

APPENDIX I

GLOSSARY

ABOARD—In or on a ship, aircraft, or other means of transportation.

ABORT—To cut short or break off an action, operation, or procedure with an aircraft, guided missile, or the like, especially because of equipment failure; for example, to abort a mission.

ACCELERATION—A change in the velocity of a body, or the rate of such change with respect to speed or direction.

ACCESSORY—A part, subassembly, or assembly designed for use in conjunction with or to supplement another assembly or unit. For example, the fuel control is an accessory for a turbojet engine.

AERODYNAMICS—The science that deals with the motion of air and other gaseous fluids and the forces acting on bodies in motion relative to such fluids.

AFFF—An aqueous film-forming foam; also known as light water.

AFT—Towards the rear of the ship, aircraft, or other object.

AILERON—A movable control surface or device. One of pair located in or attached to the wings on both sides of an aircraft. The primary purpose is to control the aircraft laterally or in a roll by creating unequal or opposing lifting forces on opposite sides of the aircraft.

AIMD—Aviation Intermediate Maintenance Department.

AIRFOIL—A structure or body, such as an aircraft wing or propeller blade, designed to provide lift/thrust when in motion relative to the surrounding air.

AIRSPEED—The speed of an aircraft, missile, rocket, or the like, relative to the air through which it flies.

ALTIMETER—An instrument for measuring altitude. It uses the change in atmospheric pressure with altitude to indicate the approximate elevation above a given point.

AMBIENT—Surrounding; adjacent to; next to. For example, ambient conditions are physical conditions of the immediate area such as ambient temperature, ambient humidity, ambient pressure, etc.

ANGLE OF ATTACK—The angle at which a body, such as an airfoil or fuselage, meets a flow or air.

ANTI-ICING—The prevention of ice formation upon an aircraft's surface or engines.

APRON—An area, ordinarily paved, for parking or handling aircraft.

ASCEND—To move or rise upward.

ASW—Antisubmarine warfare.

ATMOSPHERE—The body of air surrounding the earth. The atmospheric pressure at sea level is 14.7 psi.

ATTITUDE—The position or orientation of an aircraft, either in motion or at rest, as determined by the relationship between its axes and some reference line or plane or some fixed system of reference axes.

AUTOMATIC PILOT—A device or system that automatically controls the flight of an aircraft or guided missile.

AVGAS—Aviation gasoline for reciprocating engines.

AVIONICS—Electronics as applied to aviation.

AXIS—An imaginary line that passes through a body, about which the body rotates or may be assumed to rotate. For example, the horizontal axis, the lateral axis, and the longitudinal axis about which an aircraft rotates.

BERNOULLI'S PRINCIPLE—If a fluid flowing through a tube reaches a constriction, or narrowing of the tube, the velocity of fluid flowing through the constriction increases and the pressure decreases.

CANTED DECK—The area of an aircraft carrier flight deck that is at an angle to the center line of the ship. The canted deck permits aircraft to be parked out of the way of landing aircraft.

