SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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MECHANICAL

Valid To: March 31, 2020 Certificate Number: 3990.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory at the location listed above to perform the following tests on aircraft components, automotive components, coatings/platings, fasteners, metals and alloys, pipes, hoses, valves and fittings and pressure vessels, welds and metal-related substances:

Test	Test Method
Tension (Up to 300,000 lbs.)	ASME Section IX; ASTM A370, B557/B557M, E8/E8M; AWS D1.1/D1.1M, D1.2/D1.2M, D15.1/D15.M, D17.1/D17.1M, B4.0; ISO 15614-1
Impact	
Charpy at Controlled Temperatures (-80°F to Room Temperature)	ASTM A370, E23; AWS D1.1/D1.1M, D15.1 B4.0; ISO 15614-1
Hardness	
Brinell (10mm ball @ 500kg and 3000kg)	ASTM E10
Rockwell (B and C)	ASTM E18
Superficial (15N, 30N, 15T , 30T)	ASTM E18
Vickers (10kg)	ASTM E92
Microhardness	
Vickers (200, 500 and 1000) gm Knoop (500 gm)	ASTM E384; ISO 15614-1
Metallographic Evaluation	
Sample Preparation	ASTM E3
Alpha Case	SAE AMS-4928, SAE AMS-4965
Case Depth	SAE J423
Depth of Decarburization	ASTM E1077
Grain Size	ASTM E112 – Comparison Method only
Macro-Etching	ASTM E340; GMW 14058
Micro-Etching	ASTM E407
Plating Thickness	ASTM B487
Optical Microscopy	ASTM E883
Weld Evaluation	GMW 14058; ISO 15614-1

Test	Test Method
Chemical	
Glow Discharge Optical Emission Spectrometry (GD-OES)	ASTM E415, E1086, E1251, E1999; ISO 14707 Fe Based (Al, B, C, Co, Cr, Cu, Fe, Mn, Mo, Nb, Ni, P, Pb, S, Si, Sn, Ti, V, W, Zr) Al Based (Al, Co, Cr, Cu, Fe, Ga, Mg, Mn, Ni, Pb, Si, Sn, Ti, V, Zr)
Bend Test	ASME Section IX; AWS D1.1/D1.1M, D15.1/D15.1M, B4.0; ISO 15614-1
Break (Fillet Weld)	AWS D1.1/D1.1M, D15.1/D15.1M, B4.0; ISO 15614-1
Weld Procedure and Operator Qualification Testing	Using the methods listed on this Scope of Accreditation in accordance with ASME Section IX; AWS D1.1/D1.1M, D1.2/D1.2M, D15.1/D15.1M, D17.1/D17.1M, B4.0; ISO 15614-1; NAVSEA S9074-AQ-GIB-010/248
Resistance Spot Weld Evaluation (Process Validation)[1]	AWS C1.4/C1.4M, PS10947 <s>, AWS 8.1 M, GMW 14057, GMW 16967
Non-Destructive Testing[1]	
Ultrasonic Testing Contact Straight Beam Contact Angled Beam Contact Phased Array	AWS D1.1/D1.1M (sec. 6, part F; Annex Q), D1.2/D1.2M (sec. 5, part C), D15.1 (sec. 16.2), D17.1/D17.1M (sec. 7.3.4 ASTM E164); SOP-NDT-UT-001
Penetrant Examination Visible Fluorescent	ASTM E1417/E1417M; AWS D1.1/D1.1M (sec. 6 part C, ASTM E165), D1.2/D1.2M (sec. 5.7 ASTM E165), D15.1 (Sec. 16.3, ASTM E165), D17.1/D17.1M (sec. 7.3.1, ASTM E1417); ISO 15614-1
Magnetic Particle Examination Yoke – Visible Dry	ASTM E1444/E1444M; AWS D1.1/D1.1M (sec. 6 part C, ASTM E709), D17.1/D17.1M (sec. 7.3.2, ASTM E1444); D15.1 (sec. 16.4, ASTM E709)
Visual Inspection	AWS D1.1/D1.1M (sec. 6, part A, B, & C), D1.2/D1.2M (sec. 5), D17.1/D17.1M (sec. 7.2); ASME B31.3 (Chapter VI & Part 10); D15.1 (sec. 14)
SEM/EDS	ASTM E1508
Failure Analysis[1]	Using the methods listed on this Scope of Accreditation in accordance with the ASM Handbook, Volume 11

[1]This laboratory meets A2LA *R104 – General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these tests.

Accredited Laboratory

A2LA has accredited

UNITED TECHNICAL, INC.

Whitmore Lake, MI

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 April 2017*).

Presented this 13th day of March 2018.

President and CEO
For the Accreditation Council
Certificate Number 3990.01
Valid to March 31, 2020

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