AERODROME SAFETY PUBLICATION

Number: ASP 07
Issue No.: 01
Issued: 12 July 2021
Effective Date: 12 July 2021

Subject: Apron management service & apron safety

References: Seychelles Technical Standards – Aerodromes (STS-ADR)
ICAO Annex 14, Volume I – Aerodrome design & operations
ICAO Annex 2 – Rules of the air
ICAO Doc 9137 – Airport Services Manual, Part 8

Contents

Note – Aerodrome Safety Publications are published by the SCAA for purposes of promulgating supplementary guidance materials to the Standards and Recommended Practices (SARPs) in the Manual of Aerodrome Standards. The publications are intended to provide recommendations and guidance to illustrate a means, but not necessarily the only means, of complying with SARPs. Aerodrome Safety Publications may explain certain regulatory requirements by providing interpretive and explanatory materials.

1. Purpose

1.1. The purpose of this Aerodrome Safety Publication (ASP) is to provide supplementary guidance to aerodrome operators on provision of apron management service. It provides guidance on what is acceptable to the Aerodromes Safety & Standards Inspectorate (ASSI) of the Seychelles Civil Aviation Authority (SCAA) to demonstrate compliance with regulatory requirements under STS-ADR 13.6 relating to apron management service.

1.2. The contents of this ASP and those in Chapter 7 (Apron Safety) of ASP 06 – PANS-ADR are complementary in nature.

2. Applicability

2.1. This ASP applies to all aerodrome operators subjected to Regulation 61 of the Civil Aviation (Safety) Regulations, 2017 and the Seychelles Technical Standards - Aerodromes.

3. Cancellation

3.1. Nil.

4. Introduction

4.1. The air traffic control service at an aerodrome extends throughout the manoeuvring area, but no specific instructions relating to such a service covers the apron. Therefore, an apron management service is required to regulate the activities and movement of aircraft, vehicles and personnel on the apron.

4.2. There are a variety of different approaches to apron management which have been developed and which can, depending on the particular condition, accommodate the requirements of the aerodrome.

4.3. Generally, it is not practicable to exercise total control over all traffic on the movement area. However, in very poor visibility conditions it may be necessary to exercise such a control at the expense of capacity. Safety and expedition generally depend on aircraft and vehicles conforming to standard ground movement rules and regulations. The apron management must establish rules related to the operation of aircraft and ground vehicles on the aprons. These rules should be compatible with those for the manoeuvring area.

5.   When should an apron management service be established?

5.1.   STS-ADR 13.6 recommends that an apron management service be provided when warranted by the volume of traffic and operating conditions.

5.2.   It is not possible to define at what levels of traffic volume and under what operating conditions an apron management service should be established. Generally speaking the more complex the apron layout the more comprehensive an apron management service needs to be, particularly when taxiways are included in the apron area. The decision whether or not to provide an apron management service at a particular airport rests with aerodrome authority.

5.3.   The following operational factors may be considered when determining the need to establish a dedicated apron management service:
a) the traffic density;
b) the complexity of the apron layout; and
c) the visibility conditions under which the aerodrome authority plans to maintain operations.

5.4.   Most aerodromes may already have some form of apron management. This may simply be an area set aside for the parking of aircraft, with painted lines to guide pilots to self-manoeuvring aircraft stands. At the other end of the scale, the apron area may be a large part of the movement area with numerous nose-in stands, several terminals and complex taxiways forming part of the layout. A complex apron area such as this will need a comprehensive apron management service including radio communication facilities.

5.5.   Aerodrome authorities must therefore consider what scope of management is needed for the activity on their apron areas to ensure safe and efficient operation of aircraft and vehicles in close proximity. This is particularly important where low visibility operations are contemplated.

5.6.   The following may be considered when considering the scope of the apron management service:

a) Is the apron area sufficiently large, complex or busy to merit a separate staff to manage it?
b) What radiotelephony facilities do the staff need to exercise control over their own vehicles, airline vehicles and, if necessary, over aircraft using apron taxiways?
c) If apron management staff are required to exercise control over aircraft and vehicles on the apron area to ensure safe separation, then such staff should be properly trained and licensed and their legal authority clearly established.
d) Will the apron management service issue its own instructions such as stand allocation, start-up, push back, and taxi clearances, or will these be given by the ATS unit as an element of the apron management service?
e) How will the various airline service vehicles be regulated on the apron as well as on airside roads serving aircraft stands?

f) Is there a need for roads, controlled or uncontrolled, crossing apron taxiways?

g) Who will be responsible for inspection, maintenance and cleanliness of the aprons?

h) What size marshalling service, including leader van service (follow-me vehicles), is required to meet aircraft parking and guidance needs?

i) Are low visibility operations contemplated at the aerodrome? If so what procedures need to be developed to ensure safety on the apron area?

j) Are there procedures to cater for contingencies such as accidents, emergencies, diversion aircraft, and flow control when the stands are nearly all occupied, maintenance work, stand cleaning and security?

