



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

SOUTHWEST RESEARCH INSTITUTE
OFFICE OF AUTOMOTIVE ENGINEERING
Fuels and Lubricants Research Division and the
Engine, Emissions and Vehicle Research Division
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MECHANICAL

Valid To: May 31, 2012

Certificate Number: 0702.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform evaluations of automotive fluids, fuels, emissions, automotive components, engine and power train performance and durability using stationary engine dynamometer test stands (light duty, non-road and heavy-duty) and vehicle dynamometer facilities, and automotive fleets using standards and procedures from the following sources:

ASTM, API, SAE, ACC, CRC, ACEA, CEC, ATIEL, JASO, NMMA, CFR, EPA, CARB, Passenger Car OEM'S, Heavy Duty OEM'S, Two-Stroke OEM'S, Lubricant and Fuel Additive Company Proprietary testing procedures, and Lubricant and Fuel Marketer proprietary testing procedures.

Fuels and Lubricants Research

- Crankcase Lubricant Evaluations (Gasoline, Diesel and Alternative Fuels)
- Fuels Performance Evaluations (Gasoline, Diesel and Alternative Fuels)
- Gear Oil Evaluation
- Specialized/focused Gasoline, Diesel, Alternative Fuels and Lubricants Evaluations
- Farm Tractor and Industrial Fluid Evaluations
- Automotive Component Evaluations (Engine Dynamometer/Bench Testing)
- Automatic and Powershift Transmission Evaluations
- Power Train (Driveability and Durability)

Engine, Emissions and Vehicle Research

Dynamometer Procedures

- Light-Duty Vehicle Chassis Dynamometer Emissions and Fuel Economy
- Heavy-Duty Engine Dynamometer Emissions and Fuel Consumption
- Non-road Engine Dynamometer Emissions and Fuel Consumption
- Smoke Tests
- California Diesel Fuel Qualification Protocols

For hydrocarbons, carbon monoxide, oxides of nitrogen, carbon dioxide and particulate matter, as applicable, and the following specific analyses on samples taken, as applicable to the procedures above:

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Chemical Analyses

- Gas chromatograph analysis of methane, methanol, and ethanol
- Liquid chromatograph analysis of aldehydes and ketones
- Ion chromatograph analysis of sulfate in particulate matter
- Solvent extraction of organics from particulate matter

FUELS AND LUBRICANTS RESEARCH

ASTM: D2882, D4998, D5182, D5704, D5579, D6121, D7043, D7038, L-20, L-42

ASTM Caterpillar: 1M-PC, 1N, 1P, 1K, C13

ASTM Sequence: VIB, IIIF, IIIG, VIII, VG, IVA, VID

ASTM TC Sequences I, II, III

CARB and EPA Procedures:

- PFI, ASTM D 5598
- BMW IVD, ASTM D 5500

Cummins: ISB, ISM

Denison: T6H

Eaton: 35VQ25A

JASO: M354-2006

John Deere: JD C00L

John Deere, JDQ: 84, 94, 95, 96

Mack: T-8, T-8E, T-10A, T11, T12

Navistar 7.3L HEUI-EOAT

New Holland: Jenkins, High Energy Clutch, Driveline Stall

NMMA Recertified TC-W3:

- Mercury 15 hp
- OMC 40 hp
- OMC 70 hp

NMMA FC-W 115 hp

Roller Follower Wear Test (RFWT)

Top Tier Detergent Gasoline Deposit Control Performance Standards:

- Ford 2.3 L IVD, ASTM D 6201
- Intake Valve Sticking (IVS)
- Sequential Central Port Injection (SCPI)

Allison

TES 228 Sect VII Frictional Characteristics with Graphite Composite Clutches

TES 228 Sect IX Frictional Characteristics with Paper Composite Clutches

TES 228 Sect VII Anti-Wear Characteristics

Caterpillar

TO-4 Section 5 Wear Properties, Gears – Pumps

TO-4 Section 6 Friction Properties

FUELS AND LUBRICANTS RESEARCH

General Motors – GM 6417 DEX III, GMN 10055 DEX IIIH, GMN 10060 DEX VI:

Appendix C- Plate Clutch Friction Test
Appendix D- Band Friction
Appendix E- Oxidation Test
Appendix F- Cycling Test
Appendix G- Vehicle Performance Test
Appendix H- ECCC Vehicle Performance Test
Appendix I- Sprag Wear Test
Appendix J- Low Speed Clutch Friction Test
Appendix K- Aeration Test

JASO:

JASO M-348-2002 Clutch Friction
JASO T-904-2006 Clutch Friction

FORD-MERCON®, MERCON® V, MERCON® SP:

