



**U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

Air Traffic Organization Policy

**ORDER
JO 7110.118B**

Effective Date:
November 15, 2020

SUBJ: Land and Hold Short Operations (LAHSO)

- 1. Purpose of This Order.** This order prescribes the standards for use by the Air Traffic Organization (ATO), Flight Standards (FS), and Airports Safety and Standards (AAS) in approving and conducting land and hold short operations (LAHSO). It also establishes the terms of reference, conditions, and limitations for the application of LAHSO. This order provides procedures to be applied when LAHSO clearances are being issued to Title 14, Code of Federal Regulations (CFR), Parts 91, 121, 125, 129, and 135 aircraft operators.
- 2. Audience.** This order applies to the Air Traffic Organization, Flight Standards, and Airports Safety and Standards.
- 3. Where Can I Find This Order?** This order is available on the employee MyFAA website at https://employees.faa.gov/tools_resources/orders_notices/ and on the public FAA website at http://www.faa.gov/regulations_policies/orders_notices/.
- 4. Cancellation.** This order cancels FAA Order JO 7110.118A, Land and Hold Short Operations, effective January 30, 2016.
- 5. Explanation of Policy Changes.** This order:
 - a. Provides updates to organization titles and routing symbols.
 - b. Replaces reference to AC 150/5340-29, Installation Details for Land and Hold Short Lighting Systems, with AC 150/5340-30, Design and Installation Details for Airport Visual Aids, and adds AC 150/5345-54, Specification for L-884 Power and Control Unit for Land and Hold Short Lighting Systems, in para. 8c(1) and Appendix A, para. 4c.
 - c. Amends “Installing a LAHSO in-pavement lighting system at ‘all’ LAHSO locations,” to ‘those required’, in Appendix A, para. 4c.
 - d. Amends “pilot in command” to “pilot/flight crew” electing to go-around, in para.14k.
 - e. Amends “hold short clearance” to “hold short runway” for clarity in para. 7b(1) and (2).
 - f. Adds “minimum” to ceiling and visibility in para. 8a(1)(a) and (b).
 - g. Provides new language in para. 8c(4) to more clearly define LAHSO lighting requirements.
 - h. Provides new language in para. 8d to more clearly define vertical guidance requirements.
- 6. Waivers.** No waivers will be issued.

7. Criteria for Conducting LAHSO. Local LAHSO development teams must be established, in accordance with subparagraph 10b(1) of this order, to develop procedures utilizing the following criteria:

a. The minimum distance required to conduct LAHSO will be 2,500 feet of the Available Landing Distance (ALD) on the hold short runway. This distance will be measured from the landing threshold to the hold short point.

b. For air carrier operations only:

(1) Arrival/arrival. Approved if the distance from the landing threshold of the full-length runway to the intersection of the hold short runway is greater than 3,000 feet.

(2) Arrival/departure. Approved if the distance from the departure runway threshold of the full-length runway to the intersection of the hold short runway is less than 2,000 feet.

(3) If the runway distance and configuration do not meet the requirements of subparagraphs 7b(1) and (2) of this order, and air carrier operations are being conducted, rejected landing procedures (RLP) must be developed and validated through modeling in accordance with FAA requirements using the following guidelines:

(a) The local LAHSO development team (see Paragraph 10b(1) of this order) is responsible for developing the procedure collaboratively, considering the following:

(i) A heading to fly with instructions to remain clear of clouds.

(ii) The point from which the rejected landing is initiated (the first one-third of the runway, or 3,000 feet, whichever is less).

(iii) Potential conflict with terrain or obstacles along the rejected landing flight path.

(iv) Potential conflict with other procedural requirements; for example, is there a possible conflict between an RLP and a one-engine-out procedure for a full-length aircraft?

(v) Performance of the LAHSO aircraft and the full-length aircraft.

(vi) Different full-length traffic scenarios (for example, arrival, departure, go-around).

(vii) Any other locally specific issues.

(b) Only one RLP can be developed for each runway configuration. Therefore, this single RLP must be designed to accommodate all types of aircraft that could possibly be required to use it.

