratory staff were active participants on CRC groups doing mid-level ethanol blends research and helped to write final reports. **Attachment 3** shows examples of pages from CRC reports which contain a listing of participants with the NREL staff highlighted in yellow. **Attachment 4** contains emails from CRC to DOE and EPA staff informing them of the availability of CRC research reports as they became available.

Finally, I want to correct assertions made by Ms. McCarthy about the nature of the CRC test results where she used DOE's comments as her basis. API's strong rebuttals to DOE's comments can be found in **Attachment 5**. But let me address a few key items:

- DOE and EPA comments about E0 and E10 baseline testing in the CRC test programs are highly misleading. E0 was tested whenever a response was seen from higher level ethanol blends and E10 was tested when deemed appropriate by the automotive engineers who sit on CRC committees and designed the test programs. CRC is a research organization that has been conducting research on fuels, engines and vehicles for more than 70 years. The CRC tests are developed and managed by the same company automotive engineers who design and build cars. We have great confidence in the ability of the automotive and fuels experts who sit on CRC committees to conduct well-conceived and thorough technical investigations of consumer acceptance and vehicle safety-related issues associated with the use of mid-level ethanol blends in vehicles operated by our mutual customers.
- In fact, CRC baseline testing is consistent with EPA's. EPA granted its second waiver with no E10 testing whatsoever, and in their first waiver decision stated that E0 was the reference fuel.
- As noted above, in a June 2008 presentation to stakeholders, EPA outlined for industry the testing it anticipated would be needed for a waiver to be approved. EPA's requirements at the time were consistent with CRC's comprehensive test plans, which include engine durability and materials compatibility testing. EPA did not follow through on its own recommended broader suite of testing, but instead relied almost entirely on DOE's catalyst durability test project. EPA

improperly used the DOE catalyst program to evaluate engine durability, materials compatibility and consumer acceptance and vehicle safety issues, which were outside the scope of the DOE catalyst study. And DOE/EPA's decision to use the catalyst study for these parameters was not even a well-thought-out or statistically designed process. It was a last-minute DOE decision made by then DOE Secretary Chu to tear down and inspect engines when the catalyst testing was almost completed and after he realized DOE/EPA would not have any key materials compatibility and component durability testing in time for a 2010 approval. And the only engines that were torn down were tested on E15 and E0, clearly demonstrating that the DOE and EPA are uninterested in E10 test results.

In fact, DOE staff and CRC committee members were having discussions about DOE funding parts of the CRC research program until Secretary Chu came up with the piggy-back idea, not because it was the best scientific approach, but because it would get DOE/EPA to the finish line before October 2010. DOE's piggy-back testing was the complete opposite of the CRC approach where automotive engineers designed the studies with detailed and scientifically sound methodologies and plans from start to finish. The CRC testing procedures were based on existing protocols that are widely used in the automotive industry to evaluate engine durability and fuel systems durability to predict product life. Many of the vehicles operated on E15 using these procedures with no problems, but others did not. This in itself shows that CRC used the proper test tools.

The key objective for the oil and the auto industries in undertaking the comprehensive CRC mid-level ethanol blends research program was to ensure that the safety and performance of our mutual customers' vehicles are not compromised or otherwise adversely affected by E15. CRC met those goals – EPA and DOE did not.

Thank you for this opportunity to set the record straight.

Sincerely,



Robert L. Greco, III
Group Director: Downstream and Industry Operations

cc: U.S. Senate Committee on Environment and Public Works Members

Attachments

API is a national trade association that represents all segments of America's technology-driven oil and natural gas industry. Its more than 500 members – including large integrated companies, exploration and production, refining, marketing, pipeline, and marine businesses, and service and supply firms – provide most of the nation's energy. The industry also supports 9.2 million U.S. jobs and 7.7 percent of the U.S. economy, delivers \$86 million a day in revenue to our government, and, since 2000, has invested over \$2 trillion in U.S. capital projects to advance all forms of energy, including alternatives.

