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Jet Fuels



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[Fuels and Lubricants for Aircraft](#) Feb 27, 1975 372 pages

Authors: [N. Ye. Reznikov](#); [FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSONAFB OH](#)

**Full Text**

Contents: General characteristics of aircraft **fuels**; Brief data on the production of fuels--Petroleum the basic raw material in fuel production; **Fuels** for air breathing **jet** engines; Aviation gasolines--Piston engines and fuel requirements; Rocket propellants; Lubricants and technical fluids; Production of synthetic oils and liquids; Oils for aircraft engines; Transmission oils; Greases.

[Jet Engine Exhaust Analysis by Subtractive Chromatography](#) Dec 1978 77 pages

Authors: [Joseph J. Brooks](#); [Diana S. West](#); [John E. Strobel](#); [Leonard Stamper](#); [MONSANTO RESEARCH CORP DAYTON OH](#)

**Full Text**

This report describes the further refinement of a method for the sampling and analysis of organics in **jet** engine exhaust by chemical classes. Details for the selection, construction, and evaluation ... incorporated into both the sampling and analytical systems compared with previous systems used in a **jet** engine exhaust study of March 1975 are discussed. The capabilities of the system are illustrated by the analysis of actual **jet** engine exhaust samples from a J85-5 engine using JP-4 and an alternate fuel blend that simulates the higher aromatic content expected from shale and coal- derived **fuels**.

[Potential Benefits from the Use of JP-8 Fuel in Military Ground Equipment](#) Feb 1989 41 pages

Authors: [Alan F. Montemayor](#); [Leo L. Stavinoha](#); [Sidney J. Lestz](#); [Maurice E. LePera](#); [SOUTHWEST RESEARCH INST SAN ANTONIO TX BELVOIR FUELS AND LUBRICANTS RESEARCH FACILITY](#)

**Full Text**

... useful demonstration programs will be operations that involve joint operations of forces to include Army ground and aviation activities. These operations should be monitored for benefits as well as possible problems and the lessons learned applied accordingly. **Jet** engine **fuels**; Kerosene; Fuel additives; Diesel **fuels**; Compression/ignition engines; Sulfur/ exhaust emissions/particulates; Logistics; Military/ground/combat vehicles. (edc)

[Fuel Lubricity Requirements for Diesel Injection Systems](#) Feb 1991 72 pages

Authors: [Paul I. Lacey](#); [Sidney J. Lestz](#); [SOUTHWEST RESEARCH INST SAN ANTONIO TX BELVOIR FUELS AND LUBRICANTS RESEARCH FACILITY](#)

**Full Text**

... Department of Defense has adopted the single fuel for the battlefield concept. Diesel fuel will be replaced by JP-8/**Jet** A-1, which has both lower lubricity and viscosity. Currently, the tribological requirements of fuel-lubricated ... widely approved lubricity test or standard exists. Similar problems are currently faced in commercial applications where low-sulfur/aromatic **fuels** are being introduced. The present study details the wear mechanisms likely to exist with low lubricity **fuels**, with particular reference to injection equipment known to be fuel sensitive. The wear mechanism was found to be ...

[Combustion and Heat Transfer Studies Utilizing Advanced Diagnostics: Fuels Data Sets](#) Nov 1992 132 pages

Authors: [D. R. Ballal](#); [S. P. Heneghan](#); [H. L. Imwalle](#); [C. R. Martel](#); [T. F. Williams](#); [DAYTON UNIV OH](#)

**Full Text**

... has steadily increased. Therefore, a thermally stable JP-8 fuel is required that can operate at higher temperatures than current **fuels**. This research program had two objectives: (1) to identify fundamental conditions of fuel thermal decomposition, and (2) to provide the data needed to develop and evaluate global chemistry and heat transfer models for predicting **jet** fuel thermal decomposition and deposition rate. In this final report, we present the **Fuels** Data Sets that may be used by modelers in the industry and other laboratories for the evaluation and refinement of global chemistry ...

[The Feasibility of Using Fiber Glass Reinforced Plastics to Fabricate Petroleum Fuel Tanks](#) Jan 1958 17 pages

Authors: [Harold F. Stose](#); [QUARTERMASTER RESEARCH AND ENGINEERING COMMAND NATICK MA](#)

**Full Text**

... was conducted to determine the feasibility of using fiber glass reinforced plastics for the fabrication of 600-gallon fuel tanks. Such tanks would be transportable by truck and used to carry aviation **fuels**, motor **fuels**, or JP-4 **jet fuels**. Metal tanks of 600-gallon capacity have been built. The investigation included (a) laboratory determinations of the solvent resistance of recommended reinforced plastic materials and (b) a survey of material suppliers, reinforced ...