(c) Through modeling, RLPs must demonstrate an acceptable level of safety.

(d) Local facilities must submit the RLP procedure(s) to the Service Area Director of Air Traffic Operations through the Operations Support Group (OSG) for approval.

(e) The local LAHSO development team is responsible for validating the procedure through modeling before approval to the facility for use.

8. LAHSO Procedures.

a. General. The following conditions must exist at the airport:

(1) Ceiling and visibility requirements.

(a) Non-air carrier aircraft: ceiling minimum of 1,000 feet and visibility minimum of 3 miles.

(b) Air carrier aircraft: ceiling minimum of 1,500 feet and visibility minimum of 5 miles, unless the landing runway is equipped with a precision approach path indicator (PAPI) or visual approach slope indicator (VASI), in which case a minimum of 1,000 feet ceiling and a minimum of 3 miles visibility applies. For configurations requiring an RLP, the ceiling and visibility may differ.

- (2) The LAHSO runway ALD must be dry.
- (3) The tailwind on the hold short runway must be calm (less than 3 knots).
- (4) LAHSO must not be utilized if wind shear has been reported.
- (5) LAHSO will only be conducted at those airports that maintain a letter of agreement (LOA) signed by all the required parties, as defined in Paragraph 9 of this order.

b. Runway Equipment and Facilities. Markings and signs must be installed in accordance with FAA Advisory Circular (AC) 150/5340-1, Standards for Airport Markings; and AC 150/5340-18, Standards for Airport Sign Systems.

- (1) Runway hold-short position markings must be installed and clearly visible at all hold short points.
- (2) There must be only one designated hold short point per operational direction on a runway.
- (3) Runway hold short position signs must be installed at each hold short point and must be located on both sides of the runway. If one of the two signs is not functional or is destroyed, LAHSO may continue until the sign is repaired or replaced, if Land and Hold Short Lights are installed and operating.

c. Lighting.

(1) Land and Hold Short Lights must be installed, in accordance with AC 150/5340-30, Design and Installation Details for Airport Visual Aids, and AC 150/5345-54, Specification for L-884 Power and Control Unit for Land and Hold Short Lighting Systems.

(2) When two or more Land and Hold Short Lights in a bar are not functional, the entire bar is considered out of service and operations requiring those lights must be terminated.

(3) If the Automatic Terminal Information Service (ATIS) broadcast contains a generic LAHSO announcement (for example, "LAHSO in effect"), then all Land and Hold Short Lights must be on. If the ATIS broadcast contains specific hold short points (for example, "Expect landing on Runway 22 to hold short of Runway 27"), then only those land and hold short lights must be on.

(4) Where installed, use Land and Hold Short Lights as follows:

(a) Air Carrier instructed to hold short: Land and Hold Short Lights on the hold short runway are required at all times.

(b) Non Air Carrier instructed to hold short: Land and Hold Short Lights on the hold short runway are required only at night.

d. Glide Slope. An electronic glide slope or a Visual Glide Slope Indicator (VGSI) is required as shown below for all air carrier and/or mixed LAHSO:

(1) Day: LAHSO is only authorized on a runway that has an electronic glide slope or VGSI. The VGSI may be either a Precision Approach Path Indicator (PAPI) or a Visual Approach Slope Indicator (VASI).

(2) Night: LAHSO is only authorized on a runway that has a VGSI (PAPI or VASI).

e. A LAHSO clearance must only be issued to specified aircraft listed in FAA Order JO 7360.1, Aircraft Type Designators. In addition, a LAHSO clearance must only be issued to an aircraft and/or operator listed in accordance with paragraphs 10b(3) and (4) of this order. LAHSO operations involving helicopters may be authorized upon operator request. An eligible available landing distance list for each LAHSO configuration must be placed at all affected positions of operation. Use of automated display tools fulfills this requirement.

NOTE-

Controllers should be aware that pilots may not be able to accept a LAHSO clearance below 1,000 feet above ground level.

