JobAid for OpSpec/MSpec C049. (04/21/04)

A. Destination Airport Analysis. FAA regulations governing operations under parts 91K and 135 provide for reducing effective runway length requirements for turbine engine-powered large transport category airplanes that must be met prior to a flight's release, provided certain requirements are met by the operator. For destination airports, normal landing distance requirements for part 91K and 135 operations are 60% of the available runway length. For alternate airport landing distance requirements, 91 subpart K remains at 60%, while part 135 allows for 70% of the effective runway length. If an operator desires to reduce such requirements below 60% of the available runway length, that operator must meet regulatory requirements in two areas:

- Part 135 Eligible On-demand Operator or Part 91K Fractional Ownership Program experience; and
- FAA Approved Destination Airport Analysis program. The Destination Airport Analysis program (DAAP) must address specific regulatory requirements and be approved for use through that operator's Mspecs or OpSpecs, as applicable.

B. Experience Requirements

An Eligible On-demand Operator is defined in Title 14 of the Code of Federal Regulations (14 CFR) part 135, section 135.4. Fractional Ownership Programs must meet the same requirements and are identified in Sections 91.1053 and 91.1055. The requirements include:

(a) An on-demand or fractional ownership program operation that meets the following requirements:

(1) Two-pilot crew. The flightcrew must consist of at least two qualified pilots employed or contracted by the certificate holder.

(2) Flightcrew experience. The crewmembers must have met the applicable requirements of part 61 of this chapter and have the following experience and ratings:

(i) Total flight time for all pilots:

(A) Pilot in command--A minimum of 1,500 hours.
(B) Second in command--A minimum of 500 hours.

(ii) For multi-engine turbine-powered fixed-wing and powered-lift aircraft, the following FAA certification and ratings requirements:

(A) Pilot in command--Airline transport pilot and applicable type ratings.
(B) Second in command--Commercial pilot and instrument ratings.

(iii) For all other aircraft, the following FAA certification and rating requirements:

(A) Pilot in command--Commercial pilot and instrument ratings.
(B) Second in command--Commercial pilot and instrument ratings.

(3) Pilot operating limitations. If the second in command of a fixed-wing aircraft has fewer than 100 hours of flight time as second in command flying in the aircraft make and model and, if a type rating is required, in the type aircraft being flown, and the pilot in command is not an appropriately qualified check pilot, the pilot in command shall make all takeoffs and landings in any of the following situations:

(i) Landings at the destination airport when a Destination Airport Analysis is required by § 135.385(f); and

(ii) In any of the following conditions:

(A) The prevailing visibility for the airport is at or below 3/4 mile.

(B) The runway visual range for the runway to be used is at or below 4,000 feet.

(C) The runway to be used has water, snow, slush, ice, or similar contamination that may adversely affect aircraft performance.

(D) The braking action on the runway to be used is reported to be less than "good."

(E) The crosswind component for the runway to be used is in excess of 15 knots.

(F) Windshear is reported in the vicinity of the airport.

(G) Any other condition in which the pilot in command determines it to be prudent to exercise the pilot in command's authority.

(4) Crew pairing. Either the pilot in command or the second in command must have at least 75 hours of flight time in that aircraft make or model and, if a type rating is required, for that type aircraft, either as pilot in command or second in command.

C. DEVIATONS. The Administrator may authorize deviations from the total flight time requirements ((a) (2) (i)) [Section 91.1053] or crew pairing requirements ((a) (3)) [Section 91.1055] if the FAA office that issued the operations specifications or management specifications, as applicable, or the finds that the crewmember has comparable experience, and can effectively perform the functions associated with the position in accordance with the requirements of this chapter. The Administrator may, at any time, terminate any grant of deviation authority issued under this provision. Grants of deviation may be authorized after consideration of the size and scope of the operation, the qualifications of the intended personnel and the following circumstances:

(1) A newly authorized certificate holder does not employ any pilots who meet the minimum requirements of paragraphs (a)(2)(i) or (a)(4) of this section.

(2) An existing certificate holder adds to its fleet a new category and class aircraft not used before in its operation.