[Quantitating the Percutaneous Absorption of Mechanistically-Defined](#)

May 3, 2004

33 pages

[Chemical Mixtures](#)Authors: [Jim E. Riviere](#); [Nancy A. Monteiro-Riviere](#); [Ronald E. Baynes](#); [Xin-Rui Xia](#); [Charles Smith](#); [NORTH CAROLINA STATE UNIV AT RALEIGH SCHOOL OF VETERINARY MEDICINE](#)[Full Text](#)

The focus of this research was to assess the dermal absorption and skin toxicity of topically applied **jet fuels** Jet A, JP-8, JP-8(100) using pigs, in vitro porcine skin and inert membrane models as well as human keratinocyte cell cultures. Our working hypothesis was that **jet fuel** dermal toxicity was secondary to its hydrocarbon components with differences between fuel types ... developed that was capable of rapidly determining physical chemical properties of all **jet fuel** hydrocarbon constituents as well as assessing additive and solvent effects on membrane ...

[Low Temperature Compression Set Resistant O-Ring Materials](#)

Jul 2003

126 pages

Authors: [Kenneth Heater](#); [Mark Hodge](#); [Donald Bigg](#); [METSS CORP WESTERVILLE OH](#)[Full Text](#)

... temperatures and loads. Current materials, while chemically compatible with existing aircraft **fuels** and hydraulic fluids, are subject to both low temperature and high temperature performance ... durability and service life requirements at operating temperatures up to 225 deg F in **fuels** systems and 275 deg F in hydraulic fluid systems. Multiple materials representing ... classes of rubber chemistries were evaluated under this program for high temperature resistance to aircraft hydraulic fluids and **jet fuels**, and low temperature sealing performance before and after 3- and 28- day high temperature fluid ...

[A Novel Test Method for Fuel Thermal Stability](#)

Feb 1993

84 pages

Authors: [Michael A. Serio](#); [David S. Pines](#); [Erik Kroo](#); [Kim S. Knight](#); [Peter R. Solomon](#); [ADVANCED FUEL RESEARCH INC EAST HARTFORD CT](#)[Full Text](#)

... to demonstrate that an FT-IR fiber optic probe and a quartz crystal microbalance (QCM) probe could be used to measure deposit formation from thermal stressing of **jet fuels** in a high-temperature, high pressure flow system. These probes were designed, constructed and tested in an existing Fuel Stability Test System (FSTS) ... Total Reflectance (ATR) circle cell monitoring the stressed fuel after cooling to ambient temperature. A Shell **Jet A** and a Sun **Jet A-1** fuel were tested. It was demonstrated that both the FT-IR fiber optic probe ...

[Fuel Cell Sealant Compounds](#)

Sep 1952

138 pages

Authors: [Earl H. Sorg](#); [John F. McCarthy](#); [Edwardk M. Fettes](#); [Joseph S. Jorczak](#); [THIOKOL CORP TRENTON NJ](#)[Full Text](#)

... integral fuel tank sealant compounds with improved low and high temperature properties, increased toughness and adhesion, and better resistance to **jet fuels**. Experimental integral fuel tank sealant compounds were prepared in two-package mixes from hexamethylene dichloride/triglycol dichloride/ formal and pentamethylene ... better resistance to heat aging at 2120F, and slightly poorer resistance to swell in aromatic **fuels**. Compounding studies with Thiokol' LP-2 yielded formulations with improved adhesion properties and heat aging ...

[Studies of Slurry Fueled Propulsion Systems.](#)

Sep 1972

46 pages

Authors: [Cecil F. Warner](#); [S. N. B. Murthy](#); [PURDUE UNIV LAFAYETTE IND JET PROPULSION CENTER](#)[Full Text](#)

... combustion of aluminum particles in a hydrocarbon carrier is presented together with the predicted length of cylindrical combustor required for the complete combustion of selected slurry **fuels** containing aluminum powders. The results of the experimental investigation of the combustion efficiencies of selected **fuels**, JP-4, JP-5, decalin, 70% tetralin-30% decalin, and 75% aluminum-25% decalin, burned in a sudden dump combustor are presented and discussed. Descriptions of ...

[Hot Surface Ignition Tests of Aircraft Fluids](#)

Nov 1988

239 pages

Authors: [A. M. Johnson](#); [A. J. Roth](#); [N. A. Moussa](#); [BOEING ADVANCED SYSTEMS CO SEATTLE WA](#)[Full Text](#)

Five fluids commonly found in aircraft engine components, JP-4 and JP-8 **fuels**, Mil-H-5606 and Mil-H-83282 hydraulic fluids and Mil-L-7808 lubricating oil, were tested in the Aircraft Engine Nacelle Fire Test simulator (AENFTS) to define their Minimum Hot Surface Ignition Temperature (MHSIT's) when introduced ... engine bleed duct. The test employed a simple, uncluttered test section and a realistically simulated portion of the F-16 engine compartment. MHSIT's for all but Mil-H-83282 were consistently found to be higher than the fluids autoignition temperature. Keywords: Combustion; **Jet fuels**. (kt)

[Development and Assessment of Turbulence-Chemistry Models in](#)