6. Who operates the apron management service?

6.1. Apron management service may be provided by the aerodrome ATS, by a unit set up by the aerodrome authority, or by co-ordinated control between ATS and the aerodrome authority.

6.2. Management by the aerodrome authority:
Some countries have found that a preferred system of operating aprons has been to set up a traffic management control procedure in which a single unit takes over the responsibility for aircraft and vehicles at a pre-determined handover point between the apron and the manoeuvring area. Generally, the edge of the manoeuvring area represents the handover point. In any event, the handover point should be clearly defined and be indicated on the ground and on appropriate charts, for example the aerodrome chart, for the benefit of aircraft and vehicle operators. The apron management unit will then assume responsibilities for managing and co-ordination all aircraft traffic on the apron, issuing verbal instructions on an agreed radio frequency, and managing all apron vehicle traffic and other apron activities in order to advise aircraft of potential hazards within the apron area. By arrangement with the aerodrome ATS unit, start-up and taxi clearances will be given to departing aircraft to the handover point where the ATS unit assumes responsibility.

6.3. Co-ordinated management:
One form of the co-ordinated apron management service is where radio communication with aircraft requiring start-up or pushback clearance on the apron is vested in the ATS unit, and the control of vehicles is the responsibility of the aerodrome authority. At these aerodromes, ATS instructions to aircraft are given on the understanding that safe separation between the aircraft and vehicles not under radio control is not included in the instruction.

The apron management unit provided by the aerodrome authority maintains close communication with the ATS unit, and is responsible for aircraft stand allocation, dissemination of movement information to aircraft operators by monitoring ATC frequencies, and by updating basic information continuously on aircraft arrival times, landings and take-offs. The apron management service should ensure that the apron area is kept clean by airport maintenance and that established aircraft clearance distances are available at the aircraft stand. The

apron management unit may also provide a marshalling service and a leader van (follow-me vehicle) service. The unit staff will also be responsible for the maintenance of discipline and compliance with regulations relating to the control of vehicles, as laid down by the aerodrome authority.

6.4.   Whichever method of operating an apron management service is provided, the need for close liaison between the aerodrome authority, aircraft operator and ATS is paramount. Stand allocation, aircraft arrival or departure time, start-up clearances, dissemination of information to operators, notification of work in progress and non-availability of facilities, security arrangements and the availability of safety services, are all items of vital importance to both ATS and the aerodrome authority. The operational efficiency and safety of whichever system is adopted, depends very largely upon this close co-operation.

7.   Apron management service responsibilities and functions

7.1.   Aircraft stand allocation
The aerodrome operator normally retains over-all responsibility for aircraft stand allocation although for operational convenience and efficiency a system of preferred user stands may be established. Instructions should clearly state which stands may be used by which aircraft or groups of aircraft. Where considered desirable, a preferred order of use of stands should be laid down. Apron management staff should be given clear guidance on the stand occupancy times to be permitted and the steps to be taken to achieve compliance with the rules.

The responsibility for stand allocation may be delegated to an airline where that airline has a dedicated terminal or apron area.

7.2.   Aircraft arrival / departure times
Foreknowledge of arrival and departure times scheduled, estimated and actual is required by ATS, apron management, terminal management and the operators. A system should be established to ensure that this information is passed between all interested parties as quickly and efficiently as possible.

7.3.   Start-up clearances
Normally the ATS unit gives these. Where an apron management service operates its own radio communication on the apron area, procedures will need to be established between the apron management service and the ATS unit to ensure the efficient co-ordination and delivery of such clearances.

7.4.   Dissemination of information to operators
A system should be established to ensure the efficient distribution of relevant information between apron management, ATS and operators. Such information could include notification of work in progress, non-availability of facilities and low visibility procedures.

