

# ASSIGNMENT 12

Textbook Assignment: "Crash Rescue and Fire Fighting," chapter 12, pages 12-1 through 12-21.

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- 12-1. What is the primary duty of a fire fighter?
1. To prevent fire from spreading
  2. To save lives
  3. To extinguish fire
  4. To protect Navy equipment
- 12-2. There are four elements in the process of fire. The fourth element is a chemical reaction that allows the fire to sustain itself and grow. Which of the following terms describes this process?
1. Fire triangle
  2. Fire cube
  3. Fire tetrahedron
  4. Fire matrix
- 12-3. What is the term used to describe the lowest temperature at which vapors of a substance can be ignited and continue to burn?
1. Fire point
  2. Flash point
  3. Ignition point
  4. Spark point
- 12-4. What is the term used to describe the temperature at which a substance gives off enough vapors to form an ignitable mixture in the air near its surface?
1. Fire point
  2. Flash point
  3. Ignition point
  4. Spark point
- 12-5. At what exposed temperatures will a portion of fuel (or its vapors) spontaneously ignite?
1. 200°F
  2. 300°F
  3. 400°F
  4. 500°F
- 12-6. What class of fires occur in combustible materials, such as bedding, mattresses, books, cloth, and any matter that produces an ash?
1. Class A
  2. Class B
  3. Class C
  4. Class D
- 12-7. What class of fires occur with flammable liquid substances, such as gasoline, jet fuels, paints, grease, and any petroleum-based products?
1. Class A
  2. Class B
  3. Class C
  4. Class D
- 12-8. What class of fires is associated with electrically energized equipment?
1. Class A
  2. Class B
  3. Class C
  4. Class D
- 12-9. What class of fires is associated with combustible metals, such as magnesium and titanium?
1. Class A
  2. Class B
  3. Class C
  4. Class D
- 12-10. Water is most efficient when it absorbs enough heat to raise its temperature to a boiling point, and then changes to steam that carries away the heat, which cools the surface temperature.
1. True
  2. False
- 12-11. When proportioned with water, AFFF provides which of the following fire-extinguishing advantages?
1. An aqueous film is formed on the surface of the fuel that prevents the escape of the fuel vapors
  2. The layer effectively excludes oxygen from the fuel surface
  3. The water content of the foam provides a cooling effect
  4. Each of the above