Oct 31, 1994

56 pages

[Highly Strained Non-Premixed Flames](#)Authors: [Sanjay M. Correa](#); [GENERAL ELECTRIC CORPORATE RESEARCH AND DEVELOPMENT SCHENECTADY NY](#)[Full Text](#)

... , and comparison with Raman data on major species, temperature and mixture fraction (mean and rms quantities of each) in the same burner. **Fuels** have been CO/H<sub>2</sub> mixtures (whose reduced chemistry is modeled with two compositional variables) and methane (five variables). This ... pdf model with any of the CFD codes used in design. There is thus a clear path for transitioning the results of the research. Remaining issues included (i) a chemistry scheme for **jet fuels** (not just CO/H<sub>2</sub> and CH<sub>4</sub>), tested in turbulence and not only in the laminar context. and (ii) more species and temperature data in ...

[Advanced Fuel Hydrocarbon Remediation National Test Location -](#)

Mar 1997

4 pages

[Biopile Remediation](#)Authors: [Jeff Heath](#); [Ernie Lory](#); [NAVAL FACILITIES ENGINEERING SERVICE CENTER PORT HUENEME CA](#)[Full Text](#)

... soil. Certain species of bacteria are able to consume organic pollutants as a food source, thus detoxifying the pollutants. Biopile remediation is effective in treating soils contaminated with petroleum hydrocarbons such as gasoline, grease, **jet fuels**, diesel **fuels**, and motor oil. The microbes 'appetite' is enhanced by blowing air

through the contaminated soil pile to provide oxygen and adding fertilizer to provide additional solid nutrients.

#### [Thermal Stability Enhancement of JP-5](#)

Sep 15, 1998

38 pages

Authors: [Michael A. Serio](#); [Erik Kroo](#); [Ripudaman Malhotra](#); [Donald F. McMillen](#); [ADVANCED FUEL RESEARCH INC EAST HARTFORD CT](#)

Full Text

The objective of this work was to determine if C60 or its derivatives could enhance the oxidative thermal stability of JP-5 and similar aviation **fuels**. Two derivatives of C60 were prepared, n-hexyl amine and di-isopropylamine. Several conventional thermal stressing experiments were also performed: oxygen overpressure (OOP), isothermal corrosion oxidation ... be enhanced. The effects of reactor tube activation were important for the FSTS. Additional work is warranted on exploring the beneficial effects of C60 addition which could serve to extent the operating range of common **jet fuels**.

#### [Operations and Maintenance Manual for Expanded Bioventing System SWMU 55 \(Site FT-03\) Former Fire Protection Training Area Number 3, Charleston Air Force Base, Charleston, South Carolina](#)

Oct 1997

48 pages

Authors: [ENGINEERING-SCIENCE INC CARY NC](#)

Full Text

In October 1992, Parsons ES (formerly Engineering-Science Inc. ES) installed a bioventing pilot test system at Site FT-03 to remediate soils impacted by **jet fuels**, reclaimable mixed **fuels**, and other flammable wastes that were used during fire training exercises at the site. The pilot-scale system was composed of one 4-inch diameter horizontal vent well (HVW), four permanent soil vapor monitoring points (MPs) and several temporary soil MPs installed in fuel- impacted ...

#### [Protocol of Test Methods for Evaluating High Heat Sink Fuel Thermal Stability Additives for Aviation Jet Fuel JP-8+100](#)

Apr 2002

29 pages

Authors: [Robert W. Morris Jr.](#); [Donald Minus](#); [Steven Zabarnick](#); [Lori Balster](#); [Kenneth E. Binns](#); [AIR FORCE RESEARCH LAB WRIGHT-PATTERSON AFB OH PROPULSION DIRECTORATE](#)

Full Text

This report describes the high heat sink **fuels** thermal stability additive evaluation protocol of test methods as they apply to the evaluation of additives for JP-8+100. Individual test methods are described and a standardized methodology for test operation is presented. Acceptance criteria for both baseline **fuels** and candidate additives are also given.

#### [Army Evaluation of JP-8 and Diesel Fuel Exposed to Anti-Detonation Material Filler \(ADMF\) for Fuel Tank Effects](#)

Sep 2005

108 pages

Authors: [Bernard R. Wright](#); [Edwin A. Frame](#); [SOUTHWEST RESEARCH INST SAN ANTONIO TX DEPT OF ENGINES FUELS AND LUBRICANTS](#)

Full Text

Extensive laboratory research was conducted on metal mesh and organic foam products to determine their effects on **fuels** when placed in fuel tanks and the resulting effects to operating fuel systems. Tests done with and without mesh materials included fuel particulates, fuel elements, fuel color, fuel gum, Karl Fisher water, total acid number, **jet** fuel thermal oxidation test, conductivity, and lubricity (SLBOCLE BOCLE etc.). Two interestingly negative results were in the areas of lubrication and particle contaminants. All metallic mesh ...

