

2013 Recurrent Training Exam (Based on 2012 issues)

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Course: C-IND-IM-121016-K-006-003
 Expires: December 31, 2014



Instructions for marking this answer sheet:
 Completely darken only one box for each question. Do not use (X) or (✓). Use black lead pencil to mark. To make corrections erase darkened-in box and place a slash (/) through the incorrect answer to indicate a change has been made. Questions are arranged in vertical sequence as indicated by the arrows. IAs MUST RETURN THE EXAM BY MARCH 6, 2013, TO ENSURE RECEIVING THEIR FOUR-HOUR CERTIFICATE BY THE END OF MARCH. OTHERWISE PLEASE ALLOW SIX TO EIGHT WEEKS FOR RETURN OF CERTIFICATE. EXAM EXPIRES DEC. 31, 2013.

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| 1 | A | B | C | D | 47 | A | B | C | D | 93 | A | B | C | D | 139 | A | B | C | D |
| 2 | A | B | C | D | 48 | A | B | C | D | 94 | A | B | C | D | 140 | A | B | C | D |
| 3 | A | B | C | D | 49 | A | B | C | D | 95 | A | B | C | D | 141 | A | B | C | D |
| 4 | A | B | C | D | 50 | A | B | C | D | 96 | A | B | C | D | 142 | A | B | C | D |
| 5 | A | B | C | D | 51 | A | B | C | D | 97 | A | B | C | D | 143 | A | B | C | D |
| 6 | A | B | C | D | 52 | A | B | C | D | 98 | A | B | C | D | 144 | A | B | C | D |
| 7 | A | B | C | D | 53 | A | B | C | D | 99 | A | B | C | D | 145 | A | B | C | D |
| 8 | A | B | C | D | 54 | A | B | C | D | 100 | A | B | C | D | 146 | A | B | C | D |
| 9 | A | B | C | D | 55 | A | B | C | D | 101 | A | B | C | D | 147 | A | B | C | D |
| 10 | A | B | C | D | 56 | A | B | C | D | 102 | A | B | C | D | 148 | A | B | C | D |
| 11 | A | B | C | D | 57 | A | B | C | D | 103 | A | B | C | D | 149 | A | B | C | D |
| 12 | A | B | C | D | 58 | A | B | C | D | 104 | A | B | C | D | 150 | A | B | C | D |
| 13 | A | B | C | D | 59 | A | B | C | D | 105 | A | B | C | D | 151 | A | B | C | D |
| 14 | A | B | C | D | 60 | A | B | C | D | 106 | A | B | C | D | 152 | A | B | C | D |
| 15 | A | B | C | D | 61 | A | B | C | D | 107 | A | B | C | D | 153 | A | B | C | D |
| 16 | A | B | C | D | 62 | A | B | C | D | 108 | A | B | C | D | 154 | A | B | C | D |
| 17 | A | B | C | D | 63 | A | B | C | D | 109 | A | B | C | D | 155 | A | B | C | D |
| 18 | A | B | C | D | 64 | A | B | C | D | 110 | A | B | C | D | 156 | A | B | C | D |
| 19 | A | B | C | D | 65 | A | B | C | D | 111 | A | B | C | D | 157 | A | B | C | D |
| 20 | A | B | C | D | 66 | A | B | C | D | 112 | A | B | C | D | 158 | A | B | C | D |
| 21 | A | B | C | D | 67 | A | B | C | D | 113 | A | B | C | D | 159 | A | B | C | D |
| 22 | A | B | C | D | 68 | A | B | C | D | 114 | A | B | C | D | 160 | A | B | C | D |
| 23 | A | B | C | D | 69 | A | B | C | D | 115 | A | B | C | D | 161 | A | B | C | D |
| 24 | A | B | C | D | 70 | A | B | C | D | 116 | A | B | C | D | 162 | A | B | C | D |
| 25 | A | B | C | D | 71 | A | B | C | D | 117 | A | B | C | D | 163 | A | B | C | D |
| 26 | A | B | C | D | 72 | A | B | C | D | 118 | A | B | C | D | 164 | A | B | C | D |
| 27 | A | B | C | D | 73 | A | B | C | D | 119 | A | B | C | D | 165 | A | B | C | D |
| 28 | A | B | C | D | 74 | A | B | C | D | 120 | A | B | C | D | 166 | A | B | C | D |
| 29 | A | B | C | D | 75 | A | B | C | D | 121 | A | B | C | D | 167 | A | B | C | D |
| 30 | A | B | C | D | 76 | A | B | C | D | 122 | A | B | C | D | 168 | A | B | C | D |
| 31 | A | B | C | D | 77 | A | B | C | D | 123 | A | B | C | D | 169 | A | B | C | D |
| 32 | A | B | C | D | 78 | A | B | C | D | 124 | A | B | C | D | 170 | A | B | C | D |
| 33 | A | B | C | D | 79 | A | B | C | D | 125 | A | B | C | D | 171 | A | B | C | D |
| 34 | A | B | C | D | 80 | A | B | C | D | 126 | A | B | C | D | 172 | A | B | C | D |
| 35 | A | B | C | D | 81 | A | B | C | D | 127 | A | B | C | D | 173 | A | B | C | D |
| 36 | A | B | C | D | 82 | A | B | C | D | 128 | A | B | C | D | 174 | A | B | C | D |
| 37 | A | B | C | D | 83 | A | B | C | D | 129 | A | B | C | D | 175 | A | B | C | D |
| 38 | A | B | C | D | 84 | A | B | C | D | 130 | A | B | C | D | 176 | A | B | C | D |
| 39 | A | B | C | D | 85 | A | B | C | D | 131 | A | B | C | D | 177 | A | B | C | D |
| 40 | A | B | C | D | 86 | A | B | C | D | 132 | A | B | C | D | 178 | A | B | C | D |
| 41 | A | B | C | D | 87 | A | B | C | D | 133 | A | B | C | D | 179 | A | B | C | D |
| 42 | A | B | C | D | 88 | A | B | C | D | 134 | A | B | C | D | 180 | A | B | C | D |
| 43 | A | B | C | D | 89 | A | B | C | D | 135 | A | B | C | D | | | | | |
| 44 | A | B | C | D | 90 | A | B | C | D | 136 | A | B | C | D | | | | | |
| 45 | A | B | C | D | 91 | A | B | C | D | 137 | A | B | C | D | | | | | |
| 46 | A | B | C | D | 92 | A | B | C | D | 138 | A | B | C | D | | | | | |

