INOPERATIVE COMPONENTS OR VISUAL AIDS TABLE

Landing minimums published on instrument approach procedure charts are based upon full operation of all components and visual aids associated with the particular instrument approach chart being used. Higher minimums are required with inoperative components or visual aids as indicated below. If more than one component is inoperative, each minimum is raised to the highest minimum required by any single component that is inoperative. ILS glide slope inoperative minimums are published on the instrument approach charts as localizer minimums. This table may be amended by notes on the approach chart. Such notes apply only to the particular approach category(ies) as stated. See legend page for description of components indicated below.

(1) ILS, MLS, PAR and RNAV (LPV line of minima)

Inoperative Component or Aid	Approach Category	Increase Visibility
ALSF 1 & 2, MALSR, & SSALR	ABCD	¼ mile

(2) ILS with visibility minimum of 1,800 RVR

ALSF 1 & 2, MALSR, & SSALR	ABCD	To 4000 RVR
TDZL RCLS	ABCD	To 2400 RVR
RVR	ABCD	To ½ mile

(3) VOR, VOR/DME, TACAN, LOC, LOC/DME, LDA, LDA/DME, SDF, SDF/DME, GPS, ASR and RNAV (LNAV/VNAV and LNAV line of minima)

Inoperative Visual Aid	Approach Category	Increase Visibility
ALSF 1 & 2, MALSR, & SSALR	ABCD	½ mile
SSALS,MALS, & ODALS	ABC	¼ mile

(4) NDB

ALSF 1 & 2, MALSR, & SSALR	C	½ mile
	ABD	¼ mile
MALS, SSALS, ODALS	ABC	¼ mile

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CORRECTIONS, COMMENTS AND/OR PROCUREMENT

FOR CHANGES, ADDITIONS, OR RECOMMENDATIONS ON PROCEDURAL ASPECTS CONTACT:

FAA, Aeronautical Information Services, ATO-R
800 Independence Avenue, SW
Washington, DC 20591
Telephone 1-866-295-8236

FOR CHARTING ERRORS CONTACT:

FAA, National Aeronautical Charting Office, ATO-W
SSMC-4, Sta. #2335
1305 East West Highway
Silver Spring, MD 20910-3281
Telephone 1-800-626-3677
Email 9-AMC-Aerochart@faa.gov

FOR PROCUREMENT CONTACT:

FAA, National Aeronautical Charting Office
Distribution Division, ATO-W
10201 Good Luck Road
Glenn Dale, MD 20769-9700
Online at www.naco.faa.gov
Email 9-AMC-Chartsales@faa.gov
Telephone 1-800-638-8972
Fax 301-436-6829
or any authorized chart agent

Frequently asked questions (FAQ) are answered on our website at www.naco.faa.gov. See the FAQs prior to contact via toll free number or email.

Request for the creation or revisions to Airport Diagrams should be in accordance with FAA Order 7910.4.

TERMS/LANDING MINIMA DATA

IFR LANDING MINIMA

The United States Standard for Terminal Instrument Procedures (TERPS) is the approved criteria for formulating instrument approach procedures. Landing minima are established for six aircraft approach categories (ABCDE and COPTER).
In the absence of COPTER MINIMA, helicopters may use the CAT A minimums of other procedures.
The standard format for RNAV minima and landing minima portrayal follows:

RNAV (GPS) MINIMA

CATEGORY	A	B	C	D
LPV DA	1540/24 258 (300-½)			
LNAV/VNAV DA	1600/24 318 (400-½)			1600/40 318 (400-¾)
LNAV MDA	1840/24 558 (600-½)		1840/50 558 (600-1)	1840/60 558 (600-1¼)
CIRCLING	1840-1 545 (600-1)		1840-1½ 545 (600-1½)	1860-2 565 (600-2)

NOTE: The W symbol indicates outages of the WAAS vertical guidance may occur daily at this location due to initial system limitations. WAAS NOTAMS for vertical outages are not provided for this approach. Use LNAV minima for flight planning at these locations, whether as a destination or alternate. For flight operations at these locations, when the WAAS avionics indicate that LNAV/VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service. Should an outage occur during the procedure, reversion to LNAV minima may be required. As the WAAS coverage is expanded, the W will be removed.

RNAV minimums are dependent on navigation equipment capability, as stated in the applicable AFM, AFMS, or other FAA approved document, and as outlined below.

GLS (GLobal Navigation Satellite System (GNSS) Landing System)

The GLS (NA) minima line will be removed from existing RNAV (GPS) approach charts when LPV minima is published.

LPV (An Approach Procedure with Vertical Guidance (APV) based on WAAS lateral and vertical guidance)

Must have WAAS avionics approved for LPV approach.

LNAV/VNAV (Lateral navigation/Vertical navigation)

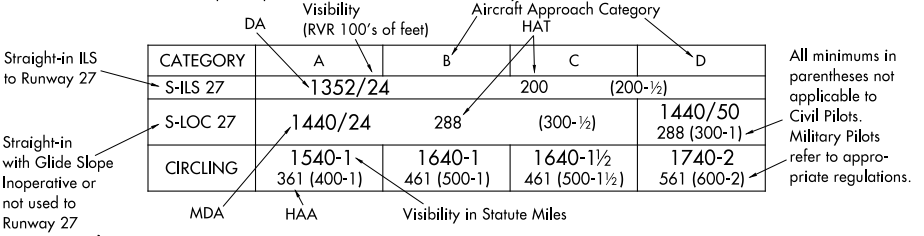
Must have either:
a.) WAAS avionics approved for LNAV/VNAV approach, or
b.) A certified Baro-VNAV system with an IFR approach approved GPS,or
c.) A certified Baro-VNAV system with an IFR approach approved WAAS, or
d.) An approach certified RNP-0.3 system with barometric vertical guidance (Baro-VNAV).
Other RNAV systems require special approval.
NOTES:
1. LNAV-VNAV minima not applicable for Baro-VNAV equipment if chart is annotated "Baro-VNAV NA" or when below the minimum published temperature, e.g., Baro-VNAV NA below -17°C(2° F).
2. DME/DME based RNP-0.3 systems may be used only when a chart note indicates DME/DME availability; e.g., "DME/DME RNP-0.3 Authorized." Specific DME facilities may be required; e.g., "DME/DME RNP-0.3 Authorized. ABC, XYZ required."

LNAV (Lateral navigation)

Must have IFR approach approved GPS, WAAS, or RNP-0.3 system.Other RNAV systems require special approval.
NOTE: DME/DME based RNP-0.3 systems may be used only when a chart note indicates DME/DME availability; e.g., "DME/DME RNP-0.3 Authorized." Specific DME facilities may be required; e.g., "DME/DME RNP-0.3 Authorized. ABC, XYZ required."

LANDING MINIMA FORMAT

In this example airport elevation is 1179, and runway touchdown zone elevation is 1152.



CATEGORY	A	B	C	D
S-ILS 27	1352/24		200 (200-½)	
S-LOC 27	1440/24	288 (300-½)		1440/50 288 (300-1)
CIRCLING	1540-1 361 (400-1)	1640-1 461 (500-1)	1640-1½ 461 (500-1½)	1740-2 561 (600-2)

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TERMS/LANDING MINIMA DATA

COPTER MINIMA ONLY

CATEGORY	COPTER
H-176°	680-½ 363 (400-½)

Copter Approach Direction

Height of MDA/DA Above Landing Area (HAL)

No circling minimums are provided

RADAR MINIMA

									Visibility (RVR 100's of feet)		
PAR (c)	10	2.5°/42/1000	ABCDE	**195**/16	100	(100-¼)					
(d)	28	2.5°/48/1068	ABCDE	**187**/16	100	(100-¼)					
ASR	10		ABC	**560**/40	463	(500-¾)	D	**560**/50	463	(500-1)	
			E	**580**/60	463	(500-1¼)					
	28		AB	**600**/50	513	(600-1)	C	**600**/60	513	(600-1¼)	
			DE	**600**-1½	513	(600-1½)					
CIR (b)	10		AB	**560**-1¼	463	(500-1¼)	C	**560**-1½	463	(500-1½)	
	28		AB	**600**-1¼	503	(600-1¼)	C	**600**-1½	503	(600-1½)	
	10, 28		DE	**660**-2	563	(600-2)					

All minimums in parentheses not applicable to Civil Pilots. Military Pilots refer to appropriate regulations.

Visibility in Statute Miles

Radar Minima:

1. Minima shown are the lowest permitted by established criteria. Pilots should consult applicable directives for their category of aircraft.
2. The circling MDA and weather minima to be used are those for the runway to which the final approach is flown - not the landing runway. In the above RADAR MINIMA example, a category C aircraft flying a radar approach to runway 10, circling to land on runway 28, must use an MDA of 560 feet with weather minima of 500-1½ .

▲ Alternate Minimums not standard. Civil users refer to tabulation. USA/USN/USAF pilots refer to appropriate regulations.

▲ NA Alternate minimums are Not Authorized due to unmonitored facility or absence of weather reporting service.

▼ Take-off Minimums not standard and/or Departure Procedures are published. Refer to tabulation.