#### [Antimisting Kerosene: Low Temperature Degradation and Blending](#)

Jun 1988

57 pages

Authors: [A. Yavrouian](#); [P. Parikh](#); [V. Sarohia](#); [JET PROPULSION LAB PASADENA CA](#)

Full Text

The inline filtration characteristics of freshly blended and degraded AMK **fuels** at low temperature are examined in this report. A basic needle valve degrader was modified to include partial recirculation of degraded fuel and heat addition in the bypass ... addition in the bypass loop improved low temperature degradation performance. In addition, this report addresses the problems associated with blending the AMK additive with **Jet A** at various base fuel temperatures. These tests established that AMK blended at temperatures between 0 and +30C produced adequate fire protection characteristics within ...

#### [Effects of JP-8 on Molecular and Histological Parameters Related to Acute Skin Irritation](#)

Jun 2000

32 pages

Authors: [M. B. Kabbur](#); [W. W. Brinkley](#); [J. V. Rogers](#); [P. G. Gunasekar](#); [C. M. Garrett](#); [K. T. Geiss](#); [J. N. McDougal](#); [HUMAN EFFECTIVENESS DIRECTORATE WRIGHT-PATTERSON AFB OH OPERATIONAL TOXICOLOGY BRANCH](#)

Full Text

Organic chemicals such as **jet fuels** and solvents are recognized to cause skin irritation after dermal exposure. The molecular responses to these chemicals that result in acute irritation are not understood well enough to allow the establishment and selection of ... of measuring various inflammatory mediators, including IL-1 alpha, inducible nitric oxide synthase (iNOS), and nitric oxide. Male F-344 rats were denmally exposed to JP-8 **jet** fuel for one hour using Hill Top Chambers. Skin samples were collected at zero, one, two, four and six hours after the beginning of ...

#### [A STUDY OF CADMIUM-TIN AND ZINC-TIN ALLOY ELECTRODEPOSITS](#)

Sep 1954

48 pages

Authors: [Bennie Cohen](#); [AERONAUTICAL SYSTEMS DIV WRIGHT-PATTERSON AFB OH MATERIALS LAB](#)

Full Text

... from fluoroborate solutions. Cadmium was used as a basis of comparison throughout The cadmium-tin alloy coating was found to be superior to cadmium coatings in the majority of tests performed. The cadmium-tin alloy coating was found to have excellent resistance to salt spray, **jet fuels**, high temperature synthetic oils, organic acid vapors, and to have very little embrittling effect on hardened steel.

