

# **RESOLUTION 1.76**

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**RESOLUTION 1.76**

Whereas the Texas Commission on Environmental Quality (TCEQ) is providing tangible financial and management support to the Texas Air Quality Study II that will take place during the summer of 2006; and

Whereas TERC is funding various studies in support of the Texas Air Quality Study II regarding ozone precursors and various other pollutants; and

Whereas TERC's Science Advisory Committee and various other scientists have recommended that Research Project H78.2006, the Tex AQSII Radical Measurement Project, be undertaken to support the upcoming field study with regard to radical compounds, which are molecular fragments in the atmosphere that are highly reactive.

Now, Therefore, Be It Resolved that the Board of Directors of the Texas Environmental Research Consortium hereby authorizes its Executive Director and HARC to engage persons and/or entities to timely complete Research Projects H78.2006, at a cost not to exceed \$400,000.

Adopted and Approved this 16th day of March, 2006.

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Bruce LaBoon, Chairman

**TERC Project H78: The TexAQS II Radical Measurement Project (TRAMP)**  
**(Estimated Cost: \$400,000; Contractor: University of Houston)**

Radicals are molecular fragments in the atmosphere that are highly reactive. This project addresses the determination and quantification of sources and sinks for radicals in the urban atmosphere of Houston during the TexAQS II field campaign 2006, which is important for a better understanding of the formation processes of secondary species in the Houston area. The hydroxyl radical (OH) is the most important oxidant in the atmosphere and controls the atmospheric lifetimes of most trace gases. OH is produced in photolysis processes of ozone ( $O_3$ ), formaldehyde (HCHO) and nitrous acid (HONO). OH initiates oxidation reactions with  $NO_x$ , CO, anthropogenic and biogenic volatile organic compounds (VOC). These reactions form peroxy radicals ( $RO_2$ ) which in turn will cause the conversion of NO to  $NO_2$  and subsequently the formation of  $O_3$ . Within the degradation of VOC also carbonyls will be formed which either may be photolyzed (e.g. formaldehyde) or oxidized by OH and finally contribute to the formation of peroxydicarboxylic nitric anhydrides (PANs). Loss mechanisms for OH involve reactions between peroxy radicals leading to hydrogen peroxide ( $H_2O_2$ ) and organic peroxides, e.g. methylhydroperoxide (MHP) and hydroxyl-methylhydroperoxide (HMHP), and reactions with  $NO_2$  leading to nitric acid ( $HNO_3$ ) and PAN. The University of Houston is in the process of setting up an air quality measurement facility at the University main campus on the roof of the 18-story tall North Moody Tower residence hall. This facility will include a 35 ft high sampling tower (200 ft above ground level) and will be equipped with air chemistry measurements including,  $O_3$ , CO, NO,  $NO_2$ , PAN and online VOC. It will also include measurements of photolysis frequencies for  $O_3$ ,  $NO_2$ , HONO and HCHO and 16 other important photolysis reactions. During the 2006 TexAQS summer campaign UH will be hosting additional photochemistry experiments at the UH-Moody Tower facility that will include OH,  $HO_2$ , and  $RO_2$  radical measurements by William Brune of Penn State University. The TRAMP study will include an analysis of radical sources and sinks (and production and loss rates) as identified by a steady-state time dependant photochemical box model. For a successful completion of the proposal some additional instrumentation will be needed. The proposed budget includes instrumentation for: HONO, Formaldehyde,  $H_2O_2$ , and MHP, and oxygenated VOC.

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Whereas the Texas Environmental Research Consortium (TERC) established the Science Advisory Committee in 2002, that is composed of air quality experts from around the country;

Whereas the Science Advisory Committee is relied on by TERC and its Research Management Organization to identify and prioritize air quality research projects for funding; and

Whereas several vacancies have recently occurred on the Science Advisory Committee for a number of different reasons; and

Whereas it would be beneficial to fill the vacancies on the Science Advisory Committee with air quality experts who have the time and commitment to assist TERC in this area.