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Written by aircraft maintenance professionals
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Official publication for AMTSociety

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Fold here and tape (do not staple)

Did you make sure to:

- Check that your name and address on reverse side is completely filled out?
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2013 Recurrent Training Exam

(based on 2012 AMT issues)

- Good for four hours of credit toward IA renewal and six hours credit for the FAA Aviation Maintenance Technician Awards Program or Transport Canada's recurrent training requirements.
- Select only one answer per question on the answer sheet.
- Must pass with 85 percent or better for credit!
- Four hours credit is only accepted for year in which exam is published. (Note: For Canadian approval, the associated organization (AMO) must be TC approved for this recognition by amending its MCM.)
- To order back issues at \$10 a copy, call (920) 563-6388.

AMT Aircraft Maintenance Technology
Written by aircraft maintenance professionals
for the professional maintenance team
Official publication for AMTSociety

Tips for completing this exam:

Mark all answers on the answer sheet provided. This is an open book exam. So place all issues in a pile, beginning with the January/February 2012, Airframe

Technology section, and follow through all 2012 issues until the exam is complete. You can find the articles on www.AviationPros.com by putting the headline in the search box.

January 2012

Cover Story:

Cold Climate Helicopter Operations

1. The combination of thick oil and cold battery temperature when starting a turbine powered helicopter can be a formula for:
A. Normal start
B. Fast start
C. Hot start
D. Cold start
2. Raising the temperature of lubricating oil will lower its viscosity.
A. True
B. False
3. Electric heat pads contain resistance elements which are vulcanized _____ sections of flexible heat conducting pads.
A. Between two
B. To the inner
C. To the outer
D. To both inner and outer
4. Electric preheat systems are generally powered by the aircraft battery.
A. True
B. False
5. Ongoing maintenance and inspection instructions for the Tanis electric preheat systems are specifically called out in which document?
A. Aircraft maintenance manual
B. Installation instructions
C. Instructions for Continued Airworthiness (ICA)
D. AC 43.13-1B
6. If a pad heat element exhibits a gray discolored area, it is likely due to _____ under a poorly bonded element.
A. Grease
B. Lubricating oil

- C. An air bubble
- D. An exposed wire

Turbine Technology:

The Small Turbine Engine Test Cell

7. The Atec modular test cell used by Rolls-Royce offers full range power absorption without the need of a _____, in most applications.
A. Exhaust system
B. Gearbox
C. Dynamometer
D. Fire suppression
 8. The Atec modular test cell used by Rolls-Royce can operate engines with a:
A. Hydromechanical control
B. Full authority digital engine control
C. Both A and B
D. Neither A or B
 9. Data collection takes four hours in the test cell's control room.
A. True
B. False
 10. This test cell is currently designed to operate which Rolls-Royce turbine engines?
A. M150 and M250
B. M250 and M350
C. RR200 and M300
D. M250 and RR300
- #### MRO Operations:
- #### Timken Aftermarket Solutions
11. Major maintenance on helicopter drivetrain components is generally accomplished by:
A. A specialized MRO
B. The factory only
C. The holder of an A&P
D. The holder of an A&P/IA

12. Timken Aftermarket Solutions can provide:
A. OEM parts only
B. PMA parts only
C. OEM and PMA parts
D. Neither OEM or PMA parts

13. During helicopter transmission overhaul _____ is one of the common problems experienced.
A. External corrosion
B. Life limited parts
C. Internal corrosion
D. Drive shaft fatigue

14. Most oil pump rotors seen by Timken are rejected for corrosion of the polished surfaces.
A. True
B. False

15. The air inlet system of the Timken engine test cell has coolers inside for what reason?
A. Increase the temperatures at the engine
B. Reduce the temperatures at the engine
C. Reduce the noise level at the engine
D. Increase the test data quality

Avionics Technology:

Portable Electronic Devices

16. Electronic flight bags and high-speed data transfer units are two of the more recent and increasingly common devices in aircraft.
A. True
B. False
17. Cell phones differ from most PEDs in that they send _____ signals.
A. Intermittent
B. Continuous



- C. Strong
- D. Weak

18. Federal Aviation Regulation (FAR) _____ provides guidance and lists approved equipment.

- A. 91.01
- B. 91.121
- C. 91.21
- D. None of the above

**Staying Legal:
FAA Enforcement Activity**

19. Charging airmen and other certificate holders with a crime is usually seen more frequently where?

- A. Europe
- B. North America
- C. South America
- D. Asia

20. Failure to follow your company's own FAA Repair Station Manual if applicable is a violation of:

- A. FAR 45
- B. FAR 145
- C. FAR 21
- D. FAR 121

21. This article describes how certain people were charged with conspiring to use and using, unapproved parts in their repairs.

