
Subject: ACARS Landing Performance Request (LPR)

Introduction

This bulletin describes the ACARS Landing Performance Request (LPR) and authorizes crews to utilize it for training purposes. The Operational Landing Distances tables in the ODM are still primary and provide official guidance.

Authorization to use LPR as primary guidance will be issued via electronic bulletin at a later time.

Background

Runway excursions, including overruns, account for almost half of all approach and landing accidents. Excursions and overruns are usually a result of multiple factors such as unstable approach, poor flare technique, excess speed, delayed brake or reverse thrust activation, and poor runway braking action.

For a given flap and autobrake setting, aircraft stopping performance is affected by runway condition, and aircraft speed and status (antiskid inop, reverser inop, etc.). As braking action decreases, the distance required to stop increases.

The calculated stopping distance on short runways (KDCA, KLGA, KSNA) can approach the available runway length. Reduced braking action shortens the available surface by increasing the stopping distance. For example, landing on a 7000' DRY runway may be within the aircraft's capability, whereas landing on a 9000' runway with POOR braking may not be. When analyzing runways for landing, one should focus on braking action and runway required rather than runway length alone.

ODM Operational Landing Distance Tables include runway braking action considerations to produce real world landing distances with a 15% safety margin. ACARS technology is now available to produce this same landing data for a specific runway using current environmental conditions, eliminating the need for manually applied corrections or interpolation.

Current landing distance performance policy and tools include:

- Flight Control normally dispatches flights to the longest available runway based on FAR WET landing field length, zero wind.
- Refer to FCTM, chapter 5, Quick Reference Landing Length.
- ODM Operational Landing Distances tables.

ACARS Landing Performance Request (LPR) provides an additional, easy to use landing distance tool that mirrors existing ODM data.

Note: LPR is intended for normal landing distances. For non-normal landing configurations, use the ODM charts.

ACARS Request Procedure

LPR should normally be requested in cruise and landing data analyzed in a low workload environment.

To access ACARS Landing Performance Request (LPR):

- Select NWA REQUEST from the AOC MENU page (LSK 5R).
- Select PERF LANDING (LSK 5R).

This access the first of 4 ACARS LDG PERF pages.

- Enter the expected landing runway at LSK 1L.
- Optional: Select NEXT PAGE (LSK 5R) to access page 2. Enter landing flap setting (3 or 4) at LSK 1R. If no flap setting is entered, LPR defaults to Flaps 4 (FULL).
- Optional: Select NEXT PAGE (LSK 5R) to access page 3. Verify/enter estimated LDG WT at LSK 3L.



Best Practice Tip: Verify the aircraft's actual weight is in line with the LPR estimated landing weight. This will ensure an accurate LPR LDIST and may also alert pilots to a potential overweight landing. If actual weight indicates an overweight landing, refer to FOM, chapter 10, Overweight Landings and QRH, chapter 0, Overweight Landing for guidance.

- Enter SEND at LSK 5L.

This basic entry produces landing data based on the current reported conditions (QNH, winds, and temperature) and estimated landing weight (WDR weight minus FPS planned fuel burn). It produces landing distances for 4 configurations and 6 runway braking action levels. Additional ACARS entries are possible and will be discussed later in this bulletin.

Landing Performance Request Uplink

'*' Indicates fields selected or default. LPR default settings are: Runway braking action GOOD (5), flaps FULL (F04), and A/BRKS LO (B-LO). Runway condition and flap setting are selectable; there is no ACARS selection for A/BRKS (this functionality is planned for the next ACARS revision).

LDIST = Calculated Landing Distance includes a 7 second air run from threshold to touchdown, stopping distance, plus a 15% safety margin. LDIST will never be greater than the available runway length.

LTP = Latest Touchdown Point to protect the LDIST on the available runway. LTP is based on a 7 second air run distance (approximately 1600'), but will never be shorter than 1000' or greater than 3000'. Landing beyond the LTP reduces the 15% safety margin included in the LDIST.

'()' = The LDIST and LTP are in parentheses when LTP is less than the calculated 7 second distance.

'- - - -' = Dashes appear when the 15% safety margin cannot be met or data is not available for requested conditions.

LPR Page 1: Provides station, runway and available runway landing distance.