- 12-12. What is the primary fire-fighting agent used to extinguish burning flammable or combustible liquid spill fires?
1. Water
  2. AFFF
  3. PKP
  4. Halon
- 12-13. By what means does CO<sub>2</sub> extinguish a fire?
1. By cooling the fire below its ignition temperature
  2. By eliminating all heat
  3. By diluting and displacing its oxygen supply
  4. By settling and blanketing the fire
- 12-14. By what means does Halon 1211 extinguish a fire?
1. By cooling the fire below its ignition temperature
  2. By eliminating all heat
  3. By settling and blanketing the fire
  4. By inhibiting the chemical chain reaction and decomposing upon contact with flames
- 12-15. What two fire-fighting agents are used in the twin agent units on board flight and hangar deck mobile fire-fighting equipment?
1. AFFF/Halon 1211
  2. CO<sub>2</sub>/PKP
  3. Water/AFFF
  4. PKP/Halon 1211
- 12-16. What fire-fighting agent is used for combating flammable liquid fires?
1. Water fog
  2. AFFF
  3. PKP
  4. CO<sub>2</sub>
- 12-17. What is the diameter of fire hoses used on board naval ships?
1. 1/2 or 1 inch
  2. 1 1/2 or 2 1/2 inch
  3. 2 or 3 inch
  4. 2 1/2 or 3 1/2 inch
- 12-18. How many gallons of concentrated AFFF are contained in a high-capacity AFFF station on board ship?
1. 200 gallons
  2. 400 gallons
  3. 600 gallons
  4. 800 gallons
- 12-19. Where are the AFFF sprinkler systems installed in the hangar bay aboard ship?
1. In the overhead
  2. On the hangar deck
  3. On each bulkhead
  4. In each CONFLAG station
- 12-20. Where are the flight deck AFFF fixed fire-fighting system controls located?
1. Primary flight control (Pri-Fly)
  2. Navigation bridge
  3. Both 1 and 2 above
  4. Flight deck control
- 12-21. Vari-nozzles are used on all AFFF and saltwater hose lines. All nozzle gallon-per-minute flow rates are based on what psi pressure at the nozzle inlet?
1. 100 psi pressure
  2. 200 psi pressure
  3. 300 psi pressure
  4. 400 psi pressure
- 12-22. What is (a) the length of Navy fire hoses and (b) the maximum operating pressure?
1. (a) 20 feet (b) 100 psi
  2. (a) 35 feet (b) 225 psi
  3. (a) 50 feet (b) 270 psi
  4. (a) 75 feet (b) 340 psi
- 12-23. Fire hose pressure above 150 psi is hazardous because excessive nozzle reaction force may result in loss of nozzle control.
1. True
  2. False
- 12-24. What is the purpose of the hard-rubber and hardwood plugs contained in the aircraft tool kit?
1. To seal ruptured fire hoses
  2. To stop fuel tank leaks
  3. To seal off aircraft intakes
  4. To wedge open aircraft canopies
- 12-25. How does aluminized protective clothing provide protection to fire fighters?
1. Because of its thermal lining
  2. Because of a positive airflow valve that cools the wearer
  3. Due to its high percentage of reflectivity to radiant heat
  4. Because of its lightweight fabric construction and ease of mobility

- 12-26. How much heat protection is lost when the gold-coated facepiece on the aluminized proximity suit becomes worn, scratched, or marred?
1. 25 %
  2. 40 %
  3. 65 %
  4. 90 %
- 12-27. The Oshkosh T-3000 crash and fire-fighting truck has a water and AFFF capacity of what total number of gallons?
1. 1,000 gallons of water and 220 gallons of AFFF
  2. 2,000 gallons of water and 310 gallons of AFFF
  3. 3,000 gallons of water and 420 gallons of AFFF
  4. 4,000 gallons of water and 510 gallons of AFFF
- 12-28. Where is the water and AFFF mixed on the P-4A aircraft fire-fighting vehicle before discharge?
1. Mixed in venturi inductors
  2. It is premixed in the holding tank
  3. Mixed by the variable-stream roof turret
  4. Mixed by the AFFF concentrate centrifugal pumps
- 12-29. The P-4A aircraft fire-fighting vehicle comes equipped with what total number of 30-pound PKP dry-chemical fire extinguishers?
1. Two
  2. Five
  3. Four
  4. Three
- 12-30. What fire extinguishing agents are carried on the P-19 fire-fighting truck?
1. PKP, water, and CO<sub>2</sub>
  2. Water, foam, and Halon 1211
  3. Halon 1211, PKP, and water
  4. CO<sub>2</sub>, Halon 1211, and foam
- 12-31. Which of the following aircraft fire-fighting vehicles are used aboard ship?
1. P-4A
  2. P-19
  3. P-25
  4. T-3000
- 12-32. How are the brakes engaged on the P-25 shipboard fire-fighting vehicle?
1. Depress the clutch pedal
  2. Release the accelerator
  3. Apply the hydraulic cylinder lever
  4. Disengage the transmission
- 12-33. The twinned agent unit (TAU-2H) is primarily designed for extinguishing what class of fires?
1. Class A
  2. Class B
  3. Class C
  4. Class D
- 12-34. The Halon nozzle on the twinned agent unit (TAU-2H) is equipped with what type of tip?
1. High-velocity tip
  2. Aspirating tip
  3. Dual orifice tip
  4. Low-reaction discharge tip
- 12-35. For what reason is JP-4 jet fuel prohibited aboard Navy ships?
1. Because of its flash point
  2. It cannot be mixed with other fuels
  3. It contaminates the ships fuel systems
  4. A fuel fire is difficult to extinguish
- 12-36. What is the calculated rate of flame spread for aviation gasoline (AVGAS) and JP-4 jet fuel?
1. 100 to 300 feet per minute
  2. 200 to 400 feet per minute
  3. 700 to 800 feet per minute
  4. 500 to 900 feet per minute
- 12-37. What is the lowest flash point of aircraft fuels that is considered safe for use aboard naval vessels?
1. 80°F
  2. 110°F
  3. 120°F
  4. 140°F
- 12-38. The top portion of the fuel tank is more void of liquid than any other section of the tank. In the event of an explosion, the liquid itself provides a restraining cushion, which will direct the explosive force in what direction?
1. Upward
  2. Downward
  3. Horizontally
  4. Diagonally