Now, Therefore, Be It Resolved that the Board of Directors of the Texas Environmental Research Consortium hereby appoints the following persons to the Science Advisory Committee, effective immediately:

- Dr. Russ Dickerson, University of Maryland
- Mr. Chris Klaus, North Central Texas Council of Government;
- Dr. John Merrill, University of Rhode Island; and
- Dr. David Mobley, U. S. EPA

Adopted and Approved this 16th day of March, 2006.

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Bruce LaBoon, Chairman

## NEW SAC MEMBERS

### **Russ Dickerson (University of Maryland)**

Dr. Russell R. Dickerson is currently the Chair of the Department of Atmospheric and Oceanic Science at the University of Maryland. He received his Ph.D. in 1980 from The University of Michigan, and has worked with Nobel Laureate Paul Crutzen in the Air Chemistry Division at NCAR and in the Abteilung Luftchemie at the Max Planck Institute in Mainz, Germany. His research interests include the interactions of various weather phenomena such as thunderstorms and atmospheric chemistry, ocean-atmosphere interactions, air pollution, the links between particulate and gaseous chemistry and global biogeochemical cycles. His research group develops analytical instruments, employs these instruments in the laboratory, field, and on ships and aircraft, and interprets the results with the aid of numerical chemical transport and cloud models.

Dr. Dickerson helped define, plan, and execute the Atmosphere Ocean Chemistry Experiment (AEROCE), and the Indian Ocean Experiment (INDOEX), and served as the Chief Scientist on the R/V Ronald Brown. He served on the steering committees of Center for Clouds Chemistry and Climate (C4), INDOEX, NARSTO, SOLAS and BASE-ASIA. Professor Dickerson is a member of the National Academy of Sciences National Research Council Committee on Animal Feeding Operations and has helped write a NRC Report on the impact of agriculture on air pollution in the US. He has been a coauthor of the EPA Criteria Documents for CO, O<sub>3</sub> and PM, contributing the sections on analytical techniques and interpretation of results from field experiments.

Dr. Dickerson currently heads the Regional Atmospheric Measurement, Modeling and Prediction Program (RAMMPP) which acts as the scientific arm of the Maryland Department of the Environment and Department of Natural Resources concerning air quality issues in the Mid-Atlantic region. With a budget of approximately \$1M per year, RAMMPP makes air quality forecasts and helps develop plans for compliance with the Clean Air Act such as State Implementation Plans (SIPS).

### **Chris Klaus (NCTCOG)**

Christopher Klaus has been on staff in the Transportation Department of the North Central Texas Council of Governments (NCTCOG), the Metropolitan Planning Organization for the Dallas-Fort Worth area, since July 1994. He is a Senior Program Manager managing the department's Air Quality Planning and Operations activities, which respond to federal air quality requirements and work towards reaching attainment of the National Ambient Air Quality Standards for the pollutant ozone.

Mr. Klaus is currently an active member of the Association of Metropolitan Planning Organization (AMPO) Air Quality Subcommittee, the Transportation Research Board (TRB) Committee on Transportation and Air Quality, and the Texas Department of Transportation (TxDOT) Technical Advisory Panel. He received his Bachelors Degree in Civil Engineering from the University of Massachusetts at Amherst in 1994, and his Masters Degree in Civil Engineering from the University of Texas at Arlington in 2003.

### **John Merrill (University of Rhode Island)**

Dr. John Merrill is currently Professor at the University of Rhode Island's School of Oceanography. He received his Ph.D. in Atmospheric Science from The University of Colorado in 1976. Dr. Merrill is an expert on the meteorological processes governing long range transport of pollution, and has been involved in various observational campaigns such as NARE and ACE-Asia.

Dr. Merrill has been active in the UNIDATA community, which develops tools for enhanced Earth system education and research, with an emphasis on real-time data delivery, and was chair of their Policy Committee, 1996-2004. He is presently Chair of the UCAR University Relations Committee.

**David Mobley (Atmospheric Modeling Division, EPA/NERL)**

David Mobley is currently Associate Director of the Atmospheric Modeling Division, National Exposure Research Laboratory, USEPA. He supports the development of advanced air quality models, emission control policies and regulations, and international emission inventories. Mr. Mobley is also Co-Chair of the Emissions Committee of NARSTO.