- CANOPY**—A covering; for example, a cockpit canopy is a transparent covering for a cockpit.
- CELSIUS**—The temperature scale using the freezing point as zero and the boiling point as 100, with 100 equal divisions between, called degrees. A reading is usually written in the abbreviated form, for example, 75 C. This scale was formerly known as the Centigrade scale, but was renamed Celsius in recognition of Andrew Celsius, the Swedish astronomer who devised the scale.
- COCKPIT**—A compartment in the top of an aircraft fuselage for the pilot and other crew members.
- COWLING**—A removable cover or housing placed over or around an aircraft component or section, especially an engine.
- DE-ICING**—The breaking off or melting of ice from aircraft surfaces, or fuel induction systems.
- DENSITY**—The weight per unit volume of a substance.
- DESCENT**—Relative to an aircraft, to come down, under control, from a higher to a lower altitude.
- DYE MARKER**—A substance that, when placed in water, spreads out and colors the water immediately to make a spot readily visible from the air.
- ELEVATOR**—As applied to aircraft, a control surface, usually hinged to a horizontal stabilizer, that is used to control the aircraft about its lateral axis. As applied to aircraft carriers, elevators are used to move aircraft between the flight deck and hanger deck.
- EMPENNAGE**—The tail section of an aircraft, including the stabilizing and control surfaces.
- ENERGY**—The ability or capacity to do work.
- ETA**—Estimated time of arrival.
- FACE CURTAIN**—A sheet of heavy fabric, installed above an ejection seat, that is pulled down to trigger the ejection seat and to protect the pilot or crew member's face against wind blast.
- FAIRING**—A part or structure that has a smooth, streamlined outline, used to cover a nonstreamlined object.
- FLAP**—The tendency of a blade to rise with high-lift demands as it tries to screw itself upward into the air.
- FLASH POINT**—The temperature at which a substance, such as oil or fuel, will give off a vapor that will flash or burn momentarily when ignited.
- FLIGHT CONTROL MECHANISM**—The linkage that connects the control(s) in the cockpit with the flight control surface(s).
- FORCE**—The action of one body on another tending to change the state of motion of a body acted upon. Force is usually expressed in pounds.
- FUSELAGE**—The main or central structure of an aircraft that carries the crew, passengers, or other load.
- HORSEPOWER**—A unit of power equal to the power necessary to raise 33,000 pounds one foot in 1 minute.
- HUMIDITY**—Moisture or water vapor in the air.
- HYDRAULICS**—The branch of mechanics that deals with the action or use of liquids forced through tubes and orifices under pressure to operate various mechanics.
- INERTIA**—The tendency of a body at rest to remain at rest, and a body in motion to continue to move at a constant speed along a straight line, unless the body is acted upon in either case by an unbalanced force.
- JETTISON**—To throw or dump overboard. For example, to drop or eject fuel, tanks, or gear from an aircraft to lighten the load for emergency action.
- LAG**—The tendency of rotor blades to remain at rest during acceleration.
- LANDING GEAR**—The components of an aircraft that support and provide mobility for the aircraft on land, water, or other surfaces.
- LAUNCH**—To release or send forth. For example, to launch aircraft from an aircraft carrier.
- LEAD**—The tendency of rotor blades to remain in motion during deceleration.
- LEADING EDGE**—The forward edge of an airfoil that normally meets the air first.
- LONGERON**—A main structural member along the length of an airplane body, to fuselage.
- LONGITUDINAL**—The lengthwise dimension; for example, the longitudinal axis of an aircraft runs lengthwise from the nose to the tail.
- MIM**—Maintenance Instruction Manual.

- MONOCOQUE**—An aircraft structure in which the stressed outer skin carries all or a major portion of the torsional and bending stress.
- NACELLE**—A streamlined structure, housing, or compartment on an aircraft; for example a housing for an engine.
- NAMP**—The Naval Aviation Maintenance Program.
- NBC**—Nuclear Biological Chemical.
- PITCH**—The rotational movement of an aircraft about its lateral axis.
- PRESSURE**—The amount of force distributed over each unit of area. Pressure is expressed in pounds per square inch (psi).
- PYLON**—A structure or strut that supports an engine pod, external tank, etc., on an aircraft.
- RADAR**—A device that uses reflected radio waves for the detection of objects.
- RADOME**—A dome housing for a radar antenna on an aircraft.
- RAM AIR**—Air forced into an air intake or duct by the motion of the intake or duct through the air.
- RPM**—Revolutions per minute.
- RUDDER**—An upright control surface that is deflected to control yawing movement about the vertical axis of an aircraft.
- SELECTOR VALVE**—A valve used to control the flow of fluid to a particular mechanism, as in a hydraulic system.
- SE**—Support equipment. All of the equipment on the ground needed to support aircraft in a state of readiness for flight.
- SERVICING**—The refilling of an aircraft with consumables such as fuel, oil, and compressed gases to predetermined levels, pressures, quantities, or weights.
- SLIPSTREAM**—The stream of air driven backward by a rotating propeller.
- SPECIFIC GRAVITY**—The ratio of the weight of a given volume of a substance to the weight of an equal volume of some standard substance, such as water.
- STRUT**—A type of supporting brace; a rigid member or assembly that bears compression loads, tension loads, or both, such as a landing gear to transmit the load from the fuselage of the aircraft.
- TAB**—A small auxiliary airfoil set into the trailing edge of an aircraft control surface and used to trim or to move, or assist in moving, the larger surface.
- TENSION**—A force or pressure that exerts a pull or resistance.
- THRUST**—The forward-direction pushing or pulling force developed by an aircraft engine or rocket engine.
- TORQUE**—A turning or twisting force.
- TRAILING EDGE**—The aft edge of an airfoil. The edge over which the airflow normally passes last.
- VELOCITY**—The rate of motion in a particular direction.
- VISCOSITY**—The internal resistance of a liquid that tends to prevent it from flowing.
- WAVE OFF**—An act or instance of refusing an aircraft permission to land in an approach, requiring another attempt. Also, the signal given an aircraft in such refusal.
- YAW**—The rotational movement of an aircraft about its vertical axis.