- 12-39. What color is liquid oxygen in an aircraft oxygen system?
1. White
  2. Light blue
  3. Yellow
  4. Light green
- 12-40. At what temperature does liquid oxygen turn or boil into gaseous oxygen?
1. 212°F
  2. -32°F
  3. -297°F
  4. 121°F
- 12-41. What is the usual mixture of aircraft anti-icing fluids?
1. 90% alcohol and 10% glycerin
  2. 75% alcohol and 25% glycerin
  3. 45% alcohol and 55% glycerin
  4. 85% alcohol and 15% glycerin
- 12-42. What fire-extinguishing agent should be applied to extinguish an ignited Mk 45 or LLU-2 parachute flare?
1. Halon 1211
  2. AFFF
  3. Low-velocity fog
  4. PKP
- 12-43. What fire extinguishing agent should NOT be directed into a battery compartment to effect cooling or to displace explosive gases because of the risk of explosion?
1. CO<sub>2</sub>
  2. AFFF
  3. Water fog
  4. PKP
- 12-44. What fire-extinguishing agent is used to lower the temperature of an aircraft battery that is in a thermal runaway condition when no flame or fire is present?
1. CO<sub>2</sub>
  2. AFFF
  3. Water fog
  4. PKP
- 12-45. Because of the potential hazards to personnel, what additional protection is necessary for personnel to combat composite fibers resulting from an aircraft fire?
1. More fire party personnel
  2. Respiratory protection
  3. Additional proximity suit liner
  4. Special eyewear
- 12-46. What advantage(s) does composite materials reinforced with carbon/graphite fibers provide in advanced aircraft construction?
1. Superior stiffness
  2. High strength-to-weight ratio
  3. Ease of fabrication
  4. All of the above
- 12-47. In composite aircraft construction, boron fibers pose less of a problem to unprotected electrical equipment than carbon or graphite fibers.
1. True
  2. False
- 12-48. What area of an aircraft is the most common source of aircraft crash fires?
1. Engine compartment
  2. Landing gear
  3. Wing fuel tanks
  4. Ordnance/stores
- 12-49. How are aircraft fluid lines identified?
1. By the diameter and length of the line
  2. By the material it is made of
  3. By etched markings in the center
  4. By bands of paint or strips of tape around the line
- 12-50. On aircraft fluid lines, steel tags can be used in place of identification tape or decals on lines of what diameter?
1. 1 inch
  2. 2 inches
  3. 3 inches
  4. 4 inches or larger
- 12-51. What do identification tape codes indicate on aircraft fluid lines?
1. Function and contents
  2. Hazards and direction of flow
  3. Pressure in the fluid line
  4. All of the above
- 12-52. How many general classes of hazards are found in connection with fluid lines?
1. One
  2. Two
  3. Three
  4. Four

- 12-53. What does the hazard code PHDAN indicate on aircraft lines?
1. Potential electrical danger
  2. Physically dangerous material
  3. Anesthetics and harmful materials
  4. Toxic and poisonous materials

IN ANSWERING QUESTIONS 12-54 AND 12-55, REFER TO TABLE 12-1 IN THE TEXT.