- A. True
- B. False

February/March 2012

**Turbine Technology:
Innovations in Turbine Engines**

22. The fan drive gear system (FDGS) for the PW1000G turbine engine _____ the engine fan from the low pressure compressor.

- A. Connects
- B. Leverages
- C. Separates
- D. Drives

23. The fan in the GTF engine rotates at a speed _____ than the low pressure compressor.

- A. Faster
- B. Slower

24. The PW GTF has a bypass ratio of:

- A. 6:1
- B. 12:1
- C. 16:1
- D. 20:1

25. This engine design resulted in a 50 to 75 percent reduction in:

- A. Fuel consumption
- B. Engine noise
- C. Oil consumption
- D. Nitrogen oxide emissions

26. Only two of the seven moving parts in the FDGS are life-limited.

- A. True
- B. False

27. The PW GTF is a 17-stage modular engine having:

- A. A three-stage LPC and eight-stage HPC
- B. A three-stage HPC and eight-stage LPC
- C. A three-stage HPT and a four-stage LPT
- D. None of the above

**Turbine Technology:
Dynamic Fluoride Ion Cleaning (DFIC)**

28. Proper brazing of turbine engine components requires:

- A. Removal of nickel
- B. Removal of cobalt
- C. Removal of titanium
- D. Removal of oxidation

29. The DFIC process cleans deep narrow cracks in turbine engine airfoils by cycling between:

- A. Rotation speed
- B. Cleaning solutions
- C. Pressure
- D. All of the above

30. During the DFIC process, fluoride ion reacts with oxides at temperatures above 1,750 F converting them to:

- A. Dust particles
- B. Slag
- C. Gas
- D. Solid waste

31. Cobalt-based alloys used to make jet engine turbine airfoils do not contain chromium.

- A. True
- B. False

**Turbine Technology:
Aircraft Welding and Repair**

32. The aircraft welding the acronym GTAW stands for:

- A. Gas tungsten airworthiness welding
- B. Gas turbine airworthiness welding
- C. Gas turbine arc welding
- D. Gas tungsten arc welding

33. The GTAW and TIG welding process are considered:

- A. Different
- B. The same
- C. Only used on turbine engines
- D. Never used on turbine engines

34. The use of an inverter in welding equipment allows for direct starting on thin sections of materials.

- A. True
- B. False

35. High-speed inverter pulsing constricts the arc for:

- A. Slower travel speeds
- B. Lower temperatures
- C. Higher temperatures
- D. Faster travel speeds

36. Older TIG technology is typically locked in at the line frequency between 20 hz and 400 hz.

- A. True
- B. False

**MRO Operations:
Finding and Fixing Fuel System Leaks**

37. One way of identifying fuel leaks is to pressurize the fuel tank with shop air and spray the suspect area with:

- A. Water
- B. A soap solution
- C. A chemical cleaner
- D. Dye penetrant

38. Before entering a fuel tank to perform maintenance, use of a gas detector is required to test for safe atmospheric conditions.

- A. True
- B. False

39. You can find safety procedures, guidelines, notes, warnings, and cautions for fuel tank maintenance listed in ATA Chapter _____ of the specific aircraft maintenance manual.

- A. 08
- B. 18
- C. 28
- D. 38

40. Using the Aero-Brite system for leak detection requires that you add a prescribed amount of fluorescent dye to the leaking fluid system and:

- A. Let it sit for 24 hours
- B. Let it circulate
- C. No circulation is needed
- D. Place the aircraft in a dark hangar



Avionics Technology: Next Generation (Data-based communications)

41. Automatic Dependent Surveillance-Broadcast (ADS-B) is FAA's satellite-based successor to:
- A. GPS
 - B. ATC
 - C. Radar
 - D. NNEW
42. ADS-B relies on two avionics components, one of which is a:
- A. Flight information service
 - B. Datalink unit
 - C. Digital audio system
 - D. Analog audio system
43. In the United States, the air traffic control (ATC) network has seen significant change since the end of World War II every:
- A. Two years
 - B. Ten years
 - C. Twenty years
 - D. No significant change

Industry Viewpoint: MRO Mechanics

44. In this article the author suggests what when you are looking for a new job:
- A. Apply for a job once per month
 - B. Understand the aviation market
 - C. Stay in the same job
 - D. Always relocate
45. When listening to feedback, your boss's assessment will always be the same as yours.
- A. True
 - B. False

Technical Tip: How to Verify Control Cable Routing

46. In this article the author illustrates the importance of checking hard to see areas during a control cable change using a:
- A. Naked eye
 - B. Flashlight
 - C. Flashlight and mirror
 - D. Borescope

April 2012

Airframe Technology: International Standard for Business Aircraft Operations (IS-BAO)

47. The International Standard for Business Aircraft Operations (IS-BAO) was developed by the industry for the benefit of the industry and considered a:

- A. Code of compliance
- B. Code of safety
- C. Code of IBAC
- D. Code of best practices