APPENDIX II

REFERENCES USED TO DEVELOP THE NONRESIDENT TRAINING COURSE

Although the following references were current when this course was published, their continued currency cannot be assured. When consulting these references, keep in mind that they may have been revised to reflect new technology or revised methods, practices, or procedures. Therefore, you need to ensure that you are studying the latest references.

Chapter 1

Basic Military Requirements, NAVEDTRA 12018, Naval Education and Training Professional Development and Technology Center, Pensacola, Florida, September 1999.

United States Naval Aviation 1910-1995, Naval Historical Center, Department of the Navy, Washington, D.C., 1997.

Manual of Navy Enlisted Manpower and Personnel Classification and Occupational Standards, NAVPERS 18068-F, Department of the Navy, Bureau of Naval Personnel, Washington, D.C., October 1998.

Chapter 2

Basic Military Requirements, NAVEDTRA 12018, Naval Education and Training Professional Development and Technology Center, Pensacola, Florida, September 1999.

Naval Aviation Maintenance Program (NAMP), OPNAVINST 4790.2 series, Naval Air Systems Command, Patuxent River, MD, February 1998.

Aviation Maintenance Ratings, NAVEDTRA 12017, Naval Education and Training Professional Development and Technology Center, Pensacola, Florida, August 1997.

Chapter 3

United States Naval Aviation 1910-1995, Naval Historical Center, Department of the Navy, Washington, D.C., 1997.

Fundamentals of Aviation and Space Technology, Institute of Aviation, University of Illinois, Savoy, IL, 1974.

Chapter 4

Aviation Structural Mechanic (H & S) 3 & 2, NAVEDTRA 12338, Naval Education and Training Program Management Support Activity, Pensacola, Florida, July 1993. *

General Manual for Structural Repair, NAVAIR 01-1A-1, Naval Air Technical Services Facility, Philadelphia, PA, September 1991.

Chapter 5

Aviation Structural Mechanic (H & S) 3 & 2, NAVEDTRA 12338, Naval Education and Training Program Management Support Activity, Pensacola, Florida, July 1993. *

Chapter 6

Aviation Machinist's Mate 3 & 2, NAVEDTRA 12300, Naval Education and Training Program Management Support Activity, Pensacola, Florida, September 1991. *

Chapter 7

Aviation Electronics Technician 1 (Organizational), NAVEDTRA 12331, Naval Education and Training Program Management Support Activity, Pensacola, Florida, June 1993. *

Chapter 8

Aviation Ordnanceman 3, 2, & 1, NAVEDTRA 12309, Naval Education and Training Program Management Support Activity, Pensacola, Florida, April 1996. *

Chapter 9

Aviation Support Equipment Technician 3 & 2, Volumes 1 & 2, NAVEDTRA 12385, Naval Education and Training Professional Development and Technology Center, Pensacola, Florida, September 1998.

Naval Aviation Maintenance Program (NAMP), OPNAVINST 4790.2 series, Naval Air Systems Command, Patuxent River, MD, February 1998.

Chapter 10

Aviation Boatswain's Mate H 3 & 2, NAVEDTRA 12368, Naval Education and Training Program Management Support Activity, Pensacola, Florida, April 1994. *

Aviation Maintenance Ratings, NAVEDTRA 12017, Naval Education and Training Professional Development and Technology Center, Pensacola, Florida, August 1997.

U.S. Navy Support Equipment Common, Basic Handling and Safety Manual, NAVAIR 00-80T-96, April 1996.

Aircraft Signals, NATOPS Manual, NAVAIR 00-80T-113, Naval Air Systems Command, October 1997.