The first asterisk indicates the data is based on GOOD braking action, the ACARS default setting. The second asterisk indicates default settings of Flaps 4 and A/BRKS LO.

JFK	22L		8400
5*GOOD		LDIST	LTP
F03	B-LO	(8400)	(1400)
F03	B-MED	6400	2800
F04*B-LO		7900	2100
F04	B-MED	6000	2800
W 250/04	HW03	XW02	

The LDIST for the requested conditions is 7900'. The actual stopping distance is less since LDIST includes a 15% safety margin. LDIST is 500'

shorter than the available runway length; therefore LTP has been increased to 2100'. As A/BRK and flap selections increase, LDIST decreases and LTP increases. LTP will never be greater than 1/3rd of the runway length up to 3000'. Note the parentheses around the F03 B-LO line. This indicates the Latest Touchdown Point has been reduced to protect the LDIST.

Note: Headwind or tailwind components are always applied to the LDIST.

LPR Page 2: Provides data for other Runway Condition Codes/Braking Actions Reports.

Note: As A/BRKS are not ACARS selectable; this page uses the default of LO A/BRKS.

F04 B-LO	LDIST	LTP
6 DRY	7900	2100
5*GOOD	7900	2100
4 G/M	8000	2000
3 MED	8000	2000
2 M/P	----	----
1 POOR	----	----

In this example, the dashed lines following Medium/Poor and Poor indicate the calculated LDIST exceeds the available runway length (and 15% margin) for these conditions.

LPR Page 3: Includes aircraft status information and landing weight used for the LDIST calculations.

VREF speed addition and aircraft status options are not currently operational for A319/320.

WT 140.2	VREF PLUS 00
TEMP 18	A30.37
REVSR OK	WING AI OFF
ANTSKD OK	ASPOIL OK
LDIST INCL 15	PCT MARGIN
TEST ONLY -	DO NOT USE
END ACARS	LPR

WT is the expected landing weight, i.e. WDR weight minus the FPS Flight Plan fuel burn. If unavailable, LPR defaults to maximum certified landing weight.

ACARS LDG PERF Options

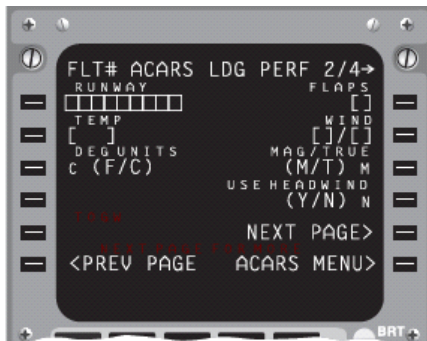
As previously mentioned, the only required entry for LPR is the landing runway. However, several additional entries are possible.

Page 2 ACARS entries available include:

RUNWAY: (LSK 1L) The runway displayed is the runway inserted on LDG PERF page 1. It can be changed or inserted on this page by entering the runway identifier.

TEMP: (LSK 2L) Pilot entered temperature overrides the uplinked value. Negative temperatures require a minus sign (e.g. -12).

DEG UNITS: (LSK 3L) Leave in default C to satisfy LPR requirements.



FLAPS: (LSK 1R) For the A319/320 entry options are Flaps 3 or 4 (4 equals FULL flaps and is the default setting).

WIND: (LSK 2R) Manual wind entry overrides the uplinked value. Use the first two digits to input the desired wind direction (e.g. for 050 at 15 kts, use 05/15). Headwind or tailwind components are always applied to LDIST calculations. If winds are variable and pilots do not desire to include a headwind component, wind values can be overwritten with 0/0.

MAG/TRUE: (LSK 3R) M or T can be selected to toggle from magnetic to true wind directions. Only used with manual wind entry.

USE HEADWIND: Non-functional as LPR always applies either headwind or tailwind components.

Page 3 ACARS entries available include:

LDG WT: (LSK 3L) Used to enter pilot estimated landing weight. With no pilot entry, LPR uses the WDR gross weight minus the Flight Plan estimated fuel burn. If unavailable, LPR defaults to maximum certified landing weight.



