

# *Warner Robins Air Logistics Center*

**AFMC**

WARNER ROBINS AIR LOGISTICS CENTER



## Informational Brief Diesel Engines and MIL-PRF-83133 JP8 Fuel In Transition

**642d  
Combat Sustainment  
Group (CBSG)**

**Bill Likos  
Engineer  
478-222-1780**



# OVERVIEW



*WARNER ROBINS AIR LOGISTICS CENTER*

- **Fuel Requirement**
- **JP-8 as a Diesel Fuel**
- **Synthetic JP-8**
- **Questions**



# Fuel Requirements And Impacts



*WARNER ROBINS AIR LOGISTICS CENTER*

- Need to Operate Deployable Tactical Equipment on JP-8
- Highway Vehicles since 2007 and Tier 4 non-road Engines coming in 2011 cannot run on JP-8

Emission control technologies intolerant of the sulfur in JP-8



# Meeting the Requirement



WARNER ROBINS AIR LOGISTICS CENTER

- At least one manufacturer has an export version of their highway vehicle that they warrant for high sulfur and ULSD use.
- Non road, or “Tiered Engines” will continue to be available for the export market after 2011 but not all models
- **Contractors need to confirm with OEM manufacturer the continued availability of their sulfur tolerant vehicles and engines**



# JP-8 as a Diesel Engine Fuel



WARNER ROBINS AIR LOGISTICS CENTER

- JP-8 has marginal lubrication compared to diesel fuel
  - Higher pump wear
- Energy density is less than diesel fuel
  - Less maximum power and range
- JP-8 contains significantly more sulfur
  - Can't use EGR or exhaust after treatment
  - Need engine lubricant formulated for sulfur



# Semi-synthetic JP-8



WARNER ROBINS AIR LOGISTICS CENTER

- Secretary of the Air Force
  - Development of domestic alternative fuels is essential for the Air Force
  - All certification actions to be completed by early 2011
  - By 2016 the Air Force will require 50% of it's CONUS fuel to be semi-synthetic Fischer Tropsch



# Semi-synthetic JP-8



WARNER ROBINS AIR LOGISTICS CENTER

- New JP-8 Spec (2008) allows blending up to 50% of Synthetic Paraffinic Kerosene (SPK) produced by the Fischer Tropsch process into conventional petroleum JP-8
- SPK consists of the best fuel hydrocarbons found in conventional petroleum, straight chain paraffins, and less than 1% undesirable aromatic ring compounds
- All MIL-PRF-83133F properties are met
- Nothing new is added !! Just the proportions



# Semi synthetic JP-8 Testing



**Selfridge ANG Base, MI.**

*WARNER ROBINS AIR LOGISTICS CENTER*

**Dec 2007 to Feb 2010**

A/M 32A-60 turbine starter

A/M 32A-86 100kW generator

R11 Oshkosh refueler

C300 refueler

GM 6.2 L stake bed truck

NGH flight line heater

Ford F-350 '07 modified FLTT

Duetz powered MJ-1 B/C bomblift

**NO PROBLEMS REPORTED**





# Semi synthetic JP-8 Testing



WARNER ROBINS AIR LOGISTICS CENTER

- Southwest Research Institute
  - 250 hour pump bench tests
  - Performance tests of 6.5L HMMWV engine
  - Caterpillar C7 performance test
  - MEP 803A 10 kW generator
- **No Difference between Conventional and Synthetic JP8**
- Will be conducting 210 hour tests of Ford Super Duty during 2010



# QUESTIONS



**AFMC**

**WARNER ROBINS AIR LOGISTICS CENTER**