CV NATOPS Manual, NAVAIR 00-80T-105, Naval Air Systems Command, November 1995.

LHD/LHA/LPD NATOPS Manual, NAVAIR 00-80T-106, Naval Air Systems Command, August 1994.

Chapter 11

Aircrew Survival Equipmentman 3 & 2, NAVEDTRA 10380, Naval Education and Training Program Management Support Activity, Pensacola, Florida, March 1990. *

Naval Search and Rescue (SAR) Manual, Naval Warfare Publication (NWP 3-50.1), February 1996.

Aviation-Crew Systems, RESCUE and SURVIVAL EQUIPMENT, Technical Manual NAVAIR 13-1-6.5, January 1998.

Chapter 12

Aviation Boatswain's Mate H 3 & 2, NAVEDTRA 12368, Naval Education and Training Program Management Support Activity, Pensacola, Florida, April 1994. *

Aircraft Fire-fighting and Rescue Manual, NATOPS, U.S. Navy, NAVAIR 00-80R-14, Naval Sea Systems Command, 1994.

Surface Ship Fire-fighting, NSTM S9086-S3-STM-010/CH-555, Volume 1, Naval Sea Systems Command, 1996.

* Effective 01 October 1996, the Naval Education and Training Program Management Support Activity (NETPMSA) became the Naval Education and Training Professional Development and Technology Center (NETPDTC).

APPENDIX III

ANSWERS TO EMBEDDED QUESTIONS CHAPTERS 1 THROUGH 12

CHAPTER 1

- A1-1. The mission and function of naval aviation is to support our naval forces and to closely coordinate with other naval forces in maintaining command of the seas.*
- A1-2. The Navy purchased its first aircraft from Glenn Curtiss on 8 May 1911.*
- A1-3. Naval Aviator CDR Alan B. Shepard Jr.*
- A1-4. The band was lifted in 1993.*
- A1-5. The initial Machinist Mate (Aviation) rating came from the Machinist Mate rating.*
- A1-6. Major changes to the enlisted aviation structure took place in 1948.*
- A1-7. The Manual of Navy Enlisted Manpower and Personnel Classification and Occupational Standards.*
- A1-8. The Aviation Support Equipment Technician rating.*
- A1-9. Aviation service ratings are subdivisions of a general rating that require specialized training within that general rating.*
- A1-10. Your division training petty officer or the Education Services Office.*

CHAPTER 2

- A2-1. It provides direction in the assignment of duties.*
- A2-2. To provide service and support to the fleet.*
- A2-3. The commanding officer.*
- A2-4. The air operations department.*
- A2-5. Issuing all fuels and oils, issuing aircraft parts and support equipment, and operating the general mess.*
- A2-6. Organizational, intermediate, and depot.*
- A2-7. The basic concept of quality assurance (QA) is preventing defects.*
- A2-8. Production control and material control.*
- A2-9. The power plants division.*
- A2-10. A naval air facility (NAF) is smaller and is not equipped to handle large numbers of aircraft?*
- A2-11. Carrier, patrol, composite, and noncombatant.*
- A2-12. Fighter, attack, strike/fighter, antisubmarine, and airborne early warning squadrons.*
- A2-13. Development, tactical, and training squadrons.*
- A2-14. Any type of aircraft that requires testing and evaluation.*
- A2-15. To provide long distance transfer of personnel and supplies.*

- A2-16. *The commanding officer.*
- A2-17. *The maintenance material control officer (MMCO).*
- A2-18. *Administrative department, safety department, operations department, and maintenance department.*
- A2-19. *Target, aircraft, avionics/armament, and line divisions.*
- A2-20. *The commanding officer must be a naval aviator.*
- A2-21. *Four divisions during peace time.*
- A2-22. *The V-1 flight deck division.*
- A2-23. *The V-4 aviation fuels division.*
- A2-24. *The navigation department.*
- A2-25. *The aircraft Intermediate Maintenance Department (AIMD).*
- A2-26. *An admiral.*
- A2-27. *The Chief of Naval Operations (CNO).*
- A2-28. *A "yard" period is the time scheduled for periodic repair and refitting of an aircraft carrier.*
- A2-29. *Underway replenishment by supply ships, carrier onboard delivery aircraft, or by vertical replenishment helicopter squadrons.*
- A2-30. *1962.*
- A2-31. *Fighter.*
- A2-32. *The aircraft has been modified four times.*
- A2-33. *Bell-Boeing.*

