WHAT IS ULTRA LOW SULFUR DIESEL FUEL (ULSD)?

- ULSD is diesel fuel with a maximum sulfur content of 15 ppm (parts per million) and is often referred to as S15. S15, S500, and S5000 are designations for diesel fuels that meet 15 ppm, 500 ppm, and 5000 ppm maximum sulfur content, respectively.
- ULSD will be required for all 2007 and later model year on-road diesel engines.

WHAT IS THE TIMELINE FOR THE INTRODUCTION OF ULSD FUEL?

- On-Road Diesel Fuel target dates (not required to convert to ULSD)
  - Refinery – June 1, 2006.
  - Terminals – September 1, 2006 (California is July 15, 2006)
  - Retail – October 15, 2006 (California is September 1, 2006)
- Non-Road/Construction conversion target is June 1, 2007 for S500 then June 1, 2010 for S15.
- Marine and Locomotive ULSD conversion target is June 1, 2007 for S500 then June 1, 2012 for S15.

WHAT ARE DIESEL DISPENSER PUMP LABELING REQUIREMENTS?

All dispenser pumps must be labeled based on U.S. Environmental Protection Agency (EPA) guidelines and indicate the sulfur level and designation of the fuel. For example, any dispenser with ULSD (S15) will state the fuel is required for use in all model year 2007 and later highway diesel vehicles and engines, also recommended for use in all diesel vehicles and engines. Any dispenser with S500 (500 ppm of sulfur) diesel fuel will state that the fuel is not suitable for fueling model year 2007 and later vehicles.

- The following EPA website provides more details on the dispenser labeling requirements:

  http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=dcf4c185891dd3789d7d8a576cb6863&rgn=div8&view=text&node=40:16.0.1.1.9.9.58.39&idno=40

WHAT IS THE CHEMICAL DIFFERENCE IN THE ULSD FUEL?

There is no major chemical difference between current diesel fuels and ULSD. ULSD is just further processed to remove more sulfur. There are, however, certain fuel characteristics that may be affected:

- LUBRICITY – Diesel fuel must adequately lubricate the fuel injection system components. The processing required to reduce sulfur to 15 ppm also removes naturally occurring lubricity agents in diesel fuel. All ULSD fuel will meet the required lubricity specification. Lubricity additives will be used if needed.
- FUEL DENSITY – The processing required to reduce sulfur to 15 ppm can reduce density of the diesel fuel, resulting in a slight reduction in energy content (BTU/gal).
- CETANE – The processing required to reduce sulfur to 15 ppm reduces the aromatics content resulting in an increase to the cetane number. Any improvement in cetane will vary with refinery source.
- COLD FLOW – The processing required to reduce sulfur to 15 ppm may affect cold flow response. Cold flow requirements change seasonally and regionally and ULSD will meet the local requirements by use of appropriate additives and/or blending with No. 1 ULSD.

WILL THE OLDER ENGINES REQUIRE THE NEW ULSD FUEL?

No, but older engines can use ULSD without modifications to the engines.
**WHY DO I NEED TO USE THE ULSD FUEL IN MY NEW 2007 ENGINES?**
- Primarily because use of higher sulfur fuels can damage engine exhaust after-treatment devices designed to reduce emissions.
- EPA states these new regulations will significantly reduce nitrous oxide (NOx) and particulate emissions.
- EPA has established a comprehensive program to regulate diesel fuel along with the production of diesel engines.
- Model Year 2007 diesel engines will be required to meet more stringent emissions requirements that will likely result in the use of high-efficiency catalytic exhaust emission control devices.

**WHAT WILL BE THE COST OF THE NEW ULSD FUEL?**
The retail price of ULSD will be market (supply/demand) driven.

**WILL THERE BE A FUEL PENALTY FOR USING THE ULSD FUEL?**
- Pre-2007 engines: fuel density will decrease slightly and this may impact fuel economy.
- 2007 and later engines: these engines will have additional emissions control devices that, depending on design, may have an additional effect on mileage.

**WHAT IS THE PROCESS FOR CHANGING OUR TANKS OVER TO THE ULSD FUEL?**
- The suggested practice is to minimize tank inventory during the transition period (June through October) and also inspect and clean tanks that are in need of cleaning.
- Particularly during ULSD transition, good housekeeping practices and removal of tank sludge/sediment/contamination will be very important.
- Each facility should demonstrate ULSD compliance prior to posting the ULSD label.
- Contact your COP representative for guidance in developing a Quality Assurance Plan (QAP) for tank conversions and product handling at your facility.

**CAN THE ULSD FUEL BE MIXED WITH THE 500 PPM DIESEL FUEL?**
- ULSD can be mixed with S500, however it will have to be downgraded up to annual limits per facility. Downgraded product must be labeled accordingly and limited to S500 sales.

**WHAT CAN I DO TO MAKE SURE MY TANKS ARE FREE FROM BACTERIAL GROWTH?**
- Bacterial growth can occur at the water/oil interface. Without water, there is no growth. Because ULSD may be more susceptible to bacterial growth, a good tank maintenance (housekeeping) practice is even more important. Routine water bottom draining and tank bottom sampling should be established to ensure a clean system and that housekeeping measures are sufficient.

**IF I ALREADY HAVE BACTERIAL GROWTH HOW DO I TREAT THE TANKS TO ELIMINATE THE CONTAMINATION?**
- Contact a tank cleaning or chemical company that specializes in tank remediation. Please contact your regional ConocoPhillips representative for assistance.

**WHAT HAPPENS IF A STATION IS OUT OF COMPLIANCE?**
- Stop sales of ULSD immediately.
- Re-label/downgrade to S500, remove product, etc.
- Show documentation for receiving certified ULSD.
- Have a Quality Assurance Plan (QAP) in effect showing proper storage/handling/sampling etc.
- Demonstrate no contamination at the site.
- EPA has established fines and damages for facilities found not to be in compliance. See EPA link below.

**REFERENCE LINKS:**
- Heavy duty engine and vehicle standards and highway diesel fuel sulfur control requirements
- Clean Diesel Trucks and Buses Rule
  http://www.epa.gov/otaq/highway-diesel/index.htm

For more information visit www.conocophillipslubricants.com or call 1-800-766-0050

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