U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Aircraft Ground Handling, Servicing, and Marshalling

Date: DRAFT **AC No:** 00-34B
Initiated by: AFS-300 **Change:**

1 **PURPOSE OF THIS ADVISORY CIRCULAR (AC).** This AC contains information and guidance for servicing, ground handling, and marshalling an aircraft. The general information contained in this AC is not all-inclusive when servicing, ground handling, and marshalling an aircraft, and does not override any variances or additional procedures at a local airport. The contents of this document do not have the force and effect of law and are not meant to bind the public in any way, and the document is intended only to provide information to the public regarding existing requirements under the law or agency policies.

2 **AUDIENCE.** This AC is intended for ground personnel working at an airport who conduct or are responsible for marshalling, fueling, or ground handling for an aircraft.

3 **WHERE YOU CAN FIND THIS AC.** You can find this AC on the Federal Aviation Administration's (FAA) website at https://www.faa.gov/regulations_policies/advisory_circulars and the Dynamic Regulatory System (DRS) at https://drs.faa.gov.

4 **WHAT THIS AC CANCELS.** AC 00-34A, Aircraft Ground Handling and Servicing, dated July 29, 1974, is canceled.

5 **RELATED TITLE 14 OF THE CODE OF FEDERAL REGULATIONS (14 CFR) SECTIONS:**

- Part 91, §§ 91.113 and 91.1025.
- Part 121, § 121.135.
- Part 125, § 125.73.
- Part 135, § 135.23.

6 **DEFINITIONS.** For the purposes of this AC, the following definitions apply:

6.1 Airport. An area of land that is used or intended to be used for the landing and takeoff of an aircraft and whose ground operations are controlled by the Air Traffic Organization (ATO) or an FAA-certified contract tower.

6.2 Air-Taxi. Also known as hover-taxi. A term used for when a rotorcraft, helicopter, or vertical takeoff and landing (VTOL) aircraft proceeds at a slow speed above the airport surface, normally below 20 knots and in ground effect.

6.3 Ground Handling. Overall term used for conducting aircraft ground operations such as servicing and towing the aircraft.

6.4 Marshalling. Act of directing the ground movement of the aircraft by signaling to the pilot of the aircraft from a signalman.

6.5 Servicing. Overall term used for conducting aircraft ground operations that provide for the needs of the aircraft, which may include service tasks such as fueling operations, resupply operations, servicing oxygen systems, servicing hydraulic systems, providing electrical power, servicing aircraft air/nitrogen oil and fluids, and providing ground air heating and air conditioning.

6.6 Signalman. An individual, also known as a marshaller, who directs aircraft movement from a ground position at an airport and is trained, qualified, and approved by the operator or airport authority to carry out the functions of a signalman.

6.7 Taxiing. When the aircraft is moving on the airport ground surface under its own engine power.

7 FOCUS. When discussing ground handling, this AC will focus on how to conduct safe ground operations around the vicinity of the aircraft and not how to do the actual specific ground operation task.

8 RELATED READING MATERIAL (current editions). For more information regarding subjects mentioned, refer to the following:

- AC 00-65, Towbar and Towbarless Movement of Aircraft.
- AC 20-35, Tiedown Sense.
- AC 20-125, Water in Aviation Fuels.
- AC 91-73, Parts 91 and 135 Single Pilot, Flight School Procedures During Taxi Operations.
- AC 120-57, Surface Movement Guidance and Control System.
- AC 120-74, Parts 91, 121, 125, and 135 Flightcrew Procedures During Taxi Operations.
- AC 150/5200-37, Safety Management Systems for Airports.
- AC 150/5210-5, Painting, Marking, and Lighting of Vehicles Used on an Airport.
- AC 150/5210-18, Systems for Interactive Training of Airport Personnel.
- International Civil Aviation Organization (ICAO) Annex 2, Rules of the Air, Appendix 1, Signals, Paragraphs 5.1 and 6.