- f. When pilots identify themselves as a solo student pilot, that pilot must not be issued a LAHSO clearance.
- g. When LAHSO operations are expected to be utilized, an announcement must be made on the ATIS; for example, "LAHSO in effect" or "Expect landing on Runway 22 to hold short of Runway 27." Local LAHSO development teams will determine whether to broadcast ALDs on the ATIS.
- h. When LAHSO is conducted at locations not served by an ATIS, or the ATIS is out of service, pilots must be advised on initial contact, or as soon as practicable thereafter, that LAHSO is in effect.
- i. Aircraft conducting closed traffic need only be advised once that "LAHSO is in effect." Acknowledgment of the ATIS meets this requirement.
- j. Traffic information must be exchanged, and a read-back must be obtained from the landing aircraft with a LAHSO clearance.
- k. Aircraft/vehicles may be allowed to cross the portion of the runway surface beyond the hold short point. The pilot/operator must be informed of the landing traffic, and acknowledge the crossing instruction. All other operations beyond the hold short point are prohibited.
- l. LAHSO must be terminated for any situation or weather condition that, in the judgment of the airport traffic control tower supervisor/controller in charge, would adversely affect LAHSO.

9. Letters of Agreement. Conducting LAHSO, in accordance with the provisions of this order, requires that airport operators agree to undertake specific actions, including the installation and maintenance of required markings, signs, and in-pavement lighting. This involves a considerable capital investment and imposes specific responsibilities and obligations on the airport operator. In order to ensure that LAHSO is conducted safely and in strict accordance with the provisions of this order, and to ensure that airport operators agree and are fully aware of their responsibilities, formal, signed LOAs between the airport operator and the ATC facility manager are required for the approval and implementation of LAHSO. A sample LOA is attached as Appendix A. At a minimum, LOAs must address:

- a. Procedures for use of LAHSO at their specific localities.
- b. Installation and maintenance of required markings, signs, and lighting.
- c. Determination of the measured length of the ALD.
- d. Coordination procedures for prompt exchange of required information (for example, inoperative lights, runway condition reports, pilot reports, braking action reports, etc.).

10. Responsibilities.

- a. ATO, Mission Support Services is responsible for:
 - (1) Incorporating the applicable standards, procedures, criteria, and requirements contained in this order into appropriate ATO documents.
 - (2) Publishing appropriate pilot information for LAHSO in the Aeronautical Information Manual (AIM).
- b. Air traffic managers are responsible for:

- (1) Organizing a LAHSO development team consisting of representatives from Air Traffic Services, the responsible Flight Standards (FS) office, the Airports District Office, airport management, local National Air Traffic Controllers Association, and airport user representative(s). This team must operate under the guidelines of this order.
 - (2) Determining that a valid operational need exists before developing procedures applicable to LAHSO. Such factors as capacity, efficiency, user input, etc., should be considered in making this determination.
 - (3) Preparing a list of aircraft types authorized to participate for each configuration utilized at the facility. The list must be readily available for controller use prior to operational use of LAHSO.
 - (4) Preparing a list of CFR Parts 121, 125, 129, and 135 operators authorized to participate in LAHSO at the airport. The list must be readily available for controller use.
 - (5) Providing a listing of runways authorized for LAHSO, along with the appropriate ALD, for publication in the US Chart Supplement and appropriate flight procedures publications. On a temporary basis, a Notice to Airmen may be issued in lieu of the above.
 - (6) Crafting a memorandum for the record signed by all parties that participated in the development of the LAHSO procedures.
 - (7) Coordinating with the appropriate FS, airport management, fixed based operators, and representatives of the aviation community while developing a LAHSO program.
 - (8) Providing a list of ALDs for aircraft participating in LAHSO. This list must be readily available for controller use.
 - (9) Conducting an annual review of the LAHSO program to validate its continued need and convening a local development team to review all LAHSO events; forward a report to the Service Area Director of Air Traffic Operations through the OSG.
- c. Flight Standards (FS) is responsible for:
- (1) Incorporating applicable standards, procedures, criteria, and requirements into appropriate FS documents.
 - (2) Initiating international coordination efforts to update International Civil Aviation Organization (ICAO) Annex 6, Operation of Aircraft, to include LAHSO procedures.
 - (3) Developing appropriate information on flight procedures for incorporation into the AIM.
 - (4) Providing guidance materials needed to reach and educate both the pilot community and FAA inspectors concerning LAHSO procedures.
 - (5) Approving all air carrier LAHSO training procedures, including any special or unique go-around procedures resulting from a rejected landing.
 - (6) Requiring the Aviation Safety Program to develop educational programs and other initiatives to reach the general aviation pilot population concerning procedures and safety concerns when conducting LAHSO.
 - (7) Recommending what LAHSO subject matter should be included in appropriate flight training curriculums under FAR Part 141, and in the curriculums for certificated flight instructor revalidation clinics.
 - (8) Providing air traffic service information relative to aircraft performance required for conducting LAHSO. FS will provide support, as outlined in FAA Order JO 7210.3, Facility Operation and Administration, Paragraph 10-3-7, Land and Hold Short Operations (LAHSO). FS will support