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AIRCRAFT APPROACH CATEGORIES

Aircraft approach category indicates a grouping of aircraft based on a speed of VREF, if specified, or if VREF not specified, 1.3 VSO at the maximum certificated landing weight. VREF, VSO, and the maximum certificated landing weight are those values as established for the aircraft by the certification authority of the country of registry. Helicopters are Category A aircraft. An aircraft shall fit in only one category. However, if it is necessary to operate at a speed in excess of the upper limit of the speed range for an aircraft's category, the minimums for the category for that speed shall be used. For example, an airplane which fits into Category B, but is circling to land at a speed of 145 knots, shall use the approach Category D minimums. As an additional example, a Category A airplane (or helicopter) which is operating at 130 knots on a straight-in approach shall use the approach Category C minimums. See following category limits:

MANEUVERING TABLE

Approach Category	A	B	C	D	E
Speed (Knots)	0-90	91-120	121-140	141-165	Abv 165

Comparable Values of RVR and Visibility

The following table shall be used for converting RVR to ground or flight visibility. For converting RVR values that fall between listed values, use the next higher RVR value; do not interpolate. For example, when converting 1800 RVR, use 2400 RVR with the resultant visibility of 1/2 mile.

RVR	Visibility (statute miles)	RVR (feet)	Visibility (statute miles)
1600	¼	4500	⅞
2400	½	5000	1
3200	⅝	6000	1¼
4000	¾		

RATE OF CLIMB TABLE

A rate of climb table is provided for use in planning and executing takeoff procedures under known or approximate ground speed conditions.

(ft. per min.)

REQUIRED GRADIENT RATE (ft. per NM)	GROUND SPEED (KNOTS)						
	30	60	80	90	100	120	140
200	100	200	267	300	333	400	467
250	125	250	333	375	417	500	583
300	150	300	400	450	500	600	700
350	175	350	467	525	583	700	816
400	200	400	533	600	667	800	933
450	225	450	600	675	750	900	1050
500	250	500	667	750	833	1000	1167
550	275	550	733	825	917	1100	1283
600	300	600	800	900	1000	1200	1400
650	325	650	867	975	1083	1300	1516
700	350	700	933	1050	1167	1400	1633

REQUIRED GRADIENT RATE (ft. per NM)	GROUND SPEED (KNOTS)					
	150	180	210	240	270	300
200	500	600	700	800	900	1000
250	625	750	875	1000	1125	1250
300	750	900	1050	1200	1350	1500
350	875	1050	1225	1400	1575	1750
400	1000	1200	1400	1600	1700	2000
450	1125	1350	1575	1800	2025	2250
500	1250	1500	1750	2000	2250	2500
550	1375	1650	1925	2200	2475	2750
600	1500	1800	2100	2400	2700	3000
650	1625	1950	2275	2600	2925	3250
700	1750	2100	2450	2800	3150	3500

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GENERAL INFORMATION

This publication is issued every 56 days and includes Standard Instrument Approach Procedures (SIAPS), Standard Instrument Departures (SIDs), Standard Terminal Arrivals (STARs), IFR Take-off Minimums and (Obstacle) Departure Procedures (ODPs), IFR Alternate Minimums, and Radar Instrument Approach Minimums for use by civil and military aviation. The organization responsible for SIAPs, Radar Minimums, SIDs, STARs and graphic ODPs is identified in parentheses in the top margin of the procedure; e.g., (FAA), (USA), (USAF), (USN). SIAPS with the (FAA) designation are regulated under 14 CFR, Part 97. See 14 CFR, Part 91.175 (a) and the AIM for further details. 14 CFR, Part 91.175 (g) and the Special Notices section of the Airport/Facility Directory contains information on civil operations at military airports.

STANDARD TERMINAL ARRIVALS AND DEPARTURE PROCEDURES

The use of the associated codified STAR/DP and transition identifiers are requested of users when filing flight plans via teletype and are required for users filing flight plans via computer interface. It must be noted that when filing a STAR/DP with a transition, the first three coded characters of the STAR and the last three coded characters of the DP are replaced by the transition code. Examples: ACTON SIX ARRIVAL, file (AQN.AQN6); ACTON SIX ARRIVAL, EDNAS TRANSITION, file (EDNAS.AQN6). FREEHOLD THREE DEPARTURE, file (FREH3.RBV), FREEHOLD THREE DEPARTURE, ELWOOD CITY TRANSITION, file (FREH3.EWC).

RNAV DP and STAR. Effective March 15,2007, these procedures, formerly identified as Type-A and Type-B, will be designated as RNAV 1 in accordance with amended Advisory Circular (AC) and ICAO terminology.

Refer to AC 90-100A U.S. TERMINAL AND EN ROUTE AREA NAVIGATION (RNAV) OPERATIONS and the Aeronautical Information Manual for additional guidance regarding these procedures.

Standard RNAV 1 Procedure Chart Notes

NOTE: RNAV 1
NOTE: DME/DME/IRU or GPS required

Some procedures may require use of GPS and will be identified by a "GPS required" note.

RNAV 1 Procedure Characteristics and Operations

1. Require use of an RNAV system with DME/DME/IRU, and/or GPS inputs.
2. Require use of a CDI, flight director, and/or autopilot, in lateral navigation mode, for flight guidance while operating on RNAV paths (track, course, or direct leg). Other methods providing an equivalent level of performance may be acceptable.
3. RNAV paths may start as low as 500 feet above airport elevation.

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PILOT CONTROLLED AIRPORT LIGHTING SYSTEMS

Available pilot controlled lighting (PCL) systems are indicated as follows:

1. Approach lighting systems that bear a system identification are symbolized using negative symbology, e.g., (A1), (V), (✿)
2. Approach lighting systems that do not bear a system identification are indicated with a negative "(L)" beside the name.

A star (★) indicates non-standard PCL, consult Directory/Supplement, e.g., (L★)

To activate lights, use frequency indicated in the communication section of the chart with a (L) or the appropriate lighting system identification e.g., UNICOM 122.8 (L), (A1), (V)

KEY MIKE	FUNCTION
7 times within 5 seconds	Highest intensity available
5 times within 5 seconds	Medium or lower intensity (Lower REIL or REIL-off)
3 times within 5 seconds	Lowest intensity available (Lower REIL or REIL-off)

CHART CURRENCY INFORMATION

FAA procedure amendment number → Orig 99365 → Date of latest change
FAA procedure amendment number → Amdt 1 00365 → Date of latest change

The Chart Date identifies the Julian date the chart was added to the volume or last revised for any reason. The first two digits indicate the year, the last three digits indicate the day of the year (001 to 365/6) in which the latest addition or change was first published.

The Procedure Amendment Number precedes the Chart Date, and changes anytime instrument information (e.g., DH, MDA, approach routing, etc.) changes. Procedure changes also cause the Chart Date to change.

MISCELLANEOUS

★ Indicates a non-continuously operating facility, see A/FD or flight supplement.

"Radar required" on the chart indicates that radar vectoring is required for the approach.

Distances in nautical miles (except visibility in statute miles and Runway Visual Range in hundreds of feet). Runway Dimensions in feet. Elevations in feet. Mean Sea Level (MSL). Ceilings in feet above airport elevation. Radials/bearings/headings/courses are magnetic. Horizontal Datum: Unless otherwise noted on the chart, all coordinates are referenced to North American Datum 1983 (NAD 83), which for charting purposes is considered equivalent to World Geodetic System 1984 (WGS 84).

Terrain is scaled within the neat lines (planview boundaries) and does not accurately underlie not-to-scale distance depictions or symbols.

