

AD-A279 765



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INTRODUCTION

The U.S. Army Belvoir Research, Development and Engineering Center is one of two research centers reporting to the U.S. Army Troop Support Command (TROSCOM) which is a subordinate command under the U.S Army Materiel Command.

Within the Belvoir Research, Development and Engineering Center (BRDEC), the Fuels and Lubricants Division of the Materials, Fuels and Lubricants Directorate has technical responsibility within the Department of the Army for mobility fuels, lubricants, functional fluids, and corrosion preventatives which encompasses management and execution of research and development programs within the Fuels and Lubricants Field of Endeavor.

Qualification Testing Programs for those Army Petroleum and Associated Product specifications having Qualification Product Listing requirements.

Engineering Support for standardization activities in Petroleum and Associated Product specifications/standards/related handbooks.

The Fuels and Lubricants (F&L) Program, as structured, is designed to meet both short and long range objectives and requirements for fuels, lubricants, power transmission/hydraulic fluids, corrosion preventatives, greases, weapon lubricant and specialty compounds. The program primarily addresses the specific needs to Army combat/tactical equipment. To accomplish these tasks, the Fuels and Lubricants Division is supported by a unique dedicated contractor-operated facility located at Southwest Research Institute, San Antonio, Texas known as the Belvoir Fuels and Lubricants Research Facility (BFLRF). This is considered an "in-house" facility of the Belvoir Research, Development and Engineering Center.

The objective of the F&L Program technology base program is to elevate combat readiness and reduce life cycle costs of Army equipment through the following:

- o Developing a capability for utilizing commercially available and other alternative fuels,
- o Development of reduced vulnerability concepts for fuels and fluids,
- o Improving commonality of petroleum and related products within the supply system,
- o Satisfying use requirements of petroleum and related products for all mobility systems, and
- o Increasing RAM-D factors for all equipment by improving overall quality of petroleum products procured and distributed through Class III systems.

Since the nature of this program does not involve hardware development as POL is a consumable item, the results accruing from the RDTE program manifest

themselves as improved capabilities, solutions to user problems, new product specifications/standards/handbooks, patents, reports, and technical publications. Formal reports and technical publications represent a means by which project results and conclusions can be disseminated to the user/developer and scientific communities. To this end, a chronological listing of all formal reports and technical publications published since 1960 has been prepared to provide a collective source of technical information, to the user and materiel developer. This cumulative listing encompasses the following:

- o Formal government reports prepared by Belvoir Research, Development and Engineering Center of the F&L RDTE mission (NOTE: this includes those reports completed prior to the disestablishment of the Coating and Chemical Laboratory in June 1974).
- o Formal government reports prepared by Belvoir F&L Research Facility personnel in support of the F&L RDTE mission.
- o Technical publications presented in the open literature (trade journals, etc.) by in-house personnel in support of the F&L RDTE mission (NOTE: this includes those publications completed prior to the disestablishment of the Coating and Chemical Laboratory in June 1974).
- o Technical publications presented in the open literature by Belvoir F&L Research Laboratory personnel in support of the F&L RDTE mission.

This listing does not include those formal reports and publications prepared by Frankford Arsenal or Rock Island Arsenal personnel who were formerly provided 6.2 RDTE funding by HQ, U.S. Army Materiel Command to support the F&L program during the 1960-70 time frame.

Any comments, questions or recommended changes relative to this cumulative listing of reports and publications will be appreciated. This information should be forwarded to the following:

Commander
U.S. Army Belvoir Research, Development and Engineering Center
ATTN: STRBE-VF (Chief, Fuel and Lubricants Division)
Fort Belvoir, VA 22060-5606

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LISTING OF IN-HOUSE TECHNICAL REPORTS OF
 FUELS & LUBRICANTS DIVISION (INCLUDING FUELS DECONTAMINATION PROGRAMS)
 SINCE 1960

<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
Heat Transfer Efficiency of Automotive Engine Lubricants	CCL-90	236584	May 60	H. K. Ross
Storage of Brake Wheel Cylinders w/Mineral Oils	CCL-92	240026	Jul 60	C. B. Jordan
Storage of Ethylene Glycol With Various Inhibitors	CCL-100	254003L	Apr 61	C. B. Jordan
Field Tests of MIL-H-46046(ORD), Hydraulic Fluid, Non-Petroleum Base, Automotive (Preservative and Limited Operational)	CCL-102	255319	May 61	C. B. Jordan
Improved Multipurpose Corrosion Inhibitor	CCL-113	279287	Mar 62	C. B. Jordan
Development of An All-Weather Hydraulic Brake Fluid	CCL-115	281183	Jun 62	C. B. Jordan
Engineering Studies on Solubilization Additives for Water in Mineral Oil	CCL-118	282237	Jul 62	C. B. Jordan
Design, Development and Evaluation of Military Design Filter/Separators	ERDL-1716	-	Jun 62	L. L. Stark J. C. Estabrook
Compatibility of Coolants With Automotive Cooling Systems Containing Aluminum Components - 1st Report	CCL-125	283607	Jun 62	C. B. Jordan
Evaluation of Commercial Anti-Freeze Compounds	CCL-128	439902	Oct 62	J. B. Counts
Development and Evaluation of Gum Preventive, Gasoline	CCL-130	290723	Dec 62	J. B. Counts
Field Tests (Semi-Storage of MIL-H-46046 (ORD), Hydraulic Fluid Non-Petroleum Base, Automotive (Preservative and Limited Operational)	CCL-131	292322	Jan 63	C. B. Jordan
The Determination of Chloride Ion Concentrations in Inhibited Engine Coolants	CCL-135	295585	Feb 63	R. Wagner

Listing of In-House Technical Reports of Fuels & Lubricants Division Since 1960 (Con't)

<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
Consolidated Diesel Electric Corporation Preproduction Model Bowser 600-GPM Filter/Separator for Air Force MH-2A Fuels	ERDL 1741	-	Mar 63	R. N. Brown R. R. Rogowski
Test and Evaluation of Briggs Filter/Coalescor for use in Military Design Filter/Separators	ERDL 1745	-	Apr 63	J. C. Estabrooke
Final Report on Compatibility of Coolants With Automotive Cooling Systems Containing Aluminum Components	CCL-145	409693	Jul 63	C. B. Jordan
Design, Development, Test and Evaluation of a 15-GPM Liquid Fuels Filter/Separator	ERDL 1752	-	Aug 63	A. A. Gariepy
Test and Evaluation of Bendix Filter/Coalescer Elements for Use in Military Design Filter/Separators	ERDL 1755	-	Sep 63	J. E. Estabrooke
Test and Evaluation of Purolator Filter/Coalescer Elements for Use in Military Design Filter/Separators	ERDL 1756	-	Sep 63	J. C. Estabrooke
Development and Evaluation of a Laboratory Bench Scale Heat Transfer Apparatus	CCL-146	421973	Oct 63	R. Buntin
Desert Field Test - All Weather Brake Fluid	CCL-147	418590	Oct 63	C. B. Jordan
Procedure for Determining Crankcase Oil Dilution	CCL-148	432500	Dec 63	M. E. LePera
Arctic Field Test - All Weather Brake Fluid	CCL-151	425420	Dec 63	C. B. Jordan
Test and Evaluation of Warner Lewis Filter Coalescer Elements for Use in Military Design Filter Separators	ERDL 1764	-	Jan 64	J. C. Estabrooke
Environmental and Operational Evaluation of Filter/Coalescer Elements	ERDL 1765	-	Jan 64	J. C. Estabrooke

