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Supervisor of Maintenance - Date

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VI. AIRCRAFT MAINTENANCE AND INSPECTION TRAINING PROGRAM

1.PERSONNEL PERFORMING MAINTENANCE ON AIRBORNE EQUIPMENT.

A.GENERAL.

All personnel, temporary or permanent, performing maintenance or servicing of <Your Agency> aircraft or ground support equipment, may, at the discretion of the <Your Agency>, be required to undergo a criminal background check. This check may also include a history of violations and other actions contained in the individual's FAA certificate record maintained by the FAA.

Ten (10) working days prior to hiring any new employees or assigning different employees to perform maintenance or servicing of <Your Agency> aircraft or GSE, Contractors providing support to the <Your Agency> shall provide the following information on prospective employees to the <Your Agency> COTR:

(1)Full name of employee

(2)Date of birth

(3)Social security number

(4)Driver license number

(5)Place(s) of residence for the past ten (10) years

(6)FAA Certificate number, if applicable

If the <Your Agency> determines that an employee is unsuitable, the <Your Agency> shall have the right to require the replacement of said employee within five (5) working days.

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B.PERSONNEL QUALIFICATION.

Qualifications for each position supported by a contractor are as follows:

(1)Shift Supervisor This person shall hold a valid mechanic certificate issued by the FAA with both airframe and powerplant ratings; and have a minimum of ten (10) years of experience in aircraft and powerplant maintenance; and have a minimum of five (5) years experience with the Federal Aviation Regulations, Part 121, 125, 135, or 145 operations at the level of responsibility for making airworthiness determinations. Must possess a working knowledge of all applicable regulations and the <Your Agency> GMM.

(2)Lead Mechanic This position shall hold a valid mechanic certificate issued by the FAA with both airframe and powerplant ratings; and have held the certificate and exercised the privileges for a minimum of seven (7) years with two (2) of those years working with the type aircraft identified herein at the level of responsibility for making airworthiness decisions.

(3)Aircraft Mechanic This position shall hold a valid mechanic certificate issued by the FAA with both airframe and powerplant ratings; and have five (5) years experience with one (1) year at the level of responsibility for making airworthiness decisions.

(4)Radio and Electrical TechnicianRadio and Electrical Technician(4)Radio and Electrical Technician This position shall have a valid mechanic certificate issued by the FAA with both airframe and powerplant ratings; or a General FCC License; and have five (5) years radio, avionics, and electrical experience.

(5)Aircraft Mechanic Helper This position shall hold a valid mechanic certificate issued by the FAA with either an airframe or powerplant or both rating; and have a minimum of one (1) year training or equivalent experience.

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2.PERSONNEL PERFORMING MAINTENANCE ON GROUND SUPPORT EQUIPMENT.

A.GENERAL

Personnel performing maintenance on <Your Agency> owned ground support equipment must be cleared as per Chapter/Section/Paragraph VI.1.A if the equipment is located the confines of the <Your Agency> Hangar and/or ramp.

B.PERSONNEL QUALIFICATIONS.

(1)GSE Mechanic. This person shall have a minimum of five (5) years experience in aviation ground support equipment maintenance. The experience must cover those general types of GSE used by the <Your Agency>.

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VI. AIRCRAFT MAINTENANCE AND INSPECTION TRAINING PROGRAM

3.ALL OTHER PERSONNEL (STORES, ETC.).

A.GENERAL

Personnel performing stores or aircraft cleaning duties under contract must be cleared as per Chapter/Section/Paragraph VI.1.A if their duties require them to be within the confines of the <Your Agency> Hangar and/or ramp.

B.PERSONNEL QUALIFICATIONS

(1)Aviation Supply Clerk This person shall have one (1) year experience working with aircraft tools and parts and possess a knowledge and understanding of the hazards associated with them. This person shall also have at least one (1) year experience working with the age control of aviation parts, supplies, and components.

(2)Cleaner This person shall have six (6) months experience working around aircraft or similar equipment and possess a knowledge and understanding of the hazards associated with them.

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VI. AIRCRAFT MAINTENANCE AND INSPECTION TRAINING PROGRAM

4.MAINTENANCE AND INSPECTION TRAINING PROGRAM

A.GENERAL

(1)An effective continuous maintenance and inspection program requires formal aircraft and avionics maintenance training programs for <your agency or contractor> personnel. The training must enable the employees to perform their duties at a competent level and comply with the provisions of FAR Part 135, Section 433. The most effective training organization is an entity separate from the maintenance organization.

B.<Your Agency or Contractor> TRAINING OFFICER

(1)The duties and responsibilities of <your agency or contractor> Training Officer are listed below and may be delegated to the extent necessary, except for item (a).

(a)Responsible for the overall training of aircraft maintenance personnel except the RII training.

(b)Ensure that all maintenance personnel are current and properly trained in accordance with this GMM.

(c)<Your agency or contractor> Training Officer will arrange and schedule all needed training. This may require checking and coordinating with various universities, industry, and the FAA Academy, etc., to determine availability of training.

(d)Courses obtained or developed will be evaluated by <your agency or contractor>Training Officer

(e)Ensure that all required training records for maintenance and inspection personnel are current and in proper files. The files will be maintained in the office of the <your agency or contractor> Training Officer.

**Note**:Required Inspection Item (RII) authorization records will be the responsibility of and located in the office of the <Quality Control Section Supervisor or other approved title>

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(f)Ensure the individuals training records reflect the number of hours of training, course completion date, and includes signed documents signifying satisfactory course completion.

(g)Ensure that all required training is conducted in a timely manner.

(h)Maintain a file listing OJT Instructors, and their qualifications.

C.EQUIVALENT TRAINING EXPERIENCE

(1)The Supervisor of Maintenance may accept in lieu of training, documents, certificates, and authorizations which reflect training associated with the job function an employee received during previous employment. This experience must have been exercised within the previous three years.

(2)The <your agency or contractor:> Training Officer will be presented with a copy of all training documents and will update the employee training records.

D.TYPES OF TRAINING

(1)<Your Agency or Contractor, as appropriate> training courses.

(a)Indoctrination Training

1 Each <your agency or contractor:> employee will receive familiarization training as soon as possible, but not to exceed 120 days after entering on duty. This training will include:

aFAA rules and regulations;

bSafety and fire control;

c<Your Agency> General Maintenance Manual;

d Technical Manuals;

e<Your Agency> policies and organization;

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(b)Directed Study Courses

1This type of training is not required but is recognized as being an integral part of an employee's career progression.

(c)Out of Agency Training

1This is classroom type training which is performed under the supervision of an out-of-agency training facility.

2Documents and Certificates presented to the employee upon satisfactory completion of a course will be entered in the employee's permanent training record file.

(d)Informal On-the-Job Training

1Informal on-the-job training is conducted at the work site by a supervisor, designated instructor, or manufacturer's representative. This type instruction is limited to the demonstration of a maintenance operation or the direct supervision of an employee performing maintenance. Course material is not required.

(e) Formal On-the-Job Training

1Formal on-the-job training may be conducted by the supervisor, designated instructor, or manufacturer representative as an integral part of an employee's normal work assignment.

2Maintenance OJT Instructors will be qualified by experience, job knowledge, schooling.

(f)Ground Operations of <Your Agency> Aircraft Training

1<Your agency or contractor> will establish and continue an on-the-job proficiency program to qualify and maintain currency of mechanics who require aircraft engine run-up and taxi authorization.

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2No person shall perform engine run-up or taxi of <your agency> aircraft until checked by a designated proficiency check examiner.

3Each person recommended for run-up authorization must hold a valid airframe and powerplant rating and be recommended by the Aircraft Maintenance Foreman.

4Tests will be revised and maintained in the Aircraft Maintenance Foreman's office.

5After meeting the requirements, a Taxi and Runup Authorization will be issued and placed in the persons training file.

6Designee Examiners for each make and model of aircraft, will be an aircraft mechanic leader or foreman and will be certified by a qualified flight engineer or a pilot.

7A written request to the Training Officer from the manager of the maintenance activity will be required when designated examiners are needed.

(g)Special Situation Training

Special training courses or instruction by Classroom Projection Systems may be developed, whenever the need arises, to improve the reliability or maintenance effectiveness of a system or item of equipment or when new products and equipment are initiated into the maintenance system.

(h)Management Training

Management training furnishes a systematic approach to the development of employees having the potential ability to manage. It provides a progressive departure from maintenance skills to the management skills.

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(i)Return to Service Training

Persons authorized to approve aircraft, airframes, aircraft engines, propellers, appliances, or component parts for return to service after maintenance, preventive maintenance, rebuilding, or alteration must have:

1Received training on the system(s) to be maintained by specific make and model airframe, powerplant, accessories, or avionics equipment; OR

2Previously performed satisfactorily under the direct supervision (OJT) of a mechanic, technician or supervisor.

3Received a thorough indoctrination in the use of current technical data reflecting the configuration of the aircraft, equipment, and associated hangar, line and test equipment.

4Have a working knowledge of the forms and procedures as outlined in Chapter III.25 of the General Maintenance Manual. Documentation of authorization will be in accordance with Chapter III.25.

(j)Required Inspection Item (RII) Training

1The <Quality Control Section Supervisor or other approved title> is responsible for administering the RII training program.

2Quality Control Contracting Officer Representatives (COR), have a wide range of experience and may be designated as RII Instructors.