- METHODS OF ESTIMATING THE QUALITY OF JET FUELS** Feb 16, 1962 23 pages  
 Authors: [V. N. Zrelvy](#); [FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OH](#)  
[Full Text](#)
- LUBRICITY PROPERTIES OF HIGH-TEMPERATURE JET FUELS** Feb 15, 1966 54 pages  
 Authors: [ESSO RESEARCH AND ENGINEERING CO LINDEN NJ PRODUCTS RESEARCH DIV](#)  
[Full Text](#)
- LUBRICITY PROPERTIES OF HIGH-TEMPERATURE JET FUELS** Aug 1966 114 pages  
 Authors: [ESSO RESEARCH AND ENGINEERING CO LINDEN NJ PRODUCTS RESEARCH DIV](#)  
[Full Text](#)
- IGNITION CHARACTERISTICS OF FUELS AND LUBRICANTS** Dec 1963 41 pages  
 Authors: [Joseph M. Kuchta](#); [Alphonse Bartkowiak](#); [Ralph J. cato](#); [Michael G. Zabetakis](#); [BUREAU OF MINES PITTSBURGH PA](#)  
[Full Text](#)  
 Ignition temperatures of n-hexane, n-octane, n-decane, JP-6 jet fuel and aircraft engine oil MIL-L-7808 (0-60-18) were determined in air using heated Pyrex cylinders of 0.314-inch to 1.38-inch diameter and Nichrome wires, rods, or tubes of 0.016-inch to 0.75-inch diameter. The ignition temperature varied little with fuel-air ratio but increased as the size of the heat source was decreased. Expressions are given which define the variation of the hot surface ignition temperatures of these combustibles with the radius and the surface area of the heat source. The expressions are applicable to ...
- AN INVESTIGATION OF THE COMPATIBILITY OF FAA 1069-1 KEROSENE FUEL GEL WITH COMMERCIAL JET TRANSPORT FUEL SYSTEMS** Feb 4, 1969 85 pages  
 Authors: [W. J. Burk](#); [BOEING COMMERCIAL AIRPLANE CO RENTON WA](#)  
[Full Text](#)  
 The testing of gelled fuel's compatibility with a commercial transport fuel system is discussed. The effect upon the strength of kerosene gelled fuels of varying the amount of gelling agent, gel water content, gelation temperature, gel temperature, pumping with different types of pumps, and subjection to a typical vibration spectrum was investigated. The corrosion characteristics of the gelled fuel and the gelled fuel's ability to support microbiological growths was studied. The gelled fuel was also tested for its ability to be pumped out of a section of a 727 wing fuel tank.
- Reduction of Electrostatic Charge in Jet Fuels during Refueler Loading** Jun 20, 1972 21 pages  
 Authors: [Joseph T. Leonard](#); [Homer W. Carhart](#); [NAVAL RESEARCH LAB WASHINGTON DC](#)  
[Full Text](#)  
 A 30-second relaxation chamber and a static charge reducer (SCR) were evaluated for their effectiveness in dissipating the electrostatic charge during refueler loading of JP-5 fuel at flow rates of 300 to 540 gpm. The electrical conductivity of the JP-5 fuel was in the range of 0.1 to 10 C. U. at 78F (1 C.U. =  $1 \times 10$  to the minus 14 power mhos/cm). A JP-4 fuel with a conductivity of 7.8 C.U. was also tested to a limited extent. The experimental setup consisted of a 600-gpm filter/separator equipped with fuel monitors, a 30-second relaxation chamber, and a static charge reducer located in ...
- LUBRICITY PROPERTIES OF HIGH-TEMPERATURE JET FUELS** Sep 1967 160 pages  
 Authors: [J. K. Appeldoorn](#); [F. F. Tao](#); [ESSO RESEARCH AND ENGINEERING CO LINDEN NJ PRODUCTS RESEARCH DIV](#)  
[Full Text](#)
- Variables Affecting the Performance of Jet Fuel Filter-Separators.** Jun 1970 367 pages  
 Authors: [Robert K. Johnston](#); [Robert D. Brown](#); [Charles M. Monita](#); [Frank Fernandez Jr](#); [SOUTHWEST RESEARCH INST SAN ANTONIO TX](#)  
[Full Text](#)  
 Results are presented from the final year of a 5-year program in research and development in hydrocarbon fuel handling and contaminant control, along with a statistical analysis of results from earlier tests performed to develop procedures for evaluating filter-separator elements, fuels, and fuel additives. The program included a large number of tests in a single-element filter-separator test loop and a variety of small-scale studies. A small coalescer device was developed and operated to study the role of filter-media parameters in removal of free water from fuel. In the water separator ( ...
- Carbon Slurry Fuels for Volume Limited Missiles** Nov 1979 219 pages  
 Authors: [R. H. Salvesen](#); [D. C. Rigano](#); [W. S. Blazowski](#); [W. F. Taylor](#); [EXXON RESEARCH AND ENGINEERING CO LINDEN NJ PRODUCTS RESEARCH DIV](#)  
[Full Text](#)  
 ... of the first year's effort of this twenty-seven month program. Initial results indicate that a dispersion of carbon black in JP-10 with select dispersing agents can be made that meets the BTU requirements. Preliminary results look promising. Combustion tests using a specially developed Liquid Fuel Jet Stirred Combustor (LFJSC) have demonstrated that carbon burnout efficiencies greater than 90% are achievable with 300 nm particles in residence times down to 4 ms. Homogeneous iron, lead, manganese, and zirconium catalysts at concentrations up to 1000 ppm proved ineffective as accelerators of ...

