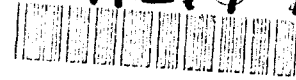


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Accession For	
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INTRODUCTION

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

AUTOVON 354-3576/4594/2257
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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/Coalescor Elements for Use in Military Design Filter/Separators	ERDL 1755	-	Sep 63	J. E. Estabrooke
Test and Evaluation of Purolator Filter/Coalescor 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 Coalescor Elements for Use in Military Design Filter Separators	ERDL 1764	-	Jan 64	J. C. Estabrooke
Environmental and Operational Evaluation of Filter/Coalescor 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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<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. Mengenhauser
Volatility Determination of Crankcase Lubricants Using Porous Fiber Glass Sheet	CCL-291	721284	Apr 71	G. G. Esposito
Oxidation of Mercaptobenzo-thiazole to Benzothiazyl Disulfied in Coolant Media	CCL-294	731789	Oct 71	J. B. Counts
Evaluation of Antileak Anti-freezes	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 Meteorological Conditions Contributing to Automotive 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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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 (Corporation), C. E. (US Air Force)
Evaluation of Commercial Antifreezes	MERADCOM 2248	A060848	May 78	J. H. Conley R. G. Jamison
Correlation Study of Laboratory Physical and Chemical Data with Dynamometer Engine Sequence Performance Testing of Engine Lubricating Oils	MERADCOM 2262	A066615	Dec 78	M. D. Kemp F. E. Council
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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Commercial Automotive Engine Oils-A Laboratory Assessment of their Quality	MERADCOM 2287	A082180	Dec 79	J.G. Sonnenburg M.E. LePera
Evaluation of Effects of ASA-3 on Performance of MIL. STD. Filter/Coalescer Elements	MERADCOM 2290	A083301	Feb 80	W.R. Williams R.J. Polk
Gasoline & Engine Oils-Literature Review, New Methods & Significance or Olefins in Fuel	MERADCOM 2296	A086740	Mar 80	M. Kolobielski F. McCaleb
Survey of problems Associated with Qualification of Military Automotive Lubricants	MEMORANDUM Report	-	Apr 80	T. C. Bowen
Guide for Methodology on Evaluation of Aftermarket Fuel & Lubricants Additives	MEMORANDUM Report	-	Sep 80	-
Identification of Synthetic Base Stocks by Pyrolysis Gas Liquid Phase Chromatography	MERADCOM 2340	A10C117	-	R. Jamison
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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Evaluation of the Flush/Fill and High- Pressure Air Purge Procedures for Converting Army Vehicles to Silicone Brake Fluid	MERADCOM 2348	A115798	Feb 82	C. Chapin J. Conley R. Jamison
Development of an Accelerated Corrosion Test for Screening Antifreeze Compounds	MERADCOM 2346	A114683	Feb 82	J. Conley
New Approach for Replacing Brake Fluid in Military Vehicles	MERADCOM 2353	A116336	Mar 82	C. Chapin J. Conley R. Jamison
Status of the Development of a Non-Flammable Hydraulic Fluid for Armored Vehicles	MERADCOM 2362	B068827	Jun 82	J. Conley M. Everett
Test of Hydraulic Fluid for Armored Vehicle Launched Bridge (AVLB) & M60A1 Launcher	Letter Report to Proj Mgr M60	-	Jan 82	H. Spitzer M. Everett
31p-NMR Analysis of Zinc Dialkyl (Diaryl) Dithiophosphate in Lubricating Oils	MERADCOM 2372	A129083	Nov 82	S-B Chen
Determination of Research Octane Number of Gasoline Fuels by an Octane Analyzer	MERADCOM 2380	A132427	APR 83	S-B Chen
Development of Quantitative Infrared Analysis for Monitoring Water and Emulsifying Agents in Fire-Resistant Microemulsion Fuels	MERADCOM 2381	A133242	APR 83	S-B Chen
Identification & Characterization of Elastomer Vulcanizate Materials using Pyrolytic Gas Liquid Chromatography	MERADCOM 2383	A134056	Apr 83	R.G. Jamison