3Personnel being considered as RII Inspectors must have the following qualifications acceptable to the <Quality Control Section Supervisor or other approved title>:

aA valid FAA Airframe and Powerplant (A&P) Mechanic certificate.

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bMust have completed the training requirements as shown in D.(1)(a).

cDemonstrate a thorough knowledge of the <Your Agency> General Maintenance Manual, aircraft maintenance manual system, aircraft logbook, and the completion of maintenance forms and aircraft work cards.

dA good working knowledge of FAA regulations, Airworthiness Directives, and Required Inspection Items.

(k)RII Designee Training Requirements

1A review of the General Maintenance Manual required Inspection Item list contained in Section III.21.1 and a description of the inspection procedures for each item.

2A full description of the duties and responsibilities of an RII designee and the accountability to the Quality Control Section.

3The procedures for re-inspection of work ("Buy back procedures").(See III.21.3)

4Procedures for inspection and calibration of precision tools, test equipment, and the proper use of this equipment. (See III.23.1)

5Procedures to ensure that required inspection at shift change or other work interruption are properly completed before the aircraft is released to service.

6Recurrent training of RII designees is required annually and will consist of reading General Maintenance Manual Section III.21. This review must be documented in the employee's training record.

7After satisfactory completion of the RII Training, a qualification test will be administered prior to certification.

8All training will be documented.

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(l)Nondestructive Test (NDT) Training

NDT training will be completed in accordance with NDT Test Standards, TI 4151.1 prior to certification.

(m)Recurrent Training

Additional training will be scheduled when a supervisor or manager determines the need, a deficiency is discovered through surveillance, and/or analysis of data from the reliability program reflects that such training would be beneficial to the aircraft maintenance program. Recurrent training will include at least the following:

1Review and upgrade of training given during both indoctrination and technical training.

2Input from maintenance bulletins and newsletters.

3Employees qualified for run-up and taxi, Required Inspection Items, and Non-destructive Testing will receive recurrent training annually through OJT, with documentation made to the training records.

E.TRAINING RECORDS

(1)The official records for formal training are maintained in the <Your Agency or Contractor> records.

(2)It is the responsibility of the <your agency or contractor>Training Officer to maintain the Individual Training Records in the proper files.

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5.ON-THE-JOB TRAINING OUTLINE

A.GENERAL

The following course outline has been developed as a guide for the maintenance instructor. A memorandum to the mechanic or technician's training file will be prepared by the instructor, certifying that the mechanic or technician has been trained on a particular system. The mechanic or technician will sign the memorandum to certify (s)he has received the training.

B.AIRCRAFT MECHANIC COURSE

(1)Objective - to provide the mechanic with a thorough understanding of the aircraft in the <your agency> fleet, the aircraft systems, and the maintenance thereof.

(2)Course Outline

(a)Ground Handling

(b)Engine Start and APU

(c)Taxiing

(d)Engine Run-up

(e)Electrical

(f)Flight Controls

(g)Fuel

(h)Power plants and Propellers

(i)Hydraulic system, landing gear, brakes, wheels and struts

(j)Environmental

(k)Anti-ice and de-ice

(l)Fire protection

(m)Oxygen

(n)Nickel Cadmium Battery

(o)Security

(p)Hazardous Materials

(3)Reference

Applicable aircraft maintenance, parts, and wiring diagram manuals as contained in the Technical Library.

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(4)OJT Course Detail Outline

(a) Ground Handling

1Basic procedures for working around aircraft

aProper procedures for pushing, pulling, towing and parking aircraft

bAircraft tie downs

cProper procedures for shutting and locking doors

dCleaning aircraft

eSafety – work stands, ladders, oil spills

2Cowling

aRemoval

bInspection

cRepairs

dCleaning

eInstallation

3Jacking

aProper selection of jacks

bUse of ballast

cSafety pins

dRemoving aircraft from jacks

eStrut deflation and inflation

4Lubrication

aTypes of lubricants to use

bHow often to lubricate

cLocation of lubrication points

(b)Engine Start and APU

1Pre-flight inspection (oil, tires, shocks, obstructions)

2Use of checklist

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3Cockpit familiarity with controls, and switches

4Use of starters

5Instrument readings

6Engine monitoring

(c)Taxiing

1Engine monitoring before taxiing

2Lights, use of radio

3Brakes

4Use of power to aid turning

5Judgement of speed

6Stopping - nose gear steering, use of brakes

(d)Engine Run-up

1Normal

aUse of checklist

bWhat to look for

cMonitoring engines

dEmergency shut-down

eProper cool down

2Max Power

aClearance from other aircraft or obstructions

bNose gear

cUse of brakes

dMaximum time period of run-up

eSteady reduction of power

fProper Shut-down

(e)Electrical Systems

1Battery - location, removal, inspection, servicing, installation battery box, use of auxiliary power

2Primary Buss System - solenoids, lights, starter system, cables

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3Electrical motors - flaps, heaters, fuel pumps, boost pumps, landing gear

4Starter-Generators

5Lights and auxiliary system

6Switches and circuit breakers

7Indicating and monitoring systems

8Troubleshooting and repair

(f)Flight Controls and Steering

1Principals of operation

2Removal and installation

3Inspection

4Repairs

5Rigging

(g)Fuel Systems

1Fuel tanks - type, inspection, servicing, installation

2Valves, Pumps, Controls - inspection servicing, removal, installation, rigging, trouble-shooting, repairs

3Plumbing - inspection and repair, manufacturing, assembling and installation of lines

4Fuel gauges - inspection, removal, installation, troubleshooting, calibration

(h)Power Plants and Propellers

1General inspection and servicing

aEngine

bPropeller and governor

cIgnition system

dFuel system

eLubrication system

fAir induction

gAccessories

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2Removal, installation, rigging, adjustment

aEngines

bPropellers and governors

cFuel system

dIgnition

eEngine oil

fInduction

(i)Hydraulic System, landing gear, brakes, wheels, and struts

1Description and principals of operation

2Inspection

3Servicing

4Rigging

5Troubleshooting

6Removal, repair, and installation of components

(j)Environmental System

1Heating

aPrincipals of operation

bInspection

cServicing

dRigging

eTroubleshooting

fRemoval, repair, and installation of components

2Air Conditioning

aPrincipals of operation

bInspection

cServicing

dRigging

eTroubleshooting

fRemoval, repair, and installation of components

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(k)Anti-Ice and Deice System

1Propellers

aPrincipals of operation

bInspection

cServicing

dRigging

eTroubleshooting

fRemoval, repair,and replacement of components

2Windshields, Pitot, and stall warning detectors

aPrincipals of operation

bInspection

cServicing

dRigging

eTroubleshooting

fRemoval, repair,and replacement of components

3Pneumatic Systems

aPrincipals of operation

bInspection

cServicing

dRigging

eTroubleshooting

fRemoval, repair, and replacement of components

(l)Fire Protection

1Fire Detection

aPrincipals of operation

bInspection

cTesting

eTroubleshooting

fServicing

gRemoval, repair and replacement of components

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2Fire Extinguisher (engine)

aPrincipals of operation

bInspection

cTesting

eTroubleshooting

fRemoval, repair, and replacement of components

(m)Oxygen

1Principals of operation

2Inspection

3Testing

4Troubleshooting

5Removal, repair, and replacement of components

(n)Nickel Cadmium Batteries

1Theory of operation

2Installation and removal

3Preventive maintenance

4Battery repair

5Charging

6Troubleshooting

(o)Security

1See Chapter IX, page 1.1

(p)Hazardous Materials

1OSHA-Material Safety Data Sheets

2HMR 175-Transportation of Hazardous Materials aboard aircraft

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C.AVIONICS MAINTENANCE COURSE

(1)Objective: To provide the Avionics Technician with a thorough understanding of the avionics systems on the aircraft in the <your agency> fleet and the maintenance thereof.

(2)Course Outline:

(a)DATA INSTRUMENTS

Description and Operation

1 Air Data Computer

2Airspeed Indication

3Altimeter

4Mach/Airspeed

5True Airspeed

6Vertical Speed

(b)TEMPERATURE INDICATION

Description and Operation

1Total Air Temperature

2Total Air Temperature Probe

(c)AIRSPEED WARNING

Description and Operation

1Warning Horns

2Warning Switches

(c)ATTITUDE REFERENCE

Description and Operation

1Flight Director Indicator

2Horizontal Situation Indicator

3Roll and Pitch Servos and Amplifiers

4Vertical Gyro

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(d)AUTOMATIC DIRECTION FINDER

Description and Operation

1ADF Controls

2ADF Antennas

3ADF Receivers and Coupler

(e)LORAN SYSTEM

Description and Operation

1Control Panel

2Antenna and Coupler

3Indicator

4Receiver

(f)RADAR NAVIGATION AND WEATHER RADAR

Description and Operation

1Indicator

2Transmitter-Receiver

3Antenna and Wave Guide

4Accessory Unit

5Controls

(g)DME

Description and Operation

1Indicators

2Control Panel

3Antenna

4Interrogators

(h)RADIO NAVIGATION AND VOR/NAVIGATION

Description and Operation

1Attitude Director Indicator

2Control Panel

3Glide Slope

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4Horizontal Situation Indicator

5Navigation Unit

(i)POSITION COMPUTING AND FLIGHT DIRECTOR

Description and Operation

1Altitude Sensor

2Course Deviation Indicator

3Flight Director Computer

4Flight Director Indicator

5Flight Director Control Panel

(j)DOPPLER NAVIGATION

Description and Operation

(k)RADAR ALTIMETER

Description and Operation

1Indicator

2Receiver-Transmitter

3Antenna

4Controls

(l)TURN AND BANK

Description and Operation

(m)FLIGHT DIRECTOR

Description and Operation

1Course Deviation Indicator(CDI, RDI, PDI)

2Flight Director Control

3Flight Director Indicator (FDI, ADI, HDI)

4Instrument Amplifiers

5Progress Display Annunciator

6Servo-Amplifier - ILS Rack

7Steering Computer

8Vertical Gyro Switching

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D.SAMPLE TEST.