9 BACKGROUND. The aviation industry has found through experience that firm safety practices deter accidents. This AC contains generally accepted information and safety

practices when ground handling and directing an aircraft while being taxied or air-taxied, which may help prevent injuries to personnel and damage to aircraft.

10 SAFETY MANAGEMENT SYSTEM (SMS) REQUIREMENTS. All managers and supervisors should identify, eliminate, control, and document hazards within the workplace to minimize risks associated with uncertainty in the decision-making process.

10.1 Identifying Hazards. After identifying hazards, assess the risks associated with each hazard, then determine and take action as needed to reduce the risk by:

10.1.1 Control Measures. Actions to reduce or eliminate a hazard, which include four methods:

1. Engineering the hazard out, such as using a longer towbar for more visibility for the person on the aircraft brakes and other aircraft being marshalled;
2. Procedural actions, such as making changes to operational limits and making more frequent inspections;
3. Administrative actions, such as stopping until corrective action is taken and/or adding more personnel; and
4. Use of personal protective equipment (PPE), such as a fueler wearing protective gloves to protect skin from contacting fuel.

10.1.2 Education. Educating and training personnel on the hazards and the safety procedures to follow to reduce the chances of a mishap occurring.

10.1.3 On-the-Job Training (OJT). Ensuring that all personnel receive safety and health OJT upon initial assignment and whenever there is a change in equipment, procedures, processes, or safety and health requirements. Well-trained and educated personnel are the greatest deterrent to mishaps in the workplace. Supervisors should document safety-related training.

11 SAFETY HAZARDS. All aircraft present hazards to ground personnel regardless of the aircraft size or type. When an individual is conducting a highly focused task on or around an aircraft in a movement area, there should be another individual providing overwatch for oncoming hazards. Hazards created from the equipment used to service the aircraft and from the aircraft themselves require situational awareness at all times. Ground personnel who are not performing an authorized and coordinated maintenance check should not enter a turbine engine ingestion zone or approach a propeller-driven aircraft until the engines are shut down. Hazards created from noise, heat, weight, aircraft thrust, propellers, and rotors are some of the possible hazards ground personnel can face.

11.1 Noise. Noise hazards created from loud aircraft engines, propellers, rotors, and support equipment not only can create potential hearing loss to ground personnel if not using proper hearing protection, but also can create a loss of situational awareness from other aircraft or support equipment moving around the aircraft being serviced.

11.2 Heat. Heat hazards generated from exposed exhaust, large diameter exposed brakes, running equipment, and pitot tubes can cause severe burns if situational awareness is lost when working with and around these items.

11.3 Weight. Impact or crush hazards created from the weight of the aircraft, and even the weight of parts of the aircraft, such as cowlings and doors for the larger transport aircraft, can seriously injure or kill an individual if these objects make contact with a person at speed. Moving aircraft tires are especially dangerous because once they are rolled onto any part of an individual at any speed, that individual cannot escape.

11.4 Thrust. Severe wind created from thrust from running aircraft can create many hazards by distracting an individual, opening or closing an unlatched cowling without warning, or turning unsecured small items into projectiles. Thrust created with large transport aircraft can even overturn vehicles and support equipment that get too close.

11.5 Propellers. Propellers can pose serious impact hazards that can result in severe injury or death to anyone who loses situational awareness around them or is careless when working with them. Hazards inherent with propellers are increased with older magneto-ignition, piston-driven aircraft because the engine can start unexpectedly. When it becomes necessary to position propellers on these aircraft, they should be handled as if the engine is going to start. Before moving a propeller, always check to be sure the ignition switches are in the "off" position and the throttle and mixture control levers are in the "closed" position for these aircraft. Always stand clear of the propeller path for any aircraft using a propeller, particularly when moving the propeller on older magneto-ignition, piston-driven aircraft, because of the possibility of inadvertent engine start. This possibility is increased when the engine is warm.