CHAPTER 3

- A3-1. *Newton's first law of motion, which describes an object's willingness to stay at rest because of inertia.*
- A3-2. *Newton's second law of motion, which describes the reason why, when equal force is applied, a heavy object accelerates slower than a light object.*
- A3-3. *If you inflate a balloon and then release it (without tying the neck), it will move opposite the direction of the escaping air (Newton's third law of motion).*
- A3-4. *Bernoulli's principle states that "as fluid reaches a narrow or constricting part of a tube, its speed increases and its pressure decreases."*
- A3-5. *The flow of air is split.*
- A3-6. *Lift is developed by the difference in air pressure on the upper and lower surfaces of an airfoil. As long as there is less pressure on the upper surface than on the lower surface, an aircraft will have lift.*
- A3-7. *The four forces that affect flight are lift, weight, thrust, and drag.*
- A3-8. *Roll, pitch, and yaw.*
- A3-9. (a) *An airplane's angle of attack is changed by raising the nose.*
 (b) *A helicopter's angle of attack is changed by increasing the pitch of the rotor blades.*

A3-10. *The main difference between a helicopter and an airplane is the way lift is achieved.*

A3-11. *A helicopter can hover.*

CHAPTER 4

A4-1. *Tension.*

A4-2. *Compression.*

A4-3. *Shear is a stress exerted when two pieces of fastened material tend to separate.*

A4-4. *Bending is a combination of tension and compression.*

A4-5. *Torsion is the result of a twisting force.*

A4-6. *Metallic or nonmetallic materials.*

A4-7. *Aluminum, magnesium, titanium, steel, and their alloys.*

A4-8. *Transparent plastics, reinforced plastics, and composite materials.*

A4-9. *Monocoque, semimonocoque, and reinforced shell.*

A4-10. *Points on the fuselage are located by station numbers, at measured distances.*

A4-11. *The spars are the main structural members of the wing.*

A4-12. *"Wet wing" describes the wing that is constructed so it can be used as a fuel cell.*

A4-13. *Vertical stabilizer and horizontal stabilizer.*

A4-14. *Primary, secondary, and auxiliary.*

A4-15. *The purpose of speed brakes is to keep the airspeed from building too high when the aircraft dives and to slow the aircraft's speed before it lands.*

A4-16. *The tricycle type of landing gear.*

A4-17. *The main advantage of rotary-wing aircraft is that lift and control are independent of forward speed; rotary-wing aircraft can fly forward, backward, sideways, or hover above the ground.*

A4-18. *Conventional fixed (skid type), retractable, and nonretractable.*

A4-19. *The tail rotor group.*

A4-20. *The possibility of leakage and contamination by foreign matter.*

A4-21. *The selector valve directs the flow of fluid.*

A4-22. *The actuating unit converts the fluid pressure into useful work.*

A4-23. *Hydraulic contamination is defined as foreign material in the hydraulic system of an aircraft.*

A4-24. *The two types of pneumatic systems are the storage bottle type and the type that has its own air compressor.*

CHAPTER 5

A5-1. *By its specification number or trade name.*

A5-2. *The head, grip, and threads.*

A5-3. *Machine screw, structural screw, and self-tapping screw.*

A5-4. *Nonself-locking nuts.*

- A5-5. *A washer guards against mechanical damage to the material being bolted and prevents corrosion of the structural members.*
- A5-6. *Camloc, Airloc, and Dzus.*
- A5-7. *Solid rivets and blind rivets.*
- A5-8. *Countersunk head or flush rivets.*
- A5-9. *Snap rings, turnbuckles, taper pins, flat head pins, and flexible connectors/clamps.*
- A5-10. *Maintenance Instruction Manual (MIM).*
- A5-11. *Safetying prevents aircraft hardware and fasteners from working loose due to vibration.*
- A5-12. *The single-wire, double-twist method.*
- A5-13. *Clip-locking method and wire-wrapping method.*
- A5-14. *Stainless steel cotter pins.*
- A5-15. *Plain, lock washers, and special washers.*

