Off-Road Compression-Ignition Engines

Q/A and Update

2008 EMA Certification Workshop

April 15, 2008

California Environmental Protection Agency
Air Resources Board

OFCI - DETERIORATION FACTORS

- Submit the durability plan to ARB prior to conducting any durability tests
- Durability testing is required to calculate the deterioration factor (DF) for each engine family
- Within each engine family, manufacturers may choose the worst case model for durability test to minimize their testing burden

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- Worst case model is defined as the model with the highest emissions deterioration
  - Factors to consider include highest fueling rate, aftertreatment technology etc.
  - "Sales-weighted" model is not the worst case model
- DFs can be additive or multiplicative
  - Aftertreatment device – multiplicative
  - No Aftertreatment device – additive

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- For established emission control technology
  - Use minimum 1,000 hours of durability testing and extrapolate to useful life
- For new emission control technologies, such as DPFs and catalysts
  - Age the engine to at least half of the useful life and extrapolate the results to useful life
- Manufacturers may carry-across DFs to other engine families subject to ARB approval
- DF carry-over to subsequent model years is allowed, if no change