48. IS-BAO incorporates the International Standards and Recommended Practices for the Operation of Aircraft applicable to business aviation prescribed by:

- A. IBAC
- B. ICAO
- C. EBACE
- D. FAA

49. ICAO adopted Annex 6 via its member states, which says each member state will require the implementation of an SMS by:

- A. Aircraft charter operators
- B. Aviation service providers
- C. Flight training organizations
- D. Aviation maintenance organizations

50. IS-BAO standards have been established with the goal of looking over someone's shoulder for what is wrong.

- A. True
- B. False

51. This article explains the four basic elements to an SMS. Which of the following is not one of them?

- A. Safety promotion
- B. Safety assurance
- C. Safety risk management
- D. Safety program software

Information Technology: Aircraft Components Get Smart

52. Radio frequency identification (RFID) was originally adopted in:

- A. Air traffic control
- B. Aircraft maintenance
- C. Retail supply
- D. None of the above

53. In aircraft maintenance RFID tags can only store part numbers and serial numbers.

- A. True
- B. False

54. Reading information and data stored on an RFID chip is typically done using a:

- A. Two-way communication device
- B. Laptop
- C. Handheld reader
- D. Maintenance documentation system

55. RFID information regarding in-service maintenance activities and records related to part replacement tasks is helpful to the:

- A. Parts manufacturer
- B. MRO organization
- C. Aircraft owner/operator
- D. Airframe manufacturer

56. After a part with an RFID chip is changed or repaired a technician can write maintenance activity information:

- A. To the part
- B. To maintenance control
- C. To the logbook
- D. To the AMM

Avionics Technology: Global Positioning System

57. For most GPS operations _____ satellites are required to be in view.

- A. Two
- B. Four
- C. Six
- D. None of the above

58. A GPS receiver calculates its position by precisely measuring the distance in nautical miles sent by GPS satellites.

- A. True
- B. False

59. When troubleshooting a GPS problem, signal interference is often:

- A. Easy to detect
- B. Only detectable on the ground
- C. Difficult to detect
- D. Only detectable using a backup system

60. A GPS repeater unit can allow system alignment when:

- A. An aircraft is in a hangar
- B. An aircraft is in cruise configuration
- C. An aircraft is on the ramp
- D. None of the above

Cover Story: Regional Service Centers

61. In this article Bombardier predicts that by the year 2030 there could be more than 1,100 business jets in service in:

- A. Canada
- B. Asia-Pacific
- C. India
- D. None of the above

62. Bombardier is developing and operating three global hubs. Which is not one of the three locations?

- A. North and South America
- B. Amsterdam
- C. Africa
- D. Singapore

63. The Bombardier process for developing a new OEM service hub is sending a team to organize these international hubs according to:

- A. FAR 91
- B. EASA 145
- C. FAR 145
- D. EASA 91



64. Stan Younger, Bombardier's vice president of Aircraft Service Centers, suggests that aircraft technicians do not need business and financial knowledge only technical skills.

- A. True
- B. False

Staying Legal: Technician Shortage?

65. The author of this article suggests there seems to be strong growth in _____ maintenance activity.

- A. Overseas
- B. General aviation
- C. Airline
- D. Military

66. The author of this article suggests it's easier to obtain a new job once you are unemployed.

- A. True
- B. False

May 2012

Recip Technology: What About Those Diesels Part 1

67. The more technical name for the diesel engine is:

- A. Compression-ignition piston engine
- B. Continuous-combustion piston engine
- C. Compression-combustion piston engine
- D. Continuous-ignition piston engine

68. The internal components on a diesel engine generally have the same size and strength characteristics as those in a gasoline engine.

- A. True
- B. False

69. Today's high-efficiency diesel engines operate near ___ percent efficiency.

- A. 25
- B. 35
- C. 50
- D. 70

70. A diesel engine's power is controlled by the:

- A. Air supply
- B. Amount of fuel
- C. Compression ignition
- D. None of the above

71. Diesel engine power pulses are generally:

- A. Sharper and less powerful
- B. More powerful but less sharp
- C. Sharper and more powerful
- D. The same as a gasoline engine

72. Aviation diesel fuel is commonly known as:

- A. Mogas
- B. Jet-A
- C. 100LL
- D. None of the above

73. Diesel fuel is roughly 19 percent heavier than avgas.

- A. True
- B. False

Turbine Technology: Read and Weep (for joy)

74. Contact maintenance button (CMB) are forms of Automated Identification Technology (AIT).

- A. True
- B. False

75. Boeing's RFID Integrated Solutions combines RFID tags and _____ installed on parts and components throughout an airplane.

- A. UPCs
- B. EMCs
- C. EMIs
- D. CMBs

76. Boeing installed 28 RFID tags and contact memory buttons in harsh environments and re-evaluated after _____ hours of flight.