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ABBREVIATIONS

ADF..... Automatic Direction Finder
ALS..... Approach Light System
ALSF..... Approach Light System with Sequenced Flashing Lights
APCH..... Approach
APP CON..... Approach Control
ARR..... Arrival
ASOS..... Automated Surface Observing System
ASR/PAR..... Published Radar Minimums at this Airport
ATIS..... Automatic Terminal Information Service
AWOS..... Automated Weather Observing System
AZ..... Azimuth
BC..... Back Course
BND..... Bound
C..... Circling
CAT..... Category
CCW..... Counter Clockwise
Chan..... Channel
CLNC DEL..... Clearance Delivery
CNF..... Computer Navigation Fix
CTAF..... Common Traffic Advisory Frequency
CW..... Clockwise
DA..... Decision Altitude
DER..... Departure End of Runway
DH..... Decision Height
DME..... Distance Measuring Equipment
ELEV..... Elevation
FAF..... Final Approach Fix
FM..... Fan Marker
FMS..... Flight Management System
GCO..... Ground Communications Outlet
GPI..... Ground Point of Interception
GPS..... Global Positioning System
GS..... Glide Slope
HAA..... Height above Airport
HAL..... Height above Landing
HAT..... Height above Touchdown
HIRL..... High Intensity Runway Lights
IAF..... Initial Approach Fix
ICAO..... International Civil Aviation Organization
IF..... Intermediate Fix
IM..... Inner Marker
INT..... Intersection
LDA..... Localizer Type Directional Aid
Ldg..... Landing
LDIN..... Lead in Light System
LIRL..... Low Intensity Runway Lights
LOC..... Localizer
LR..... Lead Radial. Provides at least 2 NM (Copter 1 NM) of lead to assist in turning onto the intermediate/final course.
MALS..... Medium Intensity Approach Light System
MALSR..... Medium Intensity Approach Light System with RAIL
MAP..... Missed Approach Point
MDA..... Minimum Descent Altitude
MIRL..... Medium Intensity Runway Lights
MLS..... Microwave Landing System
MM..... Middle Marker
N/A..... Not Applicable
NA..... Not Authorized
NDB..... Non-directional Radio Beacon
NFD..... National Flight Database
NM..... Nautical Mile
NoPT..... No Procedure Turn Required (Procedure Turn shall not be executed without ATC clearance)
ODALS..... Omnidirectional Approach Light System
OM..... Outer Marker
R..... Radial
RA..... Radio Altimeter setting height
RAIL..... Runway Alignment Indicator Lights
RCLS..... Runway Centerline Light System
REIL..... Runway End Identifier Lights
RF..... Radius-to-Fix
RNAV..... Area Navigation
RNP..... Required Navigation Performance
RPI..... Runway Point of Intercept(ion)
RRL..... Runway Remaining Lights
Rwy..... Runway
RVR..... Runway Visual Range
S..... Straight-in
SALS..... Short Approach Light System
SSALR..... Simplified Short Approach Light System with RAIL
SDF..... Simplified Directional Facility
TAA..... Terminal Arrival Area
TAC..... TACAN
TCH..... Threshold Crossing Height (height in feet Above Ground level)
TDZ..... Touchdown Zone
TDZE..... Touchdown Zone Elevation
TDZ/CL..... Touchdown Zone and Runway Centerline Lighting
TDZL..... Touchdown Zone Lights
TODA..... Take-off Distance Available
TORA..... Take-off Run Available
VASI..... Visual Approach Slope Indicator
VDP..... Visual Descent Point
VGSI..... Visual Glide Slope Indicator
WP/WPT..... Waypoint (RNAV)

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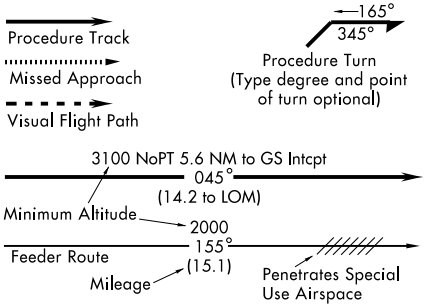
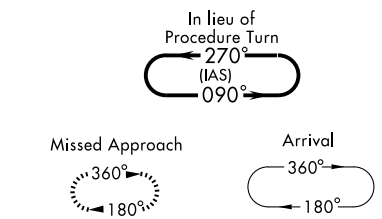
INSTRUMENT APPROACH PROCEDURES (CHARTS)

PLANVIEW SYMBOLS

TERMINAL ROUTES



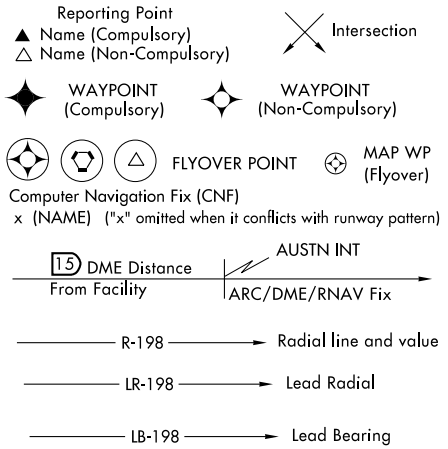
HOLDING PATTERNS



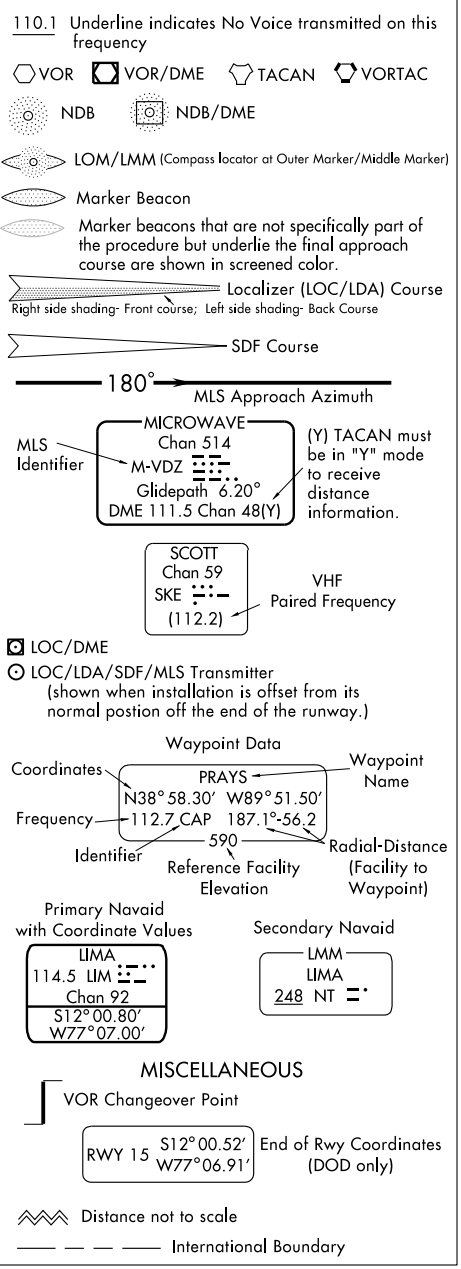
Holding pattern with max. restricted airspeed:
(175K) applies to all altitudes.
(210K) applies to altitudes above 6000′ to and including 14000′.

Limits will only be specified when they deviate from the standard. DME fixes may be shown.

FIXES/ATC REPORTING REQUIREMENTS



RADIO AIDS TO NAVIGATION



MISCELLANEOUS

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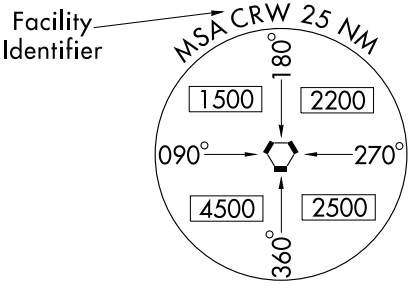
INSTRUMENT APPROACH PROCEDURES (CHARTS)

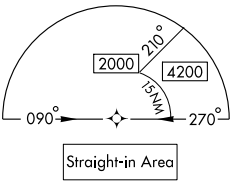
PLANVIEW SYMBOLS

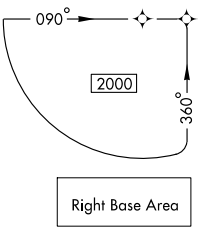
MINIMUM SAFE ALTITUDE (MSA)

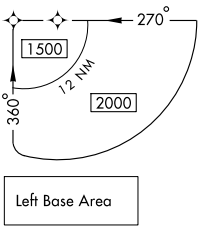


(arrows on distance circle identify sectors)

TERMINAL ARRIVAL AREA (TAA)







SPECIAL USE AIRSPACE

R-Restricted W-Warning
P-Prohibited A-Alert

OBSTACLES

- • Spot Elevation
- Λ Obstacle
- Λ Highest Obstacle
- • Highest Spot Elevation
- ΛΛ Group of Obstacles
- ± Doubtful accuracy

AIRPORTS

Primary and Secondary (named in planview)

Seaplane Base

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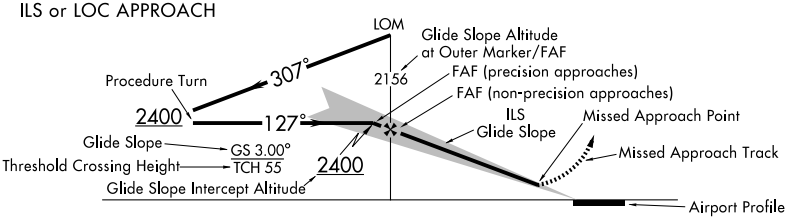
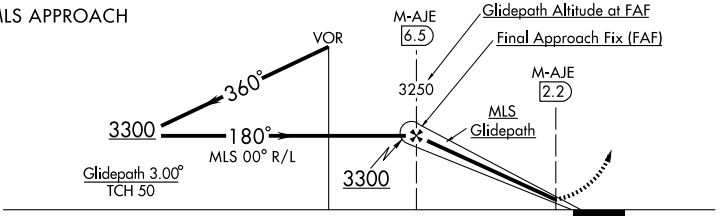
INSTRUMENT APPROACH PROCEDURES (CHARTS)

PROFILE VIEW

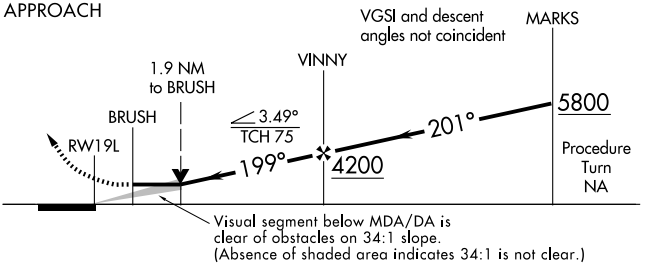
ILS or LOC APPROACH



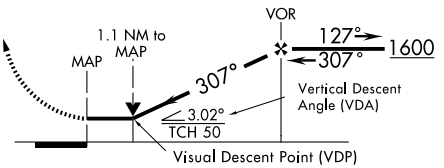
MLS APPROACH



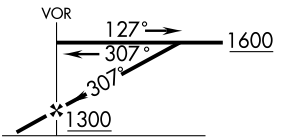
RNAV APPROACH



NON PRECISION



DESCENT FROM HOLDING PATTERN



ALTITUDES

5500	Mandatory Altitude
2500	Minimum Altitude
4300	Maximum Altitude
3000	Recommended Altitude
5000 / 3000	Mandatory Block Altitude

PROFILE SYMBOLS

2400	Glide Slope/Glide Path Intercept Altitude and final approach fix for vertically guided approach procedures.
	Visual Descent Point (VDP)
	Visual Flight Path
	Note: Facilities and waypoints are depicted as a solid vertical line while fixes and intersections are depicted as a dashed vertical line.

