



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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San Antonio, TX 78228-0510  
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MECHANICAL

Valid To: May 31, 2018

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, ISO, 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

## FUELS AND LUBRICANTS RESEARCH

### Passenger Car Motor Oil (PCMO)

Evaluation of Automotive Engine Oils in the Sequence IIIF, Spark-Ignition Engine	ASTM D6984
Evaluation of Automotive Engine Oils in the Sequence IIIG, Spark-Ignition Engine	ASTM D7320
VG Evaluation of Automotive Engine Oils for Inhibition of Deposit Formation in a Spark-Ignition Internal Combustion Engine Fueled with Gasoline and Operated Under Low-Temperature Light-Duty Conditions	ASTM D6593
IVA Evaluation of Automotive Engine Oils in the Sequence IVA Spark-Ignition Engines	ASTM D6891
Measurement of Effects of Automotive Engine Oils on Fuel Economy of Passenger Cars and Light-Duty Trucks in Sequence VID Spark Ignition Engine	ASTM D7589

### Heavy Duty

Evaluation of Engine Oils in Diesel Four-Stroke Cycle Supercharged 1M-PC Single Cylinder Oil Test	ASTM D6618
Evaluation of Engine Oils in a High-Speed, Single-Cylinder Diesel Engine - 1K Procedure (0.4 % Fuel Sulfur) and 1N Procedure (0.04 % Fuel Sulfur)	ASTM D6750
Evaluation of Engine Oils in a High Speed, Single-Cylinder Diesel Engine - Caterpillar 1P Test Procedure	ASTM D6681
Evaluation of Heavy-Duty Engine Oils under High Output Conditions - Caterpillar C13 Test Procedure	ASTM D7549
Method for Dynamometer Evaluation of Unleaded Spark-Ignition Engine Fuel for Intake Valve Deposit Formation	ASTM D6201
Method for Vehicle Evaluation of Unleaded Automotive Spark-Ignition Engine Fuel for Intake Valve Deposit Formation	ASTM D5500
Method for Evaluating Unleaded Automotive Spark-Ignition Engine Fuel for Electronic Port Fuel Injector Fouling	ASTM D5598
Evaluation of Engine Oils for Roller Follower Wear in Light-Duty Diesel Engine	ASTM D5966
Evaluation of Diesel Engine Oils in T-8 Diesel Engine	ASTM D5967
Evaluation of Diesel Engine Oils in T-8E Diesel Engine	ASTM D5967
Evaluation of Diesel Engine Oils in the T-11 Exhaust Gas Recirculation Diesel Engine	ASTM D7156
Evaluation of Diesel Engine Oils in T-12 Exhaust Gas Recirculation Diesel Engine	ASTM D7422
Evaluation of Aeration Resistance of Engine Oils in Direct-Injected Turbocharged Automotive Diesel Engine,	ASTM D6894 Navistar 7.3L HEUI-EOAT

## FUELS AND LUBRICANTS RESEARCH

### Heavy Duty (Cont'd)

Evaluation of Automotive Engine Oils for Valve-Train Wear Performance in Cummins ISB Medium-Duty Diesel Engine	ASTM D7484
Cummins ISM Test	ASTM D7468 JD C00L

### Gears / Axels

FZG Gear Testing	ASTM D4998
Standard Test Method for Evaluating the Scuffing Load Capacity of Oils (FZG Visual Method)	ASTM D5182
Evaluating the Thermal Stability of Manual Transmission Lubricants in a Cyclic Durability Test	ASTM D5579
Load Carrying Capacity Test For Transmission Lubricants	CEC L-07-95
Load Carrying Capacity Test For High EP Oils	CEC L-84-02
Method for Indicating Wear Characteristics of Non-Petroleum and Petroleum Hydraulic Fluids in a Constant Volume Vane Pump	ASTM D7043
Method for Evaluation of Moisture Corrosion Resistance of Automotive Gear Lubricants	ASTM D7038 Eaton: 35VQ25A JASO: M354
Method for Indicating Wear Characteristics of Petroleum Hydraulic Fluids in a High Pressure Constant Volume Vane Pump	ASTM D6973 Eaton: 35VQ25A JASO: M354
Evaluation of Load-Carrying Capacity of Lubricants Under Conditions of Low Speed and High Torque Used for Final Hypoid Drive Axles	ASTM D6121 (L-37)
Evaluation of the Thermal and Oxidative Stability of Lubricating Oils Used for Manual Transmissions and Final Drive Axles	ASTM D5704 (L-60-1)
Performance of Gear Lubricants in Axles Under High Speed and Shock Loading	CRC L-42
Performance Test for Evaluating Moisture Corrosion Tendencies of Automotive Gear Lubricants	CRC L-33-1

### Transmissions

Method for Evaluating the Thermal Stability of Manual Transmission Lubricants in a Cyclic Durability Test	ASTM D5579
Synchronizer Test	SS180

