Marine, Large SI, and Heavy Duty SI Overview
Overview

• Organization
• Compliance Process and Common Issues
• Selective Enforcement Audits
• Defect Reporting
• Engine Testing Issues and Laboratory Inspections
• Fuel Issues
• Engine Maps
• Exhaust System Integrity
• Auxiliary Emission Control Devices
• Our Compliance Team
How Do We Fit in the Organization

Compliance Division Director – Byron Bunker

Gasoline Engine Compliance Center – Cleophas Jackson, Director

- Gasoline Engine Compliance Audits – Mike Delduca
- Small Spark-Ignition Engines, Julia Giuliani, Sector Lead
- Evaporative Components, Trina Vallion

Compliance Analysis, Phil Carlson

- Heavy Duty Highway Spark-Ignition Engines, Marine Spark-Ignition Engines, and Large Spark-Ignition Engines (mobile and stationary), Peter Caffrey, Sector Lead
- Highway Motorcycles, Recreational Vehicles and Snowmobiles, Mike Delduca, Sector Lead
Compliance Process

• Application Review
• Corroboration tests
  – In-use, production line, confirmatory, selective enforcement audits
• Laboratory inspection and audit
• Review requests for special test procedures
• Ensure manufacturers are adhering to the regulations
• Ensure a level playing field for all manufactures
• Assist manufacturers in the process of achieving compliance with the regulations
Common Compliance Issues

• Warranty
  – Pay close attention to 40 CFR 1068.115
  – Prohibitions on denial of warranty claims by manufacturers

• Defeat devices
  – Examination of off-cycle emissions 40 CFR 1068.101(b)(2)
  – EPA is ramping up testing for defeat devices

• Exemptions
  – Test engines, display, manufacturer owned, national security, export, competition

• Hardship provisions
  – Governed under 40 CFR 1068 subpart C
  – This is a high bar – In the past brought up to the Office Director level
Selective Enforcement Audits

- 40 CFR 1068 Subpart E contains the rules for Selective Enforcement Audits (SEAs)
- EPA will utilize SEAs as part of its overall compliance process
- Process
  - EPA will randomly select up to 30 engines from the particular family
  - Engines will be locked down in a secure location
  - They will be tested at EPA directed location
  - Rules for pass or fail are in Appendix A to Subpart E
Emission Defect reporting

• Defect reporting (whole center)
  – When is a defect a defect? 40 CFR 1068.501(e)

• Explanations of components covered 40 CFR 1068.501(a)

• Items to consider
  – Thresholds for conducting an investigation
  – Thresholds for filling a report
  – Future production
    • Once a design or defect is identified
    • Defect must be corrected as soon as possible
    • This applies regardless of any requirement to conduct an investigation or submit a report
Engine testing – Issues we have seen

- Improper test equipment
- Improper calibration of equipment
- Improper record keeping
- Expired gas bottles
- Improper fuel used for test
  - Aged, etc.
  - EPA will take fuel samples for evaluation
- Pre and post catalyst exhaust leaks
- If tests are performed at a laboratory independent of the manufacturer and an issue with testing arises then the manufacturer is still responsible the ramifications of the improper or incorrect test
Laboratory Inspections

- EPA will provide suggestions for best practices
- In egregious cases EPA will take more appropriate steps
  - Review of past certification tests
  - Additional testing at an alternate location
  - Not allowing certification data from that laboratory
Fuel Issues

- 40 CFR 1065 Subpart H governs the fuels to be used as referenced by the standard setting part
- California Air Resources Board (CARB) has mandated the use of an E10 fuel (LEV3) for all testing
- EPA requires E0 test fuel and has also defined an E10 (Tier3) fuel - both specifications are in 40 CFR 1065.710
- As a result of an examination of the regulations EPA will accept test performed for MSI, LSI, and HDSI on either EPA E10 or CARB E10
  - EPA reserves the right to conduct its own testing on E0 fuel as defined in 40 CFR 1065.710(c)
Fuel Issues

• What is coming up regarding fuels?
• Technical amendment process is examining the technical basis behind altering the standards for oxygenated fuels depending upon the technology used.
• The purpose is to maintain the stringency of the standards when using an E10 fuel as opposed to E0.
• At this point nothing has been set.
• EPA’s tests will continue to be performed on E0 for the foreseeable future.
Confirmatory Tests

- These are tests performed by EPA on new engines
  - 40 CFR 1068.27 LSI and MSI
  - 40 CFR 86.091-29 HDSI

- These can be done at an EPA laboratory or upon EPA’s discretion we may test at a manufacturer’s test facility

- The results of this test will replace the manufacturer’s own certification test in EV-CIS and thus become the official certification test for that engine
Confirmatory Tests

• Manufacturer must make a test engine available within a reasonable amount of time.
• The certificate will not be awarded until the testing is complete and the new test information is placed into EV-CIS and reviewed.
• It is critical that any special issues related to testing the particular engine need to be communicated beforehand:
  – EPA will have pretesting meetings to allow for this type of communication
  – Manufacturer is provided with an engine information sheet to begin the process
• EPA will pay for the initial tests performed at its own contract laboratories.
• Manufacturer will upon, an initial failed test, be allowed to make reasonable alterations:
  – EPA will then pay for the second test
  – All subsequent tests are the manufacturer’s responsibility
• Engine maps are required under 40 CFR 1065.510
• EPA has requested copies of the Engine Maps be included in each application
  – Most manufacturers are providing these maps
  – Engine Maps assist in EPA’s efforts to ensure that the testing is performed on the correct basis
  – Follow the process of 40 CFR 1065.510 for the map generation
  – Follow 40 CFR 1065.610 for duty cycle generation
  – SAE corrected maps are not permitted
Exhaust System Integrity

• EPA is concentrating on exhaust system integrity
  – During an emission test – Perform a chemical balance of fuel, air intake and exhaust, or some other proof
  – Test configuration must be consistent with production systems
  – Engine manufacturers must ensure that equipment manufacturers build in a manner consistent with the test equipment
  – Will be investigating this during confirmatory tests and checks on equipment in midlife

• 40 CFR 1065.130(e) informs the manufacturer to “Minimize leaks sufficiently to ensure your ability to demonstrate compliance with the applicable standards.”
Auxiliary Emission Control Devices

- EPA is taking a closer look at AECD algorithms
- To facilitate this EPA has created a new template that will standardize the process of submitting AECDs
- The template will allow for a faster and more thorough review process
- We expect the new template to be available soon
- For HDSI families
  - Part 85 certifications need not have access to all the AECDs of the OEM
  - Part 86 certification must provide information on all AECDs
Your Compliance Representatives

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