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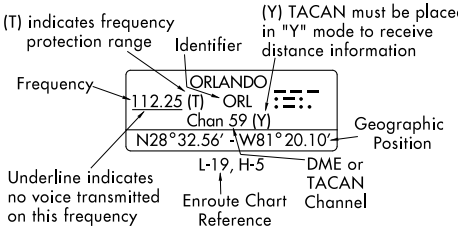
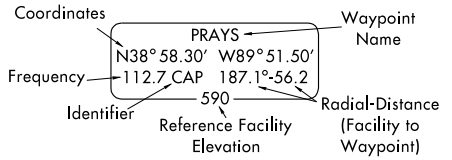
LEGEND

STANDARD TERMINAL ARRIVAL (STAR) CHARTS
DEPARTURE PROCEDURE (DP) CHARTS

RADIO AIDS TO NAVIGATION

VOR
VOR/DME
VORTAC
NDB (Non-directional Radio Beacon)
TACAN
NDB/DME
LOC/DME
LOC
LMM, LOM (Compass locator)
Marker Beacon
Localizer Course
SDF Course





FIXES/ATC REPORTING REQUIREMENTS

Reporting Points
N00° 00.00'
W00° 00.00'

75 DME Mileage (when not obvious)

▲ Fix-Compulsory and
△ Non-Compulsory Position Report

DME fix
Distance not to scale
WAYPOINT (Compulsory)
WAYPOINT (Non-Compulsory)
FLYOVER POINT

X Mileage Breakdown/ Computer Navigation Fix (CNF)
N00° 00.00'
W00° 00.00'

ROUTES

4500 MEA-Minimum Enroute Altitude
*3500 MOCA-Minimum Obstruction Clearance Altitude
270° Departure Route - Arrival Route
(65) Mileage between Radio Aids, Reporting Points, and Route Breaks
Transition Route
R-275 Radial line and value
Lost Communications Track
V12 J80 Airway/Jet Route Identification
(IAS) Holding Pattern
Changeover Point

Holding pattern with max. restricted airspeed
(175K) applies to all altitudes
(210K) applies to altitudes above 6000' to and including 14000'

SPECIAL USE AIRSPACE

R-352
R-Restricted
P-Prohibited
W-Warning
A-Alert

ALTITUDES

5500	2300	4800	2200
Mandatory Altitude (Cross at)	Minimum Altitude (Cross at or above)	Maximum Altitude (Cross at or below)	Recommended Altitude

MCA (Minimum Crossing Altitude)
Altitude change at other than Radio Aids

AIRPORTS

Civil
Military
Joint Civil-Military

NOTES

All mileages are nautical.
★ Indicates a non-continuously operating facility, see A/FD or flight supplement.
All radials, bearings are magnetic.
All altitudes/elevations are in feet-MSL.
MRA- Minimum Reception Altitude.
MAA- Maximum Authorized Altitude.
(NAME2.NAME) - Example of DP flight plan Computer Code.
(NAME.NAME2) - Example of STAR flight plan Computer Code.
SL-0000 (FAA) - Example of a chart reference number.
▼ Take-Off Minimums not standard and/or Departure Procedures are published.

07 JUN 2007 to 05 JUL 2007

AIRPORT DIAGRAM/AIRPORT SKETCH

Runways

Hard Surface | Other Than Hard Surface | Stopways,Taxiways, Parking Areas, Water Runways | Displaced Threshold

Closed Runway | Closed Taxiway | Under Construction | Metal Surface

ARRESTING GEAR: Specific arresting gear systems; e.g., BAK12, MA-1A etc., shown on airport diagrams, not applicable to Civil Pilots. Military Pilots refer to appropriate DOD publications.

uni-directional | bi-directional | Jet Barrier

ARRESTING SYSTEM

REFERENCE FEATURES

Buildings

Tanks

Obstructions

Airport Beacon #

Runway Radar Reflectors

Control Tower #

When Control Tower and Rotating Beacon are co-located, Beacon symbol will be used and further identified as TWR.

Runway length depicted is the physical length of the runway (end-to-end, including displaced thresholds if any) but excluding areas designated as stopways. Where a displaced threshold is shown and/or part of the runway is otherwise not available for landing, an annotation is added to indicate the landing length of the runway; e.g., Rwy 13 ldg 5000′.

Helicopter Alighting Areas

Negative Symbols used to identify Copter Procedures

landing point

Runway TDZ elevation.....TDZE 123

0.3% DOWN

Runway Slope.....0.8% UP

(shown when runway slope is greater than or equal to 0.3%)

NOTE:
Runway Slope measured to midpoint on runways 8000 feet or longer.

U.S. Navy Optical Landing System (OLS) "OLS" location is shown because of its height of approximately 7 feet and proximity to edge of runway may create an obstruction for some types of aircraft.

Approach light symbols are shown in the Flight Information Handbook.

Airport diagram scales are variable.

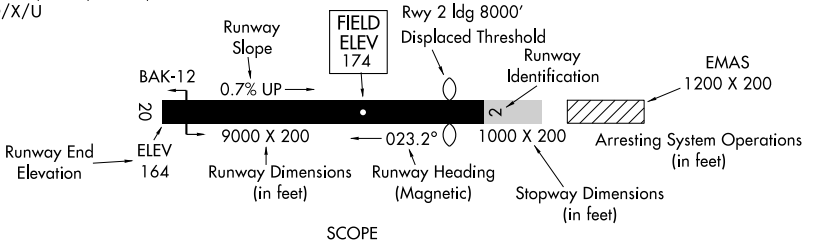
True/magnetic North orientation may vary from diagram to diagram

Coordinate values are shown in 1 or ½ minute increments. They are further broken down into 6 second ticks, within each 1 minute increments.

Positional accuracy within ±600 feet unless otherwise noted on the chart.

NOTE:
All new and revised airport diagrams are shown referenced to the World Geodetic System (WGS) (noted on appropriate diagram), and may not be compatible with local coordinates published in FLIP. (Foreign Only)

Runway Weight Bearing Capacity/or PCN Pavement Classification Number is shown as a codified expression.
Refer to the appropriate Supplement/Directory for applicable codes e.g.,
RWY 14-32 S75, T185, ST175, TT325
PCN 80 F/D/X/U



SCOPE

Airport diagrams are specifically designed to assist in the movement of ground traffic at locations with complex runway/taxiway configurations and provide information for updating Computer Based Navigation Systems (I.E., INS, GPS) aboard aircraft. Airport diagrams are not intended to be used for approach and landing or departure operations. For revisions to Airport Diagrams: Consult FAA Order 7910.4.

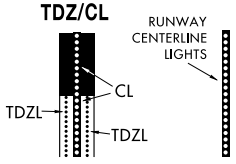
07 JUN 2007 to 05 JUL 2007

INSTRUMENT APPROACH PROCEDURES (CHARTS)
APPROACH LIGHTING SYSTEM - UNITED STATES

Approach lighting and visual glide slope systems are indicated on the airport sketch by an identifier, e.g., (A2), (V), etc.

A dot " ● " portrayed with approach lighting letter identifier indicates sequenced flashing lights (F) installed with the approach lighting system e.g., (A1). Negative symbology, e.g., (A1), (V) indicates Pilot Controlled Lighting (PCL).