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Status of the Improved MIL-G-10924D (GAA) Grease Program	BRDC 2399	A146214	Feb 84	J. Beeson
Performance of Gasohol in Military Filter Separators	MERADCOM 2389	A139645	Aug 83	W.R. Williams
Report of the DOD Study Group on CH-47 Transmission Systems	Letter Report To TSARCOM	--	Nov 83	M.E. LePera
Development of Army Mobility Fuels Research & Development Plan	Letter Report To DARCOM	--	Apr 83	M.E. LePera
Analysis of Fluid & oil Samples for USMC's Near-Term Prepositioned Ship's Materiel	Letter Report To USMC	--	Dec 82	M.E. Everett R.G. Jamison
Fuel Deterioration at Fort Polk	Letter Report to Fort Polk 5th Inf. Division	--	Dec 82	J.V. Mengenhauser M.R. Rogers S.R. Westbrook
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
Final Letter Report on USAF's Rivet Mile Program	Letter Report to USAF SAC	--	Apr 83	J.V. Mengenhauser S.R. Westbrook
Status of Gear Oil Washout or Wheel Bearing Grease in Tactical Vehicles	Letter Report to TACOM	--	Jul 83	C. Chapin D. Brown J. Beeson
Status of Vane-Axial Fan Cooling Tower Lubrication	Letter Report to ARRCOM	--	Jul 83	C. Chapin D. Brown J. Beeson
Greases vs Oil Lubrication of Wheel Bearings in Army Equipment	BRDC 2396	A147546	Nov 83	C. Chapin
Status of the Development of a Long-Life Coolant System	BRDC 2392	A143098	Nov 83	J. Conley C. Collins
Development of Non-Flammable Hydraulic Fluid	BRDC 2401	B08790	Feb 84	J. Conley

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Cooperative Program Evaluation of NATO Multigraded Diesel Engine Oils	BRDC 2402	A146072 --	Feb 84	T. Bowen
Evaluation of the L10 Life of Military Greases in Wheel Bearings by Computer Analyses	BRDC 2409	--	Apr 84	I. Rhee
Field Blending Guide for Improving the Low Temperature Operability of Diesel Fuels	BRDC 2410	A144-710	Apr 84	M. Swann & W. Williams
Investigations Directed Towards the Development of the Captured Ground Fuels Test Kit	(Interim Report)	--	Sep 84	W. Williams
Grease vs Oil Lubrication of Army Vehicles	Letter Report USMC	--	Jan 84	C. Chapin J. Beeson
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
Proposed Test Procedure for Differentiating Between Field Expedient Fuels Using the Foxboro 81-L Octane Analyzer	Letter Report to US Army QM School	--	Oct 84	S-B Chen
Development of a High Temperature Coolant for Advanced Diesel Engines	BRDC 2415	--	Nov 84	I-S Rhee
Evaluation of Evaporation Loss of Chlorotrifluoroethylene Fluid in an M60 Hydraulic Reservoir	BRDC 2417	--	Dec 84	I-S Rhee

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Effects of Diesel Fuel Improver Additives on Filterability	Letter Report HQDA & DLA	--	Oct 84	R. Jamison L. Carrasco K. Wederski
Effects of Used Engine Oil on Diesel Fuel Quality	Letter Report to TACOM	--	Oct 85	R. Jamison
Status of the Development of a Data Base to Monitor Lubrication Order/Lubrication Instruction Documents	2427	--	Nov 85	C. C. Chapin
Investigation/Test of High Density Semi-Formulated Noon-Flammable Hydraulic Fluid	Final Report (Cadillac Gage Co.)	--	Dec 85	W. P. Alfoldy G. O'Rourke
Laboratory Evaluation of Commercial Antifreezes	2429	--	Sep 86	J. H. Conley R. G. Jamison
Status of the Revision of MIL-G-46178 Grease, Helicopter Driveshaft, Coupling	Letter Report	--	Feb 86	C. C. Chapin
U.S./ Army's Methanol-Fueled Administrative Vehicle Demonstration Program Plan	Letter Report	--	Jun 86	-
Compatibility of Wheel Bearing Seals with MIL-G-10924 Greases	2434	--	Jun 86	P. Gatza J. Beeson
USSR Fuels, Fluids, & Lubricants - 1986 Update	BRDEC 2445	--	Apr 87	R. Thiesfeld J. Busi
Analysis of the Orthoisomer of Tri-cresyl Phosphate in Commercial TCP Additives	BRDEC 2448	--	May 87	S-B Chen
A Fuels & Lubricants After-market Additives Database Through 1986	BRDEC 2447	--	Jun 87	R. Thiesfeld
Developing an Accelerated Endurance Test For Greases - A Status Report	BRDEC 2453	--	Aug 87	I-S Rhee