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<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
New Corrosion Inhibitors For AntiFreezes	CCL-155	43366	Mar 64	C. B. Jordan
The Development of An Improved Cooling System Corrosion Inhibitor	CCL-156	433829	Mar 64	J. H. Conley
Performance Capabilities of Military Dimension Filter/Coalescer Elements at 20-GPM Flow Rate	ERDL-1774	-	Apr 64	J. C. Estabrooke
Design, Development, Test and Evaluation of a 50-GPM Conversion Kit for Upgrading Performance of Existing Filter/Separators on M49C Tank Trucks	ERDL-1776	-	May 64	G. A. Gariepy
Project BEARS (Bacteriological Effects, Aircraft Refueling Systems)	ERDL-1789	-	Oct 64	R. R. Rogowski R. N. Brown
Development of a Procedure for Determining Trace Quantities of Zinc in Aircraft and Automotive Engine Fuels	CCL-174	610704	Feb 65	M. E. LePera
Preliminary Studies on the Storage Stability of Brake Fluids	CCL-176	458510	Mar 65	C. B. Jordan
Evaluation of Fran-Warner Lewis Element Replacement Kit, Model FFU-12/E, for 600-GPM Filter/Separator of Air Force MH-2A Fuels Manufactured by Consolidated Diesel Electric Corporation	ERDL-1808	-	May 65	R. N. Brown
1964 Desert Tests - All Weather Brake Fluid	CCL-179	462061	May 65	C. B. Jordan
Extended Use of Improved Cooling System Inhibitor - Field Evaluation	CCL-190	625928	Jan 65	J. H. Conley
Evaluation of Fram-Warner Lewis Element Replacement Kit, Model FFU-7/E, for 300-GPM Filter/Separator of Air Force F-6 Fueler	ERDL-1810	-	Jun 65	M. K. Dale R. N. Brown

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Reports of Fuels & Lubricants Division Since 1960 (Con't)

<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
Evaluation of the Fram-Warner Lewis Element Replacement Kit Model FFU-10/E for the 600-GPM Filter/Separator of the Air Force MH-2A Fueler Manufactured by Graside Products, Incorporated	ERDL-1813	-	Jun 65	R. N. Brown
Evaluation of the Fram-Warner Lewis Element Replacement Kit, Model FFU-8/E for the 600-GPM Filter Separator of the Air Force MJ-1 Fueler	ERDL-1814	-	Jun 65	R. N. Brown
Evaluation of Fuel Contamination Monitors: Bendix "60-No 60 Gage," AEL Water Detector, BP Aquascon	ERDL-1863	-	Jun 65	R. N. Brown
Evaluation of Ethylene - Propylene Rubber Brake Cups - Stroking Tests	CCL-195	479793L	Mar 66	C. B. Jordan
Electrostatic Charge Generation in Filter/Separator Vessels	ERDL-1827	-	Aug 65	R. N. Brown
Design, Development, Test and Evaluation of a 50-GPM Optimum Lightweight Filter/Separator	ERDL-1848	-	Mar 66	G. A. Gariepy
Effect of Water on Hydraulic Brake Fluid	CCL-198	633035	Jun 66	C. B. Jordan
Peroxide Catalyzed Decomposition of Hydraulic Brake Fluids as Related to the Oxidation Stability Test and Shelf Storage	CCL-203	635222	Jul 66	J. B. Counts
Derivates of 8-Quinolinal	CCL-207	641271	Aug 66	M. Kolobielski
Investigation of the Auto-oxidation of Petroleum Fuels	CCL-204	641270	Dec 66	M. E. LePera
Preliminary Investigation of the Temperature-Flow-Corrosion Unit as a Tool for Coolant Evaluation	CCL-205	635223	Jul 66	J. H. Conley
Investigation of Organic Phosphates as Corrosion Inhibitors for Coolants	CCL-206	635224	Aug 66	J. H. Conley

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Reports of Fuels & Lubricants Division Since 1960 (Cont'd)

<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
Development of a Procedure for Analysis of Fuel De-Icers by Programmed Gas-Liquid Chromatography	CCL-208	803413L	Dec 66	M. E. LePera
Effect of Coolants on Various Types of Aluminum Alloys	CCL-210	801978	Nov 66	J. B. Counts J. H. Conley
Coolant, Fuel and Lubricant Modification Materials Field Evaluation	CCL-213	380660	Nov 66	G. J. Morris
Sintered Iron Brake Cylinder Pistons	CCL-216	646222	Feb 67	C. B. Jordan
Chemical Aspects of Oxidation Resistivity of Hydraulic Brake Fluids a Study of 3-Methoxy butanol	CCL-217	646223	Feb 67	J. B. Counts
Identification and Characterization of Petroleum Fuels Using Temperature-Programmed Gas-Liquid Chromatography	CCL-218	646382	Feb 67	M. E. LePera
Brake Fluid Sediment Caused by Rubber Cups	CCL-221	647167	Feb 67	J. B. Counts
Study of Solubility of Ternary Mixtures of Water/3-Methoxybutanol-1/Sodium Tetraborate-Diol Condensates	CCL-222	648701	Mar 67	C. B. Jordan
Investigating the Effects of Cetane Improvers on Specification Test Requirements and Related Properties of Diesel-Type Fuels	CCL-225	649280	Mar 67	M. E. LePera
Evaluation of Filter Separator Element Performance in the presence of Surface Active Fuel Additives (Faudi Feinbou and Filters, Inc. Elements)	MERDC-1888	-	Jun 67	R. N. Brown
Comparative Evaluation of Four Methods for Detecting Minute Quantities of Free Water in Hydrocarbon Fuels.	MERDC-1898	-	Jun 67	R. N. Brown S. A. Blakowy

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<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
Water Equilibration Studies - Brake Fluids	CCL-231	662812	Dec 67	E. A. Mains
Evaluation of the Residual Film Endurance of Helicopter Trans- mission-Engine Lubricant Under Oil Starvation Conditions in Gear & Bearing Bench Test Apparatus	CCL-232	820226L	Sep 67	G. J. Morris
Investigation of Water-Reactive Properties of Fuel Soluble Corrosion Preventive Additives	CCL-234	81922L	Aug 67	M. E. LePera
Sintered Iron Brake Cylinder Pistons - Final Results of Laboratory and Field Tests	CCL-238	662077	Nov 67	C. B. Jordan
Brake Fluid Sediment Caused by Rubber Caps	CCL-242	662710	Dec 67	J. Counts
Petroleum Oil Characterization Using Carbon Type Analysis and Infrared Spectroscopy	CCL-243	663816	Dec 67	M. E. LePera
Investigating Fuel - Alcohol Effects on Elastomer Components of Diesel Injector Systems	CCL-244	665374	Feb 68	M. E. LePera & C. A. Vogel
Evaluation of Antifreeze Freeze Point Testers	CCL-245	826548L	Feb 68	J. H. Conley
Analysis of Automotive Brake Fluids by Gas-Liquid Chromatography	CCL-247	666181	Mar 68	G. G. Esposito
350 GPM Optimum Lightweight Filter Separator	MERDC-1927		Apr 68	G. A. Gariepy E. C. Russell
Investigating Petroleum Fuel- Water Contact Interaction Effects	CCL-250	673110	Jul 68	M. E. LePera
Storage of Ethylene Glycol Anti- Freeze in Unlined Tin Containers	CCL-251	673111	Jul 68	J. H. Conley
Performance Evaluation of Filter- Coalocser Elements With Various Military Fuels	MERDC-1931	-	Jul 68	R. N. Brown
Reliability of the Temperature- Flow-Corrosion Unit in Antifreeze Studies	CCL-254	680166	Nov 68	J. H. Conley

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<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
Bendix, 300-GPM Horizontal Filter/Separator and 350-GPM, Military-Design Vertical Filter/Separator Performance Evaluation	MERDC-1938	-	Jan 69	R. N. Brown
Sludging Tendencies of Military and Commercial Engine Lubricants Under Stop-and-Go and Over-the-Road Service Conditions	CCL-255	683494	Mar 69	A. J. Saponaro
Filter/Coalescer Element Performance When Decontaminating JP-5 Fuel Containing Corrosion and Anti-Icing Inhibitors	MERDC-1945	-	Apr 69	S. B. Boulware
100 GPM Optimum Lightweight Filter/Separator	MERDC-1946	-	Apr 69	E. C. Russell
Investigation of New Concepts for the Decontamination of Military Hydrocarbon Fuels	MERDC-1947	-	Apr 69	T. H. Jefferson
Water Coalescence From Military Fuels	MERDC-1958	-	Jul 69	R. N. Brown
Synthesis & Study of Malates as Low-Hygroscopic Brake Fluid Components	CCL-262	691334	Aug 69	D. Lipp & A. Brause
Rapid Analysis of Antifreeze Using Gas-Liquid Chromatography	CCL-263	686289	May 69	G. Esposito & R. B. Jamison
Development of Internal-Combustion Engine Lubricants for Sub-Zero Operation	CCL-265	693866	Sep 69	T. C. Bowen
Field Investigation of the Extended Use of Military Anti-Freeze Under Desert Conditions	CCL-267	691726	Jul 69	C. B. Jordan
Study of Long Term Packaging of Ethylene Glycol Antifreeze	CCL-268	691727	Aug 69	J. H. Conley
Gas Chromatographic Determination of Ethylene Glycol in Used Oils	CCL-270	694360	Sep 69	G. G. Esposito & R. G. Jamison
Synthesis and Study of Lactates as Low-Hygroscopic Brake Fluid Components	CCL-271	694361	Oct 69	A. Brause & D. Lipp