In his previous position as Acting Director/Associate Director of the Emissions Monitoring and Analysis Division, Office of Air Quality Planning and Standards, USEPA, Mr. Mobley supported the development and implementation of technical support programs for source test methods development, emission measurement field tests, emission factor development, emission inventory development and compilation, air quality modeling for control strategy assessments, ambient monitoring, quality assurance, and data analysis. These programs provided the technical infrastructure for air quality management programs for criteria pollutants of ozone, particulate matter, carbon monoxide, sulfur dioxide, nitrogen oxides, and lead as well as air toxic pollutants.

Mr. Mobley's honors and awards include the following distinctions:

- Fellow, Air and Waste Management Association
- EPA Gold Medal for PM2.5 Monitoring Program Implementation (2000)
- EPA Bronze Medals (1983, 1986, 1988, 1993, 1994, 1996, 1998, 2001, 2005)
- EPA's Scientific & Technological Achievement Award (1984)
- Federal Engineer of the Year by the Professional Society of Engineers (1993).

## **RESOLUTION 1.78**

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**RESOLUTION 1.78**

Whereas the Board of Directors of the Texas Environmental Research Consortium (TERC) approved Resolution 1.74 at its meeting on December 15, 2005 and authorized the Houston Advanced Research Center (HARC) to issue a Request for Proposal for the purpose of extending technologies verified by the Environmental Protection Agency (EPA) to a broader class of engines and to facilitate the development of engine rebuild kits for existing engines based upon new engine technologies, through seven to twelve projects at a cost not to exceed \$1,500,000; and

Whereas HARC has proceeded to finalize this Request for Proposal in consultation with the Environmental Protection Agency and the Texas Commission on Environmental Quality; and

Whereas HARC's staff and TERC's Executive Director has just completed a series of meetings with the engine manufacturers and the environmental technology providers regarding Texas' air quality technology needs and the related plans of these entities; and

Whereas these meeting were very fruitful and productive and highlighted a variety of technology development and verification opportunities that may be pursued through the NTRD Program; and

Whereas the issuance of a Request for Proposal regarding these technology development and verification opportunities may be significantly expedited if the Request for Proposal authorized by the Board of Directors under Resolution 1.74 is revised to include the additional opportunities identified through the recent meetings with engine manufacturers and environmental technology providers.

Now, Therefore, Be It Resolved that the Board of Directors of the Texas Environmental Research Consortium hereby authorizes HARC to revise the previously approved Request for Proposal to include a call for projects relating to the following:

1. Selective Catalytic Reduction (SCR) devices and complementary technologies that are currently under development and will be ready soon for verification testing;
2. Other exhaust gas treatment technologies currently under development and soon ready for verification testing; and
3. Applications testing (installation, operation, maintenance) as part of the verification process of available technologies.

Be it Further Resolved that the budget for the revised RFP be increased from \$1.5 million to \$7,500,000

Adopted and Approved this 16th day of March, 2006.

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Bruce LaBoon, Chairman

## **RESOLUTION 1.79**

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**RESOLUTION 1.79**

Whereas the Texas Environmental Research Consortium (TERC) is proceeding to implement the New Technology Research and Development (NTRD) Program in accordance with the mandates established by the Texas Legislature; and

Whereas TERC's implementation of this program may be significantly improved through ongoing support and input from air quality technology experts from around the country; and

Whereas the desired professional support and input may be efficiently and effectively achieved through a structural process that periodically brings together these technology experts.

Now, Therefore, Be It Resolved that the Board of Directors of the Texas Environmental Research Consortium hereby establishes the Environmental Technology Advisory Council.

Be It Further Resolved that the Board of Directors hereby appoints the following persons to serve on the Environmental Technology Advisory Council:

Dr. Tom Lanni, NY State Dept. of Env. Conservation  
Mike Walsh, International Consultant  
Dick Wilson, National Environmental Strategies  
Dr. Joe Kubsh, Manufacturers of Emission Controls Association  
Barry Liebowitz, NYSERDA  
Dr. Don Hillebrand, Argonne National Lab  
Dr. Dan Cohn, MIT  
Dennis Johnson, EPA  
Bill Van Amburg, WestStart-CALSTART  
Dr. Jerry Caton, Texas A&M University  
Dr. Ron Matthews, University of Texas

Adopted and Approved this 16th day of March, 2006.