CHAPTER 6

- A6-1. *The four types of jet propulsion engines are the rocket, ramjet, pulsejet, and gas turbine engines.*
- A6-2. *Burning fuel in a container that has an opening at one end causes the expanding gases to rush out of the nozzle at a high velocity, which leaves an unbalanced pressure at the other end. This pressure moves the container in the direction opposite to that of the escaping gases.*
- A6-3. *Newton's Third law, which states that "for every acting force there is an equal and opposite reacting force."*
- A6-4. *The ramjet is the simplest power plant that uses atmospheric air to support combustion.*
- A6-5. *The pulsejet doesn't have a compressor or a turbine. It can't take off under its own power.*
- A6-6. *The four types of turbine engines are the turbojet, turboprop, turboshaft, and turbofan engines.*
- A6-7. *Inlet duct, compressor, combustion chamber, turbine, and exhaust cone assembly.*
- A6-8. *The power section, the torquemeter assembly, and the reduction gear assembly.*
- A6-9. *Normally, helicopters have turboshaft engines.*
- A6-10. *The major difference between a turboshaft and turbofan engine is the airflow.*
- A6-11. *The heart of the gas turbine engine fuel system is the fuel control.*
- A6-12. *Some of the engine operating variables that are sensed by modern fuel controls include the following: pilots' demands, compressor inlet temperature, compressor discharge pressure, burner pressure, compressor inlet pressure, rpm, and turbine temperature.*
- A6-13. *The main bearings and accessory drive gears.*
- A6-14. *A scavenging system returns oil to the tank for reuse.*
- A6-15. *The high-voltage system produces a double spark, which ionizes the gap between the igniter plug electrodes so the high-energy, low-voltage component may follow.*

In the low-voltage system, the spark is like the high-voltage system, but it has a self-ionizing igniter plug.

- A6-16. The accessory section of the gas turbine engine is usually mounted beneath the compressor section.*
- A6-17. The Brayton cycle is a process that begins with certain conditions and ends with those same conditions.*
- A6-18. ANA Bulletin No. 306M designation system and MIL-STD-1812 designation system.*
- A6-19. A special designation, such as experimental or restricted service.*
- A6-20. The type indicator, the manufacturer's indicator, and the model indicator.*
- A6-21. MIL-STD-1812 system.*
- A6-22. Before any maintenance turnups are conducted, personnel MUST install protective screens for all ducts.*
- A6-23. The two most serious hazards that you face when working around engine exhausts are high temperatures and high velocity of gases exiting tailpipes.*
- A6-24. When you work around jet engines, you should always wear protectors to avoid hearing loss.*

CHAPTER 7

- A7-1. The generator and the battery.*
- A7-2. The generator.*
- A7-3. Acid burns and explosions.*
- A7-4. Internal shorting or thermal runaway.*
- A7-5. Flush the area with large quantities of fresh water and seek medical attention immediately.*
- A7-6. Flush the affected area with large quantities of fresh water. Neutralize with vinegar or a 5-percent solution of acetic acid, and seek medical attention immediately.*
- A7-7. Ac generators or alternators.*
- A7-8. An ac electrical system.*
- A7-9. These power units furnish electrical power when engine-driven generators are not operating or when external power is not available.*
- A7-10. The altimeter, the airspeed and Mach number indicator, and the rate-of-climb indicator.*
- A7-11. It displays the correct altitude of the aircraft.*
- A7-12. Its speed compared to the speed of sound in the surrounding medium (local speed).*
- A7-13. The relative position of the aircraft compared to the earth's horizon.*
- A7-14. It shows the correct execution of a turn and bank as well as the lateral attitude of the aircraft in straight flight.*
- A7-15. The magnetic (standby) compass, the gyro compass, and the horizontal situation indicator.*
- A7-16. The transmission of intelligible coded radio-frequency waves as Morse Code.*

- A7-17. *The transmission of sound intelligence (voice, music, or tones) by continuous radio-frequency waves.*
- A7-18. *From 3,000 to 30,000 kilohertz.*
- A7-19. *100 to 400 megahertz.*
- A7-20. *The Tactical Air Navigation System (TACAN).*
- A7-21. *GPS provides highly accurate three-dimensional position, velocity, and time data to suitably equipped aircraft anywhere on or near the earth.*
- A7-22. *24 satellites.*
- A7-23. *A continuous carrier wave (CW) transmission.*
- A7-24. *RAdio Detection And Ranging.*
- A7-25. *Echo waves.*
- A7-26. *1100 feet per second.*
- A7-27. *IFF (Identification Friend or Foe)*
- A7-28. *Gather intelligence from enemy electronic devices and make them ineffective.*
- A7-29. *To detect underwater sounds and transmit these sounds to aircraft.*
- A7-30. *Magnetic Anomaly Detection (MAD).*