11.6 Rotors. Rotors on rotorcraft and vertical lift aircraft can pose a particular impact hazard that requires heightened situational awareness. The rotor blade path on these aircraft when moving at speed can be nearly invisible and can often be at waist to head height, which may result in serious injury or death. Any ground personnel who have any possibility of working around any of these aircraft while the aircraft is operating need to be trained and have safety procedures in place.

12 AIRCRAFT PARKING AND TIEDOWN. Prior to performing any servicing or towing operation, the aircraft is in a parked position, so the first thing that needs to be discussed is parked aircraft and tiedown of the aircraft.

12.1 Parked Aircraft. Unless the aircraft just moved into a parked position, ground personnel should find wheeled aircraft with the main gear wheels chocked fore and aft and the flight controls locked. This is to protect the aircraft from unintentional movement from expected or unexpected high winds created from weather and taxiing or air-taxied aircraft thrust. The tiedown items can create trip and foreign object damage (FOD) hazards if not properly accounted for during any ground handling operation.

12.2 Aircraft Tiedown. Depending on the ground operation task being performed, ground personnel may be required to tie down the aircraft or prepare the aircraft for flight by

removing the tiedowns. Information relating to aircraft tiedown techniques, equipment, and anchor installations is provided in AC 20-35. It is a good practice to always tie down small aircraft after each flight and large aircraft when unusually high winds are expected. When not in use, wheel chocks, tiedown ropes or chains, and other equipment may be stored safely near the wing tiedown anchor points on the ramp. These are usually located outside of the aircraft wheel traffic pattern. Wheel chocks should be painted a bright color so they can be easily seen.

12.3 Additional Actions. Ground personnel should develop a habit of making a visual check of the aircraft as soon as it is parked and secured. Before the flightcrew departs, advise the flightcrew of any unsafe condition that they think is an issue so maintenance personnel can determine the nature of services that will be required for the next flight. This procedure may prevent unwarranted delays of the next departure or possible in-flight failures. Examples of conditions that may be observed are low or flat tires, cracked windows, nicked propeller blades, loose propeller spinners, oil and fuel leaks, and damaged flight surfaces.

13 GROUND HANDLING AIRCRAFT. When servicing and towing the aircraft, there are some general guidelines ground personnel should follow for each ground operation.

13.1 Servicing. There are numerous operations that are considered servicing an aircraft and have their own detailed manufacturer's instructions for the equipment being used. These servicing operations usually require an airman with the applicable certificate to perform them and may only be available at certain airports. However, there are two main servicing operations with inherent hazards most common at airports; ground personnel who work with these should be aware of those hazards. The two potentially hazardous operations are aircraft fueling and servicing the oxygen systems.

13.1.1 Aircraft Fueling. Improper fueling procedures may cause aircraft accidents and in-flight incidents. If operators of fueling facilities establish procedures for safe and proper fueling of aircraft and fueling personnel follow these procedures, many aircraft accidents or incidents can be prevented. Fueling personnel should be familiar with the fuel requirements for the models and types of aircraft they are servicing. The following paragraphs contain a description of problems that may be encountered in fueling aircraft and recommended procedures for combating these problems.

13.1.1.1 Water in the Fuel. Water occurs and appears in aviation fuels in different ways.

1. Dissolved water occurs similar to the humidity in the atmosphere that converts to droplets and settles out as the fuel temperature decreases during flight.
2. Suspended water appears in the form of droplets that reflect light. High concentration of droplets will cause fuel to have a cloudy or hazy appearance.

3. Solid bodies of water may be caused by leakage of storage tanks, leaking filler neck seals, or the settling out of suspended water droplets.

13.1.1.2 Accumulation of Water. There is no way of preventing the accumulation of water formed through condensation in fuel tanks. The accumulation is certain, and the rate of accumulation will vary, so it is recommended that storage tanks, fuel truck tanks, and aircraft fuel tanks be checked *daily* for the presence of water. Any water discovered should be *removed* immediately. In addition to the daily water check, fuel tanks should be *checked after each delivery* as insurance against inadvertent water contamination.