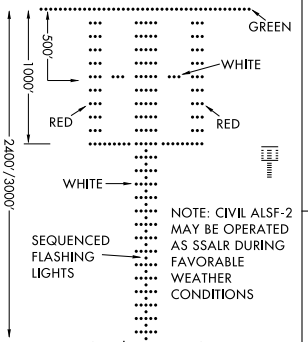
RUNWAY TOUCHDOWN ZONE AND CENTERLINE LIGHTING SYSTEMS



AVAILABILITY of TDZ/CL will be shown by NOTE in SKETCH e.g. "TDZ/CL Rwy 15"

APPROACH LIGHTING SYSTEM

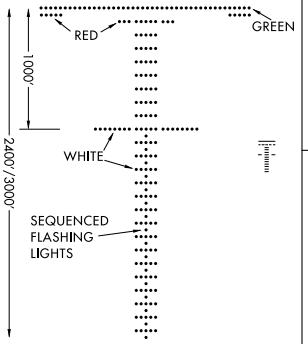
(A) **ALSF-2**



(High Intensity)
LENGTH 2400/3000 FEET

APPROACH LIGHTING SYSTEM

(A1) **ALSF-1**



(High Intensity)
LENGTH 2400/3000 FEET

SHORT APPROACH LIGHTING SYSTEM

(A2)

SALS/SALSF

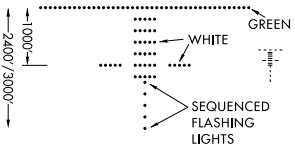
(High Intensity)

SAME AS INNER 1500' OF ALSF-1

SIMPLIFIED SHORT APPROACH LIGHTING SYSTEM

with Runway Alignment Indicator Lights

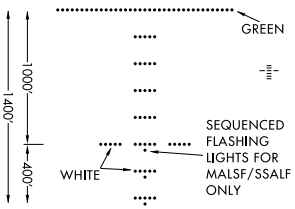
(A3) **SSALR**



(High Intensity)
LENGTH 2400/3000 FEET

MEDIUM INTENSITY (**MALS** and **MALSF**) OR SIMPLIFIED SHORT (**SSALS** and **SSALF**) APPROACH LIGHTING SYSTEMS

(A4)



LENGTH 1400 FEET

MEDIUM INTENSITY APPROACH LIGHTING SYSTEM

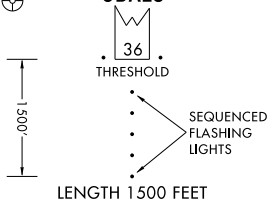
with Runway Alignment Indicator Lights

(A5) **MALSR**

SAME LIGHT CONFIGURATION AS SSALR.

OMNIDIRECTIONAL APPROACH LIGHTING SYSTEM

ODALS



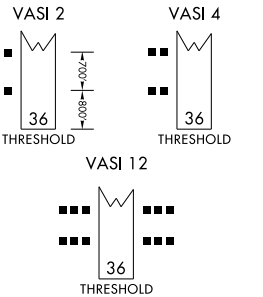
LENGTH 1500 FEET

(V) VISUAL APPROACH SLOPE INDICATOR

VASI

VISUAL APPROACH SLOPE INDICATOR WITH STANDARD THRESHOLD CLEARANCE PROVIDED.

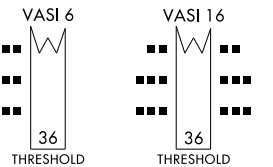
ALL LIGHTS WHITE — TOO HIGH
FAR LIGHTS RED, NEAR LIGHTS WHITE — ON GLIDE SLOPE
ALL LIGHTS RED — TOO LOW



(V3) VISUAL APPROACH SLOPE INDICATOR

VASI

VISUAL APPROACH SLOPE INDICATOR WITH A THRESHOLD CROSSING HEIGHT TO ACCOMODATE LONG BODIED OR JUMBO AIRCRAFT.



07 JUN 2007 to 05 JUL 2007

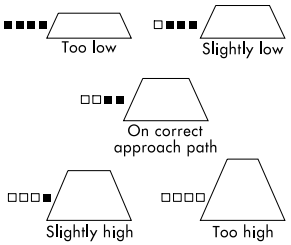
07 JUN 2007 to 05 JUL 2007

Approach lighting and visual glide slope systems are indicated on the airport sketch by an identifier, (A2), (V) etc.

A dot " ● " portrayed with approach lighting letter identifier indicates sequenced flashing lights (F) installed with the approach lighting system e.g., (A1). Negative symbology, e.g., (A1), (V) indicates Pilot Controlled Lighting (PCL).

(P) PRECISION APPROACH PATH INDICATOR

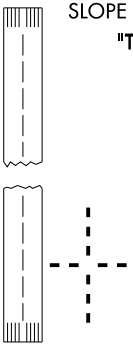
PAPI



Legend: □ White ■ Red

(V1) "T"-VISUAL APPROACH SLOPE INDICATOR

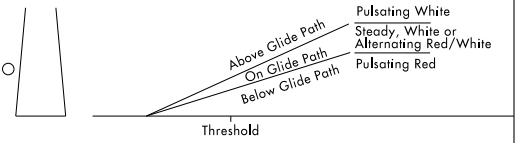
"T"-VASI



"T" ON BOTH SIDES OF RWY ALL LIGHTS VARIABLE WHITE. CORRECT APPROACH SLOPE- ONLY CROSS BAR VISIBLE. UPRIGHT "T"- FLY UP. INVERTED "T"- FLY DOWN. RED "T"- GROSS UNDERSHOOT.

(V2) PULSATING VISUAL APPROACH SLOPE INDICATOR

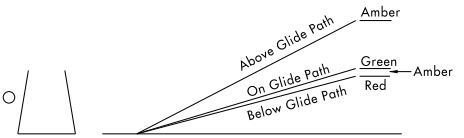
PVASI



CAUTION: When viewing the pulsating visual approach slope indicators in the pulsating white or pulsating red sectors, it is possible to mistake this lighting aid for another aircraft or a ground vehicle. Pilots should exercise caution when using this type of system.

(V4) TRI-COLOR VISUAL APPROACH SLOPE INDICATOR

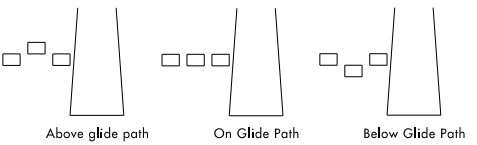
TRCV



CAUTION: When the aircraft descends from green to red, the pilot may see a dark amber color during the transition from green to red.

(V5) ALIGNMENT OF ELEMENTS SYSTEMS

APAP



Painted panels which may be lighted at night. To use the system the pilot positions the aircraft so the elements are in alignment.

MLS CHANNELING AND FREQUENCY PAIRING TABLE

MLS CHANNEL	VHF FREQUENCY	TACAN CHANNEL	MLS CHANNEL	VHF FREQUENCY	TACAN CHANNEL	MLS CHANNEL	VHF FREQUENCY	TACAN CHANNEL
500	108.10	18X	568	109.45	31Y	636	114.15	88Y
502	108.30	20X	570	109.55	32Y	638	114.25	89Y
504	108.50	22X	572	109.65	33Y	640	114.35	90Y
506	108.70	24X	574	109.75	34Y	642	114.45	91Y
508	108.90	26X	576	109.85	35Y	644	114.55	92Y
510	109.10	28X	578	109.95	36Y	646	114.65	93Y
512	109.30	30X	580	110.05	37Y	648	114.75	94Y
514	109.50	32X	582	110.15	38Y	650	114.85	95Y
516	109.70	34X	584	110.25	39Y	652	114.95	96Y
518	109.90	36X	586	110.35	40Y	654	115.05	97Y
520	110.10	38X	588	110.45	41Y	656	115.15	98Y
522	110.30	40X	590	110.55	42Y	658	115.25	99Y
524	110.50	42X	592	110.65	43Y	660	115.35	100Y
526	110.70	44X	594	110.75	44Y	662	115.45	101Y
528	110.90	46X	596	110.85	45Y	664	115.55	102Y
530	111.10	48X	598	110.95	46Y	666	115.65	103Y
532	111.30	50X	600	111.05	47Y	668	115.75	104Y
534	111.50	52X	602	111.15	48Y	670	115.85	105Y
536	111.70	54X	604	111.25	49Y	672	115.95	106Y
538	111.90	56X	606	111.35	50Y	674	116.05	107Y
540	108.05	17Y	608	111.45	51Y	676	116.15	108Y
542	108.15	18Y	610	111.55	52Y	678	116.25	109Y
544	108.25	19Y	612	111.65	53Y	680	116.35	110Y
546	108.35	20Y	614	111.75	54Y	682	116.45	111Y
548	108.45	21Y	616	111.85	55Y	684	116.55	112Y
550	108.55	22Y	618	111.95	56Y	686	116.65	113Y
552	108.65	23Y	620	113.35	80Y	688	116.75	114Y
554	108.75	24Y	622	113.45	81Y	690	116.85	115Y
556	108.85	25Y	624	113.55	82Y	692	116.95	116Y
558	108.95	26Y	626	113.65	83Y	694	117.05	117Y
560	109.05	27Y	628	113.75	84Y	696	117.15	118Y
562	109.15	28Y	630	113.85	85Y	698	117.25	119Y
564	109.25	29Y	632	113.95	86Y			
566	109.35	30Y	634	114.05	87Y			

07 JUN 2007 to 05 JUL 2007

LAND AND HOLD SHORT OPERATIONS (LAHSO)

THERE ARE NO LAND AND HOLD SHORT OPERATIONS (LAHSO) FOR ALASKA

07 JUN 2007 to 05 JUL 2007

07 JUN 2007 to 05 JUL 2007

LAND AND HOLD SHORT OPERATIONS (LAHSO)

LAHSO is an acronym for "Land and Hold Short Operations." These operations include landing and holding short of an intersection runway, an intersecting taxiway, or other predetermined points on the runway other than a runway or taxiway. Measured distance represents the available landing distance on the landing runway, in feet.

