Minutes of the Stakeholders Advisory Committee Meeting
Research Triangle Park (RTP), NC
March 31, 2005

The fourteenth meeting of the Stakeholders Advisory Committee (SAC) was held to discuss the status and direction of the Air Pollution Control Technology (APCT) Verification Center of the U.S. Environmental Protection Agency's (EPA) Environmental Technology Verification (ETV) program. This program is being conducted through a cooperative agreement between EPA and RTI International [1]. Mr. Drew Trenholm, RTI Director for the APCT Center, chaired the meeting. The agenda (Attachment A) and a list of attendees (Attachment B) are appended.

[1] *RTI International is a trade name of Research Triangle Institute.*

Introduction

Mr. Trenholm called the meeting to order at 8:35 am, reviewed the agenda, and made several announcements about the conduct of the meeting. All attendees introduced themselves.

APCT Center Update

Mr. Trenholm reviewed the events that occurred since the last SAC meeting held on October 28, 2004. The materials he used with his presentation are available as Attachment C. He also distributed a short summary of accomplishments and activities. Mr. Trenholm discussed the importance of finding partners to share the cost of verifications. Mr. Robert Bessette, Council of Industrial Boiler Owners, said that the DOE Energy Efficiency and Renewable Energy program is interested in testing and he has told them about ETV. He offered to forward contacts to Mr. Trenholm.

Mr. Trenholm reported on the status of qualifying additional testing organizations. The procedure calls for a tiered payment process, with interested testing organizations submitting documentation of their testing capabilities, experience, quality systems. Those that meet minimum requirements would be invited to submit their quality management plan, a recent test report, and an application fee to cover the cost for evaluation. When the APCT Center deems the information warrants, testing organizations would be required to pay an evaluation fee for APCT Center personnel to then conduct an on-site quality system assessment. Costs for subsequent technical systems assessments are to be borne by the APCT. Mr. Trenholm said participation would be limited to 1-2 testing organizations; there currently is no need for more. Mr. Bessette suggested that there might be interest from other testing organizations and that the charges should be sufficient to cover the APCT Center costs. Mr. Richard Van Frank, National Audubon Society, asked what the market for testing was. Mr. Trenholm repied that for the last six months, there have been no tests.

Mr. Trenholm also discussed outreach activities where the APCT Center had presented or published. Dr. Vic Engleman, representing the Air & Waste Management Association, noted that the AWMA was planning a conference to focus on diesel emissions. The conference Diesel Exhaust: Partnering with Stakeholders to Reduce Emissions is scheduled for October 6-7, 2005, in Oak Brook, IL. The conference is inviting guest speakers but is accepting abstracts for a poster session. Ms. Elion said she would submit an abstract on behalf of the APCT Center.

Mr. Bessette suggested Mr. Trenholm speak about APCT Center activities at one of STAPPA/ALAPCO's events.

Mr. Trenholm concluded his presentation with a discussion of the ETV International Forum, scheduled for July 13-14 in Washington DC, with an optional tour of EPA facilities in Cincinnati on July 15. Canada, the European Union, Japan, Korea, and Singapore are scheduled to present their ETV programs' activities. Mr. Bessette requested copies of the ETV International Forum meeting flyer, APCT Center fact sheet, and APCT Center Summary Update that he could forward to members of the Council of Industrial Boiler Owners. Mr. Trenholm offered to forward the information to all members of the SAC.

Mobile Diesel Retrofit Program

Ms. Jenni Elion, RTI, presented an update on verification of Mobile Sources. The materials she used with her presentation are available as Attachment D. She noted that the Center recently posted a verification report for a permanent high-density magnet. The company claimed substantial emissions reductions but the verification testing did not show measurable emissions reductions. Mr. Bessette asked if stakeholders could be sent copies of new verifications or at least links to the website. Ms. Elion said that at one time RTI sent out announcements to everyone in the CIS database. Mr. Trenholm said that ETVoice does list all new verifications.

