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DOCUMENT TITLE

GENERAL OPERATIONS, FLIGHT PLANNING AND PERFORMANCE

CHAPTER 22
RISK ASSESMENT

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