(3) An existing certificate holder establishes a new base to which it assigns pilots who will be required to become qualified on the aircraft operated from that base.

D. Destination Airport Analysis Program (DAAP) Requirements

DAAP requirements are found in part 91, section 91.1025 and part 135, section 135.23. Specifically, if required by section 91.1037 (c) or section 135.385, as applicable, the Destination Airport Analysis establishing runway safety margins must include the following elements, supported by aircraft performance data supplied by the aircraft manufacturer for the appropriate runway conditions at the airport(s) to be used, if a reduction below 60% of the available runway length is planned:

- **Pilot qualifications and experience.** The operator is responsible for including all applicable regulatory requirements to establish a pilot's eligibility to reduce effective runway planning requirements below 60% of the available runway length. Experience requirements include pilots with less than 100 hours flight time in type ("high minimums"), total flight time, and crew pairing limitations (less than 75 hours in type).

- **Aircraft performance data to include normal, abnormal, and emergency procedures as supplied by the aircraft manufacturer.** Landing distance calculations should be completed using FAA approved procedures and data. Consideration must be given to abnormal and emergency procedures, as some of these procedures may increase approach speeds and consequently, landing distance requirements. Additionally, planned takeoff weight for the departure from that airport should be evaluated before operating into that airport.

- **Airport facilities and topography.** Consider what services are available at the airport. Services such as communications, maintenance, and fueling may have an impact on operations to and from

that airport. Terrain features may figure prominently in or near a particular airport. High, fast-rising terrain may require special approach or departure procedures, which may impact performance requirements. For example, an aircraft certification criterion uses a 3.5-degree glideslope angle in computing landing distance data. Glideslope angles of 2.5 to 3 degrees are common and have the effect of lengthening actual landing distance. Airports that sit on top of hilly terrain or downwind of mountainous terrain may occasionally experience conditions that include gusty conditions or winds shifting from a headwind to a tailwind. Such conditions are an important consideration during the landing maneuver, particularly during the flare, and increase landing distance requirements.

- **Runway conditions (including contamination).** Runway features, such as slope and surface composition, can cause the actual landing distance to be longer than the calculated landing distance. Wet or slippery runways may preclude reductions from being taken and, in fact, require 115 percent of the distance derived from calculations, whether a reduction was used or not. This distance is calculated by increasing the distance required under dry conditions by an additional 15 percent (i.e., if AFM data shows the actual landing distance will be 2000 feet, the effective runway length required is 3,334 feet using 60% in this example. If the runway is expected to be wet or slippery upon arrival, the effective runway length required is 3,834 feet). Braking action always impacts the landing distance required as it deteriorates. Always consider the most current braking action report and the likelihood of an update prior to the flight's arrival at a particular airport.

- **Airport or area weather reporting.** Some airports may not have current weather reports and forecasts available for flight planning. Others may have automated observations for operational use. Still others may depend on a nearby airport's forecast for operations. Area forecasts are also very valuable in evaluating weather conditions for a particular operation. Comparing forecasted conditions to current conditions will lend insight to changes taking place as weather systems move and forecasts are updated. Longer flight segments may lean more heavily on the forecast for the ETA, as current conditions may change significantly as weather systems move. For example, if a flight is planned for 5 hours en route, the current conditions may not provide as much insight as a forecast for the arrival time, if a cold front is expected to pass through the area while a flight is en route.

- **Appropriate additional runway safety margins, if required.** Displaced thresholds, airport construction, and temporary obstacles (such as cranes and drawbridges) may impact runway length available for landing. NOTAMS must be consulted prior to conducting a flight and are a good source of information on items such as these.

- **Airplane inoperative equipment.** Thrust reversers, on airplanes so equipped, provide some effect of reducing landing rollout distance. However, they are not considered in landing distance performance requirements and data provided by airplane manufacturers during certification. Rather, they provide an added margin of safety when used. If thrust reversers are inoperable or not installed, that additional safety margin does not exist. Also, their effectiveness is directly related to many factors, including pilot technique, reverser deployment rates, engine speeds, and environmental conditions (e.g. wet or contaminated runways in conjunction with crosswinds). Their actual effectiveness varies greatly. Other airplane systems that directly impact landing distance requirements include antiskid and ground spoilers (if installed), brake and tire condition, and landing flap selection, to name a few.