CHAPTER 8

- A8-1. *Ejection seats, canopy ejection systems, aircraft bomb racks, and launchers.*
- A8-2. *A chemical used to ignite combustible substances.*
- A8-3. *Items that are NOT normally separated from the aircraft in flight.*
- A8-4. *An explosive is a material that is capable of producing an explosion by its own energy.*
- A8-5. *High explosives and low explosives.*
- A8-6. *The bursting effect prevents its use in ammunition and gun systems because the gas pressure formed could burst the barrel of a weapon.*
- A8-7. *Low explosives are solid combustible materials that decompose rapidly but do not normally explode.*
- A8-8. *Ordnance identification provides working and safety information, such as service/nonservice ammunition, class of explosives, and color codes representing the explosive hazards.*
- A8-9. *Color codes identify the explosive hazards within the ordnance.*
- A8-10. *Bomb body, suspending lugs, fuzing, and fin assemblies.*
- A8-11. *Full scale and sub-caliber practice bombs.*
- A8-12. *Antitank bomb cluster and antipersonnel/anti-material bomb cluster.*
- A8-13. *The Mighty Mouse and the Zuni rockets.*
- A8-14. *At least 100 miles.*
- A8-15. *The Mach number is "the ratio of the speed of an object to the speed of sound in the medium through which the object is moving."*
- A8-16. *Subsonic, transonic, supersonic, and hypersonic.*

- A8-17. *Yellow, brown, and blue.*
- A8-18. *The Walleye guided weapon does not have a propulsion system.*
- A8-19. *Torpedoes and air-laid mines.*
- A8-20. *The M61A1, 20-mm automatic gun system.*
- A8-21. *Pyrotechnics are burning items that produce a bright light for illumination.*
- A8-22. *The Mk 124 Mod 0 Marine smoke and illumination signal and the Mk 79 Mod O illumination signal kit.*
- A8-23. *For marking day or night reference points to plot the course of enemy submarines.*
- A8-24. *For long-burning, smoke and flame reference-point marking on the ocean surface.*
- A8-25. *Aircraft canopy removal, seat ejection, seat ejection drogue chute, and parachute openings.*
- A8-26. *The AME rating.*
- A8-27. *Miscellaneous cartridges.*
- A8-28. *They suspend, arm, and release ordnance for accurate delivery of weapons against the enemy.*
- A8-29. *Bomb racks carry, arm, and release stores.*
- A8-30. *Helicopters.*
- A8-31. *They are used during tactical situations to give an aircraft added offensive and defensive capabilities.*
- A8-32. *The LAU-7/A guided missile launcher.*

CHAPTER 9

- A9-1. *Aircraft handling equipment and servicing equipment.*
- A9-2. *Aircraft servicing equipment, maintenance platforms, and armament handling equipment.*
- A9-3. *The A/S32A-31A tow tractor.*
- A9-4. *The A/S32A-32 aircraft towing tractor.*
- A9-5. *The A/S32A-36A crane.*
- A9-6. *The A/S32P-25 vehicle.*
- A9-7. *Aqueous Film-Forming Foam (AFFF) and Halon 1211.*
- A9-8. *Public works department.*
- A9-9. *The NC-2A MEPP.*
- A9-10. *An electric motor.*
- A9-11. *High voltage.*
- A9-12. *Air and electrical power.*
- A9-13. *High-volume air pressure, extreme exhaust temperatures, jet intake suction, and high noise levels.*
- A9-14. *Hydraulic systems.*
- A9-15. *Six cylinders.*