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<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
Development of a Laboratory Technique for Defining Mechanical Shear Stabilities of Multi-Grade Engine Oils	CCL-273	698027	Dec 69	M. E. Lepera & J. Pigliacamp
600-GPM Optimum Lightweight Filter Separator	MERDC-1961	862202	Aug 69	E. C. Russell
Fuels Surveillance Research Program	MERDC-1978	870585	Apr 70	T. H. Jefferson
Investigating the Elastomer Environmental Effects on the Storage Stability of Military Fuels	CCL-279	704707	Apr 70	M. E. LePera
Determination of Ditertiary-butyl Disulfide in Diesel Fuel Using Thin-Layer Chromatography	CCL-281	705592	Apr 70	G. G. Esposito
Volatility Characteristics of Crankcase Lubricating Oils Using Gas-Liquid Chromatography	CCL-282	706843	May 70	G. G. Esposito
Proposed Nuclear Magnetic Resonance Method of Determining the Aromaticity of Hydrocarbon Fuels	MERDC-1983	711892	Jun 70	J. V. Mengenhauser
Effects of Corrosion Inhibitors on the Water Coalescing Characteristics of Military Standard Filter/Coalesor Elements (Interim Report)	MERDC-1986	712999	Sep 70	S.B. Boulware
Field Test for Detection of Ethylene Glycol in Crankcase Oil	CCL-284	711535	Sep 70	G.G. Esposito
Evaluation of Methods Used to Determine Element Charge Points in Fuel Filter/Separators	MERDC-1987	876367L	Sep 70	E. C. Russell
Evaluation of an Antifreeze Corrosion Test Kit	CCL-289	880557	Feb 71	C.B. Jordan

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<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
Effects of Corrosion Anti-Icing Inhibitors on the Water Coalescing Characteristics of Military Standard Filter/Coalescer Elements	MERDC-1991	722231	Feb 71	S.B. Boulware
Nuclear Magnetic Resonance Studies of Molecular Interactions at Phase Interface	MERDC-2002	722232	Mar 71	J.V. Mengershauser
Volatility Determination of Crankcase Lubricants Using Porous Fiber Glass Sheet	CCL-291	721284	Apr 71	G. G. Esposito
Oxidation of Mercaptobenzothiazole to Benzothiazyl Disulfid in Coolant Media	CCL-294	731789	Oct 71	J. B. Counts
Evaluation of Antileak Antifreezes	CCL-296	734324	Nov 71	C. B. Jordan
Evaluation of Organic Carbonates as Components of Low Hygroscopic Brake Fluids	CCL-297	735336	Jan 72	C. B. Jordan & G. Jamison
Automotive Fuel Conditioners: Their Properties and Effectiveness	CCL-299	735338	Jan 72	M. E. LePera & J. B. Sonnenbur
Storage Stability of Brake Fluids in Tin, Steel and Glass Containers	CCL-300	736861	Feb 72	C. B. Jordan
Studying the Flame Radiation Characteristics of Diesel Fuels	CCL-301	738141	Feb 72	M.E. LePera & L.G. Hartzell
Analytical Method for Ethylene Dibromide Depletion in Aviation Gasoline	CCL-304	746250	May 72	G.G. Esposito
Chloride and Water Permeability of Automotive Brake Hose	CCL-306	748083	Jul 72	J.B. Counts & R.G. Jamison
Characterization of Elastomeric Materials Used in Automotive Brake and Cooling Systems by Pyrolytic Gas Chromatography	CCL-309	748805	Jul 72	G. Esposito & G. Jamison
Determination of Petroleum Contamination in Brake Fluids	CCL-310	748806	Jul 72	C. B. Jordan R. G. Jamison

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<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
Development of a Single Package Antifreeze Compound	CCL-311	747326	Jul 72	J. H. Conley & C. B. Jordan
Improved Rifle Bore Cleaner	CCL-312	748807	Aug 72	M. J. Carroll
Evaluation of a Freezing Point Test Kit for Antifreeze	CCL-314	750569	Sep 72	C. B. Jordan
Storage Stability of Automotive Diesel Fuels	CCL-315	752906	Oct 72	M. E. LePera & J. G. Sonnenburg
A Predictive Study for Defining Limiting Temperatures and Their Application in Petroleum Produce Specifications	CCL-316	756420	Nov 72	J. P. Doner
A Study of Block Corrosion in Truck, Cargo, 1½Ton, 6x6, M561	CCL-317	755182	Nov 72	C. B. Jordan J. H. Conley P. C. Reynolds
Determination of Zinc Dialkyl (Diaryl) Dithiophosphate in Lubricating Oil	CCL-320	757605	Feb 73	M. Kolobielski
Thermal-Oxidative Stability of Automotive Diesel Fuels	CCL-321	758146	Mar 73	M. E. LePera
Investigating Automotive Gear Lubricant Copper Corrosivity	CCL-322	758147	Mar 73	M. E. LePera & J. V. Shimek
Analysis of Deposits on Valves in a Faulty Truck Diesel Engine	MERDC - 3000	761770	Mar 73	M. Kolobielski
Vanadium and Nickel Complexes in Petroleum Distillates	MERDC - 3001	760462	May 73	M. Kolobielski
Detection of Nitrate-Type Ignition Improver in Diesel Fuel	MERDC - 3002	762177	May 73	G. G. Esposito
A Crystal Microbalance for Determination of Oil in Water	MERDC - 2057	762107	May 73	J. V. Mengenhauser
Surfactants and Their Effect on Filter/Separators	MERDC- 2066	768696	Jun 73	T.H. Jefferson S.B. Boulware
Automotive Engine Oil Supplements: Their Characteristics and Effectiveness	MERDC- 3003	767537	Aug 73	M.E. LePera & J.G. Sonnenburg

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<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
Flash Distillation Method and Its Application for Analysis of Petroleum Fuels	MERDC-3005	768157	Aug 73	M. Kolobielski
A Predictive Study of the Occurance of Meterorological Conditions Contributing to Automotiv Carburetor Icing	MERDC-3006	769593	Nov 73	J.P. Doner
Investigating Waste Oil Disposal by Combustion	MERDC-3008	772911	Jan 74	G. DeBono
Investigating Heat Transfer Characteristics of Lubricants for Internal-Combustion Engines	MERDC-3009	772917	Jan 74	M.E. LePera & G.E. Oswald
Synthesis and Evaluation of Aliphatic Hydroxy Carboxylates as Low Hygroscopic Brake Fluid Components	MERDC-3010	772972	Jan 74	J.B. Counts & R.G. Jamison
Substitution of Tolyltriazole for Mercaptobenzothiazole Military Coolant Inhibitor Formulations	MERDC-3011	774293	Jan 74	R.G. Jamison & C.B. Jordan
Fire-Safe Fuel: Fuel Properties and System Compatibility Studies	MERDC-3012	774824	Feb 74	M.E. Lepera & J.G. Sonnenbur
Distillation of Oils at Reduced Pressures	MERDC-3014	779406	Jun 74	M. Kolobielski
Characterization of Petroleum Products Acquired From Foreign Sources (U)	MERDC-3016	530316	Jun 74	M.E. LePera & J.G. Sonnenbur
Brake Fluid Vapor Lock Temperatures vs Equilibrium Reflux Boiling Points	MERDC-3017	780818	Jun 75	C.B. Jordan & R.G. Jamison
Product Stability and Storage Environments: A Survey of Military Activities Procuring Diesel/Distillate Fuels	MEMORANDUM REPORT	901554	Jun 72	M.E. LePera
Investigation of Waste Oil Disposal by Direct Incineration	MERDC-2127	A011236	Feb 75	G. Debono & M.E. LePera

