NGV Commercial Fuel Spec

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Proposal

- Statewide MN80
- Regional MN73 with criteria
- Wobbe index TBD
- C4+ max 1.5 percent
- Inerts max 4%
- Other
MN80

- Relates to knock resistance of fuel
- Critical criteria for spark ignited natural gas engines
- Sound rationale for MN80 spec from engine manufacturers
- Greater flexibility in gas operations without sacrificing engine durability
MN73

- Appropriate for current HD natural gas lean burn engines
- Manufacturers advertising engines can operate as low as MN65
- **Regional exemption** with appropriate station access security provisions has been *shown to work*
- Provides operational flexibility to utilities
Wobbe Index

- MN defines a very broad spectrum of fuel compositions
- Superimposing Wobbe Index criteria on top of MN
  - Specifies smaller range of gas compositions
  - Adds protection for stationary sources
C4+

- Unsure why a C4+ spec needed on top of MN spec?
- NGV industry has never indicated a problem with C4+
- Concerns always on ethane and propane
- Can C4+ spec be dropped??
Inerts

- Inert specs defined years ago were based on historical averages in natural gas not by identified problems with limits
- Inerts did cause problems with first generation lean burn engines with wide range oxygen sensors (for feedback control)
- Believe oxygen sensor problems resolved years ago
- Need better rationale for defining inert limits
Changes in Engine Technology

- 2007 engine technology changes to stoichiometric operation with 3-way catalysts
- Engine manufacturer prior support for lower MN based on development of “world” lean burn engines to be used anywhere in the world
- Ability to “operate” with low MN fuel does not necessarily mean that performance of engine (HP, torque) will be same for all fuel compositions
Changes in Engine Technology

- While LD vehicles (stoichiometric operation with 3-way catalysts) have very high tolerance for fuel variability – 2007 HD technology may not (untested)
- Adoption of MN80 spec not viewed as a problem for engine manufacturers
- Adoption of MN73 spec may cause concerns regarding performance of 2007 technology
Certification Fuel

- Current CARB certification fuel is better quality than existing CARB commercial fuel spec or MN80
- All engine development and certification based on CARB certification fuel including 2007 low emission product (0.2 gram NOX)
- CARB indicates that change in commercial fuel spec would necessitate a change in the certification fuel spec
- Engine manufacturers don’t want to see changes in certification fuel spec in the middle of their product 2007 product development cycle
What is Needed

- Additional dialog with engine manufacturers regarding how gas composition below MN80 will impact engine durability and emissions of “2007” product
- Discussion of how lower certification fuel spec will have on product emissions
Conclusions

- See no obstacles of adopting MN80 spec immediately
- See no problems with regional exemptions
- Adopting specifications below MN80 will require evaluation of
  - Current lean burn technology vs “2007” technology
  - Impact on the industry of potential changes in the certification fuel spec
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