### Allison

Appendix C Frictional Properties	TES 439
Wear Properties	TES 389
Appendix D Frictional Properties	TES 389
Wear Properties, Gears – Pumps	TO-4 Sect 5
Friction Properties	TO-4 Sect 6
Oxidation	TES-295
Frictional Characteristics with Paper Composite Clutches	TES-295

**FUELS AND LUBRICANTS RESEARCH**

Transmissions (Cont'd)

Allison (Cont'd)

Frictional Characteristics with Paper Graphite Clutches TES-295

General Motors – GM 6417 DEX III, GMN 10055 DEX IIIH, GMN 16444 DEX VI

Plate Clutch Friction Test Appendix C

Oxidation Test Appendix E

Cycling Test Appendix F

Low Speed Clutch Friction Test Appendix J

Aeration Test Appendix K

FORD-MERCON®, MERCON® V, MERCON® SP

Friction Durability Mercon Appendix 4

Over-Running Clutch Wear Test Mercon Appendix 4

Anti-Shudder Durability Test Mercon Appendix 4

μ-V Characterization Mercon Appendix 4

Fleet

Top Tier Detergent Gasoline Deposit Control Performance Standards:

Method for Dynamometer Evaluation of Unleaded Spark-Ignition Engine ASTM D6201

Fuel for Intake Valve Deposit Formation - Ford 2.3 L IVD

- Intake Valve Sticking (IVS) ASTM D6201

- Sequential Central Port Injection (SCPI) ASTM D6201

ASTM TC Sequences I, II, III

CARB and EPA Procedures:

Method for Evaluating Unleaded Automotive Spark-Ignition Engine Fuel ASTM D5598

for Electronic Port Fuel Injector (PFI) Fouling

Method for Vehicle Evaluation of Unleaded Automotive Spark-Ignition ASTM D5500

Engine Fuel for Intake Valve Deposit Formation – BMW IVD

Marine / Two-Cycle

NMMA FC-W 115 hp NMMA FC-W

JASO

Clutch Friction JASO T-903

Lubricity JASO M-340

Tractor

Tractor – John Deere

Water Contamination / Dynamic Corrosion using SAUER-DANFOSS JDQ: 84

90 Series Pump

## FUELS AND LUBRICANTS RESEARCH

### Tractor (Cont'd)

#### Tractor – John Deere (Cont'd)

Powershift Transmission Procedure JDQ: 94  
Spiral Bevel and Final Drive Gear Wear JDQ: 95  
As Performed with a 1400 Series Axle Brake Torque Variation & Friction Retention JDQ: 96

#### New Holland: Jenkins, High Energy Clutch, Driveline Stall

Evaluation of Hydraulic Fluid using the Denison Test Procedure for Denison A-TP-30533  
Hydraulic Fluid Performance Evaluation on Denison Pumps with T6H Hybrid Pump

### Filter Testing

Inlet Air Cleaning Equipment for Internal Combustion Engines and Compressors – Performance Testing ISO 5011  
Multi-Pass Method for Evaluating Filtration Performance of a Filter Element ISO 16889  
Full-Flow Lubricating Oil Filters for Internal Combustion Engines – Part 12: Filtration Efficiency using Particle Counting and Contaminant ISO 4548 Part 12  
Filtration Efficiency using Particle Counting and Contaminant Retention ISO 19438  
Capacity  
Hydraulic Fluid Power – Filters – Multi-Pass Method for Evaluating Filtration ISO 16889

## ENGINE, EMISSIONS AND VEHICLE RESEARCH

### Emission Testing

Light-Duty Vehicle Federal Test Procedure-75 (Chassis Dynamometer Test) 40 CFR Part 86, Subpart B (Gasoline and Diesel Fueled)

With the exception of:

- *Evaporative Emissions*
- *Hot Soak Test*
- *Refueling Test*
- *Running Loss Test*

Light-Duty Vehicle Fuel Economy Test 40 CFR Part 600, Subpart B (Gasoline and Diesel 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

Particle Filter Systems, Construction Machines Swiss Ordinance on Air Pollution Control (OAPC), (Appendix 4, Section 31, 32); Particle Number Measurement in Accordance with European Union Regulation No. 49

**ENGINE, EMISSIONS AND VEHICLE RESEARCH**

Emission Testing (Cont'd)

Engine Emissions Testing Procedures	40 CFR Part 1065
Transmission Spin Loss Test	SwRI TIP 03-2103
Procedure for Running 'Hydrogen Gas Emission Testing' per IEC 60896-21 Section 6.1	SwRI TIP 07-054

NOTE: This laboratory's scope contains withdrawn, cancelled or superseded methods. As a clarifier, this indicates that the applicable method itself has been withdrawn or is now considered "historical" and not that the laboratory's accreditation for the method has been withdrawn.



## Accredited Laboratory

A2LA has accredited

### SOUTHWEST RESEARCH INSTITUTE

*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 11<sup>th</sup> day of July 2016.

A handwritten signature in blue ink, reading "Jim C. Bennett".

Senior Director of Quality & Communications  
For the Accreditation Council  
Certificate Number 0702.01  
Valid to May 31, 2018

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