RWY WET/DRY: (LSK 1R) LPR provides data for up to 6 ICAO runway braking action conditions. ACARS only allows two direct entries; D (dry) equates to DRY (6) and W provides GOOD (5) data (default setting). To input other conditions, enter the numerical value on page 4 (e.g. for MED/FAIR braking a 3 is entered on page 4 LSK 5R OTHER INPUTS). Definitions of ICAO codes are as follows for runway Condition Code/Braking Action Report:

- 6 = DRY
- 5 = GOOD
- 4 = GOOD/MED
- 3 = MED
- 2 = MED/POOR
- 1 = POOR

Other entries on this page are currently non-functional.

Diversions

The ACARS DIVERT feature updates LPR to the new destination airport. However, LPR estimated landing weight is still based on the original Flight Plan fuel burn. Pilots must enter an estimated LDG WT to provide a more accurate landing distance at the diversion airport.

If landing information is desired for an airport other than the ACARS destination airport, pilots can:

- Reference FCTM Quick Reference Landing Length Table distances.
- Use the ODM Operational Landing Distance Tables.
- Request LPR data for the new destination from Flight Control using the ACARS FREE TEXT function. Include the following information when making an LPR data request:
 - Airport.
 - Runway.
 - Flap and autobrake setting.
 - Estimated landing weight.
 - Braking action.
 - Any additional data (inop items).

The dispatcher will manually enter the data in the online tool and will uplink the requested report.

Summary

The ACARS Landing Performance Request is an additional tool to assist crews in analyzing runway conditions and aircraft stopping performance.

An assessment of estimated stopping distance is required by flight crews any time there are braking action advisories in effect, the runway is cluttered, or the runway condition report indicates contaminant is present. Prior to landing in these conditions, the crew should establish that sufficient runway is available, plus the 15% safety margin.

For additional details, refer to Airway Manual SUP, 4 - Weather, Braking Action.

Considerations when Landing Distance is in Question

If concerned about landing distance, in addition to always ensuring a stable, on speed approach, pilots should:

- Select a greater flap setting (i.e. FULL instead of 3).
- Select a higher autobrake setting (i.e. MED instead of LO).
- Land precisely; do not float, land long, or land short.
- Apply maximum reverse thrust per FCTM guidance.
- Select a different runway or divert.

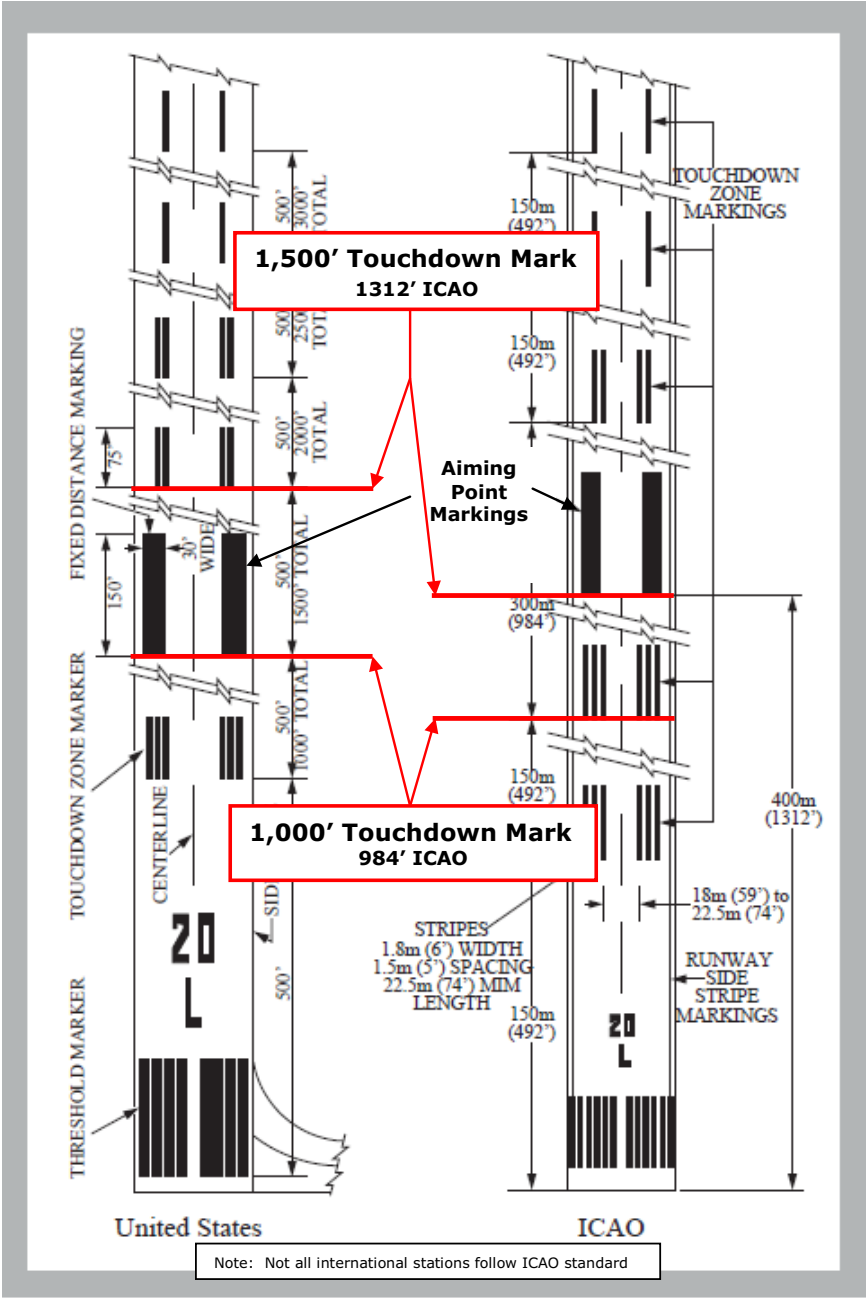
The Latest Touchdown Point provides an additional tool for planning a precision landing. Landing at the end of the touchdown zone during DRY conditions may be acceptable; however, landing at the end of the touchdown zone during POOR braking conditions may not. If in doubt, executing a go-around is always an option.