13.1.1.3 Water Detection. The method used to detect water in fuel storage tanks can vary and is based on whether the fuel is being stored in above-ground, below-ground, or mobile storage tanks. Depending on what type of storage tank is used, the method used may require dipping some type of tester into the tank, or draining the fuel into a container or a fuel tester. Testing methods and tester types include water test kits, white bucket tests, stick and paste, and stick and color-changing paper. With the exception of the white bucket test, the manufacturer's instructions should be followed for whichever method is used. The white bucket test is not a manufactured test kit; for direction on how to do the white bucket test, refer to AC 20-125.

13.1.1.4 Rust and Scale. Rust and scale dislodged from the inside of fuel storage tanks may enter the aircraft fuel tanks and clog systems. Turbine fuel tends to dislodge rust and scale and carry the particles in suspension. Because of this, fuel-dispensing equipment filters should be serviced frequently. Aviation gasoline should not be stored in tanks or equipment that have been used for turbine fuel storage.

13.1.1.5 Micro-Organisms. Micro-organic growth thrives in turbine fuel and appears as a soapy, slippery slime on the inside surfaces of fuel storage tanks. Micro-organisms of bacteria and fungi multiply rapidly and may cause serious corrosion in aircraft fuel tanks, as well as clog fuel filters, screens, and control units. Therefore, turbine fuel storage tanks should be checked frequently for the presence of slime or micro-organic growth. If found, the tank should be cleaned thoroughly to assure removal of the micro-organic growth and prevent further contamination.

13.1.1.6 Contamination. Contamination with other types or grades of fuel can cause aircraft engine damage and possible failure in flight. Turbine fuels mixed with aviation gasoline reduce the antiknock and volatility of fuels required for reciprocating engines. Quantities of aviation gasoline mixed with turbine fuels will cause damaging lead deposits to collect in jet engines when used indiscriminately. Transportation or storage of turbine fuel in tanks previously used for storage or transportation of aviation gasoline is not recommended as contamination from rust and scale, or a possible change of fuel specification, may result.

13.1.1.7 Additives. Certain turbine-engine-powered aircraft require the use of fuel containing anti-icing additives. Therefore, fuel personnel must know whether or not the fuels they dispense contain additives. When anti-icing additives are to be added to the fuel, the manufacturer's instructions (usually printed on the container) should be followed to assure proper mixture. Fuel personnel must ensure they are using the proper additive and the additive is in a properly labeled container since chemicals like diesel exhaust fluid (DEF) look the same in liquid form. DEF can cause all filters in the tank system to clog up, and the filters and fuel nozzles in the aircraft to fail, which could result in death.

13.1.1.8 Fuel-Dispensing Equipment. Fuel-servicing vehicles should be conspicuously and legibly marked to indicate the type and grade of fuel.

1. Markings should be displayed on each side and on the rear of the vehicle in *contrasting* colors.
2. Fuel hydrants and pit installations should be identified similarly, according to type of fuel and grade.
3. Turbine-fueling vehicles should be marked to show whether or not anti-icing additives are contained in the fuel being dispensed.
4. Leaking or otherwise defective pumping equipment, plumbing, hoses, nozzles, and grounding cables of fuel-dispensing vehicles and stationary facilities should be repaired before further use. Fuel-nozzle-lever stop notches should be removed to avoid the possibility of an inadvertent blocking-open of the valve.
5. Fuel-dispensing vehicles, and stationary facilities, should be equipped with appropriate fire extinguishers, fire blankets, static grounding cables, explosion-proof flashlights, and ladders. Fire extinguishers should be located so they are accessible from either side of the vehicle and remote from possible fire hazard.
6. Fueling vehicles should be positioned as distant from the aircraft as permitted by the length of the fuel-dispensing hose. Mobile units should be parked parallel to or heading away from the aircraft wing leading edge, so it may be moved away quickly in the event of an emergency. When the fueling operation is completed, the fueling vehicle should be parked at least 50 feet from aircraft or buildings and positioned in a manner to permit removal from the area without delay.