- [Health and Safety Plan Soil Vapor Extraction Treatability Investigation Site S within Operable Unit D McClellan Air Force Base](#) Jul 1991 66 pages  
 Authors: [CH2M HILL SACRAMENTO CA](#)  
 ... . Some of the hazardous materials that have been used or generated on the base include: industrial solvents and caustic cleaners, electroplating waste heavy metals, oils contaminated with polychlorinated biphenyls, contaminated **jet fuels**, low-level radioactive wastes, unused chemicals, oils and lubricants. Characterization recovery and remediation of areas affected by waste disposal practices are ongoing. Contaminated drill cuttings and purge water will be ...
- Full Text**
- [Summer Research Program \(1992\). Summer Faculty Research Program \(SFRP\) Reports. Volume 6. Arnold Engineering Development Center, Civil Engineering Laboratory, Frank J. Seiler Research Laboratory, Wilford Hall Medical Center](#) Dec 28, 1992 425 pages  
 Authors: [Gary Moore](#); [RESEARCH AND DEVELOPMENT LABS CULVER CITY CA](#)  
 The following Topics were among those completed at the Air Force Faculty Research Summer Program: Experiences using Model-Based Techniques for the Development of a Large Parallel Instrumentation System; Data Reduction of Laser Induced Fluorescence in Rocket Motor Exhausts; Feasibility of Wavelet Analysis for Plume Data Study; Characterization of Seagrass Meadows in St. Andrew (Crooked Island) Sound, Northern Gulf of Mexico; A Preliminary Study of the Weathering of **Jet Fuels** in Soil Monitored by SFE with GC Analysis; Preliminary Numerical model of Groundwater Flow at the MADE2 Site.
- Full Text**
- [Design and Field Evaluation of a Fuel Filtration/Additive Unit \(FAU\)](#) Jun 1993 202 pages  
 Authors: [G. B. Bessee](#); [SOUTHWEST RESEARCH INST SAN ANTONIO TX BELVOIR FUELS AND LUBRICANTS RESEARCH FACILITY](#)  
 A Fuel Filtration/Additive Unit (FAU) was designed, fabricated, and field tested. The FAU is capable of removing water and particulate debris from vehicle fuel cells and returning the clean fuel to the fuel cell. In addition, the FAU is capable of on-line addition of additives to convert **Jet A** to JP-8 or treating microbiological growth with a biocide. Fuel filtration, Clean fuel, Particulate debris, Free water, Microbiological growth, Fuel additive.
- Full Text**
- [A Proposed Methodology for Combustion Toxicology Testing of Combined Halon Replacement Agent/Jet Fuel Interaction](#) Apr 1993 67 pages  
 Authors: [Charles J. Kibert](#); [FLORIDA UNIV GAINESVILLE](#)  
 ... -142b. A laboratory scale experiment benchmarked on large scale testing of a 150 sq ft pool fire was developed on the basis of Froude scaling of the full scale fire to a 15 x 15 cm pan fire. A prototype apparatus was developed and investigation into the use of animal behavior methods as an indicator of human incapacitation was conducted. The result is a new method which may potentially be utilized for future toxicity studies of the combustion interaction of current and future U.S. Air Force **fuels** with various fire extinguishants. Extinguishing agents, Halon 1211, Halon replacement, Combustion
- Full Text**
- [Mechanism of Deposit Formation on Fuel-Wetted Hot Metal Surfaces](#) Jan 1995 91 pages  
 Authors: [Leo L. Stavinoha](#); [Steven R. Westbrook](#); [Lona A. McInnis](#); [SOUTHWEST RESEARCH INST SAN ANTONIO TX BELVOIR FUELS AND LUBRICANTS RESEARCH FACILITY](#)  
 Experiments were performed in a Single-Tube Heat Exchanger (STHE) apparatus and a Hot Liquid process meet **Jet Fuel** Thermal Oxidation Tester (JFTOT) ASTM D 3241 requirements. The HLPS-JFTOT heater tubes used were 1018 mild steel, 316 stainless steel (SS) 304 SS, and 304 SS tubes coated with aluminum, magnesium, gold, and copper. A low-sulfur was used to create deposits on the heater tubes at temperatures of 300 deg C, 340 deg C, and 380 deg C. Deposit voltage and Auger ion milling. Pronounced differences between the deposit thickness measuring techniques suggested that both Auger milling rate ...
- Full Text**
- [Air Force Site Characterization and Analysis Penetrometer System \(AFSCAPS\): Laser-Induced Fluorescence Cone Penetrometer - Tinker AFB Site Characterization. Volume 2](#) Dec 1994 163 pages  
 Authors: [James D. Shinn](#); [Wesley L. Bratton](#); [APPLIED RESEARCH ASSOCIATES INC SOUTH ROYALTON VT NEW ENGLAND DIV](#)  
 ... , soil and water samples were obtained with CPT or drilling technologies, and tested using analytical procedures to confirm the presence of fuel contamination. These results allowed the detection limits of the LIF-CIT probe to be evaluated for **jet fuels**. The Tinker AFB demonstration indicates that the LIF-CBT system can detect TPH concentrations to at least 100 mg/kg, the lower bound detection limit is believed to be lower than 100 mg/kg, but ...
- Full Text**
- [Air Force Site Characterization and Analysis Penetrometer System \(AFSCAPS\): Laser-Induced Fluorescence Cone Penetrometer - System Development and Evaluation. Volume 1](#) Dec 1994 118 pages  
 Authors: [James D. Shinn](#); [Wesley L. Bratton](#); [Greg Gillispie](#); [Randy St Germain](#); [APPLIED RESEARCH ASSOCIATES INC SOUTH ROYALTON VT NEW ENGLAND DIV](#)  
 ... , soil and water samples were obtained with CPT or drilling technologies, and tested using analytical procedures to confirm the presence of fuel contamination. These results allowed the detection limits of the LIF-CPT probe to be evaluated for **jet fuels**. The Tinker AFB demonstration indicates that the LIF-CPT system can
- Full Text**

detect TPH concentrations to at least 100 mg(kg. the lower bound detection limit is believed to be lower than 100 mg(kg, but ...

[Evaluation of the Hazard of Static Electricity in Nonmetallic POL](#)

[systems - Static Effects in Handling Jet Fuel in Fiberglass Reinforced](#)

Jun 1973

222 pages

[Plastic Pipe](#)

Authors: [Kenneth C. Bachman](#); [J. C. Munday](#); [ESSO RESEARCH AND ENGINEERING CO LINDEN NJ](#)

There is increasing interest in fiberglass reinforced plastic (FRP) pipe for minimizing contamination in ground handling of aviation **fuels**. This report presents the results of a literature search and experimental study conducted to determine if static electricity hazards would be increased by substituting FRP for metal pipe in such systems. Experiments were conducted in 6 inch diameter, matched volume, carbon steel and Bondstrand 2000 pipes at four fuel conductivities between 0.2 and 5.5 CU and at flow rates between 200 and 1500 GPM at controlled temperatures. Charge generation in the pipes ...

