

# Work Processes Schedule

## CALIBRATION LABORATORY TECHNICIAN

**RAPIDS: 0895N**

O\*NET/SOC: 17-3023.01

REVISION DATE: 03/2015

Tests, calibrates, and repairs electrical, mechanical, electromechanical, and electronic measuring, recording, and indicating instruments and equipment for conformance to established standards. Sets up standard and special purpose laboratory equipment to test, evaluate, and calibrate other instruments and test equipment. Aligns, repairs, replaces, and balances component parts and circuitry.

### Applicable Ratings/MOS

USMC MOS 2871, 2874, 5951, 6492

USCG None

USN AT, AWW, EM, EMN, ET, ETN, ETR, ETV, IC

### Related Instruction

Any trade related schools/courses totaling 576 hours.

### Additional Requirement

AT, AWW - Must hold NEC: 4675, 6673, 6705 or 6718 EM, AND EMN - Must hold NEC: 4675 or 4782 ET, ETN, ETR, ETV - Must hold NEC: 1589 or 6673 IC - Must hold NEC: 4675 or 4782

Total Hours: **8000**

Skill	Description	Hours
A	<p><b>PRESSURE CALIBRATION AND REPAIR</b></p> <p>Demonstrate a thorough knowledge of pressure units and their conversions. Calibrate and repair Bourdon tube, bellows and diaphragm element, and other electro/mechanical pressure sensing devices, including U-tube manometers, dial manometers, simplex gauges, vacuum gauges, compound gauges, differential pressure gauges, depth gauges (submarine), absolute pressure gauges, barometers, altimeters, Pirani gauges, Kiene indicators, pressure regulators, pressure transducers, pressure switches, cassion gauges. Troubleshoot, repair, and calibrate liquid level indicting systems as follows: Closed systems, pneumatic systems, electrical systems. Operate and maintain pressure calibration standards and equipment: (Calibrate items marked with an asterisk *) pressure panels, standard gauges*, portable pneumatic calibrators*, absolute pressure calibration systems, quartz gauges, pressure transfer standards, pressure chambers, vacuum chambers, pressure pumps, pressure booster, gauge cleaning systems, fluid separators, deadweight testers. Perform internal decontamination of dead end and bleeder type pressure sensing elements.</p>	1525
B	<p><b>TEMPERATURE CALIBRATION AND REPAIR</b></p> <p>Demonstrate a thorough knowledge of temperature units and their conversions. Calibrate and repair direct and indirect reading temperature instruments and temperature actuated switching devices as follows: Heat stress monitors, liquid in glass thermometers, bimetallic thermometers, distant reading thermometers, recording temperature devices, thermocouples, resistance thermometers, pyrometers, temperature switches, temperature controllers. Operate and maintain temperature calibration standards and equipment: (Calibrate items marked with an asterisk*) temperature baths, portable resistance thermometer bridge, resistance box, thermocouple simulator*, resistance thermometers*, digital thermometer, digital multimeters.</p>	1240