- 12-54. What is the associated hazard code that identifies alcohol?
1. FLAM
  2. AAHM
  3. PHDAN
  4. TOXIC

- 12-55. What is the associated hazard code that identifies trichloroethylene?
1. FLAM
  2. AAHM
  3. PHDAN
  4. TOXIC

- 12-56. The success of aircraft fire-fighting, crash, and rescue techniques will continue to depend on which of the following factors?
1. Training
  2. Leadership
  3. Teamwork
  4. Each of the above

- 12-57. What person must be informed when AFFF is used as the fire suppression agent on an aircraft fire and the agent is directed at or ingested into the engine or accessory section?
1. The commanding officer
  2. The senior fire official on board ship
  3. The maintenance officer of the unit involved
  4. The squadron quality assurance officer

- 12-58. In addition to the use of fire-extinguishing agents, what other method may be used to control internal aircraft engine fires?
1. Installing the engine intake covers
  2. Windmilling the engine
  3. Turn the aircraft into the wind
  4. Let the fire burn itself out

- 12-59. When CO<sub>2</sub> or Halon 1211 is expelled directly into an engine that is hot or has an internal fire, which of the following conditions could occur?
1. Thermal shock
  2. An explosion
  3. Produce toxic fumes
  4. Thermal runaway

- 12-60. In what area would you introduce fire-extinguishing agents to put out a fire in the engine accessory section area?
1. Access doors on the engine cowling
  2. The engine intake
  3. The engine exhaust section
  4. The compressor section

- 12-61. How can burning titanium be identified?
1. By the color of the smoke
  2. By the smell produced
  3. By the sparking effect of the material
  4. By the large amount of ashes produced

- 12-62. When combating class C electrical fires, what is the first thing you should do?
1. Charge all fire hoses to maximum pressure
  2. Secure the source of electrical power
  3. Post a fire security watch
  4. Ensure a nonconductive rubber mat is placed on the deck for personnel protection

- 12-63. CO<sub>2</sub> should NOT be used to make the atmosphere in an electronics compartment inert for which of the following reasons?
1. The possibility of suffocation
  2. It may cause damage to the electrical components
  3. It may produce a spark

- 12-64. When a fire occurs in the tailpipe of an aircraft during shutdown, the aircraft engine should be started in order to attempt extinguishing through exhaust pressures.
1. True
  2. False

- 12-65. What is the recommended procedure for cooling overheated wheel, brake, and tire assemblies?
1. Direct a steady stream of water at the assemblies
  2. Apply water fog to cool the brakes
  3. Discharge short burst of CO<sub>2</sub> at the assemblies
  4. Allow assemblies to cool in the surrounding air
- 12-66. What is the purpose of fusible plugs incorporated in aircraft wheel rim assemblies?
1. Automatically deflates the tire
  2. Reduces the pressure on the wheel
  3. Eliminates the possibility of explosion
  4. All of the above
- 12-67. When responding to a wheel fire or hot brakes, in what direction should personnel approach the wheel assembly?
1. In a fore or aft direction of the wheel
  2. Side to side in line with the axle
  3. Diagonally with the landing gear
  4. Any direction is approved to fight the fire
- 12-68. Which of the following materials may contribute to wheel assembly fires?
1. Grease
  2. Tire rubber
  3. Hydraulic fluid
  4. Each of the above
- 12-69. At what temperatures may aircraft tires ignite?
1. 200°F to 400°F
  2. 500°F to 600°F
  3. 700°F to 800°F
  4. 900°F to 1000°F
- 12-70. What is the danger in combating wheel assembly fires on aircraft with beryllium brakes installed?
1. They may produce irritating or poisonous gases
  2. They burn out of control
  3. The brake temperature cannot be measured
  4. The heat is not transferred to the wheel