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Analyses of Oil & Fluid Samples from Counterobstacle Test Program	Letter Report	--	Nov 86	T. Bowen
Analysis & Evaluation of Fuel & Lubricants Samples From Foreign Aircraft	Letter Report	--	Dec 86	R. Jamison G. Fodor
Analysis of Engine Oil From Ft. Knox Filter System	Letter Report	--	Jan 87	T. Bowen
Suspected Problems with Military Antifreeze Procured Under MIL-A-46153B	Letter Report	--	Mar 87	R. Jamison S-B Chen
Survey on Black Sludge Occurrences in Automotive Gasoline Fueled Engine Systems	Letter Report	--	Mar 87	M. LePera
Analysis of Contaminated Silicone Automotive Brake Fluid Samples (MIL-B-46176)	Letter Report	--	Mar 87	R. Jamison
Contaminated Military Antifreeze Procured Under MIL-A-46153B	Letter Report	--	Apr 87	J. Smith R. Jamison F. Tijerina
Test of Buoyancy Black Foam Material	Letter Report	--	May 87	W. Williams
Investigation to Determine Temperature-Viscosity Characteristics of Composite Blends of Differing Viscosity Grade Engine Oils	Letter Report	--	May 87	T. Bowen
Testing of the French 15W-40 Candidate Reference Oil	Letter Report	--	May 87	T. Bowen
Use of Commercial Lubricants in Military Installations	Letter Report	--	Jul 87	L. Villahermosa

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Review of EPA Conducted Tests of Devices Claimed to Improve Fuel Economy	Letter Report	--	Aug 87	R. Thiesfeld
Analysis of Fuel, Lubricant, Coolant, & Grease Samples Obtained From a Foreign Vehicle	Letter Report	--	Aug 87	R. Jamison S-B Chen T. Bowen
Use of Pipeline Drag Reduction Additives in Pipeline Movements of Finished Products	Letter Report	--	Aug 87	W. Williams
Analysis of Fuel, Lubricant, Grease & Brake Fluid Samples Obtained From a Foreign Vehicles	Letter Report	--	Sep 87	L. Villahermosa

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<u>TITLE</u>	<u>REPORT NO.</u>	<u>AD NO.</u>	<u>DATE</u>	<u>AUTHORS</u>
Evaluation of Fuel Additives Causing Engine Malperformance	AFLRL-1	-	Sep 66	A.A. Johnston
Controlled Spreading on Water Surface Applied to Military Uses	AFLRL-2	-	Jan 67	A.A. Johnston
Gasoline Additives Which Cause Catastrophic Vehicle Engine Failures	AFLRL-3	-	May 67	A.A. Johnston
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.
Further Investigations of Gasoline Additives Which Cause Catastrophic Vehicle Engine Failure	AFLRL-6	-	Jan 69	A.A. Johnston
Evaluation of Lubricant Agents Which Will Cause Catastrophic Engine Failure	AFLRL-7	-	Apr 69	A.A. Johnston
Anti-Material Studies	AFLRL-8	-	Jun 69	A.A. Johnston
Analysis of High-Boiling Components of Gasoline	AFLRL-9	-	Oct 71	A.A. Johnston
Separation and Identification of Crankcase Lubricant Addi- tives, 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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Study and Evaluation of Emissions From Army Materiel	AFLRL-12	-	Oct 71	J.T. Gray J.A. Russell
The Isolation and Determination of Aromatics in Gasoline by Gas Chromatography	AFLRL-13	739450	Apr 72	L.L. Stavinocha F.M. Newman
Boiling Point Distribution of Gasoline by Gas Chromatography	AFLRL-14	743989	Jun 72	L.L. Stavinocha
Hydrocarbon-Type Analysis of Gasoline by Gas Chromatography	AFLRL-15	748446	Jul 72	L.L. Stavinocha F.M. Newman
Status of Unleaded and Low-Lead Gasoline Composition	AFLRL-16	747421	Aug 72	J.N. Bowden
Synthesis of (2-Cyanoethyl)-Amides for Application in Gas Chromatography	AFLRL-17	753398	Nov 72	G.E. Fodor
Compatibility of Military Standard Engines With Unleaded and Low-Lead Gasolines	AFLRL-19	756511	Nov 72	J.V. Moffitt
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. Stavinocha
Development of a Diesel Engine Test Technique for Evaluating Arctic Engine Oils	AFLRL-24	768901	Sep 73	S.J. Lestz

