



COORDINATING RESEARCH COUNCIL

CRC

Real World

Vehicle Emissions and Emissions Modeling Group

Ongoing Research Efforts: In-Use Diesel Emissions

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www.crcao.org

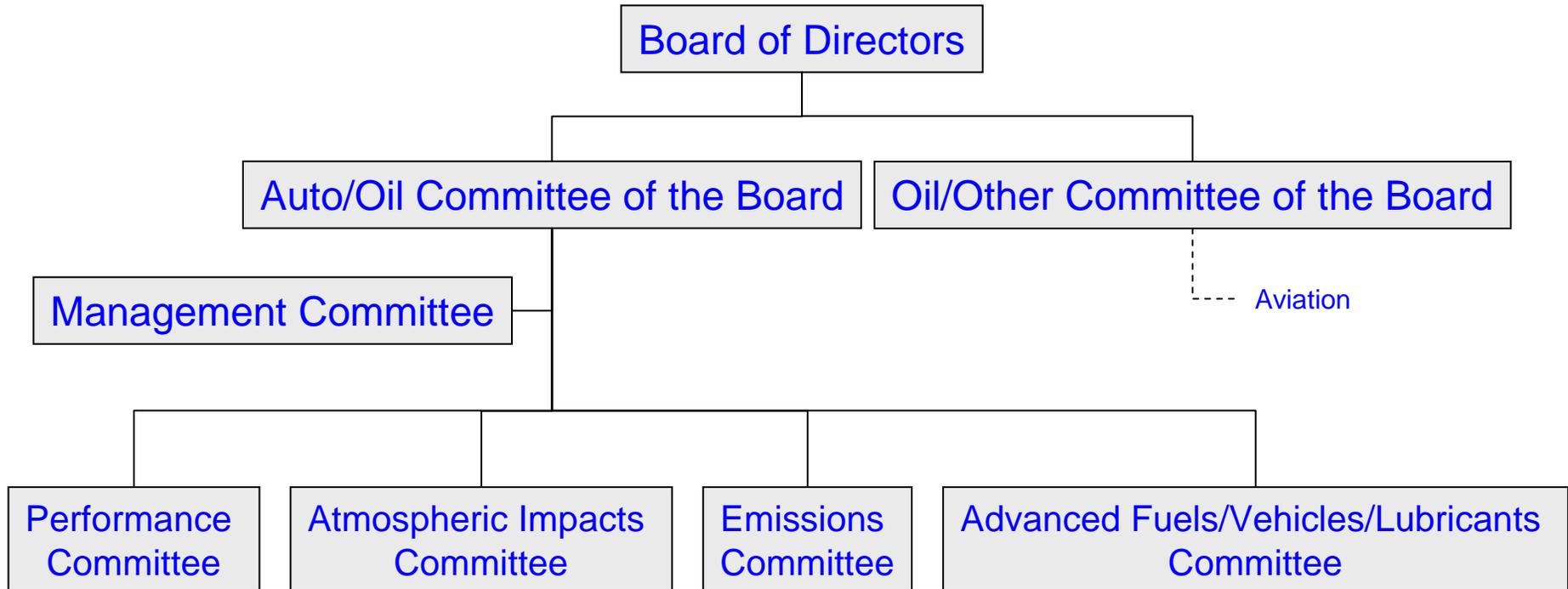
CRC Objective

- To serve as a focal point for cooperative, precompetitive research between the automobile and petroleum industries.
- To make technical information available to be used:
 - by industry to ensure compatibility and customer satisfaction
 - by industry, Government and the public to achieve clean air and other goals



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CRC Organization



COORDINATING RESEARCH COUNCIL

CRC Real World Group

- “Real World Vehicle Emissions and Emissions Modeling Group”
- Operates as a subcommittee of the Emissions Committee
- Principle domain: in-use emissions research



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On-Road Vehicle Emissions Workshops

- 16th Workshop: March, 2006
 - Co-Sponsors: EPA, CARB, DOE/NREL, SCAQMD
 - Session topics:
 - Emission Control Measures
 - Particle Measurement Methods and Results
 - Measurement Methods
 - Fuel Effects
 - Gasoline Vehicle Emissions
 - Diesel Vehicle Emissions, Models, and Aftertreatment
 - Off Road
 - Emissions Modeling
 - Particulate Matter Characterization
 - 54 presentations and 29 posters
 - Summary submitted to JAWMA
- Proceedings available from CRC
- 17th Workshop – March 26-28, 2007 – San Diego



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E-55/59

- “Heavy-Duty Vehicle Chassis Dynamometer Testing for Emissions Inventory, Air Quality Modeling Source Apportionment and Air Toxics Emission Inventory”
- Prime contractor: WVU
- Co-Sponsors: CARB, EPA, EMA, DOE/NREL, SCAQMD
- Objective: acquiring regulated emissions measurements and non-regulated emissions measurements from in-use trucks in southern California
 - Particle Sizing
 - Tampering & Malmaintenance
 - Weight Effects
 - Cycle Effects
 - MY effects
 - HHDDT & MHDDT & MHDGT
- Formal statistical analysis not yet performed
- Final Report and database release – October 2006



CRC #E-75 / NREL #ES05-3

- “Compilation of Diesel Emissions Speciation Data”
- Prime contractor: Pechan
- Co-Sponsor: DOE/NREL
- Original objectives:
 - Compile speciated exhaust emission data from on-road diesel vehicles designed to meet U.S. emission standards;
 - Provide average emission rates of large numbers of chemical species as a function of vehicle and technology category
 - Provide an assessment of the quality and completeness of the data.
- Database / written report: late 2006
- Additional analysis work under consideration



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E-66

- “2007-Level Diesel Particulate Measurement Research”
- Prime contractor: SwRI
- Co-Sponsors: CARB, EMA, EPA, DOE/NREL
- Objective: improve filter-based measurement techniques with application to the 2007 PM standards.
 - sampling and handling approaches for improving repeatability
 - approaching conditions that reflect ambient PM emission characteristics. *Diluted exhaust PM from 2007 technology, as typically measured, can approach ambient concentration conditions.*
 - Explore alternate measurement techniques that mimic filter-based measurements
- Phase 3 Final Report and Executive Summary – November 2006



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ACES

- “Advanced Collaborative Emissions Study”
- Co-Sponsors: API, CARB, DOE, EMA, EPA, Emissions Control Manufacturers
- Phase 1: detailed emissions characterization: 2007 production engines
 - Commercial fuel
 - CARB cycle converted for engine stand (ACES-1)
- Phase 1 prime contractor: SwRI
- Project start: October 2006 (testing: early 2007)
- Phase 2: 2010 engine characterization
- Phase 3: Health effects study: ~2 years of engine operation.



ACES-Cycle Development

(CRC Project# ACES-1)

- “CARB Heavy Heavy-Duty Diesel Engine Cycle”
- Contractor: WVU
- Co-Sponsor: CARB
- Objective: develop an engine dynamometer test cycle from the CARB heavy-duty chassis dynamometer test cycle and the knowledge base developed in E-55/59
- Final report and test cycle release – late 2006 / early 2007



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E-70

- “Non-Road Vehicle Emissions”
- Contractor: *TBD*
- Co-Sponsor: EPA (issuing contract)
 - Work Assignment under National HD PEMS/PAMS Contract
- Objective: collecting data to quantify populations, usage, and emissions of diesel nonroad equipment in EPA Region 7
 - Populations
 - Usage rates (activity)
 - In-use emission rates
- Project start – late 2006 / early 2007



Potential Future Research

- Collaboration with DOE/NREL on heavy-duty on-road truck remote sensing measurements
- Further analysis of E-75/ES05-3 database
- Investigating avenues to support EPAAct data needs through collaboration with EPA, CARB, DOE/NREL