13.1.1.9 Fueling Procedures. Fueling personnel should first check with the flightcrew to determine the type and grade of fuel required, including additives for the aircraft. It is a good practice to have the pilot sign a request for service, identifying the grade and quantity of fuel desired. In the absence of the flightcrew, fueling personnel should check the placard located near the aircraft fuel tank filler port, or the aircraft owner's manual that is usually carried in

the aircraft, to determine the type and grade of fuel required. Additionally, the fuel personnel should ensure:

1. That no electrical or radio equipment in the aircraft is energized or being maintained while fuel is being dispensed into the aircraft, except those switches that may require energizing to operate fuel selector valves and quantity gauge systems.
2. That qualified personnel are stationed at the aircraft fuel control panel during pressure fueling operations.
3. That fueling personnel should not carry objects in the breast pockets of their clothing when servicing aircraft or filling fuel service vehicles because loose objects may fall into fuel tanks.
4. That matches or lighters should never be carried during fueling operations.
5. That personnel are aware that, because of the high lead content, direct fuel contact with skin or the wearing of fuel-saturated clothing should be avoided. Skin irritation or blisters may result from direct contact with fuel.
6. That immediate medical attention should be sought if fuel enters the eyes.
7. That in the event of fuel spillage, fueling operations should be discontinued until the spill can be removed, using proper safety precautions.

13.1.1.10 Fueling from Mobile Equipment. The following sequence should be followed by the fueling crew:

1. Connect a grounding cable from the fueling vehicle to a satisfactory ground. Grounding posts usually consist of pipes or rods driven far enough into the ground to result in a zero potential.
2. Connect a grounding cable from ground to the aircraft (on landing gear axle or other unpainted surface). Do not attach grounding cables to the propeller or radio antenna.
3. Connect a grounding cable from the fueling vehicle to the aircraft. The fueling vehicle may be equipped with a "T" or "Y" cable permitting ground attachment first and grounding of the aircraft with the other end.
4. Connect a grounding cable from the fuel nozzle to the aircraft before removing the aircraft tank cap. This bond is most essential and needs to be maintained throughout the fueling operation and until the fuel cap is replaced.

Caution: Conductive-type fuel hoses do not provide a satisfactory method of bonding.

5. The fuel-dispensing equipment grounding cables should be removed in the reverse order of the sequence outlined above.

13.1.1.11 Fueling from Hydrants, Pits, and Cabinets.

1. Connect the grounding cable from the dispenser to the aircraft.
2. Connect the grounding cable from the hose nozzle to the aircraft before removing the fuel cap.

13.1.1.12 Overwing Fueling. The fuel-filler hose should be draped over the wing leading edge. Never lay the fuel-filler hose over the wing trailing edge because aircraft structural damage may result. A simple rubber shower mat may be used to provide protection for wing leading edges during fuel operation. Stepladders or padded upright ladders may be used to provide easy access to high-wing and large aircraft. Standing on wing surfaces should be avoided and never stand on wing struts. Hold the fuel nozzle firmly while it is inserted in the fuel tank filler neck and never block the nozzle lever in the open position. Be sure that fuel filler caps are replaced and securely latched when fueling is completed.

13.1.1.13 Underwing Fueling. Discharge possible static buildup in the fuel-dispensing hose by touching the pressure nozzle to an unpainted part of the aircraft, such as a landing gear axle, before attaching to the aircraft filler receptacle. No static ground wire between the filler nozzle and the aircraft is necessary.

13.1.1.14 Draining Fuel Sumps. The aircraft fuel tank sumps should be drained before each fuel servicing to remove water that may have accumulated from condensation or entered the tank during fueling operations. Draining fuel sumps immediately after fueling serves little purpose because the agitation action of fuel entering the tank may suspend water and contaminants, which can remain suspended for many minutes and may not settle out until the aircraft is airborne.