[Full Text](#)

[FIP: A Pattern Recognition Program for Fuel Spill Identification](#)

May 1996

35 pages

Authors: [A. Faruque](#); [B. K. Lavine](#); [H. T. Mayfield](#); [ARMSTRONG LAB TYNDALL AFB FL ENVIRONICS DIRECTORATE](#)

... system takes advantage of the high performance computational and visualization routines of the MATLAB programming environment. Both neural networks and statistical pattern recognition techniques are implemented. FIP employs covariance stabilization of the data to ensure correct classification of the gas chromatograms of weathered and unweathered **jet fuels**.

[Full Text](#)

[Oxidative Stress, Signal Transductions, Cell-Cell Communication](#)

Feb 27, 1997

9 pages

Authors: [James E. Trosko](#); [MICHIGAN STATE UNIV EAST LANSING COLL OF HUMAN MEDICINE](#)

... redox state of the cells; to determine if these chemicals alter apoptosis frequency via some oxidative damage-induced signal transduction mechanism). Results showed a structure- function relationship between PAH molecules and inhibition of gap junctions; **jet fuels** JP8 and JP4 were inhibitory to gap junctions; and perfluorinated fatty acids with chain length of 7 to 10 carbons were inhibitory to gap junctions.

[Full Text](#)

[Technology Profile: Vacuum-Mediated LNAPL Free Product](#)

Mar 1994

2 pages

[Recovery/ Bioremediation \(BIOSLURPER\), Issue 1](#)

Authors: [Patrick E. Haas](#); [AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE BROOKS AFB TX](#)

Vacuum-mediated Free Product Recovery/Bioremediation (Bioslurping) is applicable to sites where light nonaqueous phase liquids (LNAPLs) (e.g.. petroleum hydrocarbons: gasoline, **jet fuels**, diesel, heating oils, etc.) form a measurable layer of LNAPL on the water table. All parameters that affect the recoverability of the LNAPLs should be considered in site selection. Major factors include the mass of LNAPL (Is there enough to recover?) and the relative permeability of the ...

[Full Text](#)

[Biodiesel Fuel Technology for Military Application](#)

Dec 1997

308 pages

Authors: [Edwin A. Frame](#); [Gary B. Bessee](#); [Howard W. Marbach Jr](#); [SOUTHWEST RESEARCH INST SAN ANTONIO TX TARDEC FUELS AND LUBRICANTS RESEARCH FACILITY](#)

This program addressed the effects of biodiesel (methyl soyate) and blends of biodiesel with petrofuels on fuel system component and material compatibility, fuel storage stability, and fuel lubricity. Biodiesel was found to have excellent lubricity properties and was effective at 1 volume percent (vol %) blend in improving the lubricity of **Jet** A-1 fuel. The following potential problem areas associated with methyl soyate use were identified: storage stability, compatibility with some metals, and compatibility with nitrile elastomers.

[Full Text](#)

[Repeated Dose Skin Irritation Study on Jet Fuels - A Histopathology](#)

[Study](#)

Mar 1999

31 pages

Authors: [William Baker](#); [Thomas Miller](#); [Darol Dodd](#); [James McDougal](#); [MANTECH-GEOCENTERS JOINT VENTURE DAYTON OH](#)

JP-8 is the battlefield fuel for DoD and NATO countries. It's use is projected beyond 2025, with employment of additive packages to meet new weapon systems' requirements. One additive package (JP-8 + 100) currently in use increases the thermal stability of the fuel by 100 deg F. Questions have been raised about human health implications of occupational exposures to JP-8, as compared to the phased out JP-4, and to possible differences between JP-8 and JP-8 + 100. This study investigated the histopathologic effects of daily, topical, dermal exposure to JP-8 + 100, JP-4 and JP-8 in rats. Full ...

[Full Text](#)

[Fuel Degradation and Allied Studies Delivery Order 5](#)

Jul 2000

102 pages

Authors: [Andre Boehman](#); [Semih Eser](#); [Pat Hatcher](#); [Bruce Miller](#); [Harold Schobert](#); [Chunshan Song](#); [PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF MECHANICAL AND NUCLEAR ENGINEERING](#)

Experimental and theoretical efforts were undertaken to further the understanding of the thermal degradation of coal-derived and petroleum-derived **jet fuels**. Thermal degradation includes both thermal-oxidative and pyrolytic degradation and deposition.