- A. 200
- B. 1,200
- C. 2,000
- D. 20,000

77. RFID technology and implementation processes are difficult and considered a major alteration by the FAA.

- A. True
- B. False

78. Boeing offers several standard RFID technology products. Which of the following is not one of them?

- A. Rotables management
- B. Emergency equipment management
- C. Airframe degradation management
- D. LLP management

79. The Boeing RFID technology meets which of the following standards?

- A. FAR 121
- B. EMI and EMC
- C. ATA Specification 2000
- D. None of the above

Avionics Technology: Wind Shear

80. A micro-burst and a wind shear are considered to be:

- A. The same
- B. Completely different
- C. Only affect rotorcraft
- D. A and B

81. NEXRAD (Next-Generation Radar) is a network of 159 high-resolution Doppler weather radars operated by:

- A. FAA
- B. DoD
- C. U.S. Air Force
- D. None of the above

82. NEXTGEN onboard Doppler radar sends a burst of energy ahead of the aircraft to seek targets such as:

- A. Dust particles
- B. Moisture particles
- C. Wind shear
- D. None of the above

MRO Operations: Composite Repair at FedEx Express

83. The use of bonding as a method of fastening was introduced into aviation 10 years ago.

- A. True
- B. False

84. Bonding and the use of advanced composite materials such as carbon graphite and hybrid fabrics is normally found in:

- A. Flight controls
- B. Engine nacelles
- C. Primary structure
- D. All of the above

85. Today's shops specializing in bonded repairs generally have which of the following features:

- A. Open air grinding rooms
- B. Hangar remote locations
- C. Environmentally controlled layout and storage rooms
- D. None of the above

86. The FedEx LAX composite accomplishes the following:

- A. Carbon graphite wet layup repairs but not painting
- B. Pre-impregnated (pre-preg) repairs only
- C. Painting and metal-bond repairs
- D. Fiberglass repairs but not pre-preg repairs



87. The dedicated sanding room has downdraft airflow for collection of the dust and debris from sanding and grinding.

- A. True
- B. False

88. Technicians pass through the air shower when:

- A. Entering the sanding room
- B. Exiting the sanding room
- C. Entering the paint room
- D. Both A and B

89. The MD-11 tail cone has stiffeners made from which material:

- A. Fiberglass honeycomb
- B. Aluminum angle
- C. Aluminum honeycomb
- D. Carbon graphite

90. During a bonded repair which of the following is the primarily purpose of the vacuum bag?

- A. Reduces dust
- B. Removes moisture
- C. The clamp affect
- D. The cure affect

Cover Story: Composites in Aerospace: A Maintenance Primer

91. A composite is a combination of two or more materials which results in a material possessing structural properties none of the materials possess individually.

- A. True
- B. False

92. The most basic unit of composite construction is the:

- A. Honeycomb
- B. Sandwich
- C. Laminate
- D. None of the above

93. The principle advantages of composite laminates over sheet metals of equivalent strength are:

- A. Less weight
- B. High fatigue resistance
- C. Corrosion resistance
- D. All of the above

94. In a sandwich the core material carries and transfers the imposed loads to:

- A. Adjoining rivets
- B. Adjoining structure
- C. Sandwich basesheets
- D. Sandwich fasteners

95. Typical core materials used in sandwich construction include:

- A. Polymer foams
- B. Aluminum or aramid honeycomb

- C. Balsa wood
- D. All of the above

96. Due to composite's high strength, during damage assessment you must be cognizant of:

- A. Load path damage and trailing edge damage
- B. Point of impact damage but not load path damage
- C. Point of impact damage and load path damage
- D. Load path damage and leading edge damage

97. Visual inspections of composite material painted surfaces are best accomplished by using a high intensity flashlight held at a:

- A. Low incident angle to the structure
- B. High incident angle to the structure
- C. 90 degrees to the structure
- D. None of the above

98. The coin tap as a method to identify delamination can be:

- A. Highly accurate
- B. Only done on solid laminate
- C. Highly subjective
- D. Both A and B

From The FAA: Procedures 101

99. The working group in this article identified a lack of involvement by aircraft mechanics to create and validate _____.

- A. Root cause
- B. Written procedures
- C. Information quality
- D. Internal training

Industry Viewpoint: Filing ASAP Maintenance Reports

100. A functioning Aviation Safety Action Program (ASAP) relies on front-line workers to report problems they encounter.

- A. True
- B. False

101. Most errors reported through a company's ASAP are treated:

- A. With dismissal
- B. Punitively
- C. Non-punitively
- D. None of the above

Technical Tip: Listen Closely: Persistence Pays Off

102. The author suggests technicians should validate your inspection and work by taking time before and again after and _____.

- A. Intently listen to your inspector
- B. Intently listen to control surface movement

- C. Intently listen to the engine run up
- D. Listen to your supervisor

103. An aileron cable misrouted through a hidden lightning hole rather than the cable routing hole in a rib was identified by:

- A. A second set of eyes
- B. A slight sawing sound
- C. Reviewing the AMM
- D. None of the above

June 2012

Tools & Equipment Supplement: The Right Tool for the Right Job

104. Proper bearing installation can affect:

- A. Aircraft performance and safety
- B. On time delivery and safety
- C. Aircraft performance and delivery
- D. The aircraft maintenance manual

105. A bearing is designed to see minimal wear and will never need to be replaced.

- A. True
- B. False

106. When removing a grooved bearing that has been swaged in place the lip must first be:

- A. Swaged
- B. Weakened
- C. Removed
- D. Measured

107. When pressing a new bearing into the housing, make sure the new bearing is:

- A. Swaged first
- B. Machined first
- C. Cantered in the housing
- D. Parallel to the bore in the housing

108. The nature of the two-wheel rollers are to roll straight and not in a circular manner.

- A. True
- B. False

109. Proof load testing of an installed bearing is used to ensure the new bearing:

- A. Rotates correctly
- B. Handles the lateral forces
- C. Needs a new sleeve
- D. All of the above

July 2012

Recip Technology: What About Those Diesels? Part 2

110. The Thielert 1.7-liter unit originally used in the Diamond DA42 had a _____ hour mandatory clutch and gearbox rebuild.