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<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
Silicone Brake Fluids One-Year Field Test	MERDC-2132	012849	Feb 75	J.H. Conley R. Jamison B. Jordan
Silicone Brake Fluids: Two-Year Field Test	MERDC-2164	A026180	Jan 76	J. Conley R. Jamison C. Jordan
Oxygen Flask Method for Determining Elements in Oils - An Evaluation	MERDC-2165	A027099	Feb 76	M. Kolobielski
Reclaiming Used Antifreeze	MERDC-2168	A027100	Mar 76	J. Conley R. Jamison
Investigating Fire Safe Fuel Effects on Elastomer Components of Diesel Injector/Pump Systems	MERDC-2169	A027148	Mar 76	F. McCaleb M. LePera
Test and Evaluation of Commercial and Military Standard Filter/Coalescer Elements at Lowered Temperatures	MERDC-2176	A031906	May 76	W.R. Williams
Brake Fluid Stroking Tests Using a Tandem (Dual-Chamber) Master Cylinder	MERDC-2185	A030522	Jul 76	J. Conley
Determination of Contaminants in Less Flammable Hydraulic Fluids	MERADCOM 2192	A034751	Sep 76	R. Jamison
High-Energy Fuels - Literature Survey	MERADCOM 2221	A023189L	Sep 77	M. Kolobielski
Comparison Tests on the Electro Kinetic Fuel Decontaminator and a 100-GPM Military Standard Filter/Separator	MERADCOM 2220	A065915	Sep 77	W.R. Williams
Investigating Use of the Jet Fuel Thermal Oxidation Tester(JFTOT) for Predicting Diesel Fuel Performance	MERADCOM 2235	A055202	Mar 78	M.E. LePera F. McCaleb
Cooperative Field Evaluation of MIL-L-2104C Lubricants in Engine and Hydraulic Applications	MERADCOM 2258	A068144	Oct 78	P.J. Kennedy T.C. Bowen

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Reports of Fuels & Lubricants Division Since 1960

<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
Water Adsorption of Fluids & Oils	MERADCOM 2250	A065915	Jun 78	R. G. Jamison
Investigating Cause of Hydraulic System Malfunction of M60 A1 AOS Tanks Using MIL-H-46170 Synthetic-Base Hydraulic Fluid	MERADCOM 2252	A066581	Jul 78	M. E. LePera, J. Messina (US Army Frankford Arsenal), H Mullinger (Muller Corp), C. E. Snyder (US Air Force)
Evaluation of Commercial Antifreezes	MERADCOM 2248	A060848	May 78	J. H. Conley R. G. Jamison
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Development of an Anti-freeze Extender and Water Inhibitor for Automotive Cooling System	MERADCOM 2265	A066706	Dec 78	J. H. Conley R. G. Jamison
Analysis of Used Hydraulic Fluid Samples From M60 A1 Tanks in Forts Knox & Polk	Letter Report to Proj Mgr, M60 Tank	-	Jun 79	-
Fuel Contamination Problem at Fort Polk	Letter Report to DIO, Fort Polk	-	Nov 79	-
Fuel Filter Plugging Problems	Letter Report to DARCOM LAO, Fort Bliss	-	Nov 79	-
Fuel Contamination Support of the 10 KW GTED Generator Test	Letter Report to PM MEP	-	Aug 79	W. R. Williams L. A. Villahermosa

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Use of Waste Cooking Oil as an Extender of Fuel Oil	Letter Report to FESA	-	Oct 80	L. Villahermosa
Analysis of Fuel & Oil Samples from USMC Near Term Prepositioned Ships (NTPS)	Letter Report to USMC	-	Mar 81	M. LePera M. Everett R. Jamison J. Sonnenburg
Guide on Methodology for Evaluation of Aftermarket Fuel & Lubricant Additives	Letter Report to DOD	-	Apr 81	M. LePera T. Bowen
Guide for Qualification of Military Engine Oils & Gear Lubricants	Letter Report to DLA	-	July 81	T. Bowen

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Development of an Accelerated Corrosion Test for Screening Antifreeze Compounds	MERADCOM 2346	A114683	Feb 82	J. Conley
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31p-NMR Analysis of Zinc Dialkyl (Diaryl) Dithiophosphate in Lubricating Oils	MERADCOM 2372	A129083	Nov 82	S-B Chen
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Identification & Characterization of Elastomer Vulcanizate Materials using Pyrolytic Gas Liquid Chromatography	MERADCOM 2383	A134056	Apr 83	R.G. Jamison

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Analysis of Fuel Samples & Filters from Montana Army National Guard	Letter Report to State Maintenance Office, MTARNG	--	May 83	J.V. Mengenhauser M.R. Rogers S.R. Westbrook
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Status of Vane-Axial Fan Cooling Tower Lubrication	Letter Report to ARRCOM	--	Jul 83	C. Chapin D. Brown J. Beeson
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Final Report on USAF Management Equipment Evaluation Program (MEEP), Project No. H82-6D Grease, Automotive Wheel Bearing	Letter Report to USAF	--	Jun 84	J. Beeson
Final Evaluation of Joint US Army, Navy, & Marine Corps Lubricating Grease Field Performance Test at Camp LeJeune, NC and USMC Air Combat Center, Twenty-nine Palms, CA	Letter Report to USAF	--	Jul 84	J. Beeson C. Chapin
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Analysis of Contaminated Silicone Automotive Brake Fluid Samples (MIL-B-46176)	Letter Report	--	Mar 87	R. Jamison
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Controlled Spreading on Water Surface Applied to Military Uses	AFLRL-2	-	Jan 67	A.A. Johnston
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Engine Varnish-Its Cause and Chemistry	Special Report AFLRL-4	-	May 68	E. Dimitroff J.V. Moffitt R.D. Quillian, Jr.
Spectrometric Metals Analysis of Oils--Army General-Purpose Vehicles	AFLRL-5	685886	Oct 68	L.L. Stavinoha R.D. Quillian, Jr.
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Separation and Identification of Crankcase Lubricant Additives, 1971	AFLRL-10	-	Sep 71	J.T. Gray J.V. Moffitt
50,000-Mile Engine-Lubricant Field Test of XM 809 Series 5-Ton Vehicles	AFLRL-11	734349	Aug 71	S.J. Lestz B.R. Wright T.C. Bowen**

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The Isolation and Determination of Aromatics in Gasoline by Gas Chromatography	AFLRL-13	739450	Apr 72	L.L. Stavinoha F.M. Newman
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Hydrocarbon-Type Analysis of Gasoline by Gas Chromatography	AFLRL-15	748446	Jul 72	L.L. Stavinoha F.M. Newman
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Synthesis of (2-Cyanoethyl)-Amides for Application in Gas Chromatography	AFLRL-17	753398	Nov 72	G.E. Fodor
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Performance of Army Engines With Leaded and Unleaded Gasoline (Phase I Laboratory Testing)	AFLRL-21	766337	Jan 73	J.A. Russell, et al.
Anomalous Rheological Characteristics of a High-Internal-Phase-Ratio Emulsion	AFLRL-18	758908	Mar 73	R.J. Mannheimer
U.S. Army Fuels Developments	Special Report AFLRL-20	-	Jun 73	M.E. LePera* W.D. Weatherford, Jr.
Hydrocarbon-Type Analysis of Gasoline Using Stabilized Olefin Absorption and Gas Chromatography	AFLRL-23	767560	Sep 73	L.L. Stavinoha
Development of a Diesel Engine Test Technique for Evaluating Arctic Engine Oils	AFLRL-24	768901	Sep 73	S.J. Lestz

