**POWERPLANT MECHANIC (AIRCRAFT ENGINE MECHANIC)**

**RAPIDS:** 1045N  
**O*NET/SOC:** 49-3011.00  
**REVISION DATE:** 09/2018

Repairs and maintains the operating condition of aircraft engines. Replaces or repairs worn defective, or damaged components; disassembles and inspects engine parts for wear, warping, cracks, and leaks; reassembles engine and installs engine in aircraft; listens to operating engine to detect and diagnose malfunctions; tests engine operations; removes engine from aircraft using hoist or forklift trucks; reads and interprets manufacturer’s maintenance manuals and service bulletins. Adjusts, repairs or replaces electrical wiring system and aircraft accessories. Inspect, identify, remove and treat aircraft corrosion and perform aircraft cleaning. Inspect, check, service and repair propeller synchronizing.

**Applicable Ratings/MOS**

**USMC** 6023, 6033, 6062, 6112, 6113, 6114, 6116, 6122, 6123, 6124, 6132, 6152, 6153, 6154, 6156, 6172, 6173, 6174, 6176, 6212, 6213, 6214, 6216, 6217, 6218, 6222, 6223, 6226, 6227, 6242, 6252, 6253, 6256, 6257, 6258, 6276

**USCG** AMT

**USN** AD, AWF


**Related Instruction**

Any trade related schools/courses totaling 216 hours.

**Additional Requirement**

FLEET TRAINING CHANGE BEGINNING 04MAR2013:  
AWF must have completed AD (A) school ****OR**** COURSE C-050-2011  
Total Hours: **3000**

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| **GENERAL TASKS** | Demonstrates knowledge in all of the following areas.  
1. **BASIC ELECTRICITY** - 100 hrs  
   Calculate and measure capacitance and inductance; calculate and measure electrical power; measure voltage, current, resistance, and continuity; determine the relationship of voltage, current, and resistance in electrical circuits; read and interpret aircraft electrical circuit diagrams, including solid state devices and logic functions; inspect and service batteries.  
2. **AIRCRAFT DRAWINGS** - 100 hrs  
   Use aircraft drawings, symbols, and system schematics; draw sketches of repairs and alterations; use blueprint information; use graphs and charts.  
3. **WEIGHT AND BALANCE** - 20 hrs  
   Weigh aircraft; perform complete weight-and-balance check and record data.  
4. **FLUID LINES AND FITTINGS** - 25 hrs  
   Fabricate and install rigid and flexible fluid lines and fittings.  
5. **MATERIALS AND PROCESSES** - 50 hrs  
   Identify and select appropriate non-destructive testing methods; perform dye penetrant, eddy current, ultrasonic, and magnetic particle inspections; perform basic heat-treating processes; identify and select aircraft hardware and materials; inspect and check welds; perform precision measurements.  
6. **GROUND OPERATION AND SERVICING** - 150 hrs  
   Start, ground operate, move, service, and secure aircraft and identify typical ground operation hazards; identify and select fuels.  
7. **CLEANING AND CORROSION CONTROL** - 145 hrs  
   Identify and select cleaning materials, inspect, identify, remove, and treat aircraft corrosion and perform aircraft cleaning.  
8. **MATHEMATICS** - 75 hrs  
   Extract roots and raise numbers to a given power; determine areas and volumes of various geometrical shapes.  | **Total Hours:** 3000 |
shapes; solve ratio, proportion, and percentage problems; perform algebraic
operations involving
addition, subtraction, multiplication, and division of positive and negative
numbers.
9. MAINTENANCE FORMS AND RECORDS - 125 hrs
Write descriptions of work performed including aircraft discrepancies and
corrective actions using
typical aircraft maintenance records; complete required maintenance forms,
records, and inspection
reports.
10. BASIC PHYSICS - 70 hrs
Use and understand the principles of simple machines; sound, fluid, and heat
dynamics; basic aerodynamics; aircraft structures; and theory of flight.
11. MAINTENANCE PUBLICATIONS - 70 hrs
Demonstrate ability to read, comprehend, and apply information contained in
FAA and
manufacturer’s aircraft maintenance specifications, data sheets, manuals,
publications, and related
Federal Aviation Regulations, Airworthiness Directives, and Advisory
materials, read technical data.
12. MECHANIC PRIVILEGES AND LIMITATIONS - 70 hrs
Exercise mechanic privileges within the limitations prescribed by FAR 65.
13. AVIATION SAFETY - 100 hrs
Fuels, lubricants, or hydraulic fluids; flammable cements, rosins, sealants,
paints and thinners; fluids
under pressure; compressed gasses, including oxygen; batteries; aviation
ordnance and
pyrotechnics; electrical and electronic circuits; operating radio
transmitters and radar systems;
hazardous noise
sources.