1. General Information Written Test. True or False - Circle the correct answer.

**T F (1)Chocks should be utilized for all engine starts unless aircraft is to be taxied.**

**T F (2)A fireguard is mandatory prior to engine starts.**

**T F (3)All landing gear safety pins should be removed prior to starting engines.**

**T F (4)Engine run-ups may be performed in any location.**

**T F (5)The minimum crew required to tow a multi-engine aircraft in a clear area is one person**

**T F (6)A flashing green light from the tower means to hold present position.**

**T F (7)A steady red light from the control tower means to stop and then return to starting position.**

**T F (8)Ground control should be called for any aircraft movement.**

**T F (9)Aircraft should be taxied fast due to better engine cooling.**

**T F (10)It is possible to over boost an engine on the ground.**

**T F (11)The person in the pilot's seat of the aircraft is in charge during towing operations.**

**T F (12)During night taxi and run-up operations the exterior lights should not be on unless the aircraft is on a designated taxiway.**

**T F (13)The ground APU must have the brakes set when parked near an aircraft**

**T F (14)Aircraft brakes need not be set for starting engines because the aircraft is difficult to start moving.**

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VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

1.FUELING PROCEDURES.

A.GENERAL.

The following standard practices and procedures shall be used in conjunction with the instructions contained in the aircraft maintenance manual for each specific type aircraft to be serviced.

(1)When aircraft are located and serviced at the <Your Agency> maintenance facility, an A&P certificated mechanic will be assigned to the servicing operation. For servicing away from the <Your Agency> maintenance facility and when an A&P certificated mechanic is not available, the pilot in command will have responsibility for servicing operations.

B.POSITIONING OF AIRCRAFT FUEL SERVICING VEHICLES.

(1)Position the servicing vehicle so that a path of egress from the aircraft is maintained. The fuel servicing vehicles shall not be positioned under the wing of the aircraft during over wing fueling. Fuel servicing vehicles shall not be positioned within a 10-foot radius of aircraft fuel system vent openings. Minimum distance between aircraft being serviced and other aircraft shall be as follow: For large aircraft such as Sabreliners, B727, etc., 20 feet; for small aircraft such as Cessna 310, Cessna 210, Cessna 185, Cessna Citation, etc., 10 feet.

(2)When approaching an aircraft to be fueled, the tank truck driver should approach the aircraft parallel to the wings, unless single point locations on the aircraft require a different approach.

NOTE: The servicing vehicle shall not be driven or parked under any portion of the aircraft.

(3)Position mobile fueling equipment so it can either be rapidly driven or towed away from the aircraft in the event of an emergency. Do not park ramp equipment where it will obstruct the movement of the fuel truck.

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C.BONDING.

(1)Prior to making any fueling connection to the aircraft, the fueling equipment shall be bonded to the aircraft by use of a cable, thus providing a conductive path to equalize electrical potential between the fueling equipment and aircraft. The bond shall be maintained until fueling connections have been removed.

(2)In addition to the above, when fueling over wing, the nozzle shall be bonded to a metallic component of the aircraft that is metallically connected to the tank filler port. The bond connection shall be made before the filler cap is removed. If there is no plug receptacle or means for attaching a clip, the operator shall touch the filler cap with the nozzle spout before removing the cap so as to equalize the electrical potential between the nozzle and the filler port. The spout shall be kept in contact with the filler neck until the fueling is completed.

(3)Bonding and fueling connections shall be disconnected in the reverse order of connection.

D.FIRE EXTINGUISHER.

(1)Position two dry chemical or CO2 fire extinguishes so they will be available in case of a fuel spill, or fire.

(2)Each aircraft fuel servicing vehicle shall have at least two fire extinguishes, each having a rating of 20B, one mounted on each side of the vehicle.

E.OPERATION OF APU WHILE FUELING AIRCRAFT.

(1)The APU can be operated during fueling of the B727 if the following precautions are taken.

(2)A minimum of one crewmember or properly trained maintenance personnel must be in the cockpit.

VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

NOTE: Except for aircraft equipped with an external APU control panel with APU shutdown controls.

(3)The APU shall be shut down immediately and fueling discontinued in the event of fuel spill, APU malfunction, and/or APU fire.

F.PREVENTION AND CONTROL OF SPILLS.

(1)Fuel servicing equipment will be maintained in safe operating condition. Leaking or malfunctioning equipment shall be removed from service.

(a)Fuel nozzles shall not be dragged along the ground.

(b)Pouring or gravity flow shall not be permitted from a container with a capacity of more than five gallons.

(c)When a spill is observed, the fuel servicing shall be stopped immediately by release of the dead man controls. In the event that a spill continues, the equipment emergency fuel shutoff shall be actuated. The supervisor shall be notified at once and the operation shall not be continued until the spill has been cleared and it is determined to be safe.

(d)The aircraft fire crew shall be notified if a spill is over 10 feet in any dimension or over 50 square feet in area, continues to flow, or is otherwise a hazard to persons or property. This spill shall be investigated to determine the cause, whether emergency procedures were properly carried out, and what corrective measures are required.

G.EMERGENCY FUEL SHUTOFF.

(1)Access to emergency fuel shutoff control shall be kept clear at all times.

(2)Emergency fuel shutoff devices shall be operationally check at least every 3 months.

VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

H.OPERATION OF AIRCRAFT ENGINES AND HEATERS.

(1)Fuel servicing shall not be done on an aircraft while the aircraft engines are operating.

Exception: In an emergency resulting from the failure of an onboard auxiliary power unit on a jet aircraft and in the absence of a suitable ground support equipment, a jet engine mounted at the rear of the aircraft or on the wing on the side opposite from the fueling point may be operated during fueling to provide power.

(2)Combustion heaters on aircraft (e.g., wing and tail surface heaters, integral cabin heaters) shall not be operated during fueling operations.

I.EQUIPMENT AROUND AIRCRAFT.

(1)Internal combustion engine powered equipment, other than those performing aircraft servicing functions, shall not be permitted within 50 feet of aircraft during fuel servicing operations.

(2)Equipment performing aircraft servicing functions shall not be positioned within a 10-foot radius of aircraft fuel system vent openings.

(3)During over wing aircraft fuel servicing where aircraft fuel system vents are located on the upper wing surface, equipment shall not be positioned under the trailing edge of the wing.

J.ELECTRICAL EQUIPMENT USED ON AIRCRAFT SERVICING RAMPS.

(1)Battery chargers shall not be connected, operated, or disconnected while fuel servicing is being done on the aircraft.

(2)Aircraft ground-power generators or other electrical ground-power supplies shall not be connected or disconnected while fuel servicing is being done on the aircraft.

VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

(3)Electric tools or similar tools likely to produce sparks or arcs shall not be used while fuel servicing is done on the aircraft.

(a)Photographic equipment shall not be used within 10 feet of fueling equipment or of the fill or vent points of aircraft fuel systems.

(b)Battery-powered vehicle equipment shall not be operated within 10 feet of fueling equipment or spills.

(c)Communication equipment used during aircraft fuel servicing operations within 10 feet of fueling equipment or of the fill or vent points of aircraft fuel systems shall be intrinsically safe (see ANSI/UL 913-1988).

K.OPEN FLAMES ON AIRCRAFT FUEL SERVICING RAMPS.

(1)Open flames on aircraft fuel servicing ramps or aprons within 50 feet of any aircraft fuel servicing operation or fueling equipment shall be prohibited.

(2)The category of open flames and lighted open-flame devices shall include, but not be limited to, the following:

(a)Lighted cigarettes, cigars, pipes.

(b)Exposed flame heaters, liquid, solid or gaseous devices, including portable and wheeled gasoline or kerosene heaters.

(c)Heat-producing, welding or cutting devices and blowtorches.

(3)Personnel shall not carry lighters or matches on their person while engaged in fuel servicing operations.

(4)Lighters or matches are prohibited on or in fueling equipment.

L.LIGHTNING PRECAUTIONS.

Fuel servicing operations shall be suspended when there are lightning flashes in the immediate vicinity of the airport.

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M.DEADMAN CONTROL MONITORING.

(1)The fueling operator shall monitor the panel of the fueling equipment and the aircraft control panel during pressure fueling or shall monitor the fill port during over wing fueling.

(2)Fuel flow shall be controlled by use of a dead man control device.

N.FUELING.

(1)Prior to starting fueling operations, a check will be made to ensure that the fuel in the tanker is the correct grade for the aircraft. Also verify that adequate procedures have been used to prevent water in the tanker from being serviced into the aircraft fuel system.