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Comprehensive Bibliography of Literature on Noncryogenic Storage and Recovery of Hydrogen	AFLRL-30	780928	Sep 73	P.A. Kuntz* W.W. Wimer W.D. Weatherford, Jr. R.D. Quillian, Jr.
Internal Standards for the Isolation and Determination of Aromatics in Motor Gasolines	AFLRL-22	771255	Nov 73	L.L. Stavinoha
A Technique for Evaluating Fuel Mist Flammability	AFLRL-25	776965	Dec 73	B.R. Wright L.L. Stavinoha W.D. Weatherford, Jr.
Installation of Turbine-Fuels Research Combustor Laboratory	AFLRL-27	772945	Dec 73	C.A. Moses
Anti-Materiel Studies	AFLRL-28	-	Dec 73	A.A. Johnston
Ignition and Flammability Properties of Fire-Safe Fuels	AFLRL-39	784281	Feb 74	W.W. Wimer B.R. Wright W.D. Weatherford, Jr.
Direct Water Injection Cooling for Military Engines	AFLRL-32	780175	Mar 74	R. Melton* S.J. Lestz R.D. Quillian, Jr.
Octane/Cetane Relationship	AFLRL-33	779512	Mar 74	J.N. Bowden A.A. Johnston J.A. Russell
Compatibility of Military Engine Oils With Hydraulic and Power Transmission Fluid Systems (HPTF)	Letter Report AFLRL-38	-	May 74	S.J. Lestz
Rating Method and Lubricant Appetite Study for an Air-Cooled Rotary Engine	AFLRL-41	A001648	May 74	J.A. Russell S.J. Lestz
Engine-Lubricant Compatibility Tests on MIL-L-2104C Oils Using Engine Model 6V-53T	AFLRL-29	785719	Jun 74	S.J. Lestz
Development of a Bench Procedure for Evaluating the Effectiveness of Dispersant-Detergent Gasoline Additives (Phase I)	AFLRL-43	A000921	Jun 74	A.A. Johnston H.W. Marbach, Jr.

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Storage Stability of Federal Specification Gasolines	AFLRL-34	784282	Jul 74	J.N. Bowden
Crude Oil Characterizations Data Program	AFLRL-35	A005076	Jul 74	E.A. Frame E.C. Owens F.M. Newman
Effectiveness of a Gasoline Blending Agent as a Fuel Economy Improver	AFLRL-44	-	Jul 74	J.V. Moffitt
Status and Plans Relating to the AFLRL Energy R&D Program	AFLRL-40	-	Aug 74	R.D. Quillian, Jr.
Engine-Fuel-Lubricant Compatibility Tests on MIL-L-2104C Oils Using Engine Model 6V-53T and High-Sulfur Fuel	AFLRL-26	A009527	Sept 74	E.A. Frame S.J. Lestz A.A. Johnston
An Investigation of Diesel Fuel Composition-Exhaust Emission Relationships	AFLRL-42	A005077	Oct 74	J.C. Tyler J.T. Gray W.D. Weatherford, Jr.
Design and Evaluation of Diesel Exhaust Processors for the Analysis of CO and UBH with Vortex Concentration Sensors	AFLRL-45	-	Oct 74	L.L. Stavinoha F.M. Newman
Water Induction Studies in a Military Spark Ignition Engine	AFLRL-46	A003332	Oct 74	J.V. Moffitt S.J. Lestz
Effectiveness of Selected Gasoline Blending Agents as Engine Intake System Deposition Inhibitors	AFLRL-48	-	Oct 74	A.A. Johnston H.W. Marbach, Jr.
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.
Engine-Lubricant Compatibility Tests on MIL-L-2104C Oils Using Engine Model 6V-53T (Phase II)	AFLRL-37	A012778	Dec 74	S.J. Lestz
Development of a Bench Procedure for Evaluating the Effectiveness of Dispersant-Detergent Gasoline Additives--Phase II	AFLRL-52	A006580	Dec 74	H.W. Marbach, Jr. A.A. Johnston