7.5. Security arrangements
In addition to normal security arrangements there are security requirements which are of interest to many parties who operate on the apron. These would include contingency plans for such eventualities as baggage identification on the stand, bomb warnings and hijack threats.

7.6. Availability of safety services
The rescue and firefighting services (RFF) are normally alerted to an incident on the movement area by ATS. However, at aerodromes where aircraft on the apron area are controlled by the apron management service, a communication system needs to be established to alert the RFF when an incident occurs in the apron area of responsibility.

7.7. Apron discipline
The apron management service will be responsible for ensuring compliance with regulations relating to the apron by all parties.

7.8. Aircraft parking/docking guidance system
The apron guidance system provided will depend upon the accuracy of parking required and the types of aircraft operating on the apron. The simplest form of stand guidance, where precise accuracy is not required, will comprise stand identification and centre line paint markings. Guidance on apron markings is given in ICAO Doc 9157 - Aerodrome Design Manual, Part 4. The apron management service should monitor all paint markings to ensure that they are maintained in a clean condition to retain maximum visibility. Where more accurate parking/docking is required then one of the guidance systems conforming to the specifications in STS-ADR, Chapter 9 must be installed. Details of these systems are given in ICAO Doc 9157 - Aerodrome Design Manual, Part 4. The apron management service should monitor these systems and associated guidance lights to ensure that they are inspected at least weekly to maintain high standards of serviceability.

7.9. Marshalling service
An aerodrome marshalling service should be provided where parking, docking guidance systems do not exist or are unserviceable, and where guidance to aircraft parking is required to avoid a safety hazard and to make the most efficient use of available parking space. Proper training arrangements should exist for marshallers and only those who have demonstrated satisfactory competence should be permitted to marshal aircraft. Where aerodrome marshalling is provided, comprehensive instructions should be written for marshallers including:

a) the absolute necessity for using only authorized signals (ref Appendix 1). Copies of these should be displayed at suitable points;
b) the need to ensure that prior to using the authorized signals the marshaller shall ascertain that the area within which an aircraft is to be guided is clear of objects which the aircraft, in complying with his signals, might otherwise strike;
c) the circumstances in which single man marshalling may be used and the

occasions when assistance of wing walkers should be employed;

d) the action to be taken in the event of an emergency or incident involving an aircraft and/or vehicle occurring during marshalling, e.g. collision, fire, fuel spillage;

A distinctive jacket must be worn at all times. This jacket can be of the waistcoat variety colored day-glow red, reflective orange, or reflective yellow.

The badly executed aircraft manoeuvre could lead to the need for use of excessive engine power for corrective action, with consequent risk of injury or damage from blast. If necessary, aircraft in these situations should be signaled to close down engines and re-positioning is carried out by tractor.

7.10. Leader van (follow-me) service

At aerodromes where ground guidance (follow-me) vehilces are in use, local orders should ensure that drivers are suitably trained in radiotelephony communication procedures, visual signals, taxiing speeds and the correct aircraft/vehicle spacings.

7.11. Diversions

Contingency arrangements should be made at each airport to deal with the possibility of apron congestion due to a large influx of diverted aircraft. These arrangements should include the setting up of liaison committee of all parties concerned to enable quick decisions to be made. Warning arrangements should be made to alert operators to any approaching saturation of apron or terminal facilities. The apron management unit plays a key role in implementing such contingency arrangement for dealing with diversions and forecasting of saturation of facilities.

8. Apron Safety

8.1. Blast precautions

All apron users should be made aware of the hazards arising from jet effluxes and propeller slipstreams. Where necessary, apron design will have incorporated blast fences and the best use must be made of these to protect equipment. All vehicles and wheeled equipment must be left properly braked and, where appropriate, on jacks to minimize the risk of movement when subjected to jet blast or propeller slipstream. Particular care must be exercised with apron equipment having large flat side surface area. Litter or rubbish can constitute a risk when acted on by blast and it is thus necessary to ensure that aprons are kept clean. Responsibility for the marshalling of passengers across aprons rests with the airline or its agent. However, airport staff should be aware of the risk to passengers on aprons from jet blast and should be prepared to give warning when this seems necessary.