Final Points

- LDIST always includes a 15% safety margin. The LDIST should be compared to the total runway length available for landing, not the distance beyond GLIDE SLOPE.
- LTP adjusts where the aircraft must touch down to preserve the LDIST (including 15% safety margin) on the runway surface.
- An autoland will not always touch down at or prior to the LTP.
- A long runway with reduced braking action should be considered the same as a short runway.
- Calculated landing distances are corrected for runway slope, pressure altitude, and wind components.
- Landing distances are based upon the assumptions listed on the ODM Operational Landing Distances tables.

CAUTION: When the LTP is less than 1500', fly a precise approach so as not to inadvertently land short of the runway, float, or land long.

The chart on the following page depicts runway markings to aid the crew in determining the LTP.



Reported Braking Action		Reported Runway Surface Conditions			
PIREP	Definition	Runway Contaminant	ICAO/ Runway Condition Code	Mu ⁽²⁾	RCR
--	--	Dry	6		--
Good	Braking deceleration is normal for the wheel braking effort applied AND directional control is normal	- Frost - Wet or Damp 1/8" or less depth of: - Water - Slush - Dry Snow - Wet Snow	5	40 or higher	19 & above
Good to Medium	Braking deceleration OR directional control is between Good and Medium.	-15°C and colder OAT: Compacted Snow	4	39	
Medium (Fair)	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.	- Wet ("slippery when wet" runway) - Dry Snow or Wet Snow (any depth) over Compacted Snow Greater than 1/8" depth of: - Dry Snow - Wet Snow Warmer than -15°C OAT: - Compacted Snow	3	30 to 29	13 – 18
Medium to Poor	Braking deceleration OR directional control is between Medium and Poor.	Greater than 1/8" depth of: - Water - Slush	2	20 or lower	
Poor	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	Ice	1		6 – 12
Nil ⁽¹⁾	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	- Wet Ice - Water on top of Compacted Snow - Dry Snow or Wet Snow over Ice	0		5 & below
--	--	Unreliable	9 (ICAO only)	N/A	N/A

⁽¹⁾ Operations on any runway with a PIREP or runway contaminant of nil are prohibited.

⁽²⁾ The overlapping Mu scales reflect the inherent inaccuracies of ground based Mu devices. Do not base the calculation of a landing distance solely on runway friction meter readings.

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