13.1.2 Servicing of Oxygen Systems. Certain precautions should be observed whenever aircraft oxygen systems are to be serviced.

13.1.2.1 Aircraft Specific. Before servicing any aircraft with oxygen, consult the specific aircraft service manual to determine the type of equipment required and procedures to be used.

13.1.2.2 Location. Oxygen system servicing should be accomplished only when the aircraft is located outside of hangars.

13.1.2.3 Personal Cleanliness and Good Housekeeping. It is imperative when working with oxygen. Oxygen under pressure and petroleum products create spontaneous results when they are brought in contact with each other. Service people should be certain to wash oil and grease (including lip salves, hair oil, lotions, etc.), and dirt from their hands before working around oxygen equipment. It is also essential that clothing and tools are free of oil, grease, and dirt.

13.1.2.4 Permanently Installed Oxygen Tanks. Aircraft with permanently installed oxygen tanks usually require two persons to accomplish servicing of the system. One person should be stationed at the service equipment control valves, and the other stationed where that person can observe the aircraft system pressure gauges.

13.1.2.5 Warning. Oxygen system servicing is not recommended during aircraft fueling operations or while other work is performed that could provide a source of ignition.

13.1.2.6 Not Recommended. Oxygen system servicing while passengers are on board the aircraft is not recommended.

13.2 Towing. When towing aircraft, the proper towing equipment must be used. The wrong type of towing equipment, or makeshift equipment, can cause damage to the aircraft. Persons performing towing operations should be thoroughly familiar with the procedures that apply to the type of aircraft to be moved. Particular care must be exercised when pulling or pushing an aircraft with a tug, whether it is a manned or remote tug. Things that need to be considered when towing an aircraft are:

13.2.1 Aircraft Weight. Whether moving fully loaded aircraft between the terminal gates to the taxiways or moving an empty and defueled aircraft to the maintenance hangar, the weight of the aircraft must match the capacity of the tug. Heavy aircraft can push the tug with a greater force than lighter aircraft.

13.2.2 Towing Equipment Capacity. Whether it is a tug and towbar combination, or a manned or remote towbarless tug being used, the equipment will need to be rated for the capacity of the aircraft being towed.

13.2.3 Speed. Tow operators must reduce the tug speed for heavier aircraft because of the increased momentum caused by the speed and weight of the aircraft that results in increased braking distance required to stop. A faster speed of just a couple of miles per hour on a large aircraft will require a much greater distance to stop than expected.

13.2.4 Tow Guides. One should never tow an aircraft in congested areas without guides to assist in determining that there is adequate clearance.

13.2.5 Personnel. No less than two people should be used to tow large aircraft, including a qualified person in the cockpit to operate the aircraft brakes, and a qualified tow vehicle operator. One person should be able to safely move a light aircraft with a hand-operated, power-towing device or hand towbar provided the aircraft is in an area that is not congested.

13.2.6 Wheel Locks. The individual operating the tow vehicle should assure that the nosewheel scissors or tailwheel lock is disengaged, when applicable, before attempting to move the aircraft. The individual should also make certain that the nosewheel swiveling limits are not exceeded during the towing operation.

13.2.7 Braking. The tow vehicle operator should avoid sudden starts and stops. The aircraft brakes should be applied only in an emergency, on command from the tow vehicle operator or the tow guides.

13.2.8 Running Aircraft Engines. Aircraft engines should not be operated, under normal circumstances, during towing operations. However, the procedure of pushing transport aircraft away from terminal gates, used by airlines for dispatch, is an exception. If engines are operated during towing operations, procedures will be needed to keep personnel away from rotating propellers and away from the danger zones of jet engines.

13.2.9 Serviceable Landing Gear. Prior to movement of any aircraft, all applicable landing gear struts and tires should be properly inflated and brake pressure built up when applicable.