- A9-16. *Storage tank, transfer tank, control valves, and transfer lines.*
- A9-17. *For cooling the interior of aircraft and electronic components for maintenance, testing, or calibration for long periods of time.*
- A9-18. *Aircraft tripod jacks.*
- A9-19. *600 pounds.*
- A9-20. *It is used to inspect support equipment prior to its use.*
- A9-21. *Two.*
- A9-22. *The line division.*
- A9-23. *3 years.*
- A9-24. *The commanding officer or his/her designated (in writing) representative.*
- A9-25. *Anyone witnessing the misuse or abuse of support equipment.*
- A9-26. *Naval Aviation Maintenance Program (NAMP), OPNAVINST 4790.2 (series).*

CHAPTER 10

- A10-1. *5 mph.*
- A10-2. *Yellow and/or white.*
- A10-3. *V-1 division.*
- A10-4. *To find things, such as nuts, bolts, safety wire, and general trash, that could be sucked into an aircraft's engine or blown about by exhaust that could cause serious damage to the aircraft or cause personnel injury.*
- A10-5. *The "foul line" or "safe parking line."*
- A10-6. *To provide a means for arresting (stopping) aircraft in an emergency.*
- A10-7. *The "emergency stop" signal.*
- A10-8. *50 to 100 feet.*
- A10-9. *Adjustable chock assemblies.*
- A10-10. *The maintenance instruction manual (MIM) for the specific aircraft.*
- A10-11. *The Air Department.*
- A10-12. *It is used to tow a variety of aircraft.*
- A10-13. *All hands.*
- A10-14. *No, the aircraft should not be manned.*
- A10-15. *The line.*
- A10-16. *Color coding distinguishes flight-line fire extinguishers from building fire equipment.*
- A10-17. *It allows for shrinkage when the line becomes wet.*
- A10-18. *To prevent rotor blade damage during gusty or turbulent wind conditions.*
- A10-19. *Wave-off and hold.*
- A10-20. *The LSE (Landing Signalman Enlisted).*
- A10-21. *Amber.*

A10-22. No, this should be avoided.

CHAPTER 11

A11-1. Protects personnel from a variety of hazards.

A11-2. The HGU-84/P series helmet.

A11-3. It compresses the body to prevent blood from pooling in the lower parts.

A11-4. The Navy Back (NB), Navy Chest (NC), and Navy Ejection System (NES).

A11-5. The parachute harness.

A11-6. The torso harness suit.

A11-7. It helps deploy the main parachute.

A11-8. Two, automatic and manual inflation.

A11-9. 29 pounds.

A11-10. Identifies occupational fields.

A11-11. Inside the Rigid Seat Survival Kit (RSSK).

A11-12. Four.

A11-13. 20-man life raft.

A11-14. Two, medical and general.

A11-15. Seven.

A11-16. The Mk 13 or Mk 124 Mod 0 Marine Smoke and Illumination Signal Flare.

A11-17. Search and Rescue.

A11-18. Hoist cable and double rescue hook.

A11-19. Three.

A11-20. Two.

CHAPTER 12

A12-1. Fuel (combustible matter), heat, oxygen and chemical reaction.

A12-2. The "fire point" of a substance is the lowest temperature at which its vapors can be ignited and will continue to burn.

A12-3. The "flash point" of a substance is the temperature at which the substance gives off enough vapors to form an ignitable mixture with an explosive range that is capable of spreading a flame away from the source.

A12-4. Classes: A, B, C, and D.

A12-5. Water, AFFF, CO₂, Halon 1211, and PKP.

A12-6. 1 1/2 or 2 1/2 inches.

A12-7. AFFF sprinkler systems are installed in the overhead on the hanger deck.

A12-8. A standard Navy fire hose comes in 50-foot lengths.

A12-9. Aluminized protective clothing.

A12-10. The Oshkosh T-3000, P-4A, P-19, and Twinned Agent Unit (TAUs).

A12-11. A/S32P-25 fire-fighting vehicle and Twinned Agent Unit TAU-2H.

- A12-12. AFFF premixed solution and a dry chemical agent.*
- A12-13. JP-4 jet fuel.*
- A12-14. Use water fog to lower battery temperature.*
- A12-15. Identifies hazards associated with the contents of the line.*
- A12-16. Through the engine air intake.*
- A12-17. Halon 1211 or CO₂.*
- A12-18. An explosion hazard.*
- A12-19. Fore and aft.*
- A12-20. Grease, hydraulic fluid, bearing lubricants, and tire rubber.*

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