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Engine Experiments With Fire-Safe Fuels	AFLRL-31	-	Jan 75	J.T. Gray A.A. Johnston
Fuel Economy Evaluation of an Alcohol/Water/Gasoline Mix in a Military SI Engine	AFLRL-53	-	Jan 75	J.V. Moffitt
Performance of Army Engines With Leaded and Unleaded Gasoline, Phase II--Field Study Evaluation	AFLRL-54	A005577	Jan 75	J.D. Tosh A.A. Johnston E.A. Frame
Effect of Methanated Fuel on the Production of Smoke in a Typical Engine Combustor	AFLRL-55	-	Jan 75	C.A. Moses
An Investigation of the Flammability Properties of Fire Safe Hydraulic Fluids	AFLRL-56	-	Jan 75	B.R. Wright W.D. Weatherford, Jr.
Toxicity of Engine Exhaust Gases Diesel-Bromochloromethane Fuel Blend	AFLRL-51	A006088	Feb 75	A.A. Johnston K.J. Springer* D.E. Johnson* D. Boenig* F.M. Newman
Fuel-Engine Sensitivity Studies in the LD/LDS-465 Engine	AFLRL-58	-	Feb 75	A.A. Johnston J.V. Moffitt J.T. Gray
Trends in Properties of Unleaded Gasolines	AFLRL-57	A008407	Mar 75	J.N. Bowden
Performance of Diesel and Turbine Fuels in a Military Spark Ignition Engine	AFLRL-60	A013423	Mar 75	J.V. Moffitt S.J. Lestz
Evaluation of Biocides Effects on Diesel Fuel Under Prolonged Storage	AFLRL-61	A012779	Apr 75	J.N. Bowden E.A. Frame
The Application of High Performance Liquid Chromatography to the Analysis of Petroleum Materials--Part I--Qualitative Hydrocarbon Type Analysis	AFLRL-62	A014994	May 75	G.E. Fodor F.M. Newman

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Universal Fuel Requirements	AFLRL-67	A016157	May 75	J.N. Bowden W.W. Wimer
Never-Drain Engine Oil Technology	AFLRL-49	A012777	Jun 75	E.C. Owens S.J. Lestz R.D. Quillian, Jr.
Investigation of Rheological Properties of Dilute Solutions of Polymeric Antimist Agents in Hydrocarbon Fuels	AFLRL-59	A013502	Jun 75	R.J. Mannheimer W.D. Weatherford, Jr.
Exhaust Emission Analyzers--Military Potential Study	AFLRL-65	-	Jun 75	F.M. Newman
Direct Utilization of Crude Oils as Fuels in U.S. Army Diesel Engines	AFLRL-66	A016156	Jun 75	E.C. Owens E.A. Frame
U.S. Army Helicopter Modified Fuel Development Program--Review of Emulsified and Gelled Fuel Studies	AFLRL-69	A023848	Jun 75	W.D. Weatherford, Jr. F.W. Schaekel*
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
Development of Army Synthetic Automotive Engine Oils for Arctic Service	AFLRL-73	A019113	Sep 75	S.J. Lestz T.C. Bowen*

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Never-Drain Engine Oil Technology--Phase II	AFLRL-72	A023256	Oct 75	E.C. Owens S.J. Lestz R.D. Quillian, Jr.
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*
Review of Micelle Formation in Nonaqueous Systems	AFLRL-75	-	Dec 75	W.W. Wimer W.D. Weatherford, Jr.
Nonburning Evaluations of Fire-Safe Fuel Candidates in Simulated Fuel Systems	AFLRL-76	-	Dec 75	W.W. Wimer W.D. Weatherford, Jr.
Analytical Approach to the Characterization of Military Lubricants	AFLRL-77	A027397	Mar 76	L.L. Stavinoha G.E. Fodor F.M. Newman S.J. Lestz
Development of Engine and Lubricant Interferant Substances	AFLRL-79	A027690	May 76	E.A. Frame A.A. Johnston E.J. Baker** J.K. Dean**
Liaison Services on State/Municipal Regulations for Mobile Sources	AFLRL-78	A027437	Jun 76	J.A. Russell H.W. Marbach, Jr. J.D. Tosh
Performance of Army Engines With Unleaded Gasolines Field Study Evaluation	AFLRL-82	A032075	Aug 76	J.D. Tosh
Fuel and Lubricant Compatibility Studies for Army High-Output Two-Cycle Diesel Engines	AFLRL-80	A031885	Sep 76	S.J. Lestz T.C. Bowen* M.E. LePera*
Corrective Action Program for Bromochloromethane-Containing "Fire-Safe" Diesel Fuel	AFLRL-81	A043323	Sep 76	W.D. Weatherford, Jr. B.R. Wright