13.2.10 Clearance to Move. An aircraft towing or refueling has the right-of-way over all other engine-driven aircraft. For air traffic control (ATC)-controlled airports, clearance must be obtained from the airport control tower, either by appropriate radio frequency or by prior arrangement through other means, before moving aircraft across runways or taxiways.

13.2.11 Other Considerations. Each towing equipment manufacturer will have its own instructions that come with the equipment on how to use and maintain the equipment. Prior to use, the towing personnel should be familiar with the manufacturer's instructions for the equipment. For additional information on towing aircraft for subjects such as training, towing equipment, and towing communication, refer to AC 00-65.

14 MARSHALLING. Marshalling is conducted by a designated signalman/marshaller who directs the ground movement of aircraft by signaling to the pilot of the aircraft from the ground. The designated marshaller does not require an FAA certificate of any type but will be someone who is trained in marshalling hand signals and the local airport marshalling procedures. Not all airports require a marshaller to direct aircraft ground movements. The risk of possible aircraft collision with objects, people, and other aircraft will determine if a designated marshaller is required at the airport full-time, part-time, occasionally, or not at all. If use of a marshaller is required at an airport, the following procedures, at a minimum, should be used by the marshaller.

14.1 Personnel. Movement of aircraft in congested areas should be avoided. However, when necessary, additional marshalling personnel should be stationed near the aircraft wingtips to assure that adequate clearance is maintained.

14.2 Signals. The marshaller should first use any hand signals that are unique to ICAO Annex 2, Appendix 1, paragraphs 5.1 and 6. ICAO Annex 2 is available for purchase at https://store.icao.int/en/annexes. The list of unique hand signals ICAO provides is in Table 1, Unique ICAO Hand Signal for Marshalling Aircraft, and Table 2, ICAO Hand Signal Specific for Marshalling Rotorcraft, and not listed or presented in the same manner as FAA publications. Second, the marshaller should use the hand signals listed in Figure 5, Common Fixed Wing Aircraft Marshalling Signals, and Figure 6, Common Rotorcraft Marshalling Signals, for both common aircraft and rotorcraft hand

signals. Figure 6 contains some hand signals that ICAO does not list or have a counterpart for in ICAO publications for civil rotorcraft operations in the United States.

14.3 Training. No marshaller will guide an aircraft unless trained, qualified, and approved by the appropriate authority to carry out the functions of a signalman.

14.4 Identification. The marshaller should be clearly identified by wearing a distinctive fluorescent identification vest to allow the flightcrew to identify that they are the person responsible for the marshalling operation. When a situation requires added pilot awareness, a flagman can be used to direct the aircraft to the marshaller in waiting (see Figure 1, Flagman Directs Pilot to Marshaller).

14.5 Position. The marshaller should always be in view of the pilot (see Figure 2, Position of a Single Marshaller for Maximum Pilot Observation). When any number of guides is used, they should always be in view of the head marshaller (see Figure 3, Positioning of One Marshaller and a Guide During a Gate Pushback Operation with a Tug).

14.6 Hand Signal Enhancement Devices. Daylight-fluorescent wands, table tennis bats, or gloves should be used for all signaling by all participating marshallers during daylight hours. Illuminated wands should be used at night or in low visibility (see Figure 4, Night Marshalling Operations).