Mercon Appendix 4
- Friction Durability
- Over-Running Clutch Wear Test
- Anti-Shudder Durability Test
- μ -V Characterization

ENGINE, EMISSIONS AND VEHICLE RESEARCH

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| Light-Duty Vehicle Federal Test Procedure-75 (Chassis Dynamometer Test) | 40 CFR Part 86, Subpart B (Gasoline and Diesel fueled) |
| Light-Duty Vehicle Fuel Economy Test | 40 CFR Part 600, Subpart B (Gasoline and Diesel fueled) |
| Heavy-Duty Diesel Engine Federal Test Procedure | 40 CFR Part 86 Subpart N, (Diesel, Alcohol, and Gaseous-fueled) |
| Heavy-Duty Otto-Cycle Engine Federal Test Procedure | 40 CFR Part 86 Subpart N, (Gasoline, Alcohol, and Gaseous-fueled) |
| Otto-Cycle and Diesel-Cycle Engines Idle Test Procedure | 40 CFR Part 86 Subpart P, (New Methanol, Natural Gas, Liquefied Petroleum Gas and Gasoline-fueled) |
| New Diesel Heavy-Duty Engines; Smoke Exhaust Test Procedure | 40 CFR Part 86 Subpart I, (Petroleum and Methanol-fueled) and ISO 8178-9 |
| California Fuel Qualification Test | Title 13, California Code of Regulation, Section 2282 |
| New and In-Use Nonroad Engines; Exhaust Emissions Test Procedures | 40 CFR Part 89 and ISO 8178-1 |
| EGR Cooler Thermal Cycle Test | SWRI EGR-TC1 |
| Transmission Spin Loss Test | SWRI TIP 03-2103 |

ENGINE, EMISSIONS AND VEHICLE RESEARCH

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| Electric Drivetrain Performance, Efficiency and Durability Test | SWRI TIP 03-3001 |
| Air Cleaner Test Code, Recommended Practice | SAE J726 (Cancelled JUN2002) |
| Inlet Air Cleaning Equipment for Internal Combustion Engines and Compressors – Performance Testing | ISO 5011:2000 |
| Performance Specification, Filter Element, Intake Air Cleaner, Dry Type | MIL-PRF-46736E |
| Air Cleaners, Automotive: Heavy Duty, Dry-Type (for Internal Combustion Engines) | MIL-PRF-62048 |
| Multi-Pass Method for Evaluating Filtration Performance of a Filter Element | ISO 16889:1999 |
| Hydraulic Filter Elements With Cyclic Flow | SAE ARP 4205 |
| Fuel Pump Contamination KLT | FORD |
| Engine Intake Air Water Separation Test Procedure, APR2003 | SAE J2554 |
| Test Methods of Air Cleaners for Automobiles | Japanese Industrial Standard JIS D 1612 |
| American Association for Railroads (AAR) Procedure for Testing Baggy Filters | |
| American Association for Railroads (AAR) Procedure for Testing Extended Surface, Pleated Paper, Disposable Filter Elements | |

Chemistry

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| Methane Quantitative Analysis | Variation of SAE J1151 |
| Analysis of Aldehydes and Ketones in Exhaust by High Performance Liquid Chromatography | Dinitrophenylhydrazine Derivative with HPLC-UV Analysis |
| Methanol and Ethanol Analysis by Capillary Column GC | Water Collection with GC-FID Analysis |
| Analysis of Sulfate in Exhaust by Ion Chromatography | Filter Collection, IPA/Water Extraction with IC Analysis |
| Organic Solvent Extraction of 47mm Filters | Title 13, California Code of Regulation, Section 1956.8 (b) |

Chemistry

Specifications and Qualification Procedures for
Aviation Jet Fuel Filter/Separators

API/IP Specification 1581

Specifications and Qualification Procedures for
Aviation Fuel Filter Monitors with Absorbent Type
Elements

API/IP Specification 1583

Specifications and Qualification Procedures for
Aviation Fuel Microfilters

API/IP Specification 1590



World Class Accreditation

The American Association for Laboratory Accreditation

Accredited Laboratory

A2LA has accredited

SOUTHWEST RESEARCH INSTITUTE, OFFICE OF AUTOMOTIVE ENGINEERING

San Antonio, TX

for technical competence in the field of

Mechanical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).



Presented this 31st day of August 2010.

A handwritten signature in black ink, appearing to read "Peter Meyer".

President & CEO
For the Accreditation Council
Certificate Number 0702.01
Valid to May 31, 2012

For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Mechanical Scope of Accreditation.