Mid Level Ethanol Blend Experimental Framework – EPA Staff Recommendations

Karl Simon

EPA Office of Transportation and Air Quality

API Technology Committee Meeting

Chicago

6/4/08

Data submissions in support of a waiver request must include:

- Exhaust emissions
- Evaporative emissions
- Durability issues:
 - Materials compatibility
 - Driveability or operability
- All testing will need to be carried out over the useful life of vehicle or equipment

Government Attendees and Participants at Mid-Level Ethanol Blends Research Coordination Group Meetings

← June 4, 2008 Meeting Participated By: A= Attending, C= By Conference Call

Government	Affiliation	Phone	Email
Wendy Clark	A National Renewable Energy Laboratory (NREL)	303-275-4417	Wendy_Clark@nrel.gov
Antonio Fernandez	A US EPA		
Edward Nam	A US EPA		
Karl Simon	A EPA	202-343-9626	Simon.Karl@epa.gov
Kevin Stork	A DOE – Vehicle Technologies	202-586-8306	kevin.stork@ee.doe.gov

← September 24, 2008 Meeting Participated By: A= Attending, C= By Conference Call

Government	Affiliation	Phone	Email
Wendy Clark	A National Renewable Energy Laboratory (NREL)	303-275-4417	Wendy_Clark@nrel.gov
Antonio Fernandez	C EPA	734-214-4431	Fernandez.Antonio@epa.gov
Joan Glickman	A DOE – Office of Biomass Program	202-586-5607	Joan.glickman@ee.doe.gov
Ron Graves	A Oak Ridge National Laboratory (ORNL)	865-946-1226	gravesr@ornl.gov
Dave Kortum	C EPA	202-343-9022	kortum.dave@epa.gov
Edward Nam	C EPA	734-214-4613	Nam.Ed@epa.gov
Jim Peterson	A CARB	916-327-1502	apeterso@arb.ca.gov
Steve Przesmitzki	A NREL		
Karl Simon	C EPA	202-343-9626	Simon.Karl@epa.gov
Kevin Stork	A DOE – Vehicle Technologies	202-586-8306	kevin.stork@ee.doe.gov

← January 28, 2009 Meeting [Hosted by NREL] Participated By: A= Attending, C= By Conference Call

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Robert Anderson	A EPA		Anderson.Robert@epa.gov
Jim Caldwell	C EPA		Caldwell.Jim@epa.gov
Wendy Clark	A National Renewable Energy Laboratory (NREL)	303-275-4417	Wendy_Clark@nrel.gov
Antonio Fernandez	C EPA	734-214-4431	Fernandez.Antonio@epa.gov
Joan Glickman	C DOE – Office of Biomass Program	202-586-5607	Joan.glickman@ee.doe.gov
Ron Graves	A Oak Ridge National Laboratory (ORNL)	865-946-1226	gravesr@ornl.gov
Keith Knoll	A National Renewable Energy Laboratory (NREL)		
Doug Lawson	A National Renewable Energy Laboratory (NREL)		
Edward Nam	C EPA	734-214-4613	Nam.Ed@epa.gov
Jim Peterson	A CARB	916-327-1502	apeterso@arb.ca.gov
Steve Przesmitzki	A National Renewable Energy Laboratory (NREL)		Steve_Przesmitzki@nrel.gov
Karl Simon	A EPA	202-343-9626	Simon.Karl@epa.gov
Kevin Stork	A DOE – Vehicle Technologies	202-586-8306	kevin.stork@ee.doe.gov
John Wehrauch	C EPA		wehrauch.john@epa.gov
Brian West	A Oak Ridge National Laboratory (ORNL)	865-946-1231	westbh@ornl.gov

← June 3, 2009 Meeting Participated By: A= Attending, C= By Conference Call

Government	Affiliation	Phone	Email
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Jim Caldwell	C EPA		Caldwell.Jim@epa.gov
Wendy Clark	A National Renewable Energy Laboratory (NREL)	303-275-4417	Wendy_Clark@nrel.gov
Antonio Fernandez	A EPA	734-214-4431	Fernandez.Antonio@epa.gov
Joan Glickman	A DOE – Office of Biomass Program	202-586-5607	Joan.glickman@ee.doe.gov
Dave Kortum	C EPA		kortum.dave@epa.gov
Jim Peterson	C CARB	916-327-1502	apeterso@arb.ca.gov
Steve Przesmitzki	A National Renewable Energy Laboratory (NREL)		Steve_Przesmitzki@nrel.gov
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Brian West	A Oak Ridge National Laboratory (ORNL)	865-946-1231	westbh@ornl.gov