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Engine Performance and Fire- Safety Characteristics of Water-Containing Diesel Fuels	AFLRL-83	A036011	Dec 76	E.C. Owens B.R. Wright
Determination of Synthetic Hydrocarbons in Hybrid Mineral Oil Lubricants	AFLRL-86	A039964	Jan 77	L.L. Stavinocha
A Gas Chromatographic Method for Fingerprinting Synthetic Lubricants	AFLRL-87	-	Jan 77	L.L. Stavinocha
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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
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
Studies in Detergency Correlation	The Journal of the American Oil Chemists Society Vol. 41, P 47.	Jan 64	A. M. Mankowich
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

Listing of Technical Articles Published by Fuels & Lubes Div Since 1960 (Cont'd)

<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 Nonylphenoxypolycarboxylic acid	Journal of the American 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 Ethylene 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>
Polymer-Thickened Lubricating Oil	I&EC Product Res & Devel	Dec 70	M. E. LePera & J. Piglicampi
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
Rapid Analysis of Brake Fluids Using Gas-Liquid Chromatography	Automotive Engineering	1971	G. Esposito & R. Jamison
Latest Developments in Military Specification Oils	Auto Mobiltechnische Zeitschrift 422	1971	C. F. Schwarz
Qualification Testing of New Military Engine Oils	Amer Petr Inst Proceedings Div of Refining	May 71	C. F. Schwarz
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
Water Interface Affects Fuel Tests	Hydrocarbon Processing	Feb 73	M. E. LePera & J. G. Sonnenberg
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
Heat Transfer Characteristics of Lubricants for Internal Combustion Engines	I&EC Product Res & Devel	Sep 74	M. E. LePera & G. E. Oswald
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
Investigation of Waste Oil Disposal by Direct Incineration	Journal of the Air Pollution Control Association	Feb 77	M. E. LePera & G. Debono
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
New Concept in Solar Thermal Collectors	Alternative Energy Sources, Edit, T. N. Veziroglu, Hemisphere Publ. Corp.	Aug 78	H. J. Spitzer
Low Temperature Military Ground Equipment Grease Considerations	National Lubrication Grease Institute Spokesman	Aug 79	J. P. Doner
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. Mengenhauser
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
Mechanism of Corrosion Inhibition of Barium Dinonylnaphthylene Sulfonate	American Society of Lubrication Engineers Transactions (Vol 23,4,p370-377)	Jun 80	P. Kennedy

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Research & Development Effort in Military Antifreeze Formulation	American Society for Testing & Materials	Apr 79	J. H. Conley R. G. Jamison
Army Experience With Silicone Brake Fluids	Chemical Specialties Manufacturers Assoc.	May 80	J. H. Conley R. G. Jamison
Military Engine Oil Specifications Modified For Recycled Constituents	European Conference on Recycling Oil	Oct 80	M. E. LePera T. C. Bowen
Army Experience with Silicone Brake Fluids	DOD Tri-Service Corrosion Conference	Nov 80	J. H. Conley R. G. Jamison
Status of GASOHOL Evaluation & Its Procurement Within DOD	Army RDA Magazine	Mar-Apr 81	M. E. LePera
Development of a Long-Life Coolant System for Military Vehicle	Army RDA Magazine	May-Jun 81	J. H. Conley
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
Generation of a System Which Exhibits an Isopropnic in The Conversion of Army Vehicles To Silicone Brake Fluid	Army Science Conference Proceedings	Jun 82	C. C. Chapin
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
International Engine Oil Testing--A Military Perspective	SAE Int'l Fuels & Lubricants Meeting	Oct 84	M.E. LePera
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
BY BELVOIR FUELS AND LUBRICANTS RESEARCH
FACILITY* (SwRI) SINCE 1960

<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
Dispersancy Prediction by Optical Microscopy	Society of Automotive Engineers Paper No. 600B	Oct 62	E. Dimitroff J.V. Moffitt

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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>
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
Low Temperature Engine Sludge--What-Where-How?	Society of Automotive Engineers Paper No. 951A	Jan 65	E. Dimitroff R.D. Quillian, Jr.
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
Mechanism of Induction System Deposit Formation	Society of Automotive Engineers Paper No. 660784	Nov 66	E. Dimitroff A.A. Johnston
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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+University of Texas at Austin