[Full Text](#)

[Fuel Formulation Studies](#)

May 2000

135 pages

Authors: [B. Arnold](#); [Mark Badger](#); [Bruce Miller](#); [Chunshan Song](#); [PENNSYLVANIA STATE UNIV UNIVERSITY PARK](#)

Studies of industrial methods of producing coal-derived **jet fuels** were undertaken. The focus of the effort was on incorporating coal or coal components into the existing petroleum refinery infrastructure.

[Full Text](#)

[Initial Growth Rate and Visual Characteristics of a Round Jet into a Sub- to Supercritical Environment of Relevance to Rocket, Gas Turbine, and Diesel Engines](#)

Nov 20, 1998

18 pages

Authors: [B. Chehroudi](#); [D. Talley](#); [E. Coy](#); [AIR FORCE RESEARCH LAB EDWARDS AFB CA PROPULSION DIRECTORATE WEST](#)

**Full Text**

The combustion chamber temperature and pressure in many liquid rocket, gas turbine, and diesel engines are quite high and can reach levels above the critical point for the injected **fuels** and/or oxidizers. A high pressure chamber is used to investigate and understand the nature of the interaction between the injected fluid and the environment under such conditions. Pure N<sub>2</sub>, He, and O<sub>2</sub> fluids are injected. Several chamber media are selected including, N<sub>2</sub>, He, and mixtures of CO+N<sub>2</sub>. The effects of chamber pressure ranging from a subcritical (i.e. relative pressure,  $P(\text{sub } r) = P/P(\text{sub injectant})$  ...

[The Effect of Jet Fuels on the Skin Irritation and Neuropeptide Release](#)

Dec 2003

9 pages

Authors: [Mandip S. Sachdeva](#); [FLORIDA AGRICULTURAL AND MECHANICAL UNIV TALLAHASSEE FL COLLEGE OF PHARMACY](#)

**Full Text**

Excised Hairless rat skin (CD(SD)Hr.Bi, Male rats) was used for permeation and absorption studies. The studies were conducted on Franz diffusion cells using 6% Brij in normal saline (37sC) as the receptor medium which was stirred with a magnetic bar at 600 rev./min. Nonane, dodecane, tetradecane, benzene and xylene (0.5ml) spiked with 2.5µCi of respective radiolabeled chemical was placed in the donor compartment. The receptor samples were analyzed by Liquid scintillation counting. The cumulative amount of chemical permeated was plotted against time. The slope of linear portion of the curve (mg ...

[The Development of Advanced Sensor Technologies to Measure Critical Navy Mobility Fuel Properties](#)

Jan 27, 2006

54 pages

Authors: [Robert E. Morris](#); [Kevin J. Johnson](#); [Mark H. Hammond](#); [Susan L. Rose-Pehrsson](#); [NAVY TECHNOLOGY CENTER FOR SAFETY AND SURVIVABILITY WASHINGTON DC](#)

**Full Text**

... properties. These chemometric techniques were then used to evaluate several chromatographic and spectroscopic methods for their efficacy in modeling critical fuel properties. The preliminary findings from a training set consisting of 46 **jet fuels** from around the world, indicated that while capillary gas chromatography (GC) offered some advantages for certain properties, both near-IR (NIR) and Raman spectroscopy showed promise as suitable methods for a ...

[TPH Criteria Working Group Demonstration Field Sampling Report: Robins Air Force Base Warner-Robins GA](#)

Jan 2000

70 pages

Authors: [Teresa R. Sterner](#); [Elaine A. Merrill](#); [Erik K. Vermulen](#); [OPERATIONAL TECHNOLOGIES CORP DAYTON OH](#)

**Full Text**

Underground storage tank Site 70, Robins Air Force Base, Georgia, is part of a large aircraft refueling/defueling hydrant system. Site 70 was impacted by JP-4 and JP-8 **jet fuels** through spill, overflows and leaks dating back many years. This total petroleum hydrocarbon (TPH) contamination has been identified and interim corrective action applied to remove free product from above the shallow groundwater table. Using limited site data and the Total Petroleum ...

[Multifunctional Fuel Additives for Reduced Jet Particulate Emissions](#)

Jun 2006

153 pages

Authors: [Christopher J. Montgomery](#); [Adel F. Sarofim](#); [Bradley R. Adams](#); [Eric Eddings](#); [Joseph Bozzelli](#); [Viswanath Katta](#); [REACTION ENGINEERING INTERNATIONAL SALT LAKE CITY UT](#)

**Full Text**

... Modeling capabilities for assessing the effectiveness of additives were developed. Soot models using the method of moments and sectional methods were combined with detailed kinetics models for surrogates of JP-8. The models were validated with experimental data in the literature for a number of simple **fuels**. Detailed Kinetic mechanisms were developed for two ignition enhancers in the study, di-tertiary butyl peroxide and 2-ethyl-hexyl-nitrate. The kinetic models were incorporated in a CFD code to evaluate diffusion flames representative of the drop tube and swirl stabilized combustor.

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