- **Environmental conditions.** Many environmental conditions directly and indirectly affect actual landing distance requirements. Frontal passage usually causes winds to shift, sometimes causing a tailwind component. Tailwinds generally have a significantly greater impact on landing distance than headwinds. Thunderstorms in the vicinity of airports can introduce wind gusts from different directions, including windshear, to varying degrees that are difficult to predict in advance or during the actual landing maneuver itself. Density and pressure altitudes also directly impact landing distance requirements. Landing distance tables may take these factors into account. However, variations from planned conditions and actual conditions at time of landing can vary and

impact actual landing distance requirements. Stronger than forecasted tailwinds en route can cause the airplane to weigh more than projected, causing the actual landing distance to be longer than planned. If icing conditions were encountered while en route and temperatures above freezing are not reached prior to landing, any ice remaining behind removal devices or on areas that are not protected add additional weight and drag to the airplane, which in turn requires higher airspeeds and longer landing distances.

- **Other criteria that affect aircraft performance.** Many other variables have an effect on landing distance. Approach speed, flap configuration, airplane weight, tire and brake condition, airplane equipment, and environmental conditions, to name a few, all directly impact required landing distance. With these and many other factors considered, it is the pilot who must apply their application through the use of procedures and technique, the latter being highly variable. While specific additives are provided by manufacturer's landing data, a pilot usually applies techniques acquired through experience in dealing with similar circumstances. Pilots may opt for an especially smooth landing on longer runways by "floating" in ground effect, prior to touchdown. While possibly yielding a smooth landing, this technique will add to the landing distance requirement, as landing data provided by manufacturer's data through the certification process assumes a touchdown rate of descent of 8 feet per second. The following tables provide additional insight into factors that effect landing distance requirements and policies and procedures addressing them should be included in the operator's FAA-approved Destination Airport Analysis program:

REDUCTION OF LANDING DISTANCE PLANNING REQUIREMENTS
General Operational Considerations

Certification criteria	Operational consideration	Effect on safety margin
3.5 degree glideslope angle	2.5 to 3 degrees typical	Actual landing distance will be longer than calculated landing distance.
8 ft/sec touchdown rate of descent	2 to 4 ft/sec typical	Actual landing distance will be longer than calculated landing distance.
Assumes all approach speed additives bled off before reaching the 50 foot height	5 to 10 knots exceedances not uncommon	Actual landing distance will be longer than calculated landing distance.
	Longer flare distance (“float”)	Actual landing distance will be longer than calculated landing distance.
	Less than full braking effort	Actual landing distance will be longer than calculated landing distance.
	Delays in obtaining full braking configuration	Actual landing distance will be longer than calculated landing distance.
	Higher temperatures not accounted for (temperature accountability not required)	Actual landing distance will be longer than calculated landing distance.
	Downhill runway slope not accounted for (runway slope accountability not required)	Actual landing distance will be longer than calculated landing distance.
	Icy, slippery, or contaminated runway surface	Actual landing distance will be longer than calculated landing distance.
	Airplane heavier at time of landing than predicted at time of dispatch	Actual landing distance will be longer than calculated landing distance.
	Airplane higher than 50 feet over the threshold.	Actual landing distance will be longer than calculated landing distance.
	Airport pressure altitude higher than predicted at time of dispatch.	Actual landing distance will be longer than calculated landing distance.

REDUCTION OF LANDING DISTANCE PLANNING REQUIREMENTS
Other Variable Considerations

Steady-state variables	**Non steady-state variables**	**Actual Operations vs. Flight Test**	**Actual vs. Forecast Conditions**
Runway slope	Wind gusts/turbulence	Flare technique	Runway or direction (affecting slope)
Temperature	Flight path deviations	Time to activate deceleration devices	Airplane weight
Runway surface condition (dry, wet, icy, texture)		Flight path angle	Approach speed
Brake/tire condition		Rate of descent at touchdown	Environmental conditions (for example, temperature, wind, pressure altitude)
Speed additives		Approach/touchdown speed	Engine failure
Crosswinds		Height at threshold	
		Speed control	

Operators are responsible for preparing their Destination Airport Analysis program if they desire to reduce landing distance planning requirements below 60% of the effective runway length. Operators must ensure that their policies and procedures reflect at least minimum regulatory requirements and adequate policies and procedures prior to submitting their program to the FAA for approval.