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Surface Rheological Properties of Foam Stabilizers in Nonaqueous Liquids	American Institute of Chemical Engineers	Nov 67	R.J. Mannheimer
Engine Varnish--Its Cause and Chemistry	International Congress of Automotive Techniques	May 68	E. Dimitroff J.V. Moffitt R.D. Quillian, Jr.
An Investigation of Methods for Determining Cetane Numbers of Low Ignition Quality Fuels	Society of Automotive Engineers Paper No. 680466	May 68	J.T. Gray C.M. Urban
A Comparison of Linear and Annular Canal Viscometers for Surface Rheological Measurements	Journal of Colloid and Interface Science	Jun 68	R.J. Mannheimer
Why, What, and How: Engine Varnish Formation	ASME/ASLE Joint Lubrication Conference	Oct 68	E. Dimitroff J.V. Moffitt R.D. Quillian, Jr.
The Theory of Interfacial Viscoelastic Measurement by the Viscous Traction Method	American Chemical Society	Dec 68	R.J. Mannheimer
Fuel Crystallization--Additive Synergism and Compatibility	American Chemical Society	Sep 69	E. Dimitroff H.E. Dietzmann
An Induction System Deposit Technique for Motor Gasolines, + Procedure and Utilization	Society of Automotive Engineers Paper No. 690758	Nov 69	A.A. Johnston L.L. Stavinocha
Spectrometric Analysis of Used Oils	Society of Automotive Engineers Paper No. 690776	Nov 69	L.L. Stavinocha 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.

*Southwest Research Institute

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
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*
Homogenous Nucleation of Gas Bubbles in Liquids	Journal of Colloid and Interface Science	Feb 70	W.D. Weatherford, Jr.
The Theory of Interfacial Viscoelastic Measurement by the Viscous-Traction Method	Journal of Colloid and Interface Science	Feb 70	R.J. Mannheimer R.S. Schechter*
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.
Emulsified Fuels and Aircraft Safety	AGARD Conference Proceedings Paper No. AGARD-CP-84-71	May 71	W.D. Weatherford, Jr. F.W. Schaekel+
Rayleigh Scattering Experiments on the Formation and Growth of Water Clusters Nucleated From the Vapor Phase	Journal of Colloid and Interface Science	Jan 72	G.D. Stein C.A. Moses
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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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Internal Standards for the Isolation and Determination of Aromatics in Gasolines	Journal of Chromatographic Science	Oct 73	L.L. Stavinoha
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.
Rating Method and Lubricant Appetite Study for an Air-Cooled Rotary Engine	Society of Automotive Engineers Paper No. 740168	Oct 74	J.A. Russell S.J. Lestz
Hydrocarbon Type Analysis of Gasolines Using Stabilized Olefin Absorption and Gas Chromatography	Journal of Chromatographic Science	Feb 75	L.L. Stavinoha
Feasibility of Cooling Diesel Engines by Introducing Water Into the Combustion Chamber	Society of Automotive Engineers	Feb 75	S.J. Lestz R.B. Melton E.J. Rambie+
Status of Research on Anti-mist 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
Application of Synthetic Engine Oils in Army Hydraulic and Power Transmission Fluid Systems	Society of Automotive Engineers Paper No. 750828	Sep 75	S.J. Lestz P.D. Hopler+

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
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. Stavinocha
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*
Status of Research on Antimist Aircraft Turbine Engine Fuels in the US	The Combustion Institute	Apr 76	W.D. Weatherford, Jr. B.R. Wright
Reduction of Exhaust Smoke From Gas Turbine Engines by Using Fuel Emulsions	The Combustion Institute	Oct 76	C.A. Moses
Fuels and Lubricant 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*
Analytical Characteristics of Synthetic Lubricants	American Society of Engineers Paper No. 77-AM-4A-1	May 77	L.L. Stavinocha G.E. Fodor F.M. Newman
Methanol-Fuel Effects on Spark Ignition Lubrication and Wear	International Symposium Alcohol Fuel Technology	Nov 77	E.C. Owens
Suitability of Military Specification Lubricants for Two-Stroke RVP Engines	Society of Automotive Engineers Paper No. 770996	Nov 77	H.W. Marbach, Jr. J.A. Russell K.F. Smith++
An Aircraft Gas Turbine Engine Simulator Test for Evaluating Lubricant Deposition and Degradation	Lubrication Engineering	Jan 78	B.B. Baber J.C. Tyler M.L. Valtierra