identification of eligible aircraft for operating within assigned air traffic service groups for use by controllers as a planning tool.

(9) Participating in local LAHSO development teams and approving Letters of Authorization at the regional level. The Flight Technologies and Procedures Division, Flight Procedures and Airspace Group will approve all Letters of Authorization with Air Carrier Operations. If only non-air carrier operations are to be used at an airport the responsible FS office will approve the Letter of Authorization.

d. Office of Airport Safety and Standards (AAS) is responsible for:

- (1) Incorporating applicable standards, procedures, criteria, and requirements contained in this order into the appropriate documents.
- (2) Initiating international coordination efforts to update ICAO Annex 14, Visual Aids.
- (3) Publishing technical standards, siting specifications, and guidance for the design and installation of all hold short position markings, signs, and in-pavement lighting, as required by this order.
- (4) Publishing standards and guidance for maintaining skid-resistant pavements and for publishing standards and guidance for evaluating these pavements with friction measuring equipment.
- (5) Developing appropriate information on visual aids for incorporation into the AIM.
- (6) Providing instructions to airport certification safety inspectors for reviewing and inspecting hold short position markings, signs, and lights required for LAHSO at certificated Part 139 airports.

e. ATO Safety and Technical Training (AJT) is responsible for:

- (1) Maintaining/updating a risk assessment for LAHSO that considers safety of operations.
- (2) Providing analytical support essential to continuing trend analysis of site-specific incidents/accidents involving LAHSO.
- (3) Coordinating with FS on the publication of supplemental guidance and criteria to define and systematically collect LAHSO pilot deviation reports.
- (4) Participating in LAHSO program testing.

11. Distribution. This order is distributed electronically, as described in Paragraph 3, above.

12. Background. LAHSO operations include landing and holding short of an intersecting runway, an intersecting taxiway, or some other predetermined point on the runway other than on a runway or taxiway. The operations outlined in this order are for those airports that need additional tools to increase operational efficiency. This order sets the standards for conducting the following LAHSO combinations:

- a.** Landing and holding short of an intersecting runway.
- b.** Landing and holding short of an intersecting taxiway.
- c.** Landing and holding short of an approach/departure flight path.
- d.** Landing and holding short of a predetermined point.

13. Definitions. The following terms and their definitions are used throughout this order:

- a. Air Carrier** - Aircraft operating under 14 CFR Parts 121, 125, 129, and 135.
- b. Available Landing Distance (ALD)** - That portion of a runway available for landing and rollout for aircraft cleared for LAHSO, measured from the landing threshold to the hold short point.
- c. Contaminated Runway** - For the purpose of this order, a runway is considered contaminated whenever standing water, ice, snow, slush, frost in any form, heavy rubber deposits, or other substances

are present. A runway is contaminated with respect to rubber deposits or other friction degrading substances when the average friction value for any 500-foot segment of the runway within the ALD falls below the recommended minimum friction level, and the average friction value in the adjacent 500-foot segment falls below the maintenance planning friction level.

d. Dry Runway - No visible moisture present. The runway must be free of contaminants.