The following checklist should be used to ensure the operator and its Destination Airport Analysis program meets minimum regulatory requirements. This checklist should be completed by the operator and be provided to the FAA office having approval authority, along with the Destination Airport Analysis program and request for approval and issuance of Operations Specifications or Management Specifications, as applicable.

The checklist is completed using the following methodology:

- No. – Item and sub item number
- Item – Description of the item
- Response – Circle “Yes” or “No” to indicate whether or not the item is adequately addressed in the program
- Manual Page Reference – Enter the manual page number where the item is addressed

DESTINATION AIRPORT ANALYSIS PROGRAM (DAAP)
CHECKLIST

NO.	ITEM DESCRIPTION	RESPONSE	MANUAL PAGE REFERENCE
OPERATOR OR PROGRAM MANAGER REQUIREMENTS			
1.	Does the operator or program manager restrict reduced planning requirements to two-pilot crews?	Yes No	
2.	Does the operator or program manager restrict reduced planning requirements to flight crews that meet the following minimum experience requirements:		
a.	PIC – Airline Transport Pilot Certificate; applicable type rating; 1500 hours of flight time?	Yes No	
b.	SIC – Commercial Pilot Certificate; instrument rating; 500 hours of flight time?	Yes No	
3.	Does the operator or program manager require the PIC to perform all takeoffs and landings when the SIC has less than 100 hours in make, model, and type (if required) under these conditions (unless PIC is check pilot):		
a.	Landings when DAAP is used to reduce effective runway length below 60%?	Yes No	
b.	Airport visibility is at or below ¾ mile?	Yes No	
c.	RVR for the runway to be used is less than 4000 feet?	Yes No	
d.	The runway is contaminated?	Yes No	
e.	Reported braking action for the runway to be used is less than “good”?	Yes No	
f.	Crosswind component of runway to be used is in excess of 15 knots?	Yes No	
g.	Windshear is reported in the vicinity of the airport?	Yes No	
h.	Any condition in which the PIC determines it to be prudent to exercise the PIC authority?	Yes No	
4.	Crew pairing limitations – either PIC or SIC must have at least 75 hours flight time in type?	Yes No	
5.	Operations Specifications or Management Specifications issued (following FAA approval of DAAP and determination that operator or program manager meets applicable requirements)?	Yes No	
DAAP CONTENT REQUIREMENTS			
1.	Does the DAAP take pilot information, into account including:		
a.	Qualifications?	Yes No	
b.	Experience?	Yes No	
2.	Does the DAAP take into account aircraft performance data, as supplied by the aircraft manufacturer, that includes:		
a.	Normal procedures?	Yes No	
b.	Abnormal procedures?	Yes No	
c.	Emergency procedures?	Yes No	
3.	Does the DAAP take airport information into account, including:		

NO.	**ITEM DESCRIPTION**	**RESPONSE**	**MANUAL PAGE REFERENCE**
a.	Facilities?	Yes No	
b.	Topography?	Yes No	
4.	Does the DAAP take into account runway:		
a.	Conditions?	Yes No	
b.	Contamination?	Yes No	
5.	Does the DAAP take into account weather reporting for that:		
a.	Airport and/or	Yes No	
b.	Area?	Yes No	
6.	Does the DAAP take any additional runway safety margins (if required) into account?	Yes No	
7.	Does the DAAP take airplane inoperative equipment into account?	Yes No	
8.	Does the DAAP take environmental conditions into account?	Yes No	
9.	Does the DAAP take other performance criteria into account?	Yes No	

Sample OpSpec/MSpec C049/MC049. Destination Airport Analysis Program

a. The eligible on-demand certificate holder is authorized to use the Destination Airport Analysis Program described or referenced in this operations specification.

TEXT01

b. Operations specification A057 must be issued for this authorization.

TEXT99