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Application of Energy Dispersive X-Ray Fluorescence Spectroscopy to the Analysis of Contaminants in Fuels and Lubricants	Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy	Mar 78	F.M. Newman M.K. Greenberg
Determination of Aromaticity of Fuels and Lubricants Basestocks by Ultraviolet Spectroscopy	Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy	Mar 78	F.M. Newman M.K. Greenberg
Synthetic Oil Base Stock and Its Impact on New and Used Engine Oil Analysis	Symposium on Oil Analysis	Jul 78	L.L. Stavinoha
Octane-Cetane Relationships	American Chemical Society	Sep 78	J.N. Bowden
An Analysis of Alkyl and Aryl Zinc Dithiophosphate-Type Lubricating Oil Additives by Liquid Chromatography and Infrared Spectroscopy	American Society of Lubrication Engineers Paper No. 78-LC-1C-1	Oct 78	G.E. Fodor F.M. Newman
On the Growth of Steam Droplets Formed in the Laval Nozzle Using Both Static Pressure and Light Scattering Measurements	Journal of Fluids Engineering	Oct 78	C.A. Moses
Approaches to Extended Oil Drain Intervals in Army Tactical Equipment	Society of Automotive Engineers Paper No. 780954	Nov 78	E.C. Owens S.J. Lestz R.D. Quillian, Jr.
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
A Novel Laboratory Method for Evaluating Induction System Deposits in Gasoline Engines	Society of Automotive Engineers Paper No. 790020	Feb 79	H.W. Marbach, Jr. A.A. Johnston J.N. Bowden M.E. LePera*
Analytical Characteristics of Synthetic Lubricants	American Society of Lubrication Engineers	Jul 79	L.L. Stavinoha G.E. Fodor F.M. Newman S.J. Lestz

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Army Fire-Resistant Diesel Fuel	Society of Automotive Engineers Paper No. 790926	Oct 80	G.E. Fodor W.D. Weatherford, Jr. E.C. Owens B.R. Wright F.W. Schaekel*
Fuel Property Effects on Combustor Performance	<u>Gas Turbine Combustor Design Program</u> Hemisphere Publishing	80	C.A. Moses D.W. Naegeli
Effects of Fuel Molecular Structure on Spot Formation in Gas Turbine Engines	American Society of Mechanical Engineers Paper No. 80-GT-62	Mar 80	D.W. Naegeli C.A. Moses
Fuel Property Effects on Flame Radiation in Aircraft Turbine Combustors	Western States Section The Combustion Institute Paper No. WSS-80-9	Apr 80	L.G. Dodge D.W. Naegeli C.A. Moses
Effects of Alcohol Fuels on Engine Wear	Society of Automotive Engineers Paper No. 800857	Jun 80	E.C. Owens H.W. Marbach, Jr. E.A. Frame T.W. Ryan, III
Stability of Alternative Fuels	Hydrocarbon Processing, Vol. 59, No. 7	Jul 80	J.N. Bowden D.W. Brinkman
Lubricant and Volatility Related to Two-Cycle Diesel-Engine Piston-Ring Cylinder-Liner Wear	American Society of Lubrication Engineers Paper No. 80-LC-3C-1	Aug 80	L.L. Stavinoha J.R. Eichelberger S.J. Lestz J.C. Tyler
Synfuel Stability: Degradation Mechanisms and Actual Findings	American Chemical Society	Sep 80	J.N. Bowden D.W. Brinkman** J.W. Frankenfeld** W.F. Taylor**
The Use of Hybrid Fuels in a Single-Cylinder Diesel Engine	Society of Automotive Engineers Paper No. 801380	Oct 80	T.W. Ryan, III W.E. Likos C.A. Moses
Effects of Alcohol Fuels and Fully Formulated Lubricants on Engine Wear	Society of Automotive Engineers, Paper No. 811199	Oct 81	H.W. Marbach, Jr. E.A. Frame E.C. Owens D.W. Naegeli

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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. Stavinocha S.R. Westbrook
Army Needs for Diesel Fuel Stability and Cleanliness	ASTM Special Publication 751	Oct 81	L.L. Stavinocha 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. Stavinocha 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. Stavinocha
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. Stavinocha

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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 ($A^3\pi_g X^3\pi_u$) 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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<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

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<u>TITLE</u>	<u>PUBLISHED IN</u>	<u>DATE</u>	<u>AUTHORS</u>
Shear and Normal Stresses of Antimisting Kerosene at High Shear 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. Mengenhauser*
Enhanced Methodology for Jet Fuel Clean and Bright Evaluations	Proceedings of 2nd International Conference on 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