Diesel Fuel Lubricity; The Need for ***Sensible*** Specification

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A “non-technical” presentation by

Manuch Nikanjam

Background

- Diesel fuel lubricity has been the subject of research for many groups since at least 1989.
- Most agree that injection equipment require a level of lubricity to prevent excessive wear.
- Any specified level should be sufficient to protect equipment, but not too high to cause other problems and increase fuel cost.

What Happened?

- The U. S. including CA has not experienced problems for the low sulfur and the low aromatics fuels since 1993 because the industry has been aware of this issue and has taken necessary measures to address it.
- More specifically, California has had a recommended level and a monitoring process that has worked well.

What Happened…

- In the last two years CARB has increased focus in preparation for 2006 15-ppm sulfur introduction.
- During this period, all signs showed that a rational approach was being considered.
- As of few days ago, we learned that a new proposal is being propose.
- So what happened?

Equipment Type; A Different View

- Older equipment:
  - Some required higher lubricity.
- Current equipment:
  - They can handle lower lubricity.
- Future equipment (unprotected):
  - They may need higher lubricity (need data).
- Future equipment (protected):
  - They don’t need higher lubricity fuel and are on the roads in the U.S. today.

Let’s Be Practical

- We should not have a proposal that deals with one test method for a couple of years and switches to another one in 2006.
- Fuel suppliers would have to purchase units, higher and train operators.
- Shortly after, they would have to repeat the cycle.
- Either test method can work if the level is appropriate.

Let’s Be Practical

- We don’t need a complicated scheme that specifies additive levels and certification.
- The lubricity of the finished product (fuel) is what the equipment will see.

Keep Tools Flexible

- Lubricity level is affected by crude source, processing, blending, and/or additive use.
- We should not be restricted to use one tool only.
- Excessive additive concentrations can be harmful
  - Sediment Formation in Fuel
  - Gum Formation When Exposed to Crankcase Oil
  - Water Retention in Other Fuels Such as Jet

Why Is CARB Doing This?

- It generally is accepted that if the lubricity is too low, in some cases excessive changes in fuel flow can affect emission.
- Current levels in California and those proposed by ASTM are more than sufficient to address this concern.
- We need credible and technical data to show that further increase in lubricity will improve emissions.
- If not, this is a performance/marketing issue. It belongs to ASTM.
- EPA has said that they won't deal with it unless they see emissions related data.

Let's Learn from the Past

- CARB 10 % aromatics fuel:
  - It was great that is was proposed based on substantial technical data, including a major study by the Coordinating Research Council.
  - It was not so good that the second phase of the study was not considered to learn the effect of Cetane Number.
  - It resulted in unnecessary complications with the alternative fuel certification, etc.

Previous Model Worked

- CARB fuel had an affect on the environment and was worth keeping.
- Elastomer leaks, shortages, and the higher cost had the potential to do away with this fuel.
- It was good that CARB became involved and dealt with the issue and included lubricity to save the fuel.

EPA / CARB Difference

- A more strict and unnecessary CARB regulations will create yet another difference between EPA and CARB fuel.
- This will cost more and will have the potential for harmful side effects.
- European auto makers would have to make special vehicles for California.
- Non-California cars cannot come to Calif.

Let’s Make the LDD a Success

- It is hoped that people purchase a diesel vehicle with the higher engine cost to make up the difference in lower fuel cost.
- We should not make the fuel more expensive than it is.
- They also would like to be able to drive their vehicle outside California.

Other Fuel Properties for LDD

- Auto makers and engine manufacturers are working hard to develop vehicles that meet the stringent emissions requirements of the near future.
- They need several fuel properties to help them to be successful.
- Lubricity alone is not going to do it.

CRC Diesel Performance Group

- We have formed a very energetic group at CRC to address these properties.
- Several panels have been formed already.
- The lubricity panel is defining a program to conduct testing to define injection equipment needs.
- A cost analysis to follow can determine what level of fuel lubricity and what level of equipment protection are optimum.

Let’s Wait for the Science

- This work should take nine months to 1.5 years to complete.
- There will be plenty of time to apply the results by the time the LDD is here in sufficient numbers.
- Setting a high level with no technical data will set a bad precedent.

What is the Harm?

- If CARB regulates an unnecessarily high lubricity level, equipment will be built to that specification.
- Once the equipment is on the road, there is no going back. Therefore we will be stuck with a high level.
- ASTM would have no incentive to work on it anymore.
- CRC program will not be needed either.

What is the Harm…

- If unnecessarily high levels are regulated, an order of magnitude more additive is required.
- This level of additive has the potential to cause problems in the distribution system and with some equipment.
- Fuel terminal additization is required. It is costly and again will add to the cost of fuel.
- This won't eliminate all harmful side effects. In this case harm is more important than cost.

Wait for Technical Data

- EMA has endorsed our proposed ASTM level.
- NCWM is proposing a similar level for premium fuel.
- Navistar has new high pressure equipment which tolerates very low lubricity fuels.
- Other injection equipment manufacturers have products in the market that handles current fuels.
- Some in Europe are considering a more moderate level in the U.S.

The Bottom Line

- There will be no catastrophic failure if the current Calif. or proposed ASTM level is adopted. We won't lose the new fuel regulation. Emissions won't be affected.
- Let's look for credible technical data that demonstrates that any higher level will have an emissions benefit.
- If no emissions benefit, it is a performance/marketing issue and of no concern to CARB.

The Bottom Line

- ASTM is working hard to adopt a specification but there is no guarantee.
- For that reason it may appropriate for CARB to regulate a sensible level to ensure that the lower sulfur fuel is a success to reduce emissions.
- Once ASTM completes this work, CARB can drop the local requirement.

The Bottom Line

- We are working to improve the precision of the test method.
- We are considering new and modified test methods.
- We are evaluating the requirement of future equipment through additional work at ASTM and possible CRC.
- We can adjust the level as needed.