- A. 300
B. 600
C. 1,200
D. None of the above
111. The Centurion and Austro aero-diesel engines are similar in that they all are based on automobile engine designs.
A. True
B. False
112. The Gemini diesel engine is a two-crankshaft two stroke developing 100 horsepower and has:
A. Three cylinders
B. Three carburetors
C. Six pistons
D. Both A and C
- Cover Story:**
Opportunity: Maintenance, repair and alteration under the ASTM consensus standards
113. The two ASTM standards most applicable to maintenance of Light Sport Aircraft are:
A. F2245 and F2279
B. F2279 and F2295
C. F2295 and F2483
D. None of the above
114. The Sport Pilot/LSA rules created two new categories of Airworthiness Certificates for aircraft. They are:
A. Recreational Light Sport and Special Light Sport
B. Special Light Sport Aircraft and Experimental Light Sport Aircraft
C. Experimental Light Sport Aircraft and Recreational Light Sport
D. Restricted Light Sport and Experimental Light Sport
115. Experimental Light Sport Aircraft are either:
A. Kitted versions of a Special Light Sport aircraft
B. Aircraft down-graded from an original S-LSA airworthiness certificate
C. Aircraft brought into the system following the new rules such as an ultralight
D. All of the above
116. Airworthiness certificates issued under LSA regulations come with operating limitations which must be adhered to in maintaining these aircraft.
A. True
B. False
117. Logbook entries for return to service after the annual condition inspection of an LSA must be the same used in signing off an aircraft with a Standard Airworthiness Certificate.

- A. True
B. False
118. The maintenance process for an aircraft with a Special Light Sport airworthiness certificate is controlled by:
A. The manufacturer
B. The FAA
C. AC 43.13
D. EASA
119. Maintenance, repair, or alteration not specified in the maintenance manual of an S-LSA must be accomplished according to:
A. Form 337
B. A Letter of Authority (LOA)
C. Both A and B
D. Neither A or B

**From The FAA:
Looking for the Big ASAP
Success Story**

120. FAA's Aviation Safety Action Program (ASAP) is a formalized mandated reporting process.
A. True
B. False
121. Which of the following would be something not acceptable to report to your company's ASAP.
A. An observed safety hazard
B. A possible maintenance error
C. Intentionally not following a procedure
D. Both A and B.
122. The ASAP term ERC stands for:
A. Early review committee
B. Event restructuring committee
C. Event review comment
D. Event review committee
123. ASAP is about the corporate and regulatory commitment to collect and analyze reports and:
A. Report them to the company president
B. Report them to the FAA
C. Take action to improve the practices accordingly
D. Take no action just collect the data

August 2012

**Cover Story:
Aircraft Maintenance
Technician Outlook**

124. One report mentions there are 290,000 aircraft maintenance technicians globally with:
A. 21 percent being FAA certificated

- B. 24 percent being FAA certificated
C. 85 percent are FAA certificated
D. All are FAA certificated
125. The second largest group of general aviation aircraft worldwide is:
A. Single engine land
B. Multi engine land
C. Turbo prop
D. Experimental-Amateur Built
126. The Boeing Current Market Outlook 2012-2031 anticipates the global airline industry will need 24,000 airplanes.
A. True
B. False
127. Some future aircraft technician career opportunities may require you to learn skills such as:
A. Airframe and powerplant
B. Drafting and drawing
C. Communications and other languages
D. Dope and fabric repair

**MRO Operations:
Major Modifications with L-3 PI**

128. L-3 Platform Integration (PI) is a certified repair station and holds which other FAA authorization:
A. Designated Alteration Station
B. Organization Designation Authorization
C. Designated Airworthiness Representative
D. All of the above
129. During the SOFIA project on the Boeing 747SP aircraft the pressure bulkhead was moved:
A. Aft
B. Vertically
C. Forward
D. It was not moved
130. The sustainment, modification, and installation program (SMIP) provides for an intensive depot-level process for U.S. Air Force P-3 aircraft.
A. True
B. False
131. During the P3 SMIP what type of NDT is accomplished on the fuselage wing mounting structures?
A. Ultrasound
B. X-ray
C. Eddy current
D. Dye penetrant

132. The P-3 SMIP project primarily requires technicians with heavy _____ skills.
A. Avionics
B. Hydraulics
C. Structures
D. Pneumatics



Management Matters: Customer Service: Internal and External

133. In a maintenance organization great customer service is only applicable to external customers.
- A. True
 - B. False
134. Which of the following is not one of the four key elements by which internal customer service can be measured?
- A. Helpfulness
 - B. Responsiveness
 - C. Respectfulness
 - D. Position or power

September 2012

Work Procedures: Workarounds

135. A workaround in aircraft maintenance can be described as:
- A. A revised procedure
 - B. A deviation to a procedure
 - C. A mandated procedure
 - D. An airworthiness directive
136. The contributing cause for many incidents lies in the failure of maintenance personnel to follow standard operating procedures.
- A. True
 - B. False
137. Failure to perform an adequate turn over during shift change can result in:
- A. Missing key information
 - B. Missing a scheduled break
 - C. Missing an engine run
 - D. None of the above
138. Tolerance creep is the _____ of a standard or limit by the assumption that previous experience shows that limits are flexible.
- A. Gradual tightening
 - B. Gradual deterioration
 - C. Acceptable tightening
 - D. Acceptable deterioration
139. In a maintenance organization once personnel have established that something works even if it violates a standard it becomes:
- A. A revised SOP