(a)Contamination Prevention

Contamination normally occurs when the aircraft is serviced with the wrong fuel. The following procedures will help eliminate this hazard. Always ascertain that the fuel delivered is the type recommended for the aircraft. If uncertain as to the type of fuel, take a sample of fuel from the refueling truck or station before refueling is started and compare with colors listed below. After refueling is complete, take another sample from the refueling source. Repeat the color check. Use a transparent plastic container that is impervious to fuel.

**CAUTION: DO NOT USE GLASS**

(b)Some aviation fuels can be identified by color. The following color list will be of value in monitoring fuel delivery.

(1)100LL-blue

(2)Jet fuels-wide range from water-white to amber.

NOTE: The color test is nullified whenever any two of the above are mixed, since the resultant mixture could be water-clear.

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(c)Reduce the rate of fuel flow as fuel nears the top of the tank to prevent fuel spill.

(2)When single point fueling, check fuel vents for obstructions, and that air is escaping when fuel is being pumped.

O.FUEL SPILLS.

The following actions are appropriate in the event of a fuel spill, although each spill will have to be treated individually because of such variables as: size of the spill, type of flammable or combustible liquid involved, wind and weather conditions, equipment arrangement, aircraft occupancy, emergency equipment, and personnel available. Refer to National Fire Protection Association (NFPA) 407 Standard for Aircraft Fuel Servicing for a thorough discussion of fuel spills.

(1)Terminate the fueling operation; stop the flow of fuel if possible.

(2)Halt any operations in progress until a determination is made they may be continued safely.

(3)Evaluate the aircraft if the spill is such as to pose a fire threat.

(4)Mobile fueling equipment and other mobile equipment should be withdrawn or left as is until the fuel spill is removed or made safe.

(5)Notify supervisory personnel and the airport fire crew if the spill presents a fire hazard.

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VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

2.DEFUELING PROCEDURES

A.GENERAL.

The following practices and procedures shall be used in conjunction with the instructions set out in the maintenance manual for each specific type aircraft to be serviced. It will be the responsibility of the person in charge to see the following safety practices are complied with.

B.POSITIONING DEFUEL TRUCK.

(1)When positioning an aircraft to be de-fueled, due consideration should be given to the wind to prevent fuel vapor from being carried downwind toward a course of ignition. Aircraft being de-fueled shall be positioned at least 25 feet from other aircraft and buildings.

(2)The tank truck driver will approach the aircraft parallel to the wings, unless single point locations on the aircraft require a different approach.

NOTE: Unless absolutely necessary, because of the type of aircraft involved, the servicing vehicle shall not be driven or parked under any portion of the aircraft.

(3)Position the de-fuel truck so it can either be driven or towed away from the aircraft in the event of an emergency. Do not park ramp equipment where it will obstruct the movement of the tank truck.

C.BONDING.

(1)Always make the correct bonding connections before de-fueling.

(2)Connect a bonding cable from the fuel tanker to the aircraft. Do not attach cable to propellers or radio antenna.

(3)Before removing any aircraft fuel tank filler cap, connect the bonding cable attached to the fuel hose nozzle to a metallic component of the aircraft.

(4)All containers used in de-fueling of aircraft will be grounded.

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D.FIRE EXTINGUISHER.

Portable fire extinguishes (dry chemical or CO2) shall be available on the ramp or apron in case of a fuel spill or fire to provide an immediate means of fire protection. The prominent and strategic positioning of fire extinguishes is essential so they may be of maximum value in the event of an emergency. In some situations it may be desirable to position an extinguisher near an aircraft. In this situation, locate the extinguisher upwind within 50 feet of the aircraft.

E.OPERATION OF APU WHILE DEFUELING AIRCRAFT.

The APU can be operated during single point de-fueling of the B727 to transfer fuel, if the following restrictions are taken.

(1)The APU shall not be operated if the wind velocity is less than 5 knots. This is to reduce any chance of vapor accumulation in the event of a fuel spill.

(2)One-crewmember or maintenance personnel must be in the cockpit.

NOTE: Except when the aircraft is equipped with an external APU control panel with APU shutdown controls.

(3)The APU shall be immediately shut down and de-fueling discontinued in the event of fuel spill, APU malfunction, and/or APU fire.

F.USE OF GROUND UNITS.

(1)Position ground power units upwind from the de-fueling operation as far distant as possible.

(2)Do not obstruct the path of the de-fuel truck.

G.DEFUELING.

(1)Prior to starting de-fueling operations, a check will be made to ensure that the fuel in the aircraft is the same grade as in the de-fuel truck.

VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

(2)Make certain storage tank, compartment, receptacle, etc., are clean and of sufficient capacity to hold the amount of fuel to be drained.

(a)Reduce rate of de-fueling as fuel nears top of storage container, to prevent overflow and subsequent hazardous fuel spillage.

(b)A second man will be required at the fuel truck to monitor tank level during de-fueling to prevent spillage.

(3)When single point de-fueling, check fuel vents for obstructions.

H.FUEL SPILLS.

The following actions are appropriate in the event of a fuel spill, although each spill will have to be treated individually because of such variables as: size of the spill, the flammable or combustible liquid involved, wind and weather conditions, equipment arrangement, aircraft occupancy, emergency equipment, and personnel available. Refer to National Fire Protection Association (NFPA) 407 Standard for Aircraft Fuel Servicing for a thorough discussion of fuel spills.

(1)Terminate the fueling operation; stop the flow of fuel if possible.

(2)Halt any operations in progress until a determination is made they may be continued safely.

(3)Evaluate the aircraft if the spill is such as to pose a fire threat.

(4)Mobile fueling equipment and other mobile equipment should be withdrawn or left as is until the fuel spill is removed or made safe.

(5)Notify supervisory personnel and the airport fire crew if the spill presents a fire hazard.

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VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

3.FUEL TANK PURGING.

A.GENERAL.

The fuel tank purging procedures given in the various maintenance manuals all concur on several items:

(a)Safety precautions must not be compromised.

(b)During fuel tank purging, fuel vapor can be explosive.

(c)The use of warm air or cooling air is strictly for the comfort of personnel working inside the fuel tank, NOT a function of the purging operation.

B.SAFETY PRECAUTIONS.

There are several basic steps that will be taken in preparation for opening a fuel tank. Always refer to the specific aircraft maintenance manual for detail instructions.

(a)Adequately ground the airplane.

(b)No electrical power is allowed on the airplane when a fuel tank is open. Disconnect and tag the aircraft's battery. Do not restore power until the fuel tank is closed.

(c)Rope off the aircraft and post signs "DANGER - OPEN FUEL TANKS" in a clear and visible area. More than one sign should be used. Place signs in pathways where non-maintenance personnel are likely to approach the area.

(d)Purge tank using a venturi and compressed air. Position air compressor at least 100 feet from open fuel tank unless the air compressor is explosion proof.

**WARNING:FUEL VAPOR IN TANKS MAY BE TOO RICH TO IGNITE WHEN TANKS ARE INITIALLY OPENED. HOWEVER, THE VAPOR CONCENTRATION WILL PASS THROUGH AN EXPLOSIVE MIXTURE LEVEL DURING TANK VENTILATION. VAPOR MIXTURES TOO LEAN TO IGNITE, IF ALLOWED TO ACCUMULATE IN AN UNVENTILATED SPACE CAN FORM AN EXPLOSIVE MIXTURE.**

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4.AIRCRAFT FUEL CONTAMINATION CONTROL

A.GENERAL.

Aircraft fuel, especially turbine fuel, is susceptible to water contamination. Under certain conditions any water remaining in the tanks can freeze and clog the fuel screen(s). The presence of water also supports bacterial growth which can clog fuel system components and cause corrosion. The following procedures are provided to minimize problems in this area. Depending on geographic location some activities will have more water contamination problems and require additional precautions to minimize contamination from water.

B.WHEN TO TEST FOR WATER - WHAT METHOD TO USE.

Aircraft fuel sumps are to be drained during Daily and Preflight Inspections.

(1)The fuel sample drain should total at least one quart and must be inspected for contaminants.

NOTE: BECAUSE WATER SETTLES MORE SLOWLY THROUGH TURBINE FUEL THAN THROUGH GASOLINE, AFTER REFUELING IT IS DESIRABLE TO ALLOW TIME FOR ANY FREE WATER WHICH MAY BE PRESENT TO SETTLE TO THE SUMP(S) BEFORE TAKING FUEL SAMPLE. A 15-MINUTE WAIT IS ADEQUATE, BUT A LONGER SETTLING PERIOD IS BETTER WHEN TIME PERMITS. THE DRAINED FUEL SAMPLE SHALL NOT BE RETURNED TO THE FUEL TANKS.

(2)Either of the two visual inspection check methods described in this chapter may be used after refueling. The Hydrokit check described in this text shall be performed on a fuel sample from the refueling hose when it is not practical to wait 15 minutes after refueling for water to settle. Also, the Hydrokit should be used (1) for "go, no-go" test if there is a question about the condition of the fuel after a visual check has been made; and (2) whenever an aircraft is away from its home base and being fueled by a fixed base operator whose fuel storage practices are not known, or when there is any question or doubt about the contamination of fuel being serviced.

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C.VISUAL CHECK FOR CONTAMINATION.

Visually examine the sample in a clean container, preferably in sunlight. Look for visible water (cloudy, droplets, emulsion, or separate layer). Also, swirl the fuel to create a large vortex in the center. If any free water or other foreign matter is present, it will tend to collect at the center of the vortex and at the bottom of the container. If water is detected, drain sufficient fuel from the tank sumps until visual check reveals no water contamination.