e. Hold Short Point - A point on the runway beyond which a landing aircraft with a LAHSO clearance is not authorized to proceed.

f. Hold Short Position Marking - The painted runway holding position marking located at the hold short point on all LAHSO runways.

g. Hold Short Position Signs - Red and white holding position signs located alongside the hold short point.

h. Land and Hold Short Operations (LAHSO) - These operations include landing and holding short of an intersecting runway, taxiway, predetermined point, or approach/departure flight path.

i. Land and Hold Short Lights - Six or seven in-pavement, pulsing white lights at the LAHSO hold short point.

j. Mixed Operations. - LAHSO conducted between an air carrier and any other type of aircraft.

k. Rejected Landing - For the purpose of LAHSO, a rejected landing is when the pilot/flight crew elects to go around. In the event of a rejected landing on a configuration not requiring an RLP, normal pilot/controller responsibilities remain unchanged.

l. Rejected Landing Procedure (RLP) - A published, predetermined heading to be used in the event of a rejected landing. Unless alternate instructions are given by ATC, pilots are expected to execute the procedure as published and remain clear of clouds.

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Karen Chiodini
Director (A), Policy, AJV-P

August 3, 2020

Date Signed

Appendix A. Sample Letter of Agreement

Letter of Agreement (LOA) Between the Federal Aviation Administration (FAA) and Metropolitan Airport Authority (MAA)

1. Purpose.

This agreement delineates the responsibilities of the FAA and MAA that are necessary for initiating and carrying out land and hold short operations (LAHSO) on specified runways at the Metropolitan Airport.

2. Background.

LAHSO is an air traffic control procedure which permits the issuance of landing clearances to aircraft to land and hold short of an intersecting runway, taxiway, or other designated point on the runway. It is a procedure designed to increase airport capacity and to more efficiently move aircraft within the terminal airspace and on the airport surface.

3. Approved LAHSO Runways/Locations.

The following runway hold short locations are approved for conducting LAHSO at Metropolitan Airport:

Runway Designation	Location	Designation
10L	Prior to Runway 15/33 intersection	Day
10R	Prior to Runway 15/33 intersection	Day, night
11R	Prior to Taxiway B1 intersection	Day, night
15R	Prior to Runway 10R/28L intersection	Day
15L	Designated Point "HS-1" depicted on Attachment "1"	Day

4. Responsibilities of MAA.

In order to conduct LAHSO at the Metropolitan Airport, the MAA agrees to be responsible for the following actions:

- a.** Installing LAHSO runway markings and signs at all of the above specified locations in accordance with FAA Advisory Circular (AC) 150/5340-1, Standards for Airport Markings, and AC 150/5340-18, Standards for Airport Sign Systems.
- b.** Providing FAA with distance measurements from the landing runway threshold to the LAHSO runway position marking at each specified LAHSO location.
- c.** Installing a LAHSO in-pavement lighting system at those required LAHSO locations. The lighting system must be designed and installed in accordance with AC 150/5340-30, Design and Installation Details for Airport Visual Aids, and that pulse at the rate specified in AC 150/5345-54, Specification for L-884 Power and Control Unit for Land and Hold Short Lighting Systems.
- d.** Notifying the FAA airport traffic control tower whenever runway markings, signs, and/or lighting systems are inoperative.

5. Responsibilities of FAA Air Traffic Control.

In conducting LAHSO at Metropolitan Airport, the FAA must:

- a.** Publish a list of runways at the Metropolitan Airport that are approved for LAHSO, together with the available landing distance for each hold-short location.
- b.** Terminate LAHSO on any approved runway location whenever MAA reports that signs and markings are not installed or are not in accordance with this order.
- c.** Terminate LAHSO at any location when, in the judgment of the air traffic manager, conditions may result in an unsafe operation.
- d.** Issue appropriate notices to airmen relating to LAHSO.
- e.** Meet annually or as necessary to review events.

John M. Doe
Manager, Metropolitan Airport Tower
Federal Aviation Administration

Mary K. Smith
Metropolitan Airport Manager

Date: _____

Date: _____