

LIST of ACRONYMNS

ANL	Argonne National Laboratory
ANPRM	Advanced Notice of Proposed Rule Making
APBF	Advanced Petroleum Based Fuels
API	American Petroleum Institute
ARS	Agricultural Research Services
BD20	Biodiesel (20% MeSoyate in Diesel Fuel)
CLR	Cylinder, Liner, Ring
CMA	Chemical Manufacturers Association
CO	Carbon Monoxide
CRC	Coordinating Research Council, Inc.
DECSE	Diesel Emissions Control - Sulfur Effects
DENOX	Diesel Engine Nitric Oxide Catalyst
DEO	Diesel Engine Oil
DI	Dispersant Inhibitor
DME	Dimethyl Ether
EC	Emission Control
EDX	Electron Dispersive X-ray
EGR	Exhaust Gas Recirculation
EMA	Engine Manufacturers Association
EPA	Environmental Protection Agency

DOJ	Department of Justice
FT	Fischer-Tropsch
FTV	Federal Test Vehicle
HC	Hydrocarbons
HDD	Heavy Duty Diesel
LEDEO	Low Emission Diesel Engine Oil
LHR	Low Heat Rejection
MECA	Manufacturers Emissions Control Association
MeOH	Methanol
MTU	Michigan Technological University
NCAUR	National Center for Agricultural Utilization Research
NOx	Nitric Oxides
NIST	National Institute of Standards and Technology
NPRA	Notice of Proposed Regulatory Action
NREL	National Renewable Energy Laboratory
OHVT	Overview of Heavy Vehicle Technologies
OEM	Original Equipment Manufacturer
PAO	Polyalphaolefin
PC-9	Proposed Category 9
PC-10	Proposed Category 10
PM	Particulate Material
PPM	Parts per minute
PSU	The Pennsylvania State University

R&D	Research and Development
SAE	Society of Automotive Engineers
SCR	Selective Catalytic Reduction
SDL-1	Synthetic Diesel Lubricant
SEM	Scanning Electron Microscope
SOF	Soluble Organic Fraction
SwRI	Southwest Research Institute
TBN	Total Base Number
USDA	U.S. Department of Agriculture
USDOE	United States Department of Energy
VECSS	Vehicle Engine Cooling System Simulation
VI	Viscosity Index
ZDDP	Zinc Dialkyl Dithiophosphate
ZDP	Zinc Dithiophosphate
ZDTP	Zinc Diaryl Dithiophosphate

REPORT DOCUMENTATION PAGE

Form Approved
OMB NO. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE June 2000	3. REPORT TYPE AND DATES COVERED Subcontract Report	
4. TITLE AND SUBTITLE Exploring Low Emission Lubricants for Diesel Engines			5. FUNDING NUMBERS BF006001	
6. AUTHOR(S) J.M. Perez				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Perez Consulting and Technical Services 1762 Princeton Drive State College, PA 16803			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) National Renewable Energy Laboratory 1617 Cole Boulevard Golden, CO 80401-3393			10. SPONSORING/MONITORING AGENCY REPORT NUMBER NREL/SR-570-28521	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION/AVAILABILITY STATEMENT National Technical Information Service U.S. Department of Commerce 5285 Port Royal Road Springfield, VA 22161			12b. DISTRIBUTION CODE	
13. ABSTRACT (<i>Maximum 200 words</i>) A workshop to explore the technological issues involved with the removal of sulfur from lubricants and the development of low emission diesel engine oils was held in Scottsdale, Arizona January 30 through February 1, 2000. It presented an overview of the current technology by means of panel discussions and technical presentations from industry, government, and academia.				
14. SUBJECT TERMS diesel, sulfur, lubricants, low emission diesel			15. NUMBER OF PAGES 475	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT	

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. Z39-18
298-102