The hold-short point, marked by an asterisk (*), represents the predetermined points on the runway other than a runway or taxiway.

Specific questions regarding these distances should be referred to the air traffic manager of the facility concerned. The Aeronautical Information Manual contains specific details on hold-short operations and markings.

CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
BATTLE CREEK, MI			
W.K. KELLOGG (BTL)	05	13/31*	7,000 feet
DETROIT, MI			
COLEMAN A. YOUNG MUNI (DET)	15	07/25*	4,900 feet
FLINT, MI			
BISHOP INTL (FNT)	09	18/36*	4,100 feet
	36	09/27*	6,300 feet
JACKSON, MI			
JACKSON COUNTY-REYNOLDS FIELD (JXN)	24	14/32	3,400 feet
TRAVERSE CITY, MI			
CHERRY CAPITAL (TVC)	18	10/28*	2,850 feet
	28	18/36*	5,500 feet

07 JUN 2007 to 05 JUL 2007

LAND AND HOLD SHORT OPERATIONS (LAHSO)

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
AKRON, OH			
AKRON-CANTON REGIONAL (CAK)	05	01/19*	4,300 feet
	19	05/23*	3,100 feet
BLOOMINGTON, IN			
MONROE COUNTY (BMG)	17	06/24*	6,100 feet
CLEVELAND, OH			
CLEVELAND-HOPKINS INTL (CLE)	06R	10/28*	8,200 feet
COLUMBUS, OH			
OHIO STATE UNIVERSITY (OSU)	05	09L/27R	3,350 feet
	09L	05/23	2,550 feet
	09R	14/32	3,300 feet
	14	09R/27L	2,750 feet
	27L	05/23	3,300 feet
FORT WAYNE,			
FORT WAYNE INTL (FWA)	05	14/32*	9,150 feet
	14	05/23*	5,350 feet
	27	05/23*	2,700 feet
LAFAYETTE, IN			
PURDUE UNIVERSITY (LAF)	10	05/23	4,600 feet
MANSFIELD, OH			
MANSFIELD LAHM REGIONAL (MFD)	05	14/32*	4,350 feet
	14	05/23*	6,100 feet
MUNCIE, IN			
DELAWARE COUNTY-JOHNSON FIELD (MIE)	14	02/20*	4,300 feet
	20	14/32*	3,300 feet
SOUTH BEND, IN			
SOUTH BEND REGIONAL (SBN)	27L	18/36*	3,950 feet
TERRE HAUTE, IN			
TERRE HAUTE INTL-HULMAN FIELD (HUF)	05	18/36*	4,650 feet
	18	05/23*	3,300 feet
	23	18/36*	3,450 feet
	32	05/23*	4,250 feet
	36	14/32*	3,200 feet

07 JUN 2007 to 05 JUL 2007

LAND AND HOLD SHORT OPERATIONS (LAHSO)

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
ALTON/ST. LOUIS, IL			
ST. LOUIS REGIONAL (ALN)	29	17/35*	6,850 feet
	35	11/29*	4,800 feet
APPLETON, WI			
OUTAGAMIE COUNTY REGIONAL (ATW)	03	11/29*	3,300 feet
	21	11/29*	3,100 feet
	29	03/21*	3,400 feet
BLOOMINGTON/NORMAL, IL			
CENTRAL IL REGL ARPT AT			
BLOOMINGTON-NORMAL (BMI)	02	11/29*	4,600 feet
	11	02/20*	6,200 feet
CARBONDALE-MURPHYSBORO, IL			
SOUTHERN ILLINOIS (MDH)	06	18L/36R*	3,100 feet
	24	18R/36L*	3,800 feet
	36R	06/24*	3,000 feet
CHAMPAIGN-URBANA, IL			
UNIVERSITY OF ILLINOIS-WILLARD (CMI)	04	14L/32R	3,600 feet
	14L	04/22	3,550 feet
	18	04/22	4,100 feet
	22	18/36*	4,700 feet
	32R	04/22	4,050 feet
	36	14L/32R	3,950 feet
CHICAGO, IL			
CHICAGO-O'HARE INTL (ORD)	09R	TWY S	9,300 feet
	09L	14L/32R	6,100 feet
	14R	09R/27L*	9,800 feet
	22R	09L/27R*	6,050 feet
	27L	14R/32L*	6,500 feet
	27R	04L/22R*	5,700 feet
CHICAGO/AURORA, IL			
AURORA MUNI (ARR)	09	18/36	3,450 feet
	15	09/27	3,900 feet
	27	15/33	4,000 feet
CHICAGO/PROSPECT HEIGHTS/WHEELING, IL			
PALWAUKEE MUNI (PWK)	16	12/30	3,623 feet
DECATUR, IL			
DECATUR (DEC)	06	12/30*	4,800 feet
	12	06/24*	4,450 feet
	18	06/24*	4,450 feet
	24	12/30*	3,000 feet
	24	18/36*	8,000 feet
	30	18/36*	5,050 feet
	36	12/30*	4,800 feet

(SEE CONTINUATION PAGE FOR MORE LISTINGS)

07 JUN 2007 to 05 JUL 2007

LAND AND HOLD SHORT OPERATIONS (LAHSO)

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Specific questions regarding these distances should be referred to the air traffic manager of the facility concerned. The Aeronautical Information Manual contains specific details on hold-short operations and markings.

CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
DULUTH, MN			
DULUTH INTL (DLH)	09	03/21*	8,950 feet
GRAND FORKS, ND			
GRAND FORKS INTL (GFK)	26	17R/35L	3,000 feet
	35L	08/26	4,600 feet
MINNEAPOLIS, MN			
MINNEAPOLIS-ST PAUL INTL (WOLD-CHAMBERLAIN) (MSP)	30L	TWY A8/W8	8,150 feet
RAPID CITY, SD			
RAPID CITY REGIONAL (RAP)	32	05/23	6,550 feet
ROCHESTER, MN			
ROCHESTER INTL (RST)	02	13/31	5,850 feet
	13	02/20	5,270 feet
	31	02/20	3,200 feet

07 JUN 2007 to 05 JUL 2007

LAND AND HOLD SHORT OPERATIONS (LAHSO)

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
HUTCHINSON, KS			
HUTCHINSON MUNI (HUT)	13	04/22	5,250 feet
	17	04/22	3,200 feet
	22	13/31	3,400 feet
	31	17/35	2,800 feet
OLATHE, KS			
NEW CENTURY AIRCENTER (IXD)	18	04/22*	2,700 feet
	36	04/22*	3,650 feet
	22	18/36*	3,300 feet
TOPEKA, KS			
FORBES FIELD (FOE)	03	13/31*	4,950 feet
	13	03/21*	6,700 feet
	31	03/21*	5,500 feet

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LAND AND HOLD SHORT OPERATIONS (LAHSO)

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
CEDAR RAPIDS, IA			
THE EASTERN IOWA (CID)	09	13/31	5,800 feet
COLUMBIA, MO			
COLUMBIA REGIONAL (COU)	02	13/31*	6,050 feet
	13	02/20*	3,500 feet
DES MOINES, IA			
DES MOINES INTL (DSM)	05	13/31	6,350 feet
	13	05/23	5,950 feet
DUBUQUE, IA			
DUBUQUE REGIONAL (DBQ)	31	18/36	4,800 feet
	36	13/31	4,900 feet
JOPLIN, MO			
JOPLIN REGIONAL (JLN)	13	18/36*	3,250 feet
	18	13/31*	4,900 feet
KANSAS CITY, MO			
CHARLES B. WHEELER DOWNTOWN (MKC)	19	03/21	3,850 feet
ST. LOUIS, MO			
LAMBERT-ST. LOUIS INTL (STL)	12R	TWY J	8,950 feet
	24	12R/30L*	4,250 feet
	30L	06/24*	8,100 feet
SIOUX CITY, IA			
SIOUX GATEWAY/COL. BUD DAY FIELD (SUX)	13	17/35*	5,400 feet
	17	13/31*	5,650 feet
SPRINGFIELD, MO			
SPRINGFIELD-BRANSON REGIONAL (SGF)	14	02/20*	6,200 feet
	20	14/32*	4,550 feet
WATERLOO, IA			
WATERLOO REGIONAL (ALO)	06	12/30*	3,900 feet
	12	06/24*	6,100 feet
	18	06/24*	4,850 feet
	24	18/36*	3,950 feet
	30	18/36*	4,800 feet
	36	12/30*	3,650 feet

