

ARB Verification and the Off-Road Showcase Program

Heavy-Duty Diesel In-Use Strategies Branch

The Situation in California

- Moving forward to meet the goals of the Diesel Risk Reduction Plan
 - 75% reduction in diesel PM by 2010
 - 85% reduction in diesel PM by 2020
- Large reductions in NOx emissions still needed to attain ozone and PM standards
- Must reduce emissions from in-use diesel fleet to achieve both goals

In-Use Diesel Regulatory Activity

- Urban Buses (2000)
- Garbage Trucks (2003)
- School Bus Idling (2003)
- Stationary Engines (2004)
- TRUs (2004)
- Truck and Bus Idling (2004)
- Portable Engines (2004)
- Transit Fleet Vehicles (2005)
- Public HD On-Road Vehicles (2005)
- Cargo Handling Equipment at Ports and Rail Yards (2005)
- Off-Road Engines (2007)
- Shore Power for Docked Ships (2007)
- Port Trucks (2007)
- Private HD On-Road Vehicles (under development)

ARB Verification Program

- Purpose: To support California's efforts to reduce emissions of diesel PM and NOx from the in-use diesel fleet
- For hardware and fuel-based emission control strategies used in on-road, off-road, and stationary applications

Objectives of Verification

- Determine if emissions reductions are real and durable
- Quantify emissions reductions
- Ensure continued emissions reductions through in-use compliance testing and warranty reporting

Key Requirements

- Complete description of product and how it works
- Emissions test data
- Durability demonstration
- Prescribed warranty statement
- In-use compliance testing and warranty reporting

Verification Process

Where to Begin

- Read the Procedure
 - Find it here:
<http://www.arb.ca.gov/diesel/verdev/verdev.htm>
- Submit a pre-application
 - Describe system and how it works
 - Define scope of requested verification
 - Propose test plan

Collaboration Between ARB and EPA

- Applicant can pursue joint verification
 - Applicant involves both EPA and ARB at start of the verification process
 - Allows for simultaneous review by both programs
 - Goal: generation of test data that is appropriate for both programs
- For existing EPA verifications, applicant encouraged to submit data for ARB review

Additional Requirements for ARB Verification

- Minimum PM reduction: 25%
- Minimum NO_x reduction: 15%
 - Proposed change: 25% min
- NO₂ emissions limit
- Multimedia assessment for fuel-based strategies
- Stringent warranty requirements
- Annual warranty report

Key Proposed Changes to ARB Verification Procedure

- Conditional extensions to on-road applications for verified systems
- Level approach to NO_x verifications

<u>Level</u>	<u>Reduction</u>
Mark 1	≥ 25%
Mark 2	≥ 40%
Mark 3	≥ 55%
Mark 4	≥ 70%
Mark 5	≥ 85%

Key Proposed Changes to ARB Verification Procedure

- NO_x-only systems may be verified for engines that will not require PM controls
- Nonroad Transient Cycle (NRTC) will be phased in as the standard off-road test cycle
 - Verifications based on modal data will sunset on January 1, 2013 unless NRTC data provided
- Additional requirements for SCR systems
 - Reductant level monitor and notification system
 - Inducement to ensure continuous reductant supply
 - Means to ensure proper reductant is used

Regulatory Schedule

- Board meeting to be held in Sacramento on January 24, 2008
- 45-day comment period now underway
 - Deadline for comments: Jan 23, 2008 (noon)
- Regulatory documents here:
<http://www.arb.ca.gov/regact/2008/verdev2008/verdev2008.htm>

Showcase Program

A photograph of a construction site under a clear blue sky. In the foreground, two yellow cement mixers are parked on a dirt road. In the background, a blue truck is visible, and several plumes of dark smoke are rising from the site, indicating air pollution. The ground is uneven and appears to be a mix of dirt and gravel.

**Mobile Source Air Pollution Reduction
Review Committee (MSRC)
South Coast Air Quality Management District (AQMD)
Air Resources Board (ARB)**

Showcase Goals

- Demonstrate new emission control systems in off-road applications
 - Breadth of application
 - Durability
 - Effectiveness
- Facilitate verification of participating systems

Where We Are Today

- Funding approved: \$4.9 million
- Contracts with fleet owners
 - Are being written up now
 - Will reimburse equipment owners for purchase
 - May pay mfr directly if all parties agree
- Fleets/mfrs need to arrange for data logging

Showcase Participants

- Fleets

- 13 private fleets

- 5 public fleets

- 230 vehicles

- Broad range of engine and vehicle types

- Representative of statewide fleet

- Manufacturers

- 16 companies

- 29 systems total

- 10 active DPFs

- (4 include SCR)

- 19 passive DPFs

- (2 include SCR)

Requirements for Manufacturers

- Datalogging
- Installation and Support
- Warranty
 - Mfr must adhere to warranty requirements in Verification Procedure for the duration of the demonstration

Showcase and ARB Verification

- Two separate programs, but:
 - Submission of Showcase application = request for verification
- Applications have been submitted to verification staff
- ARB staff working with applicant through the verification process
- Existing data may support conditional verification

Showcase Questions?

- **MSRC**
 - Cynthia Ravenstein, Contracts Manager
 - (909) 396-3269
- **SCAQMD**
 - Adewale Oshinuga, Air Quality Specialist
 - (909) 396-2599
- **ARB**
 - John Karim, In-Use Retrofit Section
 - (626) 459-4303
 - Susan Reed, Retrofit Assessment Section
 - (626) 575-6847

Verification Info/Contacts

<http://www.arb.ca.gov/diesel/verdev/verdev.htm>

Shawn Daley, Manager

(626) 575-6972

sdaley@arb.ca.gov

Direct all hardcopy submittals to:

Erik White, Chief

Heavy-Duty Diesel In-Use Strategies Branch

Air Resources Board

P.O Box 2815

Sacramento, CA 95812