- B. A workaround
- C. An accepted SOP
- D. An accepted norm

Coatings: Taking Plating Technology to the Aircraft

140. Examples of surface enhancements include:
- A. Corrosion protection and increased wear resistance
 - B. Improved erosion conductivity
 - C. Increased brittleness
 - D. All of the above
141. Selective plating refers to a traditional tank finishing process performed in the shop or hangar.
- A. True
 - B. False
142. When brush plating and anodizing, the operator dips an absorbent tool in a solution and then:
- A. Brushes it against the power pack
 - B. Brushes it against the surface to be plated
 - C. Brushes it against nickel-base materials only
 - D. Brushes it against the surface to be painted
143. Adhesion of brush electroplates is excellent on a wide variety of materials but not:
- A. Steel
 - B. Cast iron
 - C. Stainless steel
 - D. Aluminum
144. Cadmium, zinc-nickel, and tin-zinc plating solutions have been specifically developed for plating or touching up high-strength steel parts without needing a post-plate bake.
- A. True
 - B. False
145. In the example of the landing gear bushing diameters the damaged areas were:
- A. Solvent cleaned and abraded with 120 grit sandpaper
 - B. Solvent cleaned and abraded with 220 grit sandpaper
 - C. Solvent cleaned only
 - D. Abraded with 220 grit sandpaper only
146. A common application of sulfamate nickel to localized areas of engine components is used to improve which process?
- A. Painting
 - B. Torqueing

- C. Brazing
- D. Grinding

Cover Story: A New Experience: Military Learjet Maintenance

147. Prior to arrival at the NDANG the C-21 aircraft in the article had always been maintained by civilian mechanics.
- A. True
 - B. False
148. The NDANG fully took over maintenance on these C21 aircraft on:
- A. September 1, 2007
 - B. October 1, 2007
 - C. September 1, 2008
 - D. October 1, 2008
149. Development of this program required maintenance of the aircraft according to Federal Aviation Administration (FAA) requirements using:
- A. FAA maintenance processes
 - B. DoD maintenance processes
 - C. Air Force maintenance processes
 - D. None of the above
150. The Air Guard technicians felt the FAA technical data was _____ detailed than Air Force Technical Orders (TOs).
- A. More
 - B. Less
 - C. Equally

Tools & Equipment Supplement: Evaluating Your NDI Services

151. An audit of an NDI organization focuses on five standard elements.
- A. True
 - B. False
152. Ultrasonic inspection equipment is checked against a physical calibration standard:
- A. Once per year
 - B. Twice per year
 - C. Prior to each use
 - D. Prior to every other use
153. Liquid dye penetrant and developers are controlled by:
- A. Purchase date
 - B. Black light date
 - C. Shelf life date
 - D. None of the above



154. Level 1 NDI personnel can accomplish the following:
- A. Equipment calibration
 - B. Perform inspections and interpret results
 - C. Design inspection techniques and processes
 - D. All of the above

155. Double type transducers are a _____ receiver and transmitter.
- A. Single
 - B. Separate
 - C. Triple
 - D. None of the above

October 2012

Turbine Technology: The CF34 Turns 20

156. To date there have been how many versions of the GE CF34 engine?
- A. 5
 - B. 10
 - C. 15
 - D. 20
157. The CF34-10E has a higher thrust rating produced by:
- A. Single-stage high-pressure turbine
 - B. Wide chord fan blades
 - C. 3-D aero compressor airfoils
 - D. All of the above
158. Typically technicians at MTU in Berlin complete a three-year dual apprentice program and are certified by:
- A. ICAO
 - B. FAA
 - C. NAA
 - D. EASA
159. According to MTU they see engines removed for hot section maintenance because of:
- A. Life limits of parts
 - B. Wear and damage
 - C. Both A and B
 - D. None of the above

MRO Operations: G1000 King Air Retrofit

160. The cockpit layout for the King Air G1000 features a 10.4-inch multi-function display (MFD) in the center, and 15-inch primary flight displays (PFDs).
- A. True
 - B. False

161. After the retrofit most King Airs can see an average weight savings of:
- A. 65 pounds
 - B. 75 pounds
 - C. 120 pounds
 - D. 200 pounds

162. Areas of the aircraft tail section are checked for hidden magnetism that later may affect new _____ located there.
- A. Receivers
 - B. Antennas
 - C. Sensors
 - D. Servos

163. The G1000 STC and installation instructions have specific requirements for little things such as:
- A. Wire termination and shield lengths
 - B. Shield length but not wire termination
 - C. Standard hardware
 - D. Sidewall panels

164. The digital displays have the same accuracy of readings as the traditional analog instrumentation.
- A. True
 - B. False

Work Procedures: Process Driven Checklists for General Aviation

165. Appendix D of 14 CFR 145 contains a list that defines the basic annual and 100-hour inspections requirements.
- A. True
 - B. False
166. Which of the following items would you not typically find in a written work turnover?
- A. Day-off schedules
 - B. Lock pin installation
 - C. Circuit breaker status
 - D. Safety issues