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
BEDFORD, MA			
LAURENCE G. HANSCOM FIELD (BED)	05	11/29*	3,000 feet
	11	05/23*	2,650 feet
	29	05/23*	3,650 feet
BEVERLY, MA			
BEVERLY MUNI (BVY)	09	16/34*	3,500 feet
	16	09/27*	4,000 feet
BOSTON, MA			
GENERAL EDWARD LAWRENCE LOGAN	04L	15L/33R	5,250 feet
INTL (BOS)	15R	9/27	6,800 feet
	22L	9/27	6,400 feet
	27	04R/22L	5,650 feet
BRIDGEPORT, CT			
IGOR I. SIKORSKY MEMORIAL (BDR)	06	11/29*	3,700 feet
	11	06/24*	3,350 feet
BURLINGTON, VT			
BURLINGTON INTL (BTV)	01	15/33*	2,600 feet
	15	01/19*	3,750 feet
	33	01/19*	2,900 feet
HYANNIS, MA			
BARNSTABLE MUNI-BOARDMAN/			
POLANDO FIELD (HYA)	15	06/24*	4,150 feet
	24	15/33*	4,650 feet
LEBANON, NH			
LEBANON MUNI (LEB)	25	18/36*	3,650 feet
	36	07/25*	4,200 feet
NANTUCKET, MA			
NANTUCKET MEMORIAL (ACK)	06	15/33*	4,300 feet
	33	06/24*	3,150 feet
NORWOOD, MA			
NORWOOD MEMORIAL (OWD)	35	10/28*	3,320 feet
PORTLAND, ME			
PORTLAND INTL JETPORT (PWM)	11	18/36*	5,800 feet
	18	11/29*	3,500 feet
WINDSOR LOCKS, CT			
BRADLEY INTL (BDL)	06	01/19*	6,000 feet
	24	15/33*	5,850 feet
	33	06/24*	4,550 feet

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
ALBANY, NY			
ALBANY INTL (ALB)	01	10/28*	4,150 feet
	28	01/19*	3,750 feet
ATLANTIC CITY, NJ			
ATLANTIC CITY INTL (ACY)	04	13/31*	3,550 feet
	13	04/22*	3,600 feet
	31	04/22*	5,750 feet
ELMIRA, NY			
ELMIRA/CORNING REGIONAL (ELM)	24	10/28*	4,750 feet
	28	06/24*	3,050 feet
FARMINGDALE, NY			
REPUBLIC (FRG)	32	01/19*	3,650 feet
ISLIP, NY			
LONG ISLAND MAC ARTHUR (ISP)	06	15R/33L	4,200 feet
	10	15R/33L	3,000 feet
	15L	10/28	3,000 feet
	15R	10/28	4,600 feet
	24	10/28	4,600 feet
	28	06/24	4,500 feet
	33R	06/24	3,000 feet
NEW YORK, NY			
LA GUARDIA (LGA)	04	13/31*	4,600 feet
	31	04/22*	5,500 feet
NEWARK, NJ			
NEWARK LIBERTY INTL (EWR)	11	04R/22L	5,700 feet
	04L	11/29	7,750 feet
	04R	11/29*	8,100 feet
POUGHKEEPSIE, NY			
DUTCHESS COUNTY (POU)	06	15/33	3,150 feet
SYRACUSE, NY			
SYRACUSE HANCOCK INTL (SYR)	10	15/33*	7,700 feet
	15	10/28*	6,000 feet
TETERBORO, NJ			
TETERBORO (TEB)	01	06/24*	4,550 feet
	06	01/19*	3,750 feet

(SEE CONTINUATION PAGE FOR MORE LISTINGS)

07 JUN 2007 to 05 JUL 2007

LAND AND HOLD SHORT OPERATIONS (LAHSO)

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
HAGERSTOWN, MD			
HAGERSTOWN REGIONAL-RICHARD A. HENSON FIELD (HGR)	09	02/20*	3,500 feet
NEWPORT NEWS, VA			
NEWPORT NEWS/WILLIAMSBURG INTL (PHF)	20	07/25*	5,200 feet
	25	02/20*	6,550 feet
NORFOLK, VA			
NORFOLK INTL (ORF)	14	05/23*	2,850 feet
	23	14/32*	6,300 feet
WILMINGTON, DE			
NEW CASTLE (ILG)	01	09/27	4,050 feet
	09	01/19	4,800 feet
	14	01/19	4,450 feet
	19	14/32	5,750 feet
	27	14/32	5,300 feet
	32	09/27	3,600 feet

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LAND AND HOLD SHORT OPERATIONS (LAHSO)

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
ERIE,PA			
ERIE INTL/TOM RIDGE FIELD (ERI)	24	02/20*	4,100 feet
HARRISBURG, PA			
CAPITAL CITY (CXY)	26	12/30	3,450 feet
LANCASTER, PA			
LANCASTER (LNS)	26	13/31*	5,190 feet
PHILADELPHIA, PA			
NORTHEAST PHILADELPHIA (PNE)	24	15/33*	4,150 feet
	33	06/24*	3,600 feet
PHILADELPHIA, PA			
PHILADELPHIA INTL (PHL)	09L	17/35*	7,350 feet
	17	09L/27R*	4,400 feet
PITTSBURGH, PA			
ALLEGHENY COUNTY (AGC)	10	13/31*	3,250 feet
	28	05/23*	4,450 feet
READING, PA			
READING REGIONAL/CARL A. SPAATZ	13	18/36*	5,200 feet
FIELD (RDG)	18	13/31*	3,050 feet
WILKES-BARRE/SCRANTON, PA			
WILKES-BARRE-SCRANTON INTL (AVP)	04	10/28*	4,700 feet

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
BOZEMAN, MT			
GALLATIN FIELD (BZN)	12	12/30*	6841 feet
EVERETT, WA			
SNOHOMISH COUNTY (PAINE FIELD) (PAE)	16R	11/29	3,923 feet
	29	16R/34L	3,598 feet
	34L	11/29	4,127 feet
MOSES LAKE, WA			
GRANT COUNTY INTL (MWH)	04	14L/32R	4,700 feet
	14L	04/22	7,550 feet
	22	14L/32R	4,650 feet
	32R	04/22	5,050 feet
PORTLAND, OR			
PORTLAND-HILLSBORO (HIO)	12	02/20	5,013 feet
	31	16/34	3,150 feet
SALEM, OR	34	13/31	3,050 feet
MCNARY FIELD (SLE)			
	07	03/21	2,800 feet
SPOKANE, WA	21	07/25	7,000 feet
SPOKANE INTL (GEG)	25	03/21	4,350 feet
	07	12/30	4,500 feet
TWIN FALLS, ID	25	12/30	3,600 feet
JOSLIN FIELD-MAGIC VALLEY REGIONAL (TWF)			

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
HONOLULU, HI			
HONOLULU INTL (HNL) (PHNL)	04L	08L/26R	3,700 feet
	04R	08L/26R	6,250 feet
	08L	04L/22R	9,350 feet

07 JUN 2007 to 05 JUL 2007

LAND AND HOLD SHORT OPERATIONS (LAHSO)

THERE ARE NO LAND AND HOLD SHORT OPERATIONS (LAHSO) FOR ARKANSAS OR OKLAHOMA

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LAND AND HOLD SHORT OPERATIONS (LAHSO)

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
DALLAS-FORT WORTH, TX			
DALLAS-FORT WORTH INTL (DFW)	17C	TWY B*	10,460 feet
	18R	TWY B*	10,100 feet
	35C	TWY EJ*	9,050 feet
	36L	TWY Z*	10,650 feet
LONGVIEW, TX			
EAST TEXAS REGIONAL (GGG)	31	17/35*	8,100 feet
	35	13/31*	4,150 feet

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
WACO, TX			
WACO REGIONAL (ACT)	14	01/19	5,150 feet
	19	14/32	6,050 feet

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
BATON ROUGE, LA			
BATON ROUGE METROPOLITAN, RYAN FIELD (BTR)	13	04L/22R	4,140 feet
	22R	13/31	3,450 feet
	22L	13/31	2,900 feet
NEW ORLEANS, LA			
LAKEFRONT (NEW)	18R	09/27	5,359 feet
	27	18R/36L	2,560 feet

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
HOUSTON, TX			
GEORGE BUSH INTERCONTINENTAL/	26L	TWY NE	9,010 feet
HOUSTON (IAH)	08R	TWY NP	9,019 feet

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
SMYRNA, TN			
SMYRNA (MQY)	01	14/32	3,000 feet
	14	01/19	3,400 feet
	32	01/19	3,950 feet

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
CHARLESTON, SC			
CHARLESTON AFB/INTL (CHS)	03	15/33	5,550 feet
	15	03/21	5,700 feet
	33	03/21	2,900 feet
FLORENCE, SC			
FLORENCE REGIONAL (FLO)	09	01/19*	2,600 feet
	27	01/19*	3,350 feet
	01	09/27*	3,500 feet
GREENSBORO, NC	14	05/23	3,450 feet
PIEDMONT TRIAD INTL (GSO)	23	14/32	9,200 feet
WINSTON-SALEM, NC	33	04/22	6,010 feet
SMITH REYNOLDS (INT)			