8.2. Aircraft refueling

Airlines and fuel companies are responsible for the observance of safety procedures during the fuelling of aircraft. All personnel working on aprons should, however, be made aware of the major safety precautions and should

report any apparent breach to the person in charge of the fuelling operations, the fueling overseer. The main points to be observed are:

a) no smoking or naked lights within the fuelling zone;

b) auxiliary power units and ground power units shall not be started during the fuelling operation;

c) a clear exit path maintained to and from the aircraft to allow the quick removal of fuelling equipment and persons in an emergency;

d) aircraft and supply sources shall be correctly bonded and the correct earthing procedures employed;

e) fire extinguishers of a suitable type should be readily available; and

f) fuel spillage should he immediately brought to the attention of the fuelling overseer. Detailed instructions should be laid down for dealing with fuel spillage.

When necessary, aircraft fuelling companies should be given instructions with respect to the acceptable positioning of vehicles relative to the aircraft to ensure that taxing clearance limits are not infringed. Guidance on precautionary measures to be taken while fuelling operations are carried out is contained in the ICAO Doc 9137, Airport Services Manual, Part 1 - Rescue and Fire Fighting.

8.3. Apron sweeping

The cleanliness of paved areas is vital to prevent foreign object damage (FOD) to the engines of taxiing aircraft. A regular programme should be instituted for the mechanical sweeping of aprons and taxiways so that in a given period of time all the operational paved areas where aircraft taxi or park will have been swept. In addition, sweeping should be available "on request" to deal with those areas on which loose material has accumulated since the last regular sweeping and which represent a hazard to aircraft. It is unlikely that there will be any requirement to sweep the runway on a regular basis unless the airfield is located in a dusty or sandy area.

8.4. Apron cleaning

At regular intervals, aircraft stands should be withdrawn from service and scrubbed with a chemical solvent to remove oil, grease and rubber marks. This is also required prior to repainting stand markings. The solvent may be applied from a bowser using spray booms and the stand is then scrubbed using a mechanical rotary brush. It is important that the stand being scrubbed should not be used by aircraft during the scrubbing operation.

9. Training

9.1. The functions of the apron management service require that its staff be appropriately trained and authorized to carry out their respective responsibilities. This applies particularly to those responsible for the operation of an apron management centre or tower, to marshallers and to leader van (follow-me vehicle) operators.

9.2. Staff operating an apron management centre or tower have the responsibility for managing and, at some aerodromes, controlling aircraft movement within their area of responsibility. To a considerable extent their function is similar to

that of ATC control on the manoeuvring area and similar training of staff is required. As a minimum, the following should be included in their training programme:

a) ATS unit/apron management co-ordination;
b) aircraft stand allocation procedures;
c) start-up procedures;
d) push-back procedures;
e) gate holding procedures;
f) taxi clearances; and
g) en-route clearances.

9.3. Aircraft marshallers require training to ensure that they are properly qualified to direct aircraft movements. Their training should focus on:

a) signaling;
b) aircraft characteristics, both physical and operating, that relate to manoeuvring of aircraft within the confines of the apron; and
c) personal safety around aircraft and particularly engines.

9.4. At aerodromes where leader vans ("follow me" vehicles) are in use, local regulations should ensure that drivers are suitably qualified in radiotelephony communication procedures, know visual signals and have a suitable knowledge of taxiing speeds and correct aircraft/vehicle spacing. A thorough knowledge of the aerodrome layout with an ability to find one's way in low visibility is important.

10. Queries

10.1. Any queries relating to this Aerodrome Notice should be addressed to Head of Aerodrome Safety & Standards Inspectorate on seyaga@scaa.sc

Aerodrome Safety & Standards Inspectorate
Seychelles Civil Aviation Authority

Appendix 1 – Marshalling signals

1. From a signalman to an aircraft

Notes
i. *These signals are designed for use by the signalman, with hands illuminated as necessary to facilitate observation by the pilot, and facing the aircraft in a position:*
   a) *for fixed-wing aircraft, on left side of aircraft, where best seen by the pilot; and*
   b) *for helicopters, where the signalman can best be seen by the pilot.*
ii. *The meaning of the relevant signals remains the same if bats, illuminated wands or torchlights are held.*
iii. *The aircraft engines are numbered, for the signalman facing the aircraft, from right to left (i.e. No. 1 engine being the port outer engine).*
iv. *Signals marked with an asterisk (*) are designed for use to hovering helicopters.*
v. *References to wands may also be read to refer to daylight-fluorescent table-tennis bats or gloves (daytime only).*
vi. *References to the signalman may also be read to refer to marshaller.*

1.1. Prior to using the following signals, the signalman shall ascertain that the area within which an aircraft is to be guided is clear of objects which the aircraft might otherwise strike.