POWERPLANT THEORY AND MAINTENANCE

Demonstrate knowledge in all of the following areas.

1. RECIPROCATING ENGINES - 100 hrs
Inspect and repair a radial engine; overhaul reciprocating engine; inspect,
check, service, and repair
reciprocating engines and engine installations; install, troubleshoot, and
remove reciprocating engine.

2. TURBINE ENGINES - 250 hrs
Overhaul turbine engine; inspect, check, service, and repair turbine engines
and turbine engine
installations; install, troubleshoot, and remove turbine engines.

3. ENGINE INSPECTION - 250 hrs
Perform powerplant conformity and airworthiness inspections.

POWERPLANT SYSTEMS AND COMPONENTS

Demonstrate knowledge in all of the following areas.

1. ENGINE INSTRUMENT SYSTEMS - 100 hrs
Troubleshoot, service, and repair electrical and mechanical fluid rate-of-
flow indicating systems;
inspect, check, service, troubleshoot, and repair electrical and mechanical
engine temperature,
pressure, and R.F. M indicating systems.

2. ENGINE FIRE PROTECTION SYSTEMS - 100 hrs
Inspect, check, service, troubleshoot, and repair engine fire detection and
extinguishing systems.

3. ENGINE ELECTRICAL SYSTEMS - 100 hrs
Repair engine electrical system components; install, check, and service
engine electrical wiring,
controls, switches, indicators, and protective devices.

4. LUBRICATING SYSTEMS - 100 hrs
Identify and select lubricants; repair engine lubrication system components;
inspect, check, service,
troubleshoot, and repair engine lubrication systems.

5. IGNITION AND STARTING SYSTEMS - 100 hrs
Overhaul magneto and ignition harness; inspect, service, troubleshoot, and
repair reciprocating and
turbine engine ignition systems and components; inspect, service,
troubleshoot, and repair turbine
engine electrical starting systems; inspect, service, and troubleshoot
turbine engine pneumatic
starting systems.

6. FUEL METERING SYSTEM - 100 hrs
Troubleshoot and adjust turbine engine fuel metering systems and electronic
eengine fuel controls;
overhaul carburetor; repair engine fuel metering system components; inspect, check, service, troubleshoot, and repair reciprocating and turbine engine fuel metering systems.

7. ENGINE FUEL SYSTEMS - 100 hrs
Repair engine fuel system components; inspect, check, service, troubleshoot, and repair engine fuel systems.

8. INDUCTION AND ENGINE AIRFLOW SYSTEMS - 100 hrs
Inspect, check, troubleshoot, service, and repair engine ice and rain control systems; inspect, check, troubleshoot, service, and repair heat exchangers, supercharger and turbine engine airflow and temperature control systems; inspect, check, service, and repair carburetor air intake and induction manifolds.

9. ENGINE COOLING SYSTEMS - 100 hrs
Repair engine cooling system components; inspect, check, troubleshoot, service, and repair engine cooling systems.

10. ENGINE EXHAUST SYSTEM COMPONENTS - 100 hrs
Repair engine exhaust system components; inspect, check, troubleshoot, service, and repair engine exhaust systems; troubleshoot and repair engine thrust reverser systems and related components.

11. PROPellers - 100 hrs
Inspect, check, service, and repair propeller synchronizing and ice control systems; identify and select propeller lubricants; balance propellers; repair propeller control systems components; inspect, check, service, and repair fixed-pitch, constant-speed, and feathering propellers and propeller governing systems; install, troubleshoot, and remove propellers; repair aluminum alloy propeller blades.

12. UNDUCTED FANS - 100 hrs
Inspect and troubleshoot unducted fan systems and components.

13. AUXILIARY POWER UNITS - 100 hrs
Inspect, check, service and troubleshoot turbine-driven auxiliary power units.