Table 1. Unique ICAO Hand Signal for Marshalling Aircraft

ICAO HAND SIGNAL FOR MARSHALLING AIRCRAFT		
Wingwalker/Guide	Establish communication via interphone (technical/servicing communication signal)	Open/close stairs (technical/servicing communication signal)
Fire	Identify Gate	Negative (technical/servicing communication signal)
Disconnect power (technical/servicing communication signal)	Connect ground power (technical/servicing communication signal)	Normal Stop
Do not touch controls (technical/servicing communication signal)	Dispatch Aircraft	Hold Position/Stand By
Straight Ahead	Turns while backing (for tail to port)	Turns while backing (for tail to starboard)
Move Back	Set Brakes	Cut Engines
Turn right (from pilot's point of view)	Turn left (from pilot's point of view)	Release Brakes
Slow down engine(s) on indicated side	Chocks Removed	Chocks Inserted
Proceed to next signalman or as directed by tower/ground control	Affirmative/All Clear	

Table 2. ICAO Hand Signal Specific for Marshalling Rotorcraft

ICAO HAND SIGNAL SPECIFIC FOR MARSHALLING ROTORCRAFT
Land
Hover

Figure 1. Flagman Directs Pilot to Marshaller

Figure 2. Position of a Single Marshaller for Maximum Pilot Observation

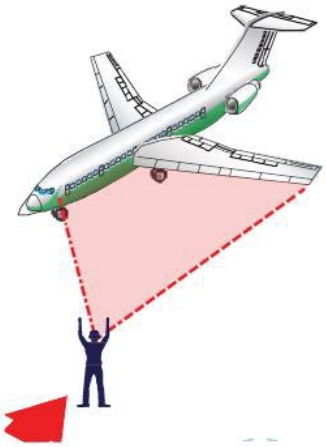

Figure 3. Positioning of One Marshaller and a Guide During a Gate Pushback Operation with a Tug

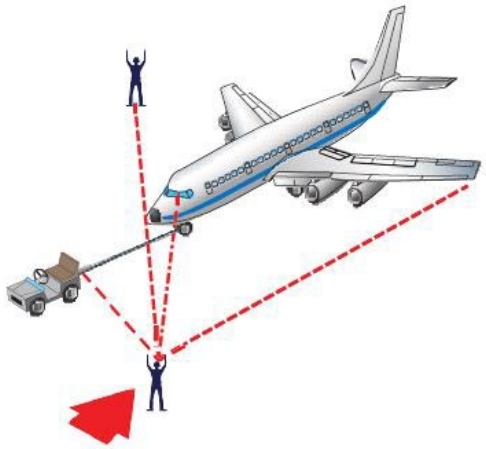

Figure 4. Night Marshalling Operations

Marshaller Using Illuminated Wands

Figure 5. Common Fixed Wing Aircraft Marshalling Signals

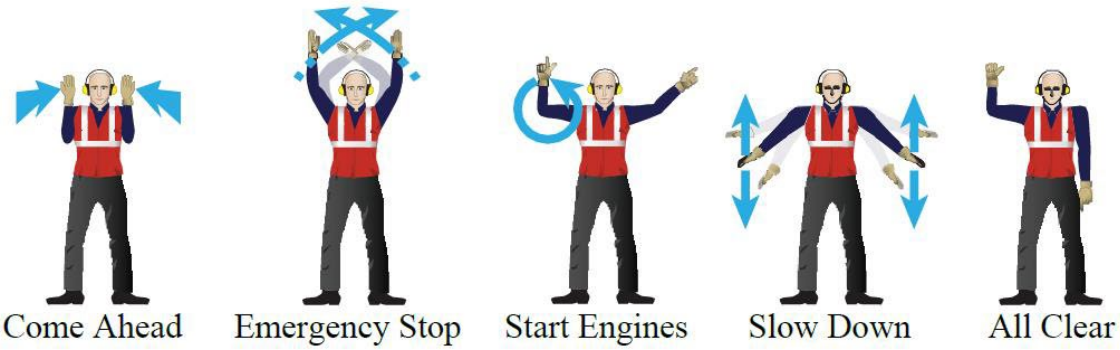

Figure 6. Common Rotorcraft Marshalling Signals

15 AC FEEDBACK FORM. For your convenience, the AC Feedback Form is the last page of this AC. Note any deficiencies found, clarifications needed, or suggested improvements regarding the contents of this AC on the Feedback Form.

Lawrence Fields
Acting Executive Director, Flight Standards Service