← September 16, 2009 Meeting Participated By: A= Attending, C= By Conference Call

Government	Affiliation	Phone	Email
Robert Anderson	A EPA	202-343-9718	Anderson.Robert@epa.gov
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Joan Glickman	A DOE – Office of Biomass Program	202-586-5607	Joan.glickman@ee.doe.gov
Ron Graves	A Oak Ridge National Laboratory (ORNL)	865-946-1226	gravesrl@ornl.gov
James Hyde	C New York State Department of Environmental Conservation	518-402-8347	jhyde@gw.dec.state.ny.us
Keith Knoll	C National Renewable Energy Laboratory (NREL)	303-275-4453	keith.knoll@nrel.gov
Steve Przesmitzki	A National Renewable Energy Laboratory (NREL)	202-586-6434	Steve_Przesmitzki@nrel.gov
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Brian West	A Oak Ridge National Laboratory (ORNL)	865-946-1231	westbh@ornl.gov

← February 2, 2010 Meeting Participated By: A= Attending, C= By Conference Call

Government	Affiliation	Phone	Email
Robert Anderson	C EPA	202-343-9718	Anderson.Robert@epa.gov
Wendy Clark	C National Renewable Energy Laboratory (NREL)	303-275-4417	Wendy_Clark@nrel.gov
Antonio Fernandez	C EPA	734-214-4431	Fernandez.Antonio@epa.gov
Keith Knoll	C National Renewable Energy Laboratory (NREL)	303-275-4453	keith.knoll@nrel.gov
Dave Kortum	C EPA	202-343-9022	kortum.dave@epa.gov
Doug Lawson	A National Renewable Energy Laboratory (NREL)	303-275-4429	doug.lawson@nrel.gov
Robert McCormick	A National Renewable Energy Laboratory (NREL)	303-275-4432	Robert.McCormick@nrel.gov
Steve Przesmitzki	A DOE – Vehicle Technologies	202-586-6434	steven.przesmitzki@ee.doe.gov
Kevin Stork	A DOE – Vehicle Technologies	202-586-8306	kevin.stork@ee.doe.gov
Brian West	A Oak Ridge National Laboratory (ORNL)	865-946-1231	westbh@ornl.gov

← May 5, 2010 Meeting Participated By: A= Attending, C= By Conference Call

Government	Affiliation	Phone	Email
Robert Anderson	A EPA	202-343-9718	Anderson.Robert@epa.gov
Wendy Clark	C National Renewable Energy Laboratory (NREL)	303-275-4417	Wendy_Clark@nrel.gov
Brian Duff	A DOE	303-275-4845	brian.duff@go.doe.gov
Patricia Ellis	C DE Dept. of Natural Resources & Environmental Control	302-395-2500	Patricia.Ellis@state.de.us
Antonio Fernandez	C EPA	734-214-4431	Fernandez.Antonio@epa.gov
Ron Haste	C CARB	626-575-6676	rhaste@arb.ca.gov
Jeff Herzog	C EPA	734-214-4227	herzog.jeff@epa.gov
Keith Knoll	C National Renewable Energy Laboratory (NREL)	303-275-4453	keith.knoll@nrel.gov
Doug Lawson	A National Renewable Energy Laboratory (NREL)	303-275-4429	doug.lawson@nrel.gov
Renee Littau	C CARB	916-322-6019	rlittau@arb.ca.gov
Paul Machiele	C EPA		Machiele.Paul@epa.gov
Howard Marks	A DOE	202-586-9062	howard.marks@ee.doe.gov
Robert McCormick	A National Renewable Energy Laboratory (NREL)	303-275-4432	Robert.McCormick@nrel.gov
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Karl Simon	A EPA	202-343-9626	Simon.Karl@epa.gov
Kevin Stork	A DOE – Vehicle Technologies	202-586-8306	kevin.stork@ee.doe.gov
Brian West	A Oak Ridge National Laboratory (ORNL)	865-946-1231	westbh@ornl.gov
Dave West	C New Jersey Department of Environmental Protection	609-826-5467	dave.west@dep.state.nj.us
Tom White	A DOE	202-586-1393	thomas.white@hq.doe.gov