C	<p><b>DIMENSIONAL CALIBRATION AND REPAIR</b></p> <p>Demonstrate a thorough understanding of dimensional measurement concepts, measuring tools, and basic interferometry. Calibrate dimensional instruments as follows: (Repair items marked with asterisk *) inside/outside micrometers*, thread micrometers*, depth micrometers*, dial calipers*, dial indicators*, mechanical height gauges, deflection gauges. Operate, employ, and maintain dimensional calibration standards and equipment as follows: (Calibrate items marked with an asterisk *) standard inside micrometer sets*, standard outside micrometer sets*, standard screw thread micrometer sets*, standard depth micrometer gauges*, micrometer maintenance kits, super-micrometer*, gauge block sets, gauge block maintenance kits, optical glass, monochromatic light, surface plates, dial indicator calibrator*, electronic height gauge*, optic vernier height gauge*, standard bore gauge set*, measuring irons, parallels.</p>	1280
D	<p><b>TACHOMETER CALIBRATION AND REPAIR</b></p> <p>Repair and calibrate rotary motion indicating devices as follows: Centrifugal tachometers, vibrating reed tachometers, photoelectrical tachometers, chrometric tachometers, electric tachometers. Operate and maintain rotary motion calibration standards and equipment as follows: Tachometer testers, photoelectric pick-off, universal timer counters, speed reducers and increasers.</p>	400
E	<p><b>FLOW CALIBRATION</b></p> <p>Repair and calibrate flow measuring instruments as follows: Positive displacement flow meters, variable area flow meters laminar flow elements, turbine flow meters, viscometers. Operate and maintain flow calibration standards and equipment as follows: Portable standard flow meters, variable area flow meter standards, rotameter tubes.</p>	200
F	<p><b>TORQUE CALIBRATION AND REPAIR</b></p> <p>Repair and calibrate torque tools as follows: Audible signal torque wrenches, flexible beam torque wrenches, rigid frame torque wrenches, torque watch torque wrenches, torque screwdrivers, pneumatic torque tools. Operate and maintain torque standard and equipment as follows: (Calibrate item marked with an asterisk *) torque testers*, slotted weight sets, radius arms, torque tool sealant kits.</p>	420
G	<p><b>HUMIDITY CALIBRATION</b></p> <p>Repair and calibrate humidity indicating instruments as follows: Psychrometers, humidigraphs, dew point indicators. Prepare humidity standard solutions with magnesium, sodium, and lithium chloride. Operate and employ humidity chambers.</p>	200
H	<p><b>FORCE CALIBRATION AND REPAIR</b></p> <p>Repair and calibrate force indicating instruments as follows: Force gauges, lever arm force gauges, vibration transducers and accelerometers. Operate force calibration standard and equipment as follows; Scale dynamometers, force indicators, load cells.</p>	250
	<p><b>ELECTRONIC MAINTENANCE AND REPAIR</b></p>	

I	<p>Repair electrical, mechanical, electromechanical, and electronic measuring, recording, and indicating instruments and equipment for conformance to established standards and assist in formulating calibration standards. Disassemble instruments and equipment using hand tools and inspect components for defects. Align, repair, replace and balance component parts and circuitry. Reassemble instruments and equipment. Troubleshoot special DC circuits, troubleshoot DC circuits, troubleshoot DC parallel circuits, troubleshoot AC circuits, make resistance checks. Replace switches and fuses, test and inspect grounding devices, perform electrostatic discharge (ESD) measures, determine electronic component values, perform basic soldering and repair procedures, analyze waveform signal measurements using oscilloscopes, measure current, voltage and resistance using digital multimeters, measure resistance using a megger, perform functional checks on test equipment, perform frequency measurements using signal generators and frequency counters, utilize component analyzers (HUNTRON TRACKER), perform measurements using schematics, troubleshoot digital equipment.</p>	860
J	<p><b>MISCELLANEOUS CALIBRATIONS</b></p> <p>Calibrate and repair combustible gas indicators utilizing standard gases. Calibrate and repair leak detectors. Calibrate hydrometers using standard hydrometers and solutions.</p>	300
K	<p><b>REPAIR PROCEDURES</b></p> <p>Utilize the following procedures to design, manufacture, fabricate, or repair parts of measuring instruments and equipment: Prepare schematic diagrams and sketches, fabricate and install tubing and special fittings, repair hydraulic pumps, manufacture special tools, solder wiring and metals, braze metals, harden metals, temper metals, operate bench grinders, operate drill presses, operate precision lathes. Utilize ultrasonic and industrial cleaning equipment.</p>	625
L	<p><b>ADMINISTRATION</b></p> <p>Prepare calibration problem referral cards and trouble/failure reports. Prepare and attach calibration stickers and tags to equipment. Prepare and submit MEASURE forms, review recall schedules, and schedules and schedule equipment for calibration. Perform and document quality assurance inspections and calibration spot checks. Prepare preventive maintenance schedules, submit work requests, and monitor production reports. Calculate and interpolate information contained in reports of calibration. Plan sequence of testing and calibration procedures for instruments and equipment according to blueprints, schematics, technical manuals and other specifications. Assist in formulating test, calibration, repair, and evaluation plans and procedures to maintain precision accuracy of measuring, recording, and indicating instruments and equipment. Maintain records on instruments calibrated in accordance with company policies and procedures.</p>	700