Note 1 - Upon observing or receiving any of the signals below, the pilot will take such action as may be required by the interpretation of the signal given.

Note 2 - The design of many aircraft is such that the path of the wing tips, engines and other extremities cannot always be monitored visually from the flight deck while the aircraft is being manoeuvred on the ground.


1. Wingwalker/guide

Raise right hand above head level with wand pointing up; move left-hand wand pointing down toward body.

Note.— This signal provides an indication by a person positioned at the aircraft wing tip, to the pilot/ marshaller/ push-back operator, that the aircraft movement on/off a parking position would be unobstructed.

2. Identify gate

Raise fully extended arms straight above head with wands pointing up.
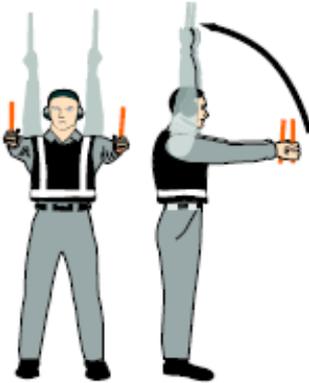
3. Proceed to next signalman or as directed by tower/ground control

Point both arms upward; move and extend arms outward to sides of body and point with wands to direction of next signalman or taxi area.

6 a). Normal stop

Fully extend arms and wands at a 90-degree angle to sides and slowly move to above head until wands cross.
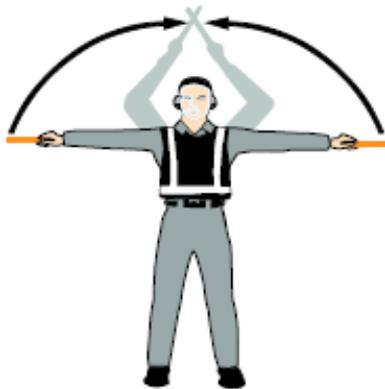
6 b). Emergency stop

Abruptly extend arms and wands to top of head, crossing wands.

7 a).   Set brakes

Raise hand just above shoulder height with open palm. Ensuring eye contact with flight crew, close hand into a fist. Do not move until receipt of "thumbs up" acknowledgement from flight crew.

7 b).   Release brakes

Raise hand just above shoulder height with hand closed in a fist. Ensuring eye contact with flight crew, open palm. Do not move until receipt of "thumbs up" acknowledgement from flight crew.

8 a).   Chocks inserted

With arms and wands fully extended above head, move wands inward in a "jabbing" motion until wands touch. **Ensure acknowledgement is received from flight crew.**

8 b).   Chocks removed

With arms and wands fully extended above head, move wands outward in a "jabbing" motion. **Do not** remove chocks until authorized by flight crew.
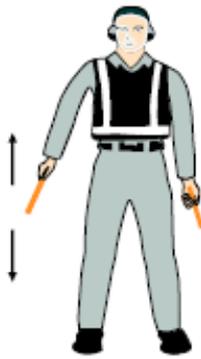
12. **Slow down engine(s)
on indicated side**

With arms down and wands toward ground, wave either *right* or *left* wand up and down indicating engine(s) on *left* or *right* side respectively should be slowed down.

13. **Move back**

With arms in front of body at waist height, rotate arms in a forward motion. To stop rearward movement, use signal 6 a) or 6 b).

14 a). **Turns while backing
(for tail to starboard)**

Point left arm with wand down and bring right arm from overhead vertical position to horizontal forward position, repeating right-arm movement.

14 b). **Turns while backing
(for tail to port)**

Point right arm with wand down and bring left arm from overhead vertical position to horizontal forward position, repeating left-arm movement.
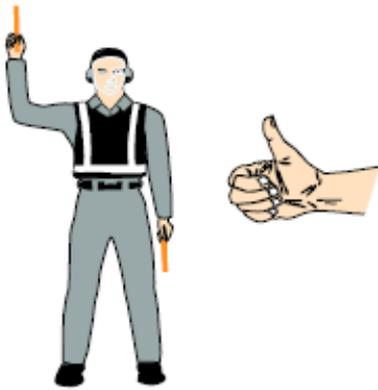
15.   Affirmative/all clear

Raise right arm to head level with wand pointing up or display hand with "thumbs up"; left arm remains at side by knee.