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Internal Standards for the Isolation and Determination of Aromatics in Motor Gasolines	AFLRL-22	771255	Nov 73	L.L. Stavinoha
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An Investigation of Diesel Fuel Composition-Exhaust Emission Relationships	AFLRL-42	A005077	Oct 74	J.C. Tyler J.T. Gray W.D. Weatherford, Jr.
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Study and Evaluation in the Field of Environmental Pollution Related to the Utilization of Army Materiel	AFLRL-50	A003335	Oct 74	J.T. Gray et al.
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Investigation of the Flammability Properties of Hydraulic Fluids	AFLRL-70	A019775	Jun 75	B.R. Wright W.D. Weatherford, Jr. M.E. LePera*
Reduction of Exhaust Smoke From Gas Turbine Engines by Using Fuel Emulsions	AFLRL-68	-	Jul 75	C.A. Moses
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Evaluation of Synthetic Automotive Crankcase Lubricants for Military Applications	AFLRL-71	A023613	Dec 75	S.J. Lestz J.A. Russell T.C. Bowen* M.E. LePera*
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The Temperature Dependence of Micellar Solubilization	Journal of American Oil Chemists Society Vol. 37, No. 11, P587	Nov 60	A. M. Mankowich
Detection of Glycols in Crankcase Oils	Materials Research & Standards, Vol. 1, American Society for Testing Materials	Jan 61	C. B. Jordan
Hard Surface Detergency	Journal of American Oil Chemists Society Vol. 38. P 1.	Nov 61	A. M. Mankowich
Ordnance Requirements for Hydraulic Brake Fluid & Rubber Cups	The Journal of the Automotive Engineers	Jan 61	C. F. Pickett
Correlation of Hard Surface Detergency, Soil & Surfactant	The Journal of the American Oil Chemists Society, Vol 39, P 206.	Apr 62	A. M. Mankowich
Further Studies of Detergency Correlation	The Journal of the American Oil Chemists Society Vol. 40, No. 3 P 96.	Mar 63	A. M. Mankowich
Correlation of Detergency With Physicochemical Factors	The Journal of the American Oil Chemists Society Vo. 40, P 674.	Nov 63	A. M. Mankowich
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Use of Karl Fischer Reagent for the Determination of Water in Condensates of Sodium Tetraborate & Diols	Analytical Chemistry Vol. 36, P 424.	Feb 64	C. B. Jordan
Detergency-Micellar Relationships of an Anionic-Nonionic Surfactant Mixture	The Journal of the American Oil Chemists Society Vol. 41, P 449	Jun 64	A. M. Mankowich
The Energetics of Micellar Solubilization	The Journal American Oil Chemists Society Vol. 42, No. 3 P 185	Mar 65	A. M. Mankowich

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Dimensional Analysis Applied to Detergency	Journal American Oil Chemists Society Vol 42, No. 7 P 629	Jul 65	A. M. Mankowich
Gas Chromatographic Analysis of Ether-Alcohols in Carbon Removing Compounds	Journal of Gas Chromatography Vol 3, P 64.	Feb 65	G. G. Esposito & R. Wagner
The Energetics of Surfactant Adsorption at the Air-Water Interface	The Journal of the American Oil Chemists Society Vol 43, P 615	1966	A. M. Mankowich
Cohesive Energies in Polar Organic Liquids	The Journal of Physical Chemistry Vol 70, P 3162	1966	E. F. Meyer & R. Wagner
The Synthesis of Substituted 8-Quinolinols	The Journal of Heterocyclic Chemistry, Vol. 3, P275.	1966	M. Kolobielski
Identification of Alcohols by Color Reactions	Analytical Chemistry Vol. 37, P 926.	1965	J. B. Counts
Development of a Procedure for Analysis of Fuel De-Icers by Programmed Gas-Liquid Chromatography	Journal of Gas Chromatography, Vol 6.	Jun 68	M. E. LePera

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Investigating the Effects of Cetane Improvers on Specification Test Requirements and Related Properties of Diesel-Type Fuels	I&EC Products, Res and Devel	1968	M. E. LePera
Products of Borax-Glycol Condensation	Journal Chemical Engineering Data	1968	G. H. Myers
A Simple and Accurate Dilatometer for Liquids	Journal of Chemical Education, Vol 45, P 349.	1968	E. F. Meyer & R. E. Wagner
Homogeneous Nonionic Detergent Nonylphenoxy-decaethoxyethanol	Journal of the Americal Oil Chemists' Society, Vol 45, P 616	1968	M. Kolobielski
Petroleum Oil Characterization Using Carbon Type Analysis and Infrared Spectroscopy	National Lubrication Feb 69 Grease Institute (NLGI) Spokesman		M. E. LePera
Surface Rheological Properties of Foam Stabilizers in Nonaqueous Liquids	American Institute of Chemical Engineering Journal	1969	R. J. Mannheimer
Rapid Analysis of Antifreeze Using Gas Chromatography	SAE Journal	Aug 70	G. Esposito & R. Jamison
Gas Chromatography Determination of Ehtylene Glycol in Used Oils	J. of Materials ASTM	Dec 70	G. Esposito & R. Jamison

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
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Brake Fluids Effects of Functional Groups on Some Chemical and Physical Properties	I&EC, Product Res & Devel	1971	A. R. Brause, S. P. Tucker & D. W. Lipp
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Latest Developments in Military Specification Oils	Auto Mobiltechnische Zeitschrift 422	1971	C. F. Schwarz
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Gasoline Composition is Changing	Automotive Engineering	Nov 72	J. N. Bowden
Testing Flame Radiation Properties of Diesel Fuels	I&EC, Product Res & Devel	Dec 72	M. E. LePera & L. G. Hartzell
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How Stable is Diesel in Storage	Hydrocarbon Processing	Sep 73	M. LePera & J. Sonnenburg

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Investigating Automotive Gear Lubricant Copper Corrosivity	Lubrication Engineering	Dec 73	M. LePera J. Shimek
New Methods for Determining Additives & Contaminants in Petroleum Fuels	Proceedings of the 1974 US Army Science Conference	Jun 74	M. Kolobielski
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Preferential Adsorption in the Lubrication Process of Zinc Dialkyldithiophosphate, Letter to the Editor	ASLE Transactions	Apr 75	M. Kolobielski
Estimation of Dipole Moment of Oxidized Gasolines: A Potential Method for Evaluating Effectiveness of Additives	American Chemical Society	Sep 76	M. Kolobielski
Fuel & Lubricant Composition Effects on Army Two-Cycle Diesel Engine Performance	Society of Automotive Engineers (Paper No. 760717)	Oct 76	S. J. Lestz M. E. LePera T. C. Bowen
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Military Specification MIL-G-10924C and its Modified Shell Roll Stability Test	NLGI Spokesman	Feb 77	J. P. Doner

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Investigation of the Causes of Stuck Servovalves in US Army Hydraulic Systems Using MIL-H-46170 Hydraulic Fluid, Rust-Inhibited, Synthetic Hydrocrabon Base	American Society of Lubrication Engineers (Paper 77-AM-2A-1)	May 77	M. E. LePera
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Electrocoalescer Comparison Performance Tests	American Society of Mechanical Engineers (Paper No. 79-GT-174)	Mar 79	W. R. Williams L.L. Prem
Army Experience with Silicone Brake Fluids	Institute of Petroleum	Oct 78	J. H. Conley R. G. Jamison
Research in Military Antifreeze Formulations	Society of Automotive Engineers (Paper No. 790 415)	Feb 79	J. H. Conley R. G. Jamison
Army Mobility Fuels in the Twenty-First Century	Army RD&A Magazine	Jan-Feb 80	J.V. Mengershauser
The Army's Alternative & Synthetic Fuels Program	Army RD&A Magazine	Sep-Oct 80	M.E. LePera
Incorporating Recycled Constituents into the new MIL-L-46152A Engine Oil Specification	National Petroleum Refiners Association (Paper FL-79-114)	Nov 79	M.E. LePera T.C. Bowen
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Army Experience With Silicone Brake Fluids	Chemical Specialties Manufacturers Assoc.	May 80	J. H. Conley R. G. Jamison
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Status of GASOHOL Evaluation & Its Procurement Within DOD	Army RDA Magazine	Mar-Apr 81	M. E. LePera
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Fuel Quality versus Fuel Performance	Army RDA Magazine	Mar-Apr 82	M. E. LePera
US Army Converts to Silicone Brake Fluid	Army RDA Magazine	Sept-Oct 81	H. J. Spitzer
GASOHOL Under Test by DOD	Hydrocarbon Processing	July 81	M. E. LePera
Fuel Quality vs Engine Type	Hydrocarbon Processing	Jan 82	M. E. LePera
Mobility Fuels: Fuel Quality US Engine Performance	Army RDA Magazine	Mar-Apr 82	M. E. LePera
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Energy Self-Sufficiency for the Airland 2000 Thrust	Army RDA	Sep-Oct 82	T. W. Broadwater M. E. LePera