← October 19, 2010 Meeting Participated By: A= Attending, C= By Conference Call

Government	Affiliation	Phone	Email
Robert Anderson	A EPA	202-343-9718	Anderson.Robert@epa.gov
David Barnes	C New York State Department of Environmental Conservation	518-402-8292	dlbarnes@gw.dec.state.ny.us
Wendy Clark	A National Renewable Energy Laboratory (NREL)	303-275-4417	Wendy_Clark@nrel.gov
Patricia Ellis	C DE Dept. of Natural Resources & Environmental Control	302-395-2500	Patricia.Ellis@state.de.us
Michael Kendix	A GAO	202-512-7692	KendixM@gao.gov
Keith Knoll	A National Renewable Energy Laboratory (NREL)	303-275-4453	keith.knoll@nrel.gov
Howard Marks	A DOE	202-586-9062	howard.marks@ee.doe.gov
Robert McCormick	A National Renewable Energy Laboratory (NREL)	303-275-4432	Robert.McCormick@nrel.gov
Tim Minelli	A GAO	202-512-8443	MinelliT@gao.gov
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Karl Simon	A EPA	202-343-9626	Simon.Karl@epa.gov
Kevin Stork	A DOE – Vehicle Technologies	202-586-8306	kevin.stork@ee.doe.gov
Travis Tempel	A DOE – Biomass Program		travis.tempel@ee.doe.gov
Jack Wang	A GAO	202-512-6197	WangJ@gao.gov
Brian West	A Oak Ridge National Laboratory (ORNL)	865-946-1231	westbh@ornl.gov
Tom White	A DOE	202-586-1393	thomas.white@hq.doe.gov

CRC Project CM-136-09-1B

INTERMEDIATE-LEVEL ETHANOL BLENDS ENGINE DURABILITY STUDY

April 2012



COORDINATING RESEARCH COUNCIL, INC.

3650 MANSELL ROAD·SUITE 140·ALPHARETTA, GA 30022

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W. Clark, NREL
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K. Eng, Shell
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M. Valentine, Toyota
M. Watkins, ExxonMobil
L. Webster, Nissan
A. Williams, NREL
J. Williams, API



CRC REPORT NO. 662

**DURABILITY OF AUTOMOTIVE
FUEL SYSTEM COMPONENTS
EXPOSED TO E20**

Coordinating Research Council
CRC Contract No. AVFL-15

National Renewable Energy Laboratory
NREL Task Order No. KZCI-8-77444-01

CRC AVFL-15 Project Panel
December 2011



COORDINATING RESEARCH COUNCIL, INC.
3650 Mansell Road, Suite 140, Alpharetta, GA 30022

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Acknowledgements

Special recognition to Jason Holmes and TRC for accommodating the necessary modifications and extensions to complete the project, as well as to the unwavering diligence and participation of the Steering Oversight Panel for the CRC AVFL-15 Project, which is comprised of the following members:

Bill Cannella, Chevron

Wendy Clark, NREL Technical Monitor

Dominic DiCicco, Ford, Project Co-Leader

King Eng, Shell

Mike Foster, BP, Project Co-Leader

Jeff Jetter, Honda

Stuart Johnson, VW

Coleman Jones, GM

Scott Jorgensen, GM

Keith Knoll, NREL Technical Monitor, Project Co-Leader

David Lax, American Petroleum Institute

Mani Natarajan, Marathon

David Patterson, Mitsubishi

Michael Teets, Chrysler

Sean Torres, Ford, Project Co-Leader

Marie Valentine, Toyota

Matt Watkins, ExxonMobil

Leah Webster, Nissan

Ken Wright, ConocoPhillips

Phil Yaccarino, GM

Brent Bailey, CRC

Jane Beck, CRC

Chris Tennant, CRC

Brent Bailey

From: Brent Bailey
Sent: Thursday, August 30, 2012 4:04 PM
To: 'patrick.davis@ee.doe.gov'; 'Stork, Kevin'; Steve Przesmitzki (Steven.Przesmitzki@ee.doe.gov); West, Brian
Cc: Chris Tennant; Jan Tucker; West, Brian
Subject: FW: CRC Performance Committee - Gasoline Deposit meeting - Report on CRC Engine Durability study (CM-136-09-1B)
Attachments: CRC Schedule - October 3 2012.doc; Return Form - October 3 2012.doc

Dear Pat, Kevin, and Steve,

See the message below and attachments from Jan Tucker. You are invited to attend this special meeting in Chicago where the recent CRC Engine Durability Study will be discussed. Kristy Moore of RFA and Shon Van Hulzen of Growth will be in attendance. Please let Jan know if you plan to attend. You may also designate someone from one of the labs or other DOE staff to attend on your behalf. I would be pleased to arrange a separate meeting with you in Chicago if there is interest in other discussions.

Regards,

Brent

To the Members of the
CRC Performance Committee

During the PC Gasoline Deposit meeting in Chicago on October 3 at 1:45 pm, there will be a report on the CRC Engine Durability study (CM-136-09-1B). This portion of the meeting will address any questions or comments on the project. Members of DOE and other outside agencies will be invited to attend this session of the committee meeting.

Attached is the full schedule with return form. If you plan to attend and have not returned the form, please do so as soon as possible so I can make proper meeting arrangements with the hotel.

Regards,

Jan Tucker
CRC Correspondence (not for public distribution)
COORDINATING RESEARCH COUNCIL, INC.
3650 MANSELL ROAD, SUITE 140
ALPHARETTA, GA 30022
TEL: 678/795-0506 ext.100 FAX: 678/795-0509
WWW.CRCAO.ORG

Brent Bailey

From: Brent Bailey
Sent: Thursday, May 10, 2012 9:19 AM
To: Koupal, John
Cc: Paul Machiele; Chris Tennant
Subject: CRC Report No. CM-136-09-1b

John,
Just left voice message for you on this topic. Per previous agreement, we want to give you and Paul a heads up on any significant developments at CRC on mid-level blends. We will be posting a new final report on Engine Durability of E15/E20 blends in LDVs on May 16. CRC does not do press events, but there will be an industry press event in connection with the release of this report on that day. Please call me if you have any questions or would like to discuss.
Best regards,
Brent

Brent K. Bailey, Executive Director
CRC Correspondence (not for public distribution)
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Brent Bailey

From: Jane Beck
Sent: Wednesday, January 30, 2013 10:45 AM
To: Rose, Ken; Williams, Jim ; Cannella, Bill; DiCicco, Dominic ; Dolch, Johanna; Eng, King ; Foster, Mike; Gunter, Garry; Jetter, Jeff; Johnson, Stuart; Jorgensen, Scott; Lax, David ; Natarajan, Mani; Patterson, David ; Sigelko, Jenny; Teets, Michael; Valentine, Marie; Webster, Leah; Woebkenberg, Bill; Wrigley, Krystal; Clark, Wendy; Fairbridge, Craig; Graves, Ronald L. ; Kubsh, Joe; Mabutol, Andy; McCormick, Robert; Mueller, Chuck; Sluder, Scott ; Smith, Dennis A.; Stork, Kevin ; Thornton, Matthew; Wagner, Robert; Zigler, Brad; Reed, Bowu
Cc: Brent Bailey; Chris Tennant
Subject: CRC Project AVFL-15a Final Report

Dear Members of the AVFL Committee, the AVFL Working Group, and Mailing List:

The final report for CRC Project AVFL-15a, "Durability of Fuel Pumps and Fuel Level Senders in Neat and Aggressive E15," by the AVFL-15a Project Panel members, January 2013, has been posted on the CRC website at www.crao.org.