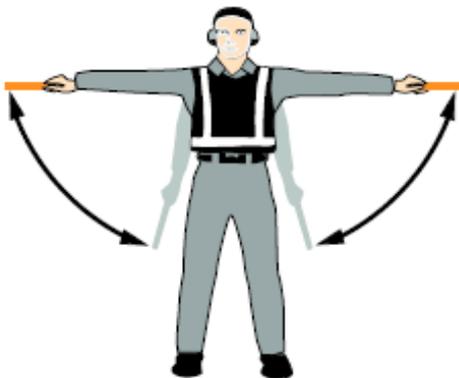   *Note.— This signal is also used as a technical/ servicing communication signal.*

*16.   Hover

Fully extend arms and wands at a 90-degree angle to sides.
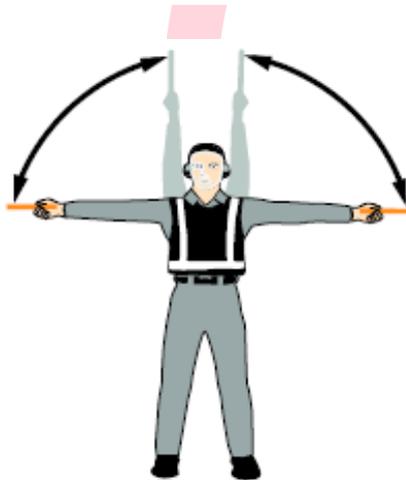
*17.   Move upwards

Fully extend arms and wands at a 90-degree angle to sides and, with palms turned up, move hands upwards. Speed of movement indicates rate of ascent.
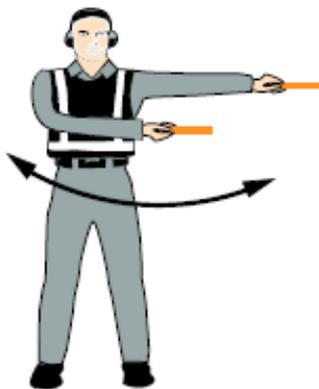
*18.   Move downwards

Fully extend arms and wands at a 90-degree angle to sides and, with palms turned down, move hands down-wards. Speed of movement indicates rate of descent.
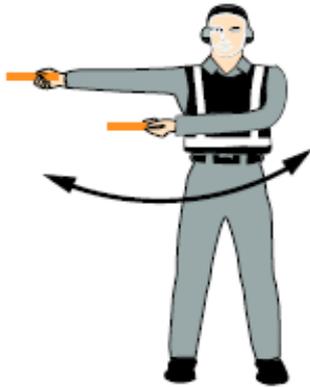
***19 a).   Move horizontally left
(from pilot's point of view)**

Extend arm horizontally at a 90-degree angle to right side of body. Move other arm in same direction in a sweeping motion.
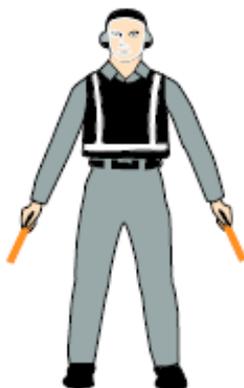
***19 b).   Move horizontally right
(from pilot's point of view)**

Extend arm horizontally at a 90-degree angle to left side of body. Move other arm in same direction in a sweeping motion.

*20.   Land

Cross arms with wands downwards and in front of body.

21.   Hold position/stand by

Fully extend arms and wands downwards at a 45-degree angle to sides. Hold position until aircraft is clear for next manoeuvre.
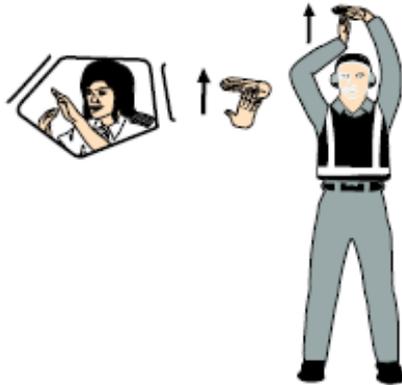
22. Dispatch aircraft

Perform a standard salute with right hand and/or wand to dispatch the aircraft. Maintain eye contact with flight crew until aircraft has begun to taxi.

23. Do not touch controls (technical/servicing communication signal)

Extend right arm fully above head and close fist or hold wand in horizontal position; left arm remains at side by knee.