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Military 2104 Specification, Where We Are and Where We Go	SAE International Fuels and Lubricants Meeting	Oct 82	T. C. Bowen
Qualifying Military Engine Oils & Gear Lubricants	National Petroleum Refiners Association, Paper FL-82-79	Nov 82	T. C. Bowen
Advanced Non-Destructive Evaluation Technology	Materials Evaluation Vol 42	Jan 84	H.J. Spitzer
Antifreeze Package For Used Antifreeze	2nd Int'l ASTM Symposium on Engine Coolants	Apr 84	J.H. Conley
DOD User Requirements For Lubricating Greases in Ground Equipment	SAE West Coast Meeting	Aug 84	J.L. Beeson
Belvoir Center's Studying High Temperature Engine Antifreeze	Army RDA Magazine	Sep-Oct 84	M. Kolobielski
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Cooperative Efforts Advance International Engine Oil Testing	Army RD&A Magazine	Mar-Apr 1985	M. LePera
AMC Publishes New Lubricants Regulation	Army RD&A Magazine	Mar-Apr 1985	M. LePera
Partial Oxidation of Diesel Fuel and Cetane Number	American Chemical Society Preprint Symposia, Vol. 30, No. 2	Apr 85	S-B. Chen
Use of Diesel Fuels in Military Equipment	Army RD&A Magazine	May-Jun 1985	M. LePera
Evaluation of the L ₁₀ Life of Military Greases in Wheel Bearings by Computer	Failure & Preven- tion & Reliability - 1985, ASME	Sep 85	I-S. Rhee
Measurement of Cetane Number With a Small-Scale Octane Octane Analyser	I&EC Product Research and Development	Sep 1986	S-B Chen

LISTING OF TECHNICAL ARTICLES PUBLISHED
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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
A Study of Gear Lubricant Thermal Oxidative Degradation Phenomena	Society of Automotive Engineers Paper No. T-38	Jan 60	N.T. Meckel R.D. Quillian, Jr.
Combustion Characteristics of Compression-Ignition Engine Fuel Components	Society of Automotive Engineers Paper No. 263A	Nov -60	D.R. Olson N.T. Meckel R.D. Quillian, Jr.
The Proposed MIL-L-2104B Engine Oil Specification	Western Petroleum Refiners Association	Apr 61	R.D. Quillian, Jr. R.E. Streets*
A Study of Low Temperature Sludge Techniques	Society of Automotive Engineers Paper No. 375A	May 61	R.D. Quillian, Jr. J.V. Moffitt
Electrophoresis of Dispersant Lubricating Oil	American Chemical Society	Sep 61	J.N. Bowden E. Dimitroff
The Operation of Compression Ignition Engines on Wide Boiling Range Fuels	Society of Automotive Engineers Paper No. 437C	Nov 61	D.R. Olson N.T. Meckel R.D. Quillian, Jr.
An Apparatus for Determining Fuel Spray Characteristics	Society of Automotive Engineers Paper No. 436A	Nov 61	N.T. Meckel D.R. Olson R.D. Quillian, Jr.
An Apparatus for Investigating the Induction System Depositing Tendencies of Gasoline	Society of Automotive Engineers	Jan 62	J.N. Bowden R.D. Quillian, Jr.
Mechanism Studies of Polymeric Dispersants	American Chemical Society	Sep 62	J.N. Bowden E. Dimitroff
A Theory on the Mechanism of Dispersancy in Oil Medium	American Chemical Society	Sep 62	E. Dimitroff J.N. Bowden
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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
CIE Fuel--Low Temperature Influence on Injection and Combustion	Society of Automotive Engineers	Jan 63	N.T. Meckel R.D. Quillian, Jr.
Cleaner Crankcases With Blow-by Diversion	Society of Automotive Engineers Paper No. 801B	Jan 64	R.D. Quillian, Jr. N.T. Meckel J.V. Moffitt
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An Apparatus for Surface Rheological Measurements	American Chemical Society	Sep 65	R.A. Burton* R.J. Mannheimer
Ammonia Fuel-Engine Compatibility and Combustion	Society of Automotive Engineers Paper No. 660156	Jan 66	J.T. Gray E. Dimitroff N.T. Meckel
CITE Fuels--Some Pump, Some Don't	Society of Automotive Engineers	Jun 66	J.T. Gray E. Dimitroff N.T. Meckel
Some Observations on the Liquid Injection Technique As a Research Tool	Society of Automotive Engineers Paper No. 660748	Oct 66	J.T. Gray N.T. Meckel R.J. Mannheimer
A Bench Technique for Evaluating the Induction System Deposit Tendencies of Motor Gasolines	Society of Automotive Engineers Paper No. 660783	Nov 66	A.A. Johnston E. Dimitroff
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Crystal-Liquid Insolubility and Pumpability	7th World Petroleum Congress	Apr 67	E. Dimitroff J.T. Gray N.T. Meckel
An Analysis for Bingham Plastic Flow in a Canal Viscometer	Journal of Colloid Interface Science	Nov 67	R.J. Mannheimer R.S. Schechter+
A Study of Marginal Compression Ignition	Society of Automotive Engineers	Nov 67	J.T. Gray C.M. Urban

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
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Engine Varnish--Its Cause and Chemistry	International Congress of Automotive Techniques	May 68	E. Dimitroff J.V. Moffitt R.D. Quillian, Jr.
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Spectrometric Analysis of Used Oils	Society of Automotive Engineers Paper No. 690776	Nov 69	L.L. Stavinoha B.R. Wright
A Theoretical Estimation of Viscous--Interaction Effects With a Torsional Surface Viscometer	Journal of Colloid and Interface Science	Jan 70	R.J. Mannheimer R.A. Burton*
Scaling of Flames Above Free-Burning Structures	Combustion and Flame Combustion Institute	Feb 70	W.D. Weatherford, Jr.

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An Improved Apparatus and Analysis for Surface Rheological Measurements	Journal of Colloid and Interface Science	Feb 70	R.J. Mannheimer R.S. Schechter*
Shear Dependent Surface Rheological Measurements of Foam Stabilizers in Non-Aqueous Liquids	Journal of Colloid and Interface Science	Feb 70	R.J. Mannheimer R.S. Schechter*
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Total Cooling of Piston Engines by Direct Water Injection	Society of Automotive Engineers Paper No. 700886	Nov 70	W.D. Weatherford, Jr. R.D. Quillian, Jr.
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The Isolation and Determination of Aromatics in Gasoline by Gas Chromatography	Journal of Chromatographic Science	Apr 72	L.L. Stavinoha F.M. Newman
Anomalous Rheological Characteristics of a High-Internal-Phase-Ratio Emulsion	Journal of Colloid and Interface Science	Sep 72	R.J. Mannheimer
Air-Cooled Rotary Engines-- A Fuels and Lubricants Study	Society of Automotive Engineers Paper No. 730046	Jan 73	J.A. Russell S.J. Lestz J.T. Gray
Emission Characteristics of Small Industrial Engines	Society of Automotive Engineers Paper No. 730857	Sep 73	J.A. Russell J.B. O'Sullivan* W.A. Summerson

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Calculation of Viscosity From Immiscible Displacement of Highly Viscous Materials in Capillary Tubes	Journal of Colloid and Interface Science	Oct 73	R.J. Mannheimer
Measurement of Non-Newtonian Viscosity by Immiscible Displacement	Journal of Colloid and Interface Science	Nov 73	R.J. Mannheimer
Direct Water Injection Cooling for Military Engines and Effects on the Diesel Cycle	Fifteenth International Symposium on Combustion	Aug 74	R.B. Melton S.J. Lestz R.D. Quillian, Jr.
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Status of Research on Antimist Aircraft Turbine Engine Fuels in the U.S.	AGARD Proceedings Report No. AD A011341	Apr 75	W.D. Weatherford, Jr. B.R. Wright
Army Experience With Synthetic Engine Oils in Mixed Fleet Arctic Service	Society of Automotive Engineers Paper No. 750685	Jun 75	S.J. Lestz T.C. Bowen*
Synthetic Oils for Arctic Service	Automotive Engineering, Vol. 83	Jun 75	S.J. Lestz
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Direct Utilization of Crude Oil as a Fuel for High-Speed Diesel Engines	Society of Automotive Engineers Paper No. 750762	Sep 75	E.C. Owens E.A. Frame W. Bryzik+
Octane Number Increase of Military Vehicles Operating on Unleaded Gasoline	Society of Automotive Engineers Paper No. 750937	Oct 75	J.D. Tosh J.T. Gray E.B. Trescott**
Gas Chromatographic Analysis of Exhaust Hydrocarbons From a Gas Turbine Combustor	The Combustion Institute	Oct 75	C.A. Moses L.L. Stavinoha
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Effect of Fuel Properties on Soot Formation in Turbine Combustion	Society of Automotive Engineers Paper No. 781026	Nov 78	D.W. Naegeli C.A. Moses
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Listing of Technical Articles Published by Belvoir Fuels and Lubricants Research Facility (SwRI) Since 1960 (continued)