Regards,

Jane

Jane Beck

CRC Correspondence (not for public distribution)

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Study: E15 Could Put Some Engines at Risk



<http://energytomorrow.org/blog/study-e15-could-put-some-engines-at-risk/#/type/all>

by [Bob Greco](#)
May. 18, 2012

More on the potential risk to America's car and truck fleet posed by E15 – gasoline containing 15 percent ethanol that has EPA approval: Just-released [research](#) indicates that more than 5 million existing cars and light trucks, which EPA says are OK for E15 use, could develop engine problems as a result.

Why this discrepancy? The Coordinating Research Council (CRC), a non-profit entity supported by the automotive and oil and petroleum industries, tested the durability of engines using tests that have been conducted for more than a decade to determine how well engines would hold up with a new fuel.

On the other hand, the Department of Energy (DOE) and EPA tested the catalyst system and then used the results of those tests to say the engine would be fine. It's a bit like taking a reading test to determine whether your heart is healthy.

A key finding in the CRC study:

- Of eight different tested engine types, one had a design that was (in retrospect) inappropriate for the test cycle, two failed on E20 (20 percent ethanol) and E15, and five passed on E20 and by assumption E15 and E0 (gasoline with zero ethanol content). The two engine types that failed E15 testing successfully completed reference testing on E0.
- The majority of the failures can be linked to issues with valve seats, either related to material or wear/deformation.

There are at least 5 million known engines on the road today with the same or similar characteristics to the two engines that failed on E20 and E15. Because testing was done on only a small proportion of the light-duty engine types currently in use, the number of at-risk engines probably is higher.

API President and CEO Jack Gerard, during a conference call with reporters this week:

“EPA's decisions in 2010 and 2011 approving E15 ethanol-gasoline blends for most American vehicles were premature and irresponsible. ... Worse, as API noted in its [press briefing two weeks ago](#), it approved the fuel even though government labs had raised red flags about the compatibility of E15 with much of the dispensing and storage infrastructure at our nation's gas

stations. ... Not all vehicles in the CRC tests showed engine damage, but engine types that did are found in millions of cars and light duty trucks now on America's roads."

Mike Stanton, president and CEO of Global Automakers:

"We can build the cars for the fuels, but the EPA made this retroactive to 2001 and that is the problem. ... Our goal is to ensure that new alternative fuels are not placed into retail until it has been proven they are safe and do not cause harm to vehicles, consumers, or the environment. The EPA should have waited until all the studies on the potential impacts of E15 on the current fleet were completed."

Mitch Bainwol, president and CEO of the Alliance of Automobile Manufacturers:

"The study... indicates the risk for consumers is profound, with clear environmental, safety, fuel efficiency and financial implications. Cars were not built for E15. It's that simple – and now we have material evidence that validates our concerns."

Not surprisingly, the CRC study doesn't sit well with some folks. A DOE blog criticized the CRC study's methodology rather than focusing on the identified risks and concerns for consumers.

First, DOE seems to think that it has more expertise than the car designers and manufacturers who conducted the CRC tests. CRC has been doing work of this kind for more than 70 years, often with DOE's funding. Even more interesting: Through the National Renewable Energy Laboratory, DOE was an active participant in the technical oversight panel for the CRC study throughout its duration and at no point raised any concerns. Other points:

- Valvetrain-type engines that were tested were selected from among popular 2001-2009 models, not cherry-picked for failure. Indeed, five of the engines that were tested passed the E20 test. If someone was trying to pick engines that would fail testing they did a pretty poor job of it.
- The engine pass/fail determination was made after engine teardown and analysis. The use of the 10 percent cylinder leakage criterion to determine whether there may be engine distress is a well-established and accepted industry standard used in engine development and was used as a signal that teardown was required. The CRC study indicated use of E15 would damage the valves in some engines, leading to cylinder leakage, loss of compression and power.
- Nobody should be all that surprised that DOE found no discernible impact of E15 based on teardown inspections of engines used in its catalyst durability study. After all, its study was just that – an evaluation of the effects of higher levels of ethanol on a catalyst (i.e., the catalytic converter). It was never designed to specifically assess the stresses of mid-level ethanol blends on an engine. For DOE and others to draw conclusions about the effect of ethanol on an engine based on a test designed for a catalyst evaluation is not only scientifically unsound, it is just plain wrong.