(1)Visual check, using red dye

This dye check can be used only with fuel which does not contain the Phillips

Additive PFA-55MB.

(a)This check is performed the same as the visual check, except that several drops of dye coloring are added to the drained fuel sample.

NOTE: Use regular liquid household red food dye that is used to color cake icing, (McCormick, or equivalent).

(b)Swirl the fuel sample to form a vortex and examine it for foreign matter. When the swirling stops, add several drops of dye; the drops will form into balls and fall to the bottom if no water is present. If water is present, the dye will dissolve and color the fuel sample bright red.

(c)If water is found, drain sufficient fuel from the tank sumps to eliminate the water and recheck.

(2)Hydrokit Check

This is a more precise fuel check, which provides a capability for testing the fuel contamination in the fueling truck and the aircraft.

WARNING: THE POWDER USED IN THE HYDROKIT MAY BE FATAL IF SWALLOWED: THEREFORE, EXTRA CARE SHOULD BE TAKEN IN THE DISPOSAL OF SAMPLES SO THAT THERE IS NO POSSIBILITY OF HANDLING AND INGESTING THE POWDER OF THE POWDER- FUEL MIXTURE INTO THE STOMACH FROM HANDS.

VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

(1)All organizations which are directly responsible for maintaining turbine-powered aircraft should stock an appropriate supply of the Hydrokits.

(2)The fuel-sampling test should be accomplished before and after fueling operations to ensure that a representative test is accomplished.

NOTE: Before Hydrokit test is performed, check the condition of the granular material (desiccant) in the bottom of the container containing Hydrokit capsules. The desiccant should be blue in color. If color is violet, pink, or white, or if the material inside the capsule has changed from grayish-white to pink or purple color, the capsule should be discarded safely.

(3)Checking procedures

(a)The fuel sample should be drawn from the aircraft side of the final filter/separator, from the piping on the fueling vehicle, or from the fueling nozzle itself.

(b)The fuel sample should be drawn about one-half minute after fuel flow into aircraft starts. If a fuel test is requested before the fueling is started or after the tanks are serviced, it should be run in addition to, not as a part of the test as described in (c)(1).

(c)Only the containers (jars) supplied with Hydrokit should be used for taking samples and testing. If dust or dirt is present, the container should be wiped out with a clean dry cloth.

(d)After a container has been used, it may be prepared for reuse. This should be done as soon as possible after test is completed.

NOTE: The Hydrokit is very sensitive to moisture and can be easily contaminated. Avoid uncapping the container in rain or with wet hands.

Fill a clean and dry sample container to the graduation mark (100cc - approximately three fluid ounces) with fuel.

VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

(f)Empty contents of one capsule into fuel sample. Close container tightly.

(g)Shake the sample approximately 10 seconds. Examine powder for evidence of color change.

(1)Results

(a)Color changes

If powder changes color - to purple - or if colored spots appear anywhere inside the jar within two-minutes, the sample "fails". Water concentration is 30 ppm or more of free water.

(b)No color change

If no color change is observed within the two-minute period, the sample "passes". the fuel sample is essentially dry, containing less than 30 ppm of free water.

NOTE: Ignore any color change which occurs after two minutes, and safely dispose of sample. No effort should be made to determine the amount of free water by degree of color change. Such a determination is meaningless and could be misleading.

(2)Action to be taken if test fails

(a)Cease fueling operation.

(b)Advise the appropriate supervisor or lead person.

(c)Check filter/separator sump for water accumulation.

Take additional action as indicated by the situation after informing the appropriate supervisor. This should normally include repetition of test before resuming fueling to check if the procedure during the test was at fault.

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(e)Report the incident to the immediate supervisor, with all pertinent details.

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VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

5.AIRCRAFT GROUND HANDLING SAFETY.

A.GENERAL.

This chapter establishes safety practices for taxiing, towing, application of external electrical power, and engine run-up. Where the safety requirements of this section cannot be met, a waiver shall be secured from the division manager or facility manager, specifically stating the waiver conditions which exist within the facility that causes a need for a waiver to be issued.

B.RESPONSIBILITY.

Activities operating and/or maintaining <Your Agency> aircraft will adhere to the provisions of this chapter.

(1)Taxiing of aircraft should be held to a minimum.

(2)Extra caution should be observed when movement of aircraft is necessary during darkness and/or inclement weather. Marshallers shall use illuminated wands when guiding aircraft at night.

(3)Except in emergencies, aircraft will not be moved or operated unless the minimum approved ground crew, as specified in this chapter, is available and utilized.

C.FIREGUARD.

A properly trained individual will be stationed near the aircraft prior to engine starting. The individual will serve as fireguard and shall stand by until all engines are operating and the danger of fire during start no longer exists.

D.COCKPIT.

The appropriate cockpit checklist shall be used for starting, operating, and trouble shooting of aircraft engines. The outlined procedures shall be followed before, during, and after the operation.

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E.EXTERNAL GROUND POWER UNITS.

Ground Power Units, electrical heating, and air-conditioning units shall be located as far as practical from refueling facilities, fuel tank vents, and drains. Only properly qualified personnel shall start, operate ground power and auxiliary power units.

F.ENGINE RUN-UP.

When performing maintenance with engines running, personnel must exercise extreme caution. When making engine adjustments with cowling opened or removed. There must be direct communications between the person at the controls and the person making the adjustments. Preoccupation with the maintenance task may distract attention from spinning propellers, or intake and exhaust hazards.

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CHAPTER VII.TRAINING AND SERVICING

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6.APPROVED MARSHALLING HAND SIGNALS.

A.ASSUMING GUIDANCE OF AIRCRAFT.

The marshall person indicates "I am your marshall - am properly positioned and assuming guidance of the aircraft." Both arms are raised vertically to full length.

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B.COME AHEAD SIGNAL

The marshall person indicates the aircraft should proceed straight ahead. Both hands slightly above eye level, elbows at shoulder level. Motion with the forearms upward through the vertical position for the aircraft to come ahead. The signal will be repeated until the aircraft approaches the stop position.

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C.RIGHT TURN

The marshall person points their left arm at the right wheel of the aircraft around which it is to pivot while continuing the "Come Ahead" signal. The sharpness of the turn may be varied by increasing or decreasing the rapidity of the come ahead motion.

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D.LEFT TURN

The marshall person points their right arm at the left wheel of the aircraft around which it is to pivot while continuing the "Come Ahead" signal. The sharpness of the turn may be varied by increasing or decreasing the rapidity of the come ahead motion.

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E.SLOW DOWN.

The marshall person requests a decrease in taxi speed by extending the arms out sideways from the body, hands and wand pointing downward. With elbows slightly bent he makes a downward repetitive motion.

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F.STOP SIGNAL - BRAKES ON.

(1)Under normal conditions the "stop" signal should flow naturally from either the "Come Ahead" or "Slow Down" signals. Beginning with arms extended horizontally, sideways, the marshall person modulates the closure rate of the aircraft to the parking spot by raising arms toward the vertical. The nose wheel should stop on the spot as the wands cross. The "Stop" signal will be used when necessary to hold the aircraft away from the normal parking position.

(2)Engine(s) will not be shut down until the "Cut Engine(s)" signal is given.

(3)The brakes will be held "ON" until the "Chocks IN" signal is given.

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G.CUT ENGINE(S).

Engine(s) will not be shut down until this signal is given. The marshall person draws on hand and wand horizontally across the neck in cutting motion. If only one engine is to be cut, the marshall person will point other hand at the engine to be shut down.

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H.CHOCKS INSERTED - BRAKES OFF.

(1)<Your Agency> operations require the operator to hold pressure on the foot brakes until chocks have been inserted. This signal advises the operator that chocks are in and they may resume their other duties. Hands are held aside and outward from the body with wands pointed across the body. A downward motion is made bringing the tips of the wand together.

(2)The operator will acknowledge by showing marshall person both fists, thumbs extended toward each other.

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I.SET BRAKES.

The marshall person requests the parking brakes be set by pointing both arms held shoulder high at the aircraft with wands pointed toward each other, tips touching. Slight up and down motion with the arms may be used to attract operator's attention.

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J.CHOCKS REMOVED

The marshall person advises the operator that chocks have been removed by reversing "Chocks Inserted" motion. Hands are held straight down with wands pointed outward. A sweeping motion upward and outward is made to shoulder level.

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K.START ENGINES

Engine starting by hand signal will be used if headset is unavailable. the marshall person will point the engine to be started while extending the other shoulder level and rotating forearm, hand and wand.

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VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

7.TAXIING AIRCRAFT.

A.GENERAL.

Only personnel trained and authorized by the <Your Agency> Supervisor of Maintenance or rated pilots shall be permitted to taxi <Your Agency> aircraft. Taxiing operations shall be performed in accordance with all applicable <Your Agency> and local directives and requires at least one marshaller. A person authorized to taxi aircraft shall be familiar with approved radio communications procedures and airport control tower or ground control frequencies.

(1)The person in charge of taxiing is responsible to ascertain that all existing procedures, regulations, and standards are complied with.

(2)Brakes shall be checked immediately for proper operation and hydraulic pressures will be constantly monitored.

(3)Reverse thrust shall not be used for backward movement of the aircraft.