<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
The Mechanisms Leading to Increased Cylinder Bore and Ring Wear in Methanol-Fueled SI Engines	Society of Automotive Engineers, Paper No. 811200	Oct 81	T.W. Ryan, III D.W. Naegeli E.C. Owens H.W. Marbach, Jr. J.G. Barbee
Accelerated Stability Test Techniques for Middle Distillate Fuels	ASTM Special Publication 751	Oct 81	L.L. Stavinoha S.R. Westbrook
Army Needs for Diesel Fuel Stability and Cleanliness	ASTM Special Publication 751	Oct 81	L.L. Stavinoha S.R. Westbrook M.E. LePera*
Army's Synthetic/Alternative Mobility Fuels Program	International Conference of Alternative Energy Sources	Dec 81	J.A. Russell M.E. LePera*
Accelerating the Procedures for Implementing Future Army Mobility Fuels	International Conference of Alternative Energy Sources	Dec 81	J.A. Russell J.P. Cuellar R.A. Rentz T. Timbario
Lubricant Volatility Related To Two-Cycle Diesel-Engine Piston-Ring/Cylinder Liner Wear	American Society of Lubrication Engineers Vol 38, No. 1	Jan 82	L.L. Stavinoha J.R. Eichelberger
Sooting Tendency of Fuels Containing Polycycle Aromatics in a Research Combustor	American Institute of Aeronautics and Astronautics AIAA 82-0299	Jan 82	D.W. Naegeli L.G. Dodge C.A. Moses
Fuel Microemulsions For Jet Engine Smoke Reduction	American Society of Mechanical Engineers, ASME 82-GT-33	Apr 82	D.W. Naegeli C.A. Moses
User Needs for Diesel Stability and Cleanliness Specifications	American Petroleum Institute, API 820-00004	May 82	L.L. Stavinoha
Shale-Derived Distillate Fuels	<u>Energy Progress</u> , Vol 2, No. 2	Jun 82	J.N. Bowden E.C. Owens D.W. Naegeli L.L. Stavinoha

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Tests of Blending and Correlation of Distillate Fuel Properties	American Institute of Chemical Engineers	Aug 82	J. Erwin J.N. Bowden
Stability of Some Coal and Tar Sands Syncrude Fraction	<u>Fuel</u> , Vol. 61, No. 11	Nov 82	D.W. Brinkman* J.N. Bowden
Sooting Tendency of Fuels Containing Polycyclic Aromatics in a Research Combustor	Journal of Energy, Vol. 7, No. 2	Mar-Apr 83	D.W. Naegeli L.G. Dodge C.A. Moses
Effects of Flame Temperature and Fuel Composition on Soot Formation in Gas Turbine Combustors	Combustion Science and Technology	Aug 83	L.G. Dodge D.W. Naegeli C.A. Moses
Study of Pool Burning Self-Extinguishment Mechanisms in Aqueous Diesel Fuel Microemulsions	1983 Fall Meeting, Paper No. WSS/CI 83-48 The Combustion Institute	Oct 83	W.D. Weatherford, Jr. D.W. Naegeli
The C ₂ (A ³ πg X ³ πu) High-Pressure Band Afterglow in Carbon Monoxide	1983 Fall Meeting, The Combustion Institute	Oct 83	D.W. Naegeli W.D. Weatherford, Jr.
Laboratory Evaluation of Army Multiviscosity Grade Tactical Engine Oils	Society of Automotive Engineers, Fuels and Lubricants Meeting, Paper No. 831719	Nov 83	A.F. Montemayor E.C. Owens E.A. Frame S.J. Lestz T.C. Bowen**
The Effects of Lubricant Composition on S.I. Engine Wear With Alcohol Fuels	Society of Automotive Engineers, Fuels and Lubricants Meeting, Paper No. 831702	Nov 83	H.W. Marbach, Jr. E.A. Frame E.C. Owens D.W. Naegeli B. Wielgos
Practical Ignition Limits for Low Molecular Weight Alcohols	Spring Meeting, The Combustion Institute	Mar 84	D.W. Naegeli W.D. Weatherford, Jr. E.C. Owens
Study of Pool Burning Self-Extinguishment Mechanisms in Aqueous Diesel Fuel Microemulsions	Journal of Dispersion Science and Technology, Vol. 5, pp. 159-177	Apr 84	W.D. Weatherford, Jr. D.W. Naegeli

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Feasibility of a Full-Scale Degradar for Anti-Misting Kerosene	Journal of Aircraft, Vol. 21, No. 2	May 84	R.J. Mannheimer
Improved Methods for the Chemical Characterization of Lubricants	Symposium of Trends in Lube Oil Basestocks, Division of Petroleum Chemistry, American Chemical Society	Aug 84	D.L. Present F.M. Newman
Engine Wear With Methanol Fuel in a Nitrogen-Free Environment	Society of Automotive Engineers, 1984 SAE International Fuels and Lubricants Meeting and Exposition, Paper No. 841374	Oct 84	D.W. Naegeli D.M. Yost E.C. Owens
Study of Pool Burning Self-Extinguishment Mechanisms in Aqueous Diesel Fuel Microemulsions	Journal of Dispersion Science and Technology Vol. 5, No. 2, pp. 159-177	Apr 84	W.D. Weatherford, Jr. D.W. Naegeli
Hydraulic Systems Performance of Army Engine Oils	Society of Automotive Engineers, Fuels and Lubricants Meeting, Paper No. 841348	Oct 84	H.W. Marbach, Jr. S.J. Lestz
Engine Wear with Methanol Fuel in a Nitrogen-Free Environment	Society of Automotive Engineers, Fuels and Lubricants Meeting, Paper No. 841374	Oct 84	D.W. Naegeli D.M. Yost E.C. Owens
Emissions Characterization of Diesel Forklift Engines	Society of Automotive Engineers, Fuels and Lubricants Meeting, Paper No. 841396	Oct 84	H.E. Dietzmann T. Lee*
Solid Lubrication of Advanced Heat Engines	Proceedings of Army Research Office-Industrial Tribology Institution Workshop	Nov 84	M.D. Kanakia E.C. Owens
SI Engine Cylinder Bore Corrosion by Alcohol Combustion Residues	Combustion Institute Joint Meeting	Apr 85	D.W. Naegeli E.C. Owens

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Listing of Technical Articles Published by Belvoir Fuels and Lubricants Research Facility (SwRI) Since 1960 (continued)

<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Effect of Organic Sulfur Compounds on Cetane Number	American Chemical Society Preprint Symposia, Vol. 30, No. 2	Apr 85	J.N. Bowden E.A. Frame
Microemulsion Droplet Properties via Measured Vapor Pressure	Journal of Dispersion Science and Technology, Vol. 6, No. 4, pp. 467-488	Sep 85	W.D. Weatherford, Jr.
Acquisition and Interpretation of Diesel Engine Heat Release Data	Society of Automotive Engineers, Fuels and Lubricants Meeting, Paper No. 852068	Oct 85	T.J. Callahan D.M. Yost T.W. Ryan, III
Fuel Effects on Combustion in a Two-Stroke Diesel Engine	Society of Automotive Engineers, Fuels and Lubricants Meeting, Paper No. 852104	Oct 85	D.M. Yost T.W. Ryan, III E.C. Owens
Correlation of Physical and Chemical Ignition Delay to Cetane Number	Society of Automotive Engineers, Fuels and Lubricants Meeting, Paper No. 852103	Oct 85	T.W. Ryan, III
Fuel Property Effects on Army Diesel Engine Performance	Society of Automotive Engineers, Fuels and Lubricants Meeting, Paper No. 852091	Oct 85	A.F. Montemayor E.C. Owens S.J. Lestz
Effect of Organic Sulfur Compounds on Cetane Number	<u>Industrial and Engineering Chemistry Product Research and Development</u> , Vol. 25, No. 2, pp. 156-159	Jun 86	J.N. Bowden E.A. Frame
Thermal Stability Concerns of Navy Aviation Fuel	American Society of Mechanical Engineers, International Gas Turbine Conference	Jun 86	E.C. Owens
Real-Time Quality Control of Antimisting Kerosene (AMK) Rheology by Die-Swell Measurements	<u>Chemical Engineering Communications</u> , Vol. 48, pp. 79-82	Jul 86	R.J. Mannheimer