167. The act of inspecting another's work needs to come with mutual acknowledgment by both parties that:
- A. Errors found will be met with swift disciplinary action
 - B. Only RII is important
 - C. Errors found are not a reflection of technical competency
 - D. Inspection is the same as judgment

Cover Story: Embraer's New Executive Jet Assembly Facility

168. The fuselage, empennage, and wing assemblies for the Phenom 100 and 300s are all built in Melbourne, FL.
- A. True
 - B. False
169. The Embraer Manufacturing Execution System (MES) is a computer-controlled:
- A. Parts collection and delivery system
 - B. Data collection and reporting system
 - C. A former NASA system
 - D. Dedicated to the Brazilian facility
170. Each new hire into the facility has four weeks of training that includes:
- A. Lean manufacturing processes
 - B. Continuous improvement concepts
 - C. Technical courses
 - D. All of the above

Staying Legal: IAs Get Ready for March 31, 2013

171. Beginning in March 2013 the FAA will use new _____ for Inspection Authorization renewal.
- A. Regulation
 - B. Paperwork
 - C. Guidance
 - D. Policy
172. Refresher training attendance alone will now satisfy all requirements for Inspection Authorization (IA) renewal.
- A. True
 - B. False
173. In addition to one of the four classic ways to renew your Inspection Authorization (IA) you must now provide evidence to the FAA that you:
- A. Are employed
 - B. Attended an eight-hour seminar
 - C. Meet the actively engaged requirement
 - D. Work for a repair station

Industry Viewpoint: OEM or PMA Parts – Is There a Difference?

174. PMA parts undergo the same rigorous approval and quality control process as OEM parts.
- A. True
 - B. False



175. The FAA oversees the production of both PMA and OEM parts:

- A. The same
- B. Differently
- C. Only OEM parts
- D. Only PMA parts

**From The FAA:
Human Factors Challenges**

176. The number one reason the FAA takes action against aviation maintenance technicians relates to errors made with:

- A. Documentation and procedures
- B. Tool calibration
- C. Duty time limits
- D. None of the above

177. An MRO working on multiple customer aircraft generally uses only one type of manufacturers' publications and company work cards.

- A. True
- B. False

178. SMS uses which of the following to understand why something may have gone wrong or to predict trends.

- A. Attitudes
- B. Return on investment
- C. Key indicators
- D. All of the above

179. Whether you are maintaining airliners or small aircraft safety culture must be communicated from:

- A. Union reps
- B. FAA inspectors
- C. Senior executive level
- D. Outside consultants

180. The workshop delegates ranked _____ as the second largest risk to safe work.

- A. Professionalism
- B. Return on investment
- C. Required inspection items
- D. Fatigue

TECHNICIAN AWARD ELIGIBILITY

The FAA encourages all eligible technicians and employers to participate in the awards program each year. Continuous participation in the FAA William (Bill) O'Brien Awards Program for regulatory, airworthiness, and safety awareness training will reinforce and promote/foster a high level of professionalism and safety within the industry:

- a. An FAA-certificated mechanic or repairman (technician) in general aviation, repair station, or air carrier maintenance working on aircraft component parts for 14 CFR parts 91, 121, 125, 127, 129, 133, 135, 137, 141, or 145 entities.
- b. A noncertificated maintenance technician employed by a part 121/135 air carrier or a part 145 repair station and working on aircraft or component parts.
- c. A student in an FAA-certificated part 147 Aviation Maintenance Technician School who is maintaining a course average grade of "C" or better. The student must receive training required by this award program outside of his or her regular part 147 school curriculum.
- d. An apprentice mechanic working full time or part time performing aircraft maintenance under an FAA-certificated mechanic or repairman is also eligible to receive an award.

All phases require that individuals register at <http://www.FAASafety.gov>, enroll in the William (Bill) O'Brien Awards Program, and complete the Core Training Course/Courses, which can be found in the Aviation Learning Center at <http://www.FAASafety.gov>.

AMT AWARD REQUIREMENTS

a. Phase I. Bronze (total training – 12 hours)

- (1) Complete Mandatory Core Training available at Aviation Learning Center at www.FAASafety.gov.
- (2) Satisfactorily complete 12 hours of aviation maintenance training.

b. Phase II. Silver (total training – 40 hours)

- (1) Complete Mandatory Core Training available at Aviation Learning Center at www.FAASafety.gov.
- (2) Satisfactorily complete 40 hours of aviation maintenance training.

c. Phase III. Gold (total training – 80 hours)

- (1) Complete Mandatory Core Training available at Aviation Learning Center at www.FAASafety.gov.
- (2) Complete college level course or three credit hours or 40 classroom hours in Mathematics, English, Science, Aviation Safety, Human Factors, Quality Control, or similar aviation career related courses.
- (3) Satisfactorily complete 80 hours of maintenance training.

Note from AMT:

Are you ready to take the exam, but don't have all of the back issues of Aircraft Maintenance Technology from 2012?

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Just a reminder that things have changed over the last several years. AC 65-25E requires 12 hours for a Bronze

Award, 40 hours for a Silver, and 80 hours for a Gold.

New this year the exam is available online and can be submitted online. If you prefer to submit the paper version, please be sure that all of the information on the answer sheet is filled in. We receive several tests each year that we can't issue a certificate for because the return address information is not filled out. It is also a good idea to photocopy your completed test just in case it doesn't make it to our offices.

Good luck on the exam!

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