(4)Weather, wind, and ramp conditions shall be considered at all times and good judgment exercised before taxiing any aircraft. Light twin aircraft will not be taxied by maintenance personnel when surface winds are above 25 MPH. When wind conditions are above 25 MPH, taxi test should be delayed or performed by pilot personnel.

(5)Position the flight controls to compensate for existing wind and/or terrain as specified in the appropriate Aircraft Flight Manual or Pilots Operating Handbook.

(6)Wing marshallers shall be utilized in congested areas. Minimum power should be used to prevent damage to surrounding aircraft and equipment. Wing marshallers are responsible for stopping all vehicle and/or foot traffic in the vicinity of an aircraft taxiing or preparing to taxi.

Prior to any movement of aircraft across runways or taxiways, clearance must be obtained from the airport Air Traffic Control or determined visually on airports without radio control facilities. Airport ground traffic frequencies shall be monitored at all times during taxi and runup operations. The receiver volume shall be adjusted high enough to be heard above the sound of the engines.

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(8)When taxiing at night, turn position lights, landing lights, and anti-collision light ON, strobe lights should be turned OFF.

(9)Taxi speed shall be held to minimum, especially when utilizing wing walkers or taxiing in congested areas. Taxiing speed shall not exceed a person's normal walking pace, approximately 4 miles per hour.

B.STANDARD TAXI LIGHT SIGNALS.

LIGHTSMEANING

Flashing GreenCleared to Taxi

Steady RedStop

Flashing RedTaxi clear of runway in use

Flashing WhiteReturn to starting point on airport

Alternating Red and GreenExercise extreme caution

C.PARKING OF AIRCRAFT.

(1)Aircraft shall be parked in designated parking areas as specified in the local authorized parking plan.

(2)Transient aircraft will be directed to a suitable parking area with voice communication when radio facilities are available and in use, at other times hand signals or follow-me vehicle will be used.

(3)Aircraft parked in hangars will be positioned clear of hangar doors at all times during severe weather. During normal weather conditions, the following criteria will be adhered to when there is a requirement to park an aircraft across the threshold of hangar doors.

(a)The aircraft will be securely chocked in position to secure minimum sway motion.

(b)Adequate clearance will be given between hangar doors and aircraft to allow maximum sway motion of aircraft and still not contact the hangar doors.

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(c)Hangar door position will be secured by locking the control switches of power-operated doors and chocking the rollers on manually-operated doors.

(4)Designated parking areas are to be utilized for the purpose of performing engine test/run operations. When engine speeds are to be higher than idle, the person performing the engine run will ensure that the aircraft is parked in an area that is safe for all engine speeds.

(5)Wheel chocks shall be placed fore and aft of main landing gear or nose wheels, as applicable.

(6)Internal or external control locks shall be engaged.

(7)Landing gear down lock safety pins shall be installed, if applicable.

(8)Pitot tubes shall have cover protector installed.

(9)Aircraft parked in a hangar shall be statically grounded.

(10)Engine (intake and exhaust) plugs shall be installed in turbine powered aircraft.

(11)Maintenance equipment utilized in parking areas shall be removed and secured clear of the area after use.

D.<Your Agency> HANGAR AND RAMP SAFETY.

Taxiing, engine operations, and movement of aircraft present a condition where accidents can easily occur. Every person involved in aircraft maintenance has a responsibility to promote safety. Some events to be aware of are:

(1)Vehicle movements, including tugs, etc., in the area of aircraft taxiing or ready to taxi. Marshallers shall direct all moving vehicles clear of the aircraft.

(2)Personnel walking in the area of operating aircraft engines, both propeller and gas turbine engines. Aircraft rotating beacons shall be on when the engines are operating.

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8.AIRCRAFT TOWING/REPOSITIONING.

A.GENERAL.

Aircraft ground handling personnel shall be thoroughly familiar with all procedures pertaining to the type of aircraft being towed, repositioned and the local operating procedures regarding the ground movement of aircraft. Newly assigned personnel will complete an adequate on-the-job training program before being assigned to ground handling of aircraft.

(1)During normal duty hours a minimum of four personnel shall be utilized when towing aircraft in a congested area. The tow vehicle operator will be in charge of the operation. The person in charge shall ensure that members of the towing crew are familiar with their assignments. The wing and tail marshalling may be dispensed with when the aircraft is being moved in an area where no contact with objects is probable, including vehicle movement areas.

(2)A tail marshaller shall be assigned when moving large aircraft with high vertical stabilizers into or out of hangers. A tail marshaller shall be utilized whenever clearances are close and the possibility of contact with objects exist.

(3)The towing vehicle operator shall be responsible for operating his/her vehicle in a safe manner and shall obey emergency stop instructions given by any team member. When operating a government vehicle the operator shall be a qualified driver. Contractor personnel shall be authorized by letter from the COTR to operate U.S. Government vehicles.

(4)Each member of the towing team must be aware of who is in charge and the wing and/or tail marshaller shall be prepared to relay clearances and guidance signals to him/her.

(5)The operator of the towing vehicle is responsible for using the services of a guideman whenever vision is restricted or the aircraft is being positioned into a close or congested area. The operator must take hand signals from ONE GUIDEMAN.

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(6)Only one person, the GUIDEMAN, shall relay signals to the operator of the tow vehicle. Because verbal signals are easily misunderstood, the marshaller shall avoid using them. All hand signals shall be standard and given with both arms. One-handed signals shall not be used. Hand signals may be supplemented with a shrill police type whistle.

(7)A qualified person shall be utilized in the pilot's seat of the aircraft being towed to observe and operate the brakes as required by the towing team. When necessary, another person shall be stationed to watch and maintain hydraulic pressure if the person in the pilot's seat is unable to do so. All persons shall be familiar with normal and emergency braking procedure.

(8)Operating or towing of aircraft on taxiways or runways requires radio communication be established between the tow vehicle or a lead vehicle and the airport tower or ground control and maintained until terminated by tower or ground control personnel.

(a)The aircraft brakeman in the cockpit may utilize the aircraft radio for tower or ground control communications provided they also have two-way communication with the driver of the tow vehicle via interphone or hand held radio.

(b)Towing of an aircraft with inoperable radios is permissible by utilizing a lead vehicle that has two way radio communication with tower or ground control personnel.

(9)The person in charge of the towing operation shall verify that the nose gear torque link or rudder lock are disengaged when applicable prior to towing the aircraft. Rudder lock and/or torque links shall be reengaged after towing.

(10)Under no circumstances shall personnel walk between the nose wheel of a moving aircraft and the towing vehicle nor ride on the outside of a moving aircraft. To avoid personal injury, no person (except in an emergency situation) shall attempt to board or leave a moving aircraft or towing vehicle. All personnel shall be seated on installed seats during towing operations.

(11)The towing speed of the aircraft shall not exceed that of the walking team members. The aircraft engine shall not be operated at any time the aircraft is being towed into position.

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(12)If necessary, the aircraft brake systems shall be charged before each towing operation. When towing aircraft with faulty brakes, personnel must be located by each main gear with chocks in hand for emergency use. Chocks shall be readily available in case of emergency during any towing operation. Aircraft brakes should be operationally checked prior to towing operations.

(13)To avoid possible injury and aircraft damage during towing operations, entrance ladders shall be retracted and gear down locks installed, if applicable.

(14)Prior to towing any aircraft, towing team members shall check all tires and landing gear struts for proper inflation.

(15)When towing aircraft, the vehicle operator should not jerk the aircraft or start and stop suddenly. Cockpit personnel shall not apply aircraft brakes during towing operations unless an emergency exists. Upon completion of the towing operation the tug driver shall notify the brakeman to set brakes if applicable.

(16)Aircraft shall be parked in specified areas only. Generally, the distance between rows of parked aircraft shall be enough to allow immediate access of emergency vehicles in case of fire and also permit free movement of equipment and materials.

(17)Prior to any movement of aircraft across runways or taxiways, contact shall be made with the airport control tower or ground control for clearance to proceed.

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VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

9.AIRCRAFT DEICING AND COLD WEATHER GROUND OPERATIONS.

Maintenance personnel should be familiar with Advisory Circular (AC) 20-117 in addition to the instructions contained in this section.

A.GENERAL.

This section details procedures necessary to assure safe movement and servicing of aircraft on the ground during cold weather operations. Approved methods and equipment for removing snow, ice, frost, and slush are detailed in this section.

NOTE: The presence of ice, frost or snow anywhere on the surfaces can seriously impair the performance characteristics of the aircraft and utmost care must be taken to clear the surfaces of any discernable hazard.

B.PRECAUTIONS.

The procedures listed below and the instructions in the aircraft maintenance manual will be adhered to:

(1)If freezing conditions exits or are forecast, the aircraft will be stored in a hangar if possible. When the aircraft cannot be hangared, and accumulate moisture freezes, in any form, deicing will be accomplished as required, per paragraph C of this section.

(2)When towing aircraft on snow or ice, extreme caution should be used due to the peculiar handling reactions of towed aircraft on slippery surfaces.

(3)Any towing vehicle used on snow or ice to move aircraft will be outfitted with chains on the drive wheels, unless waived in writing by the Supervisor of Maintenance.

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C.DEICE PROCEDURES.

Deicing will be accomplished using the <Your Agency> truck mounted de-icing equipment following these operational and safety guidelines.