See a more detailed rebuttal of DOE's comments, [here](#). (See attached).

E15 is a perfect example of why the Renewable Fuels Standard is becoming unrealistic and unworkable. EPA made a rushed and premature decision to meet a political deadline in the fall of 2010. The CRC research shows that EPA didn't do its homework and is willing to put the consumer's vehicle at risk. EPA needs to base its decision on sound science, not political goals. The auto and oil industries conducted a scientifically sound and robust study, and the results from the CRC study should be concerning.

Gerard:

“The value of these vehicles along with the value of vulnerable gasoline dispensing equipment at the nation's 157,000 gasoline service stations could run into many billions of dollars. EPA's waivers put these investments at risk. The result could be more vehicle repairs for consumers and upward pressure on gasoline prices. ... This is breakthrough research that should've been done by EPA. ... Our data needs to be looked at.”

Detailed Rebuttal of Critiques of the CRC Mid-Level Ethanol Blends Engine Durability Study

Background

- DOE in its critique, rather conveniently neglects to mention that, through the National Renewable Energy Laboratory (NREL), (a DOE contractor,) it was an active participant in the technical oversight panel for the CRC engine durability study throughout the duration of the program. At no point did NREL object to the tests, test cycles or the test procedures.
- DOE seems to think that it has more expertise than the car designers and manufacturers who designed and conducted the CRC tests. CRC has been doing work of this kind for over 70 years, often with DOE's funding. It is interesting that DOE now feels the need to critique this particular study.
- There is ample evidence that in the end, DOE's and EPA's testing and timing was driven more by the political time clock rather than a desire for a comprehensive test program:
 - Initially, in a June 2008 presentation, EPA outlined for industry the testing it anticipated would be needed for a waiver to be approved. EPA's requirements at the time were consistent with the auto and oil industry's comprehensive test plans. EPA did not follow through on its own recommended broader suite of testing, but instead relied almost entirely on DOE's catalyst durability test project. EPA has not offered an explanation for the change.
 - DOE initially contemplated co-funding this CRC study, but then changed their funding plans and decided to instead fund a tear down of the engines used in their catalyst program knowing full well their approach would not reveal anything because the study tested the catalyst, not the engine. This allowed EPA to do some hand waving at the end of the catalyst test and to say they also looked at engine durability and materials compatibility.
 - DOE made the political decision to inspect "critical engine parts" more than a year after the catalyst testing had already started. EPA and DOE realized that they were missing critical engine durability and materials compatibility data needed to approve a waiver, so instead of running meaningful tests to evaluate these parameters, they piggy-backed onto the catalyst study which was almost near completion. This is the complete opposite of the CRC project where automotive engineers designed the study with detailed and scientifically sound methodologies and plans from start to finish.
 - The driver in all of this was EPA's desire to make an October 2010 approval announcement. DOE's withdrawal of funding for CRC had nothing to do with test cycles and engine selection for the CRC project and everything to do about getting to the finish line before October 2010.
 - Coincidentally, mid-term elections were held November 2, 2010.
- Also, DOE looked for ways to accelerate the catalyst study since testing on one of the vehicles had been delayed. DOE changed the way the test was being run to accumulate miles more quickly so that the delayed vehicle could catch up with the rest. Auto and oil industry representatives strongly disagreed with this approach since this in effect made this one vehicle's test different from the other vehicles.

Rebuttal of specific critiques:

E0 Testing

It was unnecessary to test more than three engines on E0. The auto and oil industries do not believe in wasting resources on unnecessary tests. The fact that the test cycle was able to pass or fail the seven other engine models means we had a good test tool. The engineers who designed the engine that failed on all three fuels explained what happened during this testing – mainly that for this particular engine the test cycle did not cause the valves to rotate which resulted in abnormal wear for all three fuels. Even so, the E0 failure was less severe than E20 or E15.