Ms. Elion discussed two organizations that are close to signing contracts for verification of their technologies, both diesel particulate filters. Papers are planned for the AWMA annual meeting this June, and the Department of Energy (DOE) Diesel Engines Emissions Reduction (DEER) workshop this August. Ms. Elion concluded her presentation by noting that the once a technology has been verified under a protocol, the protocol may be revised to incorporate lessons learned. Several points to consider in revising the *Generic Verification Protocol For Diesel Exhaust Catalysts, Particulate Filters, and Engine Modification Control Technologies for Highway and Nonroad Use Diesel Engines* include the steady-state cycle for highway engines; the transient cycle for nonroad engines, published by EPA in a Notice of Proposed Rulemaking (NPRM); concern about platinum emissions from diesel exhaust catalysts; as well as updating the Statistics section.

Mr. Bessette asked whether verification testing could document emissions reductions achieved just by switching from 2D to ultralow sulfur diesel (ULSD) fuel (assuming someone was willing to pay for it). Such testing could be performed, but the verification would be conducted under the *Generic Verification Protocol For Determination Of Emissions Reductions Obtained By Use Of Alternative Or Reformulated Liquid Fuels, Fuel Additives, Fuel Emulsions, And Lubricants For Highway And Nonroad Use Diesel Engines And Light Duty Gasoline Engines And Vehicles*, not the devices protocol cited above. Ms. Elion said that more tests would be needed to see statistical difference (95% confidence level) when only a small (5%) difference is expected, and that testing for fuels is even more extensive than for devices. Mr. Trenholm illustrated the testing scheme from the fuels protocol with a schematic showing multiple test points for the baseline engine to show any degradation over time, additional testing with the proposed fuel, and further testing with the baseline fuel.

Mr. John Paul, Regional Air Pollution Control Agency, said that the higher sulfur content of 2D fuel has a long-term effect of harming the catalyst in the technology. Mr. Trenholm said that our

previous requirement was to start with "clean" engine, and the emissions test for that are with 2D fuel.

Mr. Paul said that air filters are sold with charts showing which models they work with and asked if ETV provides similar information. Mr. Trenholm said that the verification report is for only the specific engine used in testing. OTAQ uses the verification data and supporting information from the manufacturer to determine the emissions reductions credits for the engine and for other engines within the same family.

Mr. Bessette asked if any ultrasonic devices have been submitted for verification testing. Ms. Elion replied she hadn't seen applications for any thus far, although at least four magnet technologies have been submitted.

Mr. Van Frank noted that getting CARB certification appears to be very important. Mr. Trenholm agreed and that it is market driven. Dr. Engleman added that the engine manufacturers are very interested in CARB certification. Ms. Elion noted that CARB staff participated in the development of the APCT protocols, and the Technical Panels worked to harmonize the ETV and CARB programs but CARB had not finalized their requirements. The ETV verification report facilitates CARB certification and OTAQ listing on the Voluntary Diesel Retrofit Program's list of approved technologies, both of which are attractive selling points that appeal to fleet markets.

Mr. Bessette asked if fuel economy was measured during testing. The verification does include fuel consumption as a measurable parameter, but it has not been assigned a Data Quality Objective and fuel savings are not reported with a 95% confidence. Mr. Bessette recommended upgrading fuel consumption to report with a higher confidence level because even slight improvements in fuel economy add up over large fleets and might generate tradable emissions credits. Mr. Paul said that there has been a lot of resistance of trading between mobile and stationary sources.

There was discussion of technologies proposed to clean up dirty engines that do not meet emissions standards. The subject was addressed during the Technical Panel meetings, and was eventually dropped for several reasons. Mr. Trenholm noted that the testing organization cannot "standardize" a level of dirtiness to allow emissions reductions to be measured from the same level. Ms. Elion added that OTAQ was heavily involved in the development of the protocol and the use of dirty engines in the verification program would trigger enforcement actions and penalties.

Mr. Bessette said that one of the benefits is the number of applicants. He expects that the protocols posted on the Internet means that vendors would/should test using the protocol before coming to ETV. He recommended that the APCT Center should track the number of visitors and downloads. Mr. Trenholm said that development of protocols is an important ETV activity, and perhaps there isn't enough credit given for it; however the APCT operates under OMB survey restrictions. Mr. Bessette said that for a DOE program, two surveys are now in progress - Oak Ridge for government and Alliance (non-government).

Dust Suppression

Ms. Debbie Franke, RTI, presented an overview of the activities on Dust Suppression. The

materials she used with her presentation are available as Attachment E. Ms. Franke noted that the draft data did not include results for the winter quarter at Fort Leonard Wood (FLW), MO, because frequent snow and rain precluded obtaining test samples. In addition to the weather, the testing organization could not control road traffic or road maintenance.

Members of the SAC discussed disparity in the results between quarters and between samples. Because the verification protocol was established as a field test and not a laboratory test, many variables were completely behond the control of the testing organization. The issue of field vs. bench testing was discussed at previous technical panel meetings and also by the technical panel during protocol development. The end users on the technical panel felt that bench testing could not adequately reflect real use conditions and the decision was made to test control efficiency on actual roads representing extreme weather conditions: hot, flat, and dry in Maricopa County, AZ, and mixed in FLW. Toxicity tests were conducted in a laboratory.

Key variables in the test program were weather conditions and road control. Despite cooperation from Maricopa County, AZ, the road used for testing was graded during the verification testing, nullifying the results for that quarter. Because FLW is a secure Army base, disruption to the test roads was minimized. However, the testing schedule had to accommodate the Army training schedule.

Ms. Franke noted that the verification was very expensive and recommended finding partners to make the testing more affordable.

Mr. John Leslie, Syntech Products Inc. (whose products were tested), said that the goal of the verification protocol was to demonstrate, in principle, whether dust suppression products have merit. He said the results indicated that they were a viable solution to controlling total PM, PM10, and PM2.5 and that the verification reports would be a valuable marketing tool. He noted that unpaved roads were one source of fugitive dust emissions and that the products could be individually tailored to specific applications where fugitive dust was a concern, such as steel mills and coal mines.

Mr. Dick Gebhart, US Army/Engineer Research and Development Center, said that FLW has used the results of the 3-month ETV tests that compared tower profiling with mobile sampling to negotiate with the state on particulate emissions. Mr. Gebhart also noted that the Army had no money to support additional verifications at this time.

NEET Database

Mr. Paul Peterson, RTI, presented an overview of the New and Emerging Environmental Technologies database. The materials he used with his presentation are available as Attachment F. Mr. Peterson also demonstrated the capabilities of the NEET website. Providers submit their own self-verified data to the database. It is reviewed before it becomes accessible via the website. Mr. Peterson said some technologies are rejected either because the claims are so extreme as to strain credulity, or because contact information cannot be substantiated.

Mr. Bessette asked if the ETV logo shows up for products that have been verified. While the information screen notes that data is from a verification report, the ETV logo does not appear. There was discussion about how to tie in verified technologies, possibly by linking to the reports,

and also charging vendors to help make the program self-sufficient. Mr. Peterson noted that the website does not accept advertising and does not promote or endorse specific products.

Indoor Air Products
Ms. Debbie Franke, RTI, presented an overview of the activities on indoor air products. The materials she used with her presentation are available as Attachment G. Ms. Franke reviewed prior work in this area and discussed current plans to draft a test/QA plan and hold a vendor meeting.

Baghouse Filtration Products
Mr. Trenholm presented an update on verification of baghouse filtration products (BFP). The materials he used with his presentation are available as Attachment H. This was the second technology area developed; the verification protocol has since become recognized as ASTM test method D6380-02 and is being considered as an ISO standard. The protocol was originally written such that verifications would expire after three years. All but one of the original BFP verifications have expired. Mr. Trenholm is offering the holders of expired verifications a 50% discount on the cost of re-verifying their products; three vendors have accepted. There was a question that if the vendor certifies that no changes have been made to the product since the original verification, can the verification be extended; this discussion included the rapid and frequent manufacturing materials and process changes necessitated in the current economy.

The SAC discussed conducting verifications under vendor-specified conditions. Dr. Engleman asked the kind of dust vendors wanted for verification. Dr. John McKenna, ETS, said that people are asking for application specific dusts, such as cement dust. One issue is that the dust feeder is very sensitive and is unable to handle all dust types while producing data of the required quality.

Dr. McKenna said that the South Coast Air Quality Management District has asked about using ETV results in their standards. Dr. McKenna said that while the verification results are valuable, they cannot take the place of field tests, which take into account factors such as maintenance, proper seating, and bag seam construction. ETS has told SCAQMD that there should be good correlation between ETV results and actual performance.

Mr. Bessette suggested that a manufacturer who has put their material into an actual baghouse facility could use continuous emissions monitoring to compare to ETV data. Dr. McKenna said that in Germany, there is a field version of the BFP test equipment and correlations have been reasonable. However, the limitation is that it still doesn't give stack emission data. Dr. McKenna said that states could specify that verified fabrics must be used. Although it would not address stack emissions, it would assure that the best fabrics available are used. Buyers may also start specifying filtration efficiency as measured by the verification test. There was discussion of verifying fabric samples that included seams, because seams are a pathway for emissions. It was noted that the seam-to-fabric ratio for a baghouse is very small, and would be substantially larger on a small bench-scale test.

APCT Center Business Plan
Dr. McKenna presented a draft of the proposed business plan. The overheads he used with his presentation are available as Attachment I. Mr. Trenholm asked about expansion areas discussed during the meeting and whether they match up with technology selection criteria in the business plan; there was no disagreement. There was a discussion about how states are getting out in front

of EPA on regulations, thus state priorities have become more important. Mr. Kosusko said that the ETV program has increased its emphasis on outcomes. After discussion, the SAC advised that the priority for national interest in pollutants was fine PM, ozone, diesel engine exhaust, and indoor air pollutants.

Conclusion

The next SAC meeting is scheduled for Tuesday, September 20, 2005, in Research Triangle Park, NC.

Mr. Trenholm thanked everyone for their participation and adjourned the meeting at 2:45 p.m.

Respectfully submitted,
Jenni M. Elion
Research Triangle Institute

Attachment A: AGENDA
Air Pollution Control Technologies Verification Center
Environmental Technology Verification Program
Stakeholders Advisory Committee (14th meeting)
EPA–RTF Building
Research Triangle Park, NC
March 31, 2005

8:30 a.m.	Welcome/Introduction *Drew Trenholm, APCT Center Director, RTI International* *Michael Kosusko, APCT Center Project Officer, US EPA/APPCD*
8:45 a.m.	Status/Update: APCT Center *Drew Trenholm, RTI International*
9:15 a.m.	Status/Update: Mobile Diesel Engines *Jenni Elion, RTI International*
10:15 a.m.	BREAK
10:30 a.m.	Status/Update: Dust Suppression *Debbie Franke, RTI International*
11:15 a.m.	Status/Update: NEET Database *Paul Peterson, RTI International*
11:45 a.m.	LUNCH
12:45 p.m.	Status/Update: Indoor Air Products *Debbie Franke, RTI International*
1:15 p.m.	Status/Update: Baghouse Filtration Products *Drew Trenholm, RTI International*
1:45 p.m.	Business Planning *John McKenna, ETS*
2:00 p.m.	Summary/Wrap-Up/Next Meeting *Drew Trenholm, RTI International*
2:45 p.m.	Adjourn

Attachment B: List of Attendees

APCT ETV Program

Michael Kosusko	US EPA/APPCD
Drew Trenholm*	RTI International

Stakeholder Advisory Committee Members Present

Robert Bessette	Council of Industrial Boiler Owners
Vic Engleman	Engleman Associates *(representing AWMA)*
David McNeal	EPA (Region 4)
John Paul	Regional Air Pollution Control Agency
John Pinkerton	National Council of Air & Stream Improvement
Richard Van Frank	National Audubon Society

Other Attendees

Jenni Elion*	RTI International
Debbie Franke*	RTI International
Dick Gebhart	US Army/Engineer Research and Development Center
John Leslie	Syntech Products Corp.
John McKenna*	ETS
Paul Peterson*	RTI International
Gene Tatsch	RTI International

Stakeholder Advisory Committee Members Absent

Praveen Amar	NESCAUM
Linda Benevides	Commonwealth of Massachusetts
Michael Bevan	Advent International
Jim Blubaugh	EPA/OTAQ
John Bosch	EPA/EMAD
Rick Colyer	EPA/ESD
Ted Cromwell	American Chemistry Council
David Foerter	Institute of Clean Air Companies
Dawn Friest	Engine Manufacturers Association
Thomas Logan	EPA/EMAD
Robert McIlvaine	McIlvaine Company
Dale McKinnon	Manufacturers of Emissions Controls Association
Brock Nicholson	NC Dept. of the Environment and Natural Resources
Gene Praschan	Consultant
Scott Rowland	California Air Resources Board

**Indicates presenter*