(1)Two men will be stationed in the basket to provide safe and efficient deicing. One will operate the boom and the other will control the spray nozzle. Contact with the driver will be maintained at all times by use of headsets and mike in the basket and the truck cab. Dual controls are provided, but the basket operator is the key controller of the boom in regard to close tolerance of basket.

(2)A minimum clearance of 10 feet is to be maintained between the deicer vehicle and the aircraft at all times.

(3)At no time will the vehicle pass under any part of the aircraft during the deicing operation.

(4)The combustion heater on the aircraft deicing unit is not to be operated if the vehicle is within 50 feet of an aircraft of hangar, or the aircraft or vehicle is being refueled.

(5)All personnel operating the deicing equipment will be properly trained and an appropriate notation filed in their employment record.

(6)There are to be no occupants in the basket during transport of the vehicle to and from deicing operations.

(7)Do not walk or stand on the aircraft after deice fluid has been applied.

(8)When servicing the deicing vehicle, leave space for heat expansion of the fluid.

(9)Wear goggles or face shield while performing deicing operations.

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**CAUTION:** IF THE VEHICLE ENGINE STOPS AND CANNOT BE RESTARTED, THIS WILL STRAND THE OCCUPANTS OF THE BASKET. IN THIS CASE, THE BOOM MUST BE LOWERED BY REMOVING THE REAR CENTER PANEL OF THE VEHICLE AND SLOWLY SCREWING THE ADJUSTING BOLT ON THE BOOM ACTUATING CYLINDER WHILE PUSHING FIRMLY ON THE SOLENOID BUTTON UNTIL THE BOOM STARTS TO SLOWLY FREE FALL. BE SURE THE VEHICLE IS CLEAR OF THE AIRCRAFT WHEN LOWERING THE BOOM IN THIS MANNER.

D.FLUID APPLICATION

(1)Assure that all aircraft doors and windows are closed before and during fluid applications.

(2)Lower wing flaps fully to assure removal of all ice that may have accumulated in flap well areas during aircraft operations.

(3)Do not spray fluid directly into air scoops, engine inlets, or on hot exhausts. Snow accumulations of one inch or more should be removed before any fluid application.

(4)Apply only enough fluid to remove the ice or snow and leave a light film of deicing fluid on the aircraft.

(5)When an aircraft is hangared to accomplish deicing, all hinges for the elevator, aileron, rudder and tabs should be hand-sprayed with undiluted ethylene glycol after all melted ice or snow has drained off the aircraft.

(6)All landing gear components and the lower wing surface in the landing gear area should be sprayed to remove all accumulated slush.

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E.APPROVED AIRCRAFT DEICING FLUIDS

Only approved deicing fluids will be used. The following approved fluids are not harmful to natural or artificial rubber, plastics, bearings or the airframe structure. The flash point is high enough to be safe for use around aircraft.

(1)MIL-A-8243A Fluid, Federal Stock Number 6850-00-558-1248.

(2)Union Carbide Aircraft Deicing Fluid C

(3)Dow Chemical Aircraft Deicing Fluid No. 146

(4)Any commercial brand of ethylene glycol permanent antifreeze is acceptable in an emergency.

NOTE: Deicing fluid is to be mixed using the individual manufacturer specifications for the particular fluid being used and the approved aircraft maintenance manual.

CAUTION: When using deicing/anti-icing fluids on aircraft as anti-icing compounds (i.e., glycol-based fluids applied concentrated and cold to aircraft to prevent ice, snow and frost from adhering to the treated surfaces), the following precautions should be used:

(a)On type I fluids (glycol-base with corrosion inhibitor usually used as dicing fluids), do not use in temperatures below -30 degrees F.

(b)On type II fluids (glycol-base with corrosion inhibitors and thickeners), do not use in temperatures below +15 degrees F.

F.PERSONAL PROTECTION

Certain precautions must be taken during cold weather to prevent injury to personnel while exposed to the elements.

(1)Clothing adequate to supply protection should be worn.

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(2)Extra caution should be used during lifting, pulling, and bending due to the increased risk of muscle pull in cold temperatures.

(3)The time spent exposed to low wind chill conditions should be carefully monitored and periods of relief provided to lower the risk of frost bite.

G.POTABLE WATER TANKS

Potable water tanks will be drained during freezing weather and serviced only when mission requirements mandate a need for potable water. After completion of the last flight of the day, tanks will be drained. When tanks are drained, information stickers will be applied where anyone needing to know may read and be advised of empty tanks.

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10.TIRES.

A.GENERAL.

(1)This procedure establishes policy for all tires used on <Your Agency> aircraft.

(2)The only re-treaded tires approved for use on <Your Agency> aircraft are the main tires on the Boeing 727's. The re-treading is to be accomplished by an approved facility.

(3)Boeing 727 main tires are limited to six (6) retread operations.

B.SERVICING.

(1)Aircraft manufacturer's recommendations will be used when available for maintaining all aircraft tires. When manufacturer's recommendations are not available Advisory Circular 145-4 may be used as a guide in determining serviceability of tires.

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11.CHEMICAL TOILETS.

A.GENERAL.

Chemical toilets will be serviced following procedures given in the aircraft maintenance manual applicable to the aircraft being serviced. Safety measures shall be followed carefully during this procedure.

WARNING:CHEMICAL CONCENTRATE USED IN TOILETS MAY CAUSE IRRITATION IF IT CONTACTS EYES OR SKIN. IF CONCENTRATE CONTACTS EYES OR SKIN, FLUSH WITH CLEAN WATER. IF IRRITATION PERSISTS, SEEK MEDICAL AID.

(1)The following materials and equipment will be utilized to accomplish servicing efficiently and safely. Chemical toilets will be serviced with a mixture of 75% propylene glycol and 25% water, in lieu of straight water, during temperatures below freezing. This is in addition to all other requirements that may be specified in the aircraft maintenance manual.

(a)Approved toilet servicing unit

(b)Neoprene or natural rubber gloves

(c)Face shield and water proof apron

(d)Approved deodorant/disinfectant chemical

(2)Aircraft being operated in temperatures below freezing will be serviced in accordance with the requirements stated in the aircraft maintenance manual.

(3)Care should be taken to prevent any spills on the ramp area or hanger floor.

(4)All waste will be disposed of in an approved waste disposal receptacle in accordance with local, city, and state requirements.

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12.AIR CONDITIONING UNITS

A.GENERAL.

Each aircraft requires different servicing procedures and system components will be located at different points on the aircraft. The appropriate approved aircraft manufacturer maintenance manual will be referenced for servicing instructions.

B.SAFETY MEASURES

The following safety measures shall be adhered to:

WARNING:CHARGED FREON SYSTEMS ARE UNDER HIGH PRESSURE. THE UNEXPECTED RELEASE OF FREON MAY CAUSE PERSONAL INJURY. EXERCISE CAUTION WHEN CHECKING FOR LEAKS AND/OR MAKING REPAIRS WHEN THE SYSTEM IS CHARGES.

(1)A face shield will be worn by all personnel in the immediate areas when freon systems are being serviced.

(2)When it is necessary to remove or replace any component in a freon system which requires the depletion of the freon charge, an approved freon reclamation unit will be utilized. This will prevent the loss of freon into the atmosphere.

CAUTION:REMAIN CLEAR OF ANY COMPONENT THAT MAY BE INADVERTENTLY OR UNEXPECTEDLY ACTIVATED DURING THE SERVICING OF ELECTRICALLY OPERATED AIR CONDITIONING SYSTEM..

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VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

13.HYDRAULIC AND OIL SERVICING.

A.GENERAL

In addition to the requirements outlined in the aircraft/equipment maintenance manuals the following shall apply to hydraulic and oil servicing of aircraft, engines, and APU.

B.SERVICING EQUIPMENT

(1)Avoid spilling oil or hydraulic fluid on aircraft surfaces or maintenance stands.

(2)Ground aircraft and servicing vehicles prior to making servicing connections. Hand operated hydraulic and oil servicing carts need not be grounded during servicing operations.

(3)Position servicing equipment as far from any portion of the aircraft as cables/hoses will allow. Maintenance stands shall be properly positioned to obtain easy access to filler caps.

CAUTION:SOME <Your Agency> AIRCRAFT USE A COMMERCIAL HYDRAULIC FLUID WHICH IS NOT COMPATIBLE WITH STANDARD RED MIL-H-5606. MAKE SURE THAT THE AIRCRAFT MAINTENANCE MANUAL REQUIREMENTS ARE FOLLOWED TO PREVENT CONTAMINATION.

C.SERVICING CONTAINERS

(1)When servicing from cans or drums, ensure that cleanliness and product integrity are maintained.

(2)Keep each product segregated and properly identified.

(3)Carefully read the label before dispensing oil and hydraulic products to ensure the correct product is being used.

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(4)Fluids and containers carried aboard aircraft shall meet the provisions of CFR 49, Part 175, in relation to transportation of dangerous fluids.

(5)Personnel will not use fluids obtained from permanent or temporary storage containers which are not properly identified.

**CAUTION:SKYDROL HYDRAULIC FLUID CAN CAUSE INJURIES TO PERSONNEL AND EQUIPMENT. IMMEDIATELY FOLLOWING THE SERVICING OF EQUIPMENT WITH SKYDROL PERSONNEL SHOULD CLEANSE THEIR HANDS. ANY FLUID SPILLED DURING SERVICING SHALL IMMEDIATELY BE CLEANED UP AND THE CLEANING MATERIALS DISCARDED.**

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14.HIGH PRESSURE GAS CYLINDER SERVICING PROCEDURES.