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
DAYTONA BEACH, FL			
DAYTONA BEACH INTL (DAB)	07L	TWY W	7,500 feet
	16	07L/25R	2,900 feet
FORT LAUDERDALE, FL			
FORT LAUDERDALE EXECUTIVE (FXE)	26	13/31	3,000 feet
	31	08/26	3,250 feet
JACKSONVILLE, FL			
CRAIG MUNI (CRG)	14	05/23*	3,650 feet
	05	14/32	3,600 feet
LAKELAND, FL			
LAKELAND LINDER REGIONAL (LAL)	05	09/27*	2,500 feet
	09	05/23*	6,000 feet
MIAMI, FL			
MIAMI INTL (MIA)	09	12/30*	9,750 feet
	12	09/27*	8,100 feet
ORLANDO, FL			
EXECUTIVE (ORL)	25	13/31	4,500 feet
ORLANDO SANFORD (SFB)	09L	18/36	5,500 feet
	09C	18/36	3,150 feet
	18	09R/27L	4,624 feet
	36	09L/27R	5,300 feet
POMPANO BEACH, FL			
POMPANO BEACH AIRPARK (PMP)	15	10/28	3,800 feet
	10	15/33	3,000 feet
ST. PETERSBURG-CLEARWATER, FL			
ST. PETERSBURG-CLEARWATER INTL (PIE)	04	09/27	4,286 feet
	09	04/22	4,733 feet
	17L	04/22	7,557 feet
	22	17L/35R	4,514 feet
	35R	09/27	3,405 feet
SARASOTA (BRADENTON), FL			
SARASOTA/BRADENTON INTL (SRQ)	14	04/22	3,800 feet
TAMPA, FL			
TAMPA INTL (TPA)	18L	09/27*	5,650 feet
	27	18L/36R*	4,350 feet
TITUSVILLE, FL			
SPACE COAST REGIONAL (TIX)	09	18/36*	4,200 feet
	36	09/27*	3,750 feet
VERO BEACH, FL			
VERO BEACH MUNI (VRB)	29L	04/22	4,700 feet
WEST PALM BEACH, FL			
PALM BEACH INTL (PBI)	13	09L/27R*	4,370 feet
	09L	13/31	3,200 feet
	27R	13/31	3,725 feet

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
ATLANTA, GA			
HARTSFIELD-JACKSON ATLANTA INTL (ATL)	08L	TXY B13	8,490 feet
	09R	TXY J	8,620 feet
	26R	TXY H	8,600 feet
	27L	TXY P	8,600 feet
BIRMINGHAM, AL			
BIRMINGHAM INTL (BHM)	06	18/36	8,700 feet
	36	06/24	5,150 feet
SAVANNAH, GA			
SAVANNAH/HILTON HEAD INTL (SAV)	09	18/36	5,450 feet
	27	18/36	3,200 feet
	36	09/27	4,050 feet

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
COLORADO SPRINGS, CO			
CITY OF COLORADO SPRINGS MUNI (COS)	30	17R/35L	7,450 feet
	35L	12/30	10,250 feet
PUEBLO, CO			
PUEBLO MEMORIAL (PUB)	17	08L/26R	5,850 feet
	26R	17/35	8,300 feet

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
NAPA, CA			
NAPA COUNTY (APC)	18R	06/24	5,450 feet
	24	18R/36L	3,700 feet

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CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
BURBANK, CA			
BOB HOPE (BUR)	15	08/26	4,250 feet
LONG BEACH, CA			
LONG BEACH (DAUGHERTY FIELD) (LGB)	12	16L/34R	4,100 feet
	25R	12/30	3,400 feet
	30	07L/25R	5,850 feet

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LAND AND HOLD SHORT OPERATIONS (LAHSO)

LAHSO is an acronym for "Land and Hold Short Operations." These operations include landing and holding short of an intersection runway, an intersecting taxiway, or other predetermined points on the runway other than a runway or taxiway. Measured distance represents the available landing distance on the landing runway, in feet.

The hold-short point, marked by an asterisk (*), represents the predetermined points on the runway other than a runway or taxiway.

Specific questions regarding these distances should be referred to the air traffic manager of the facility concerned. The Aeronautical Information Manual contains specific details on hold-short operations and markings.

CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
LAS VEGAS, NV			
NORTH LAS VEGAS (VGT)	30L	07/25	4,000 feet
	25	12R/30L	4,000 feet
OGDEN, UT			
OGDEN-HINCKLEY (OGD)	03	07/25	4,700 feet
	07	03/21	3,450 feet
	21	16/34	4,550 feet
	25	16/34	3,200 feet
	34	07/25	3,850 feet
PRESCOTT, AZ			
ERNEST A. LOVE FIELD (PRC)	21L	12/30	5,150 feet

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LAND AND HOLD SHORT OPERATIONS (LAHSO) (CONTINUED)

CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
GREEN BAY, WI			
AUSTIN STRAUBEL INTL (GRB)	18	06/24*	2,692 feet
	24	18/36*	6,050 feet
	36	06/24*	4,932 feet
MADISON, WI			
DANE COUNTY REGIONAL-TRUAX FIELD (MSN)	03	14/32	3,400 feet
	18	03/21	4,850 feet
	21	18/36	6,450 feet
	32	18/36*	5,300 feet
	36	14/32*	7,050 feet
MARION, IL			
WILLIAMSON COUNTY REGIONAL (MWA)	20	11/29*	6,650 feet
	29	02/20*	4,650 feet
MOLINE, IL			
QUAD CITY INTL (MLI)	05	09/27	2,509 feet
	05	13/31	2,509 feet
	09	05/23	5,500 feet
	09	13/31	5,500 feet
	13	05/23	3,100 feet
	13	09/27	3,100 feet
	27	05/23	3,350 feet
	27	13/31	3,350 feet
	31	05/23*	2,550 feet
	31	09/27*	2,550 feet
MOSINEE, WI			
CENTRAL WISCONSIN (CWA)	26	17/35*	7,300 feet
	35	08/26*	5,000 feet
PEORIA, IL			
GREATER PEORIA REGIONAL (PIA)	13	04/22*	7,600 feet
	22	13/31*	5,100 feet
ROCKFORD, IL			
CHICAGO/ROCKFORD INTL (RFD)	01	07/25*	6,000 feet
	07	01/19*	8,800 feet
SPRINGFIELD, IL			
ABRAHAM LINCOLN CAPITAL (SPI)	04	13/31	3,200 feet
	22	13/31	4,150 feet
	31	04/22	3,350 feet
	36	13/31	3,000 feet

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LAND AND HOLD SHORT OPERATIONS (LAHSO) (CONTINUED)

CITY/AIRPORT	LDG RWY	HOLD-SHORT POINT	MEASURED DISTANCE
WHITE PLAINS, NY			
WESTCHESTER COUNTY (HPN)			
	11	16/34*	2,500 feet
	16	11/29*	4,000 feet

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DESCENT TABLE 99028

RATE OF DESCENT TABLE

A rate of descent table is provided for use in planning and executing precision descents under known or approximate ground speed conditions. It will be especially useful for approaches when the localizer only is used for course guidance. A best speed, power, altitude combination can be programmed which will result in a stable glide rate and altitude favorable for executing a landing if minimums exist upon breakout. Care should always be exercised so that minimum descent altitude and missed approach point are not exceeded.

ANGLE OF DESCENT (degrees and tenths)	FEET /NM	GROUND SPEED (knots)										
		30	45	60	75	90	105	120	135	150	165	180
2.0	210	105	160	210	265	320	370	425	475	530	585	635
2.5	265	130	200	265	330	395	465	530	595	665	730	795
VERTICAL PATH ANGLE 2.7	287	143	215	287	358	430	501	573	645	716	788	860
2.8	297	149	223	297	371	446	520	594	669	743	817	891
2.9	308	154	231	308	385	462	539	616	693	769	846	923
3.0	318	159	239	318	398	478	557	637	716	796	876	955
3.1	329	165	247	329	411	494	576	658	740	823	905	987
3.2	340	170	255	340	425	510	594	679	764	849	934	1019
3.3	350	175	263	350	438	526	613	701	788	876	963	1051
3.4	361	180	271	361	451	541	632	722	812	902	993	1083
3.5	370	185	280	370	465	555	650	740	835	925	1020	1110
4.0	425	210	315	425	530	635	740	845	955	1060	1165	1270
4.5	475	240	355	475	595	715	835	955	1075	1190	1310	1430
5.0	530	265	395	530	660	795	925	1060	1190	1325	1455	1590
5.5	580	290	435	580	730	875	1020	1165	1310	1455	1600	1745
6.0	635	315	475	635	795	955	1110	1270	1430	1590	1745	1950
6.5	690	345	515	690	860	1030	1205	1375	1550	1720	1890	2065
7.0	740	370	555	740	925	1110	1295	1480	1665	1850	2035	2220
7.5	795	395	595	795	990	1190	1390	1585	1785	1985	2180	2380
8.0	845	425	635	845	1055	1270	1480	1690	1905	2115	2325	2540
8.5	900	450	675	900	1120	1345	1570	1795	2020	2245	2470	2695
9.0	950	475	715	950	1190	1425	1665	1900	2140	2375	2615	2855
9.5	1005	500	750	1005	1255	1505	1755	2005	2255	2510	2760	3010
10.0	1055	530	790	1055	1320	1585	1845	2110	2375	2640	2900	3165
10.5	1105	555	830	1105	1385	1660	1940	2215	2490	2770	3045	3320
11.0	1160	580	870	1160	1450	1740	2030	2320	2610	2900	3190	3480
11.5	1210	605	910	1210	1515	1820	2120	2425	2725	3030	3335	3635
12.0	1260	630	945	1260	1575	1890	2205	2520	2835	3150	3465	3780

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