24. Connect ground power (technical/servicing communication signal)

Hold arms fully extended above head; open left hand horizontally and move finger tips of right hand into and touch open palm of left hand (forming a "T"). At night, illuminated wands can also be used to form the "T" above head.
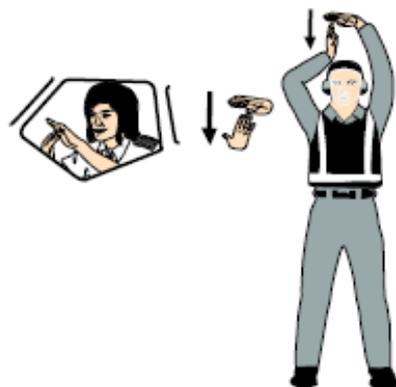
25. Disconnect power (technical/servicing communication signal)

Hold arms fully extended above head with finger tips of right hand touching open horizontal palm of left hand (forming a "T"); then move right hand away from the left. **Do not** disconnect power until authorized by flight crew. At night, illuminated wands can also be used to form the "T" above head.
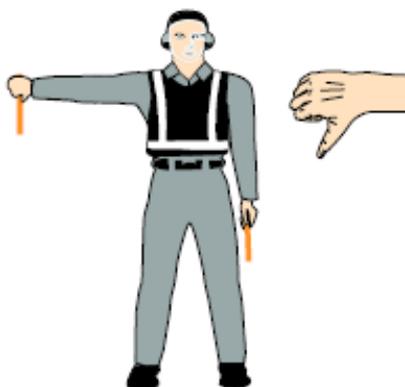
26. Negative
(technical/servicing
communication signal)

Hold right arm straight out at 90 degrees from shoulder and point wand down to ground or display hand with "thumbs down"; left hand remains at side by knee.

27. Establish communication
via interphone
(technical/servicing
communication signal)

Extend both arms at 90 degrees from body and move hands to cup both ears.

28. Open/close stairs
(technical/servicing
communication signal)

With right arm at side and left arm raised above head at a 45-degree angle, move right arm in a sweeping motion towards top of left shoulder.

Note.— This signal is intended mainly for aircraft with the set of integral stairs at the front.

2. From the pilot of an aircraft to a signal man

Notes
i. *These signals are designed for use by a pilot in the cockpit with hands plainly visible to the signalman, and illuminated as necessary to facilitate observation by the signalman.*
ii. *The aircraft engines are numbered in relation to the signalman facing the aircraft, from right to left (i.e. No. 1 engine being the port outer engine).*

2.1.   Brakes
Note - The moment the fist is clenched or the fingers are extended indicates, respectively, the moment of brake engagement or release.
a) Brakes engaged: raise arm and hand, with fingers extended, horizontally in front

of face, then clench fist.
b) Brakes released: raise arm, with fist clenched, horizontally in front of face, then extend fingers.

2.2. Chocks
a) Insert chocks: arms extended, palms outwards, move hands inwards to cross in front of face.
b) Remove chocks: hands crossed in front of face, palms outwards, move arms outwards.

2.3. Ready to start engine(s)
a) Raise the appropriate number of fingers on one hand indicating the number of the engine to be started.

3. Standard emergency hand signals

3.1. The following hand signals are established as the minimum required for emergency communication between the aircraft rescue and firefighting (ARFF) incident commander/ARFF firefighters and the cockpit and/or cabin crews of the incident aircraft. ARFF emergency hand signals should be given from the left front side of the aircraft for the flight crew.
Note - In order to communicate more effectively with the cabin crew, emergency hand signals may be given by ARFF firefighters from other positions

1. Recommend evacuation

Evacuation recommended based on ARFF and incident commander's assessment of external situation.

Arm extended from body and held horizontal with hand upraised at eye level. Execute beckoning arm motion angled backward. Non-beckoning arm held against body.

Night — same with wands.

2. Recommended stop

Recommend evacuation in progress be halted. Stop aircraft movement or other activity in progress.

Arms in front of head, crossed at wrists.

Night — same with wands.

3. Emergency contained

No outside evidence of dangerous conditions or "all-clear."

Arms extended outward and down at a 45-degree angle. Arms moved inward below waistline simultaneously until wrists crossed, then extended outward to starting position (umpire's "safe" signal).

Night — same with wands.

4. Fire

Move right-hand in a "fanning" motion from shoulder to knee, while at the same time pointing with left hand to area of fire.

Night — same with wands.