Listing of Technical Articles Published by Belvoir Fuels and Lubricants Research Facility (SwRI) Since 1960 (continued)

<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Shear and Normal Stesses of Antimisting Kerosene at High Shea Rates Determined From Die-Swell and Torsional Balance Measurements	<u>Chemical Engineering Communication</u> , Vol. 48, pp. 57-77	Jul 86	R.J. Mannheimer
Shale Light Oil as a Diesel Fuel	Confab '86, Western Research Institute	Jul 86	N.R. Sefer J.N. Bowden
Methodology for Identification of Diesel Fuel System Debris Related to Problems in the Field	Proceedings of 2nd International Conference on Long-Term Storage Stabilities of Liquid Fuels	Jul 86	S.R. Westbrook J.G. Barbee L.L. Stavinoha M.E. LePera* J.V. Mengershauser*
Enhanced Methodology for Jet Fuel Clean and Bright Evaluations	Proceedings of 2nd International Conference of Long-Term Storage Stabilities of Liquid Fuels	Jul 86	J.G. Barbee R.J. McInnis K.B. Kohl L.L. Stavinoha W.R. Williams*
Summary Overview of Sources of Error in Accelerated Stability Test Methods for Diesel Fuels	Proceedings of 2nd International Conference on Long-Term Storage Stabilities of Liquid Fuels	Jul 86	G.H. Lee, II L.L. Stavinoha
Studies Relating to the Mechanism of Diesel Fuel Deterioration and Additive Inhibition	Proceedings of 2nd International Conference on Long-Term Storage Stabilities of Liquid Fuels	Jul 86	G.H. Lee, II L.L. Stavinoha
Thermal Stability Deposit Measuring Device	Proceedings of 2nd International Conference on Long-Term Storage Stabilities of Liquid Fuels	Jul 86	L.L. Stavinoha J.G. Barbee
Development of a Test Method to Determine Potential Peroxide Content in Turbine Fuels	Proceedings of 2nd International Conference on Long-Term Storage Stabilities of Liquid Fuels	Jul 86	G.E. Fodor

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Thermal Stability of Diesel Fuels	Proceedings of 2nd International Conference on Long-Term Storage Stabilities of Liquid Fuels	Jul 86	L.L. Stavinoha J.G. Barbee
Methodology for Evaluating the Stability of Motor Gasolines	Proceedings of 2nd International Conference on Long-Term Storage Stabilities of Liquid Fuels	Jul 86	D.L. Morris J.N. Bowden L.L. Stavinoha M.E. LePera*
U.S. Army Evaluation of NATO Multigraded Diesel Engine Oils	Society of Automotive Engineers, International Congress and Exposition, Paper No. 870401	Feb 87	T.C. Bowen* E.A. Frame
Effects of Fuel Properties on Diesel Spray Characteristics	Society of Automotive Engineers, Transactions, Paper No. 870533	Feb 87	T.J. Callahan T.W. Ryan, III L.G. Dodge J.A. Schwalb
Diesel Fuel Ignition Quality as Determined in a Variable Compression Ratio, Direct-Injection Engine	Society of Automotive Engineers, Transactions, Paper No. 870585	Feb 87	T.W. Ryan, III
Diesel Fuel Ignition Quality as Determined in a Constant Volume Combustion Bomb	Society of Automotive Engineers, International Congress and Exposition, Paper No. 870586	Feb 87	T.W. Ryan, III B. Stapper
Methodology for Identification of Diesel Fuel System Debris Related to Problems in the Field	American Society for Testing and Materials, Symposium on Distillate Fuel System Contamination	Jun 87	S.R. Westbrook J.G. Barbee L.L. Stavinoha
Ignition Delay as Determined in a Variable Compression Ratio, Direct-Injection Engine	Society of Automotive Engineers, Fuels and Lubricants Meeting, Paper No. 872036	Nov 87	T.W. Ryan, III

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TECHNICAL REPORT & PUBLICATION SOURCES

The in-house technical reports and those reports by the US Army Fuels & Lubricants Research Laboratory which have an entry listing under AD Number (Accession Number) may be obtained from the Defense Technical Information Center (DTIC) or National Technical Information Service (NTIS). The request for these reports should be directed to the following:

Defense Technical Information Center
Cameron Station
Alexandria, VA 22314

National Technical Information Services
US Dept. of Commerce
Springfield, VA 22151

Those reports which do not have an AD Number designation may be obtained by forwarding a request to the address provided on page ii.

Copies of the technical publications/articles listed may be obtained by forwarding a request to the appropriate technical society for the paper/preprint desired. The addresses for those societies which have a majority of the publications are listed as follows:

American Chemical Society
1155 16th Street, NW
Washington, DC 20036

American Society of Lubrication Engineers
838 Busse Highway
Park Ridge, Illinois 60068

American Society of Mechanical Engineers
345 East 47th Street
New York, NY 10017

American Society for Testing & Materials
1916 Race Street
Philadelphia, PA 19103

National Lubrication Grease Institute
4635 Wyandotte Street
Kansas City, MO 64112

National Petroleum Refiners Association
Suite 1000, 1899 L Street
Washington, DC 20036

Society of Automotive Engineers
400 Commonwealth Drive
Warrendale, PA 15096

The Combustion Institute
Elsevier North Holland, Inc.
52 Vanderbilt Avenue
New York, NY 10017

ABBREVIATIONS

The following is a listing of those abbreviations and their definitions which have been used in this publication:

ACS	American Chemical Society
AOS	Add-on Stabilizer (associated with M60 A1 Tank)
AFLRL	US Army Fuels and Lubricants Research Laboratory
AMC	Army Materiel Command
ASLE	American Society of Lubrication Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing of Materials
AVRADCOM	Aviation Research & Development Command
AVSCOM	Aviation Systems Command
BETC	Bartlesville Energy Technology Center (Dept. of Energy)
BRDEC	Belvoir Rsch, Dev, & Engr Center
CCE	Commercial Construction Equipment
CCL	US Army Coating & Chemical Laboratory
CIE	Compression-Ignition Engine
CITE	Compression-Ignition & Turbine Engine
CO	Carbon Monoxide
DARCOM	Department of the Army Research Command
DDC	Defense Documentation Center
DIO	Directorate of Industrial Operations
DLA	Defense Logistic Agency
DOE	Department of Energy
ERDL	Engineering Research & Development Laboratories
EREC	Exxon Research and Engineering Company
FESA	US Army Facilities Engineering Support Agency
GAA	Grease, Automotive & Artillery
GPM	Gallon per Minute
GTED	Gas Turbine Engine Driven
HQ	Headquarters
I&EC	Industrial & Engineering Chemistry
IR	Infrared Spectroscopy
KW	Kilowatt
LAO	Logistics Assistance Office
MERADCOM	Mobility Equipment Research & Development Command
MERDC	Mobility Equipment Research & Development Center
NLGI	National Lubrication Grease Institute
NTIS	National Technical Information Services
PM	Project Manager
PM MEP	Project Manager for Mobil Electric Power
POL	Petroleum, Oils & Lubricants
RDA	Army Research Development & Acquisition
RDTE	Research, Development, Testing & Evaluation
SAE	Society of Automotive Engineers
SPRO	Strategic Petroleum Research Office
SWRI	Southwest Research Institute
TACOM	Tank and Automotive Command
UBH	Unburned Hydrocarbons
UTA	University of Texas at Austin