E10 Testing

DOE complained that there was no E10 testing. This allegation is akin to “the pot calling the kettle black.” Curiously, DOE fails to mention that, in its own evaluations of mid-level blends on marine engines, light-duty vehicle evaporative emissions testing, and teardown analyses of engines used in catalyst durability testing, E10 was not used as a control. These tests compared E0 with either E15 or E20. In its catalyst durability testing of Tier 2 vehicles DOE tested 19 vehicles on E0 and E15 but only 5 on E10. DOE chose to not tear down any of the vehicles tested on E10. In support of its initial E15 waiver decision, EPA prepared a Technical Memorandum which analyzed the DOE data and stated that “...since the waiver request is for E15, this analysis focuses on those vehicles that were aged on E15 compared to those vehicles that were aged on E0.” DOE’s testing in support of EPA’s waiver of NLEV and Tier 1 emissions vehicles included not one E10 test. The fuels selected and tested in the CRC engine durability program are fully aligned with both the DOE and EPA work referenced above. The use of E0 and E15 in the CRC study avoids ambiguity as to the source of any effects that may be observed.

Engine Durability Test Cycles

Engine durability tests by definition stress the engine, unlike DOE’s catalyst test – which stressed the catalyst and nothing else. We all know that when doctors test the durability of the human engine (i.e., our hearts), they put us on a treadmill and keep cranking it up. They and their patients are not just satisfied with a leisurely walk in the park type-test. The test cycle employed by CRC is a standard engine durability test cycle that has been in use for many years. The only modification made to it for this study was to limit the maximum engine speed to 3500 RPM. This modification was made to reduce the test severity, making it more likely that engines would complete the test without experiencing failures unrelated to the test objective, i.e., evaluating the effect of E15 on engine durability. Consumers should trust automotive engineers on this topic more than government regulators. EPA is the expert on devising regulations -- that is what they do. The automakers develop and build engines and emissions control systems -- that is what they do. We have great confidence in our scientific experts who design engines, emissions control systems and fuels.

Engine Pass/Failure Determination

The engine pass/fail determination was made after engine teardown and analysis. The 10 percent cylinder leakage criterion was used to determine whether there was engine distress and was used as a signal that teardown was required. The use of a 10% leakdown criterion is far from arbitrary. It is an

accepted and standard industry practice/criterion for determining engine distress. Engines that exceeded the 10% leak down criterion in the CRC study were further examined by teardown. The failure was determined by inspection during engine teardown, this evaluation method has been used in the automotive industry for over 100 years. In fact, 3 engines exceeded the 10% leakdown criterion, but were deemed to pass after engine inspections and detailed review of the data.

The investigators in the CRC study evaluated the performance of several different compression and leakdown gauges and ultimately used one tool which provided extremely repeatable measurements (within +/- 1%) – much smaller than the range reported in the DOE program. In addition, the fact that DOE concluded that engine leakdown is “not a reliable indicator of vehicle performance” is not surprising given that the test cycle on which they base their allegation is itself not a reliable measure of changes in engine durability. In contrast to the driving cycle evaluated in the DOE study, the test cycle used by CRC produced dramatic and easily measurable changes so it provided an excellent basis for assessing engine durability.

Test Engine Selection

The real point to be made here is that all of the engines tested by CRC are engines that were waived by EPA and are expected by the general public not to have issues with the new fuel, E15. It is true that a couple of the engines tested by CRC were subject to recalls by the National Highway Traffic Safety Administration (NHTSA). However, none of these recalls were for engine-related issues associated with operation on E0 and E10. It also is worth noting that 25 of the 27 vehicle models which DOE had used in its catalyst durability test program were subject to a NHTSA recall of some kind.

Aggressive Ethanol

Some who are not experts at fuels or vehicles have claimed that CRC used “aggressive ethanol” or “illegal fuels” in this study. That assertion is blatantly false. The ethanol used in this test program was not an “aggressive ethanol”. It exceeded ASTM specifications, was made by an RFA member, and was representative of what can be found in the market place.

Usefulness of the CRC Study

The CRC study is the only real engine durability of its kind. The 240 million drivers of vehicles in the US need DOE, EPA and other government agencies to take responsible actions when it comes to regulating their fuels and vehicles.