A.GENERAL.

The following procedures are provided to reduce the inherent danger of servicing high pressure gas cylinders.

B.RECHARGING PROCEDURES FOR HIGH PRESSURE CYLINDERS.

(1)Insure that the cylinder to be serviced is well anchored and secured against any motion due to failure of regulator.

(2)Remove cover plate from the valve of the cylinder to be charged. Rotate cam so that valve is in the open position.

(3)Connect the hose from the supply cylinder to a pressure gauge and then to the cylinder to be charged. Charge cylinder to the pressure recommended in the specific manual.

(4)Open valve on supply cylinder slowly, charge slowly to prevent receiving cylinder from getting too hot.

(5)Close valve on the cylinder being charged by turning cam to closed position. Close valve on the supply cylinder. Remove cylinder from the hose and gauge.

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15.HAZARDOUS MATERIALS.

A.GENERAL.

The <Your Agency Aviation Title> conducts missions requiring the carrying of hazardous materials, maintains a battery shop for the maintenance of aircraft batteries, transports equipment that may contain flammable fluids, and performs other functions requiring the use of fluids and materials classified as hazardous. The <Your Agency Aviation Title>, Supervisor of Maintenance, shall make available to all <Your Agency> maintenance personnel a current copy of the Code of Federal Regulations (CFR), Title 49, Parts 100-177, as a reference for Hazardous Materials.

B.DEFINITION OF HAZARDOUS MATERIAL.

Hazardous materials means a substance or material which has been determined by the U.S. Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported by air transportation and which has been so designated in CFR Title 49 Parts 100-177. <Your Agency> mission related items and equipment may also be considered hazardous materials.

C.AUTHORITY TO TRANSPORT.

The <Your Agency> shall not accept for shipment aboard any aircraft hazardous materials except those exempted by CFR Title 49, Part 175.10 without a special release from the Chief, Air Operations Division. Some of the exempted substances and materials are:

(1)The <Your Agency> will accept shipments (cargo) containing carbon dioxide, solid (dry ice) provided the package is clearly marked with the name of the contents being cooled, the net weight of the dry ice or an indication that the net weight is 5 pounds or less, and also marked "Carbon Dioxide, Solid" or "Dry Ice".

(2)The <Your Agency> will permit packages containing dry ice in quantities not exceeding 4 pounds per passenger when used to pack perishables in carry on baggage.

(3)Packages containing dry ice must be designed to prevent a build up of pressure that could rupture the packaging.

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(4)Current copies of CFR, Title 49, Parts 100-177 are available for reference.

(5)<Your Agency> personnel are responsible for screening of all shipments, cargo, freight, etc., to prevent the carriage of hazardous materials as specified in CFR, Title 49.

D.EXAMPLES OF HAZARDOUS MATERIALS.

The following list of hazardous materials are meant to be a guide only. Nothing can replace good judgement when transporting any substance or material that can either explode or contribute to an in-flight emergency or after accident fire. For example, transporting small emergency power generating units can be hazardous if their fuel systems have not been properly drained and purged. Therefore, this list is a guide only:

(1)Paints

(2)Lighter fluids

(3)Lighters with flammable liquid reservoirs

(4)Fireworks

(5)Tear gas/Mace

(6)Ammunition and explosive devices

(7)Radio pharmaceuticals

(8)Fish meal

(9)Celluloid film

(10)Batteries

(11)Compressed gas

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E.SPECIAL AUTHORITY TO TRANSPORT HAZARDOUS MATERIALS.

In the performance of special missions, the <Your Agency> may be required to transport certain substances, material, and devices that are considered hazardous materials. These situations require special authorization by the Chief, <Your Agency Aviation Title>. A complete list of the hazardous materials being transported by air shall be provided the Chief, <Your Agency Aviation Title>, for his approval. This information will be provided to the Chief Pilot and Supervisor of Maintenance and will be retained until completion of the mission and provided to appropriate personnel in case of an accident or incident involving the aircraft. Notice of the presence of hazardous material, not necessarily the type of materials, on board the aircraft shall be given to maintenance personnel required to service the aircraft during and after the mission to alert them to the possibility of residual materials being present.

F.RELEASE TO MAINTENANCE AFTER SPECIAL MISSIONS.

Special missions or situations where hazardous materials have been carried shall require a special search by <Your Agency> tactical/flight personnel prior to the aircraft being released to maintenance. Following missions or situations where hazardous materials have been carried the following procedure will be used:

(1)Aircraft shall be parked and the tires chocked.

(2)Maintenance personnel shall assist the <Your Agency> tactical/flight personnel in opening the doors and cargo compartments.

(3)Maintenance personnel shall not begin any servicing or maintenance on the aircraft until it has been released by the Supervisor of Maintenance or his designee.

G.SPECIAL

Following missions or situations where hazardous materials have been carried the <Your Agency> shall perform a special search of the aircraft to assure that all hazardous materials (ammunition, weapons, mace, explosives, etc.) have been removed prior to releasing the aircraft to maintenance.

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VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

16.AIRCRAFT CLEANING - SPECIAL HEALTH PRECAUTIONS.

A.INTERIOR.

<Your Agency> aircraft interiors represent a special cleaning requirement. Personnel being transported from vastly different backgrounds, under potentially dangerous circumstances, often spill body fluids/waste and blood on seats, floors, and other furnishings inside the aircraft. These fluids have been known to carry several blood borne pathogens such as hepatitis B, AIDS, etc. During inspections of aircraft interiors maintenance personnel shall visually inspect for possible areas of blood and/or body fluid spills.

(1)Routine Cleaning of Aircraft Interiors Used to Transport Prisoners

All personnel assigned to cleaning the aircraft interior shall take special precautions to protect themselves from contaminates of this nature. They will take the following precautions:

(a)Wear vinyl or latex gloves.

(b)Wear disposable gowns, coveralls, or a wrap around apron with a chest bib that extends to the knees.

(c)Immediately wash with soap and water any skin surfaces contaminated by blood or body fluids. Use waterless antiseptic hand cleaner or antiseptic towelettes in the absence of soap and water until soap and water is available.

(d)After completing the cleaning of the interior, remove gloves and place in a biohazard-labelled bag. Wash hands thoroughly with soap and water, if available, or use a waterless antiseptic hand cleaner or antiseptic towelette until soap and water is available. Remove and dispose of gowns, coveralls, and/or aprons worn during the cleaning.

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(2)Procedures for Cleaning Known Blood and/or Body Fluid Spills

Special precautions shall be taken when cleaning areas where known blood and/or body fluid spills have occurred. The following procedures shall be used:

(a)If personnel have accidentally come into contact with blood and/or body fluids during the inspection process they shall immediately wash with soap and water any skin surfaces contaminated by blood or body fluids. Use a waterless antiseptic hand cleaner or antiseptic towelettes in the absence of soap and water until soap and water is available.

(b)Wear vinyl or latex gloves and disposable gowns, coveralls, or a wrap around apron with a chest bib that extends to the knees.

(c)Cordon off area of the spill to prevent the accidental spread of body fluids.

(d)Remove any large pieces of glass or other solid material, if present. Do not pick up material with hands. Use a plastic scoop to remove this matter. Place solid material in a puncture-resistant container. The scoop must dis-infected after use and placed in a clean place or if disposable is placed in a biohazard-labelled bag.

(e)Carefully remove the body fluids from the spill surface with disposable wipes. When the wipe is saturated, replace it with a new one. Do not wring out fluids. All soiled wipes are to be placed in the puncture-resistant container.

(f)Decontaminate the area with a bleach solution\* or a commercially prepared, Environmental Protection Agency approved solution specifically intended for clean up of blood and body fluid spills. This is done by starting 2 inches outside the spill and moving into the center of the spill by making a series of overlapping concentric circles with a wipe. The area is allowed to dry and the process is repeated. The soiled wipes are placed into the puncture-resistant container.

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(g)Place all puncture resistant containers and material used in the cleanup in a biohazard-labelled bag until disposal occurs.

(h)Remove gloves and place in a biohazard-labelled bag. Wash hands thoroughly with soap and water, if available, or use a waterless antiseptic hand cleaner or antiseptic towelette until soap and water is available.

(i)Dispose of material in the waste container in accordance with applicable regulations.

**\***NOTE:The appropriate cleansing agent is a bleach and water mixture. Add 1/4 cup of bleach to 1 gallon of water. Do not mix ahead of time and store; the solution loses strength over time. Separate containers of bleach and water should be available for mixing at the time needed.

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VII. AIRCRAFT AND GROUND EQUIPMENT SERVICING

17.FOREIGN OBJECT DAMAGE (FOD) PROGRAM.

A.GENERAL.

FOD inspections are a continuing process. Containers painted red and marked "FOD" shall be placed throughout the hangar and outside adjacent to pedestrian doorways. Maintenance personnel shall be constantly on lookout for material that could be ingested into engines, struck by propeller blades, and/or blown by the exhaust of engines or propellers causing injury to personnel and/or damage to aircraft.

B.RAMP INSPECTIONS

Maintenance personnel shall be assigned to perform a general inspection of hangar and ramp areas the first workday of each week to ensure all ramp areas used by the <Your Agency> are clean.

C.AIRCRAFT PROTECTION.