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Bruce LaBoon, Chairman

## **RESOLUTION 1.80**

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**RESOLUTION 1.80**

Whereas the primary purpose of the New Technology Research and Development (NTRD) Program is to facilitate the development and verification of technologies to maximize the reduction of Nitrogen Oxides (NO<sub>x</sub>) from diesel fueled vehicles and equipment; and

Whereas the success of the NTRD Program is contingent upon ongoing input from the owners and operators of diesel fueled vehicles and equipment as well as their awareness of the air emission reduction technologies that will be developed and verified under the NTRD Program; and

Whereas appropriate input from these stakeholders and the exchange of diesel technology information may be facilitated through the establishment of an NTRD Workgroup that would be composed of a cross-section of the owners and operators of diesel fueled vehicles and equipment from the Houston-Galveston and Dallas-Ft. Worth regions.

Now, Therefore, Be It Resolved that the Board of Directors of the Texas Environmental Research Consortium hereby authorizes the Houston Advanced Research Center and its Executive Director to expeditiously establish an NTRD Workgroup and to appoint a cross-section of the owners and operators of the diesel fueled vehicles and equipment to serve on the Workgroup.

Adopted and Approved this 16th day of March, 2006.

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Bruce LaBoon, Chairman

# **RESOLUTION 1.81**

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**RESOLUTION 1.81**

Whereas the Board of Directors of the Texas Environmental Research Consortium (TERC) has adopted a Strategic Plan to guide implementation of the New Technology Research and Development Program; and

Whereas the Strategic Plan specifies the technology development and verification efforts that TERC will pursue; and

Whereas the North Central Texas Council of Government has identified the technology development and verification needs of the Dallas-Ft. Worth region to attain the eight-hour ozone standard; and

Whereas the technology development and verification priorities of the North Central Texas Council of Government are consistent with TERC's Strategic Plan; and

Whereas the North Central Texas Council of Government has proposed a partnership with TERC to facilitate the development and verification of technologies that are needed for the Dallas-Ft. Worth region on an expedited basis; and

Whereas, the Houston Advanced Research Center and TERC's Executive Director have determined that the priorities identified by the North Central Texas Council of Government are consistent with those of Texas' other nonattainment areas; and

Whereas the North Central Texas Council of Government has designated \$1.0 million to \$2.0 million to support technology development and verification efforts with TERC.

Now, Therefore, Be It Resolved that the Board of Directors of the Texas Environmental Research Consortium hereby directs its Executive Director to take the actions that are necessary and prudent to facilitate a partnership with the North Central Texas Council of Government, to facilitate the development and verification of those technologies that are needed in the Dallas-Ft. Worth area to attain the eight-hour ozone standard.

Adopted and Approved this 16th day of March, 2006.

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Bruce LaBoon, Chairman

## **RESOLUTION 1.82**

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**RESOLUTION 1.82**

Whereas implementation of the New Technology Research and Development Plan may be facilitated through funding partnerships with various federal agencies, including the Environmental Protection Agency, the Department of Energy and the Department of Defense, particularly through these agencies' Small Business Innovation Research Program; and

Whereas the Texas Environmental Research Consortium (TERC) is committed to pursuing these funding partnerships with the Department of Energy and the Department of Defense as it has already done with the Environmental Protection Agency; and

Whereas Ms. Jennifer Shepard has a consulting practice in the Washington D.C. area and is particularly adept at identifying and securing funding from federal agencies.

Now, Therefore, Be It Resolved that the Board of Directors of the Texas Environmental Research Consortium hereby authorizes its Executive Director to engage Ms. Shepard for this purpose, at a cost not to exceed \$20,000.

Adopted and Approved this 16th day of March, 2006.

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Bruce LaBoon, Chairman