

# Proposed Amendments to the Verification Procedure

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Public Workshop



June 23, 2009



California Environmental Protection Agency

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Air Resources Board

# Verification Procedure

## Background

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- Adopted May 2002
- Ensures that diesel emission control strategies achieve real and durable emissions reductions of diesel PM and NOx
- Ensures continued system performance through warranty and in-use compliance requirements
- Amendments adopted February 2004, March 2006 and January 2008

# Outline of Proposed Amendments

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- Pre-installation compatibility assessment
- Notification period for incidents during durability/field demonstration changed from 90 to 45 days
- Identification of Transport Refrigeration Units, Auxiliary Power Units, Marine, and Locomotive applications as off-road subcategories with specific testing requirements
- Requirement for accurate date and time stamp for data submitted to substantiate durability and field demonstrations
- Requirement for engine speed to be measured during durability and field demonstration periods

# Outline of Proposed Amendments (continued)

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- Information on DECS maintenance practices
- Component swapping across fleets
- Repower practices
- Warranty claims in excess of four percent may result in revocation, suspension, or modification of existing verification
- Scope of compliance
- Other minor changes and clarifications

# Pre-installation Assessment of Compatibility

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Verification requires installations to adhere to all the terms and conditions of the Executive Order

- Specific requirements for assessment of candidate applications
- Applicants must retain assessment records for the duration of the warranty period
- Exhaust temperature and engine speed must be measured and recorded for strategies whose performance is temperature-dependent

# Pre-installation Assessment of Compatibility (continued)

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- Alternative compliance option for temperature dependent technologies
  - For PM control devices only
  - May demonstrate suitability using previously recorded data from similar engines and applications
  - Only appropriate for vehicles/applications whose engine shares engine family and displacement
  - Must provide written statement to end-user, and upon request to the Executive Officer, that candidate engine meets the required exhaust temperature

# Pre-installation Assessment of Compatibility (continued)

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Note: The modified text found in page 26 of handout, Section 2706 (t)(1)(B) should have included an underline beneath "used in similar vehicles and applications" denoting an addition as follows:

(B)The applicant, distributor, and/or installer can document a pattern of use that, based on previously measured and recorded data from engines used in similar vehicles and applications that share the same engine family name and displacement, would ensure that the exhaust gas temperature profile of the candidate engine adheres to the requirements of the applicable Executive Order, and

# Data logging Requirements

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- Data logging requirements
  - Must be measured and recorded using an independent data logging system
  - Must read the following parameters at least every 5 seconds (0.2 Hz):
    - Date and time
    - Exhaust gas temperature in degrees Celsius
    - Engine speed in revolutions per minute (RPM)

# Data logging Requirements (continued)

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- Specifies location of sensors
- Recorded data must be representative of the duty cycle of candidate vehicle/application.
- Temperature must be measured and recorded for a period not less than 24 hours but long enough to obtain a clear picture of duty cycle
- Data logging system must be synchronized to start and stop automatically with engine operation

# Correction to Section 2704

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The modified text found in page 14 of handout, Section 2704 (d)(2) should have been underlined to denote an addition as follows:

(2) Temperature and Backpressure Measurement Requirements.  
For strategies that include exhaust aftertreatment, engine backpressure, exhaust temperature, and engine speed must be measured and recorded for 1000 hours or over the entire durability period (whichever is shorter).

# DECS Maintenance Practices

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- Cleaning procedures must be identified in Owner's Manual and verification application
- Information must include:
  - Specific cleaning procedures
  - Identification of any equipment necessary to clean and/or maintain components
  - Identification of performance criteria indicating maintenance was performed properly

# Owner's Manual Clarifications

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- Specific procedures for cleaning and maintaining all components of strategy must be outlined
- Indicate if component swapping is permissible across fleets
- Component swapping practices must be included in Owner's Manual
- Parts not covered under warranty provisions must be identified and described
- Potential safety concerns must be addressed

# Repower Event

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- Proposed definition: “Repower” means to replace the engine in a vehicle with another engine meeting a subsequent engine emissions standard (e.g., replacing a Tier 0 engine with a Tier 2 or later engine)
- DECS may remain on a repowered vehicle/application if terms and conditions of Executive Order are met
- Applicable to strategies which are less than 10 years old

# Marine, Locomotive, Transport Refrigeration Units, and Auxiliary Power Units

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- Proposed changes identify these applications as unique subcategories of existing classifications (on-road/off-road/stationary/etc..)
- Introduce definitions to clarify categories proposed in section 2701
- Proposed changes clarify appropriate durability test cycle and appropriate emission test cycle for each subcategory

# Appropriate Sub-category Test Cycle

Proposed changes identify the appropriate test cycle for the following subcategories: (Red font signifies a change from original posting)

<u>Stationary (including transport refrigeration Units and Auxiliary Power Systems)</u>	<u>Marine</u>	<u>Locomotives</u>
Discrete mode test cycle from ARB off-road regulations <u>or another test cycle approved by the Executive Officer</u> (3 hot starts)	<u>Discrete mode test cycles identified in the ISO 8178 test procedure, Part 4, <b>August 15, 1996, Section 8.5, Test Cycles type E "Marine applications"</b></u> (3 hot starts)	<u>40 CFR Part 92 (Subpart B) or 40 CFR Part 1033 (Subpart F)</u>

# Marine, Locomotive, Transport Refrigeration Systems, and Auxiliary Power Systems

- The modified text found in page 12 of handout, Section 2703 (e)(3)(4-5) should have been underlined to denote new language as follows:

(Red font signifies a change from original posting in addition to underline)

- (4) Marine Engines. For marine propulsion engines, the applicant must follow the discrete mode test procedures outlined in the ARB off-road regulations (as referenced in (2) or (2)(B) above), but use the test cycles identified in the International Standards Organization (ISO) 8178 test procedure, Part 4, **August 15, 1996**, Section 8.5, Test Cycles type E “Marine applications”. A minimum of three hot-start tests must be conducted using the specified test cycle. Applicants may request that the Executive Officer consider alternative test cycles and methods, as described in subsection (f).
- (5) Locomotives. (Language to be determined) 40 CFR Part 92 (Subpart B) or 40 CFR Part 1033 (Subpart F).

# Scope of Compliance

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- No person shall sell, offer to sell, or introduce into commerce an ARB verified diesel emission control strategy unless all of the conditions of the governing Executive Order and the procedure are met
- Failure to comply with terms of Executive Order or Verification Procedure may result in penalties such as modification, revocation or suspension of Executive Order
- Specific prohibition against representing a non-verified device as verified

# Miscellaneous

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- Third party statement must identify vehicle/engine and include fleet contact person
- Clarification - installation warranty covers full repair or replacement cost of strategy, including parts and labor
- Reference to "Diesel Emission Control System" changed to "Diesel Emission Control Strategy" throughout
- In the event of a failure during field demonstration, applicants must report event and circumstances within 45 days (previously 90)
- Clarification - All labels must be approved by Executive Officer and used on ARB verified devices only
- Clarification - Warranty reports must be submitted separately for each individual DECS family name
- Provide contact for new application submission

# Next Steps

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- Provide comments on proposed amendments by July 8, 2009
- Public Hearing scheduled for October 22-23, 2009
- Contact Information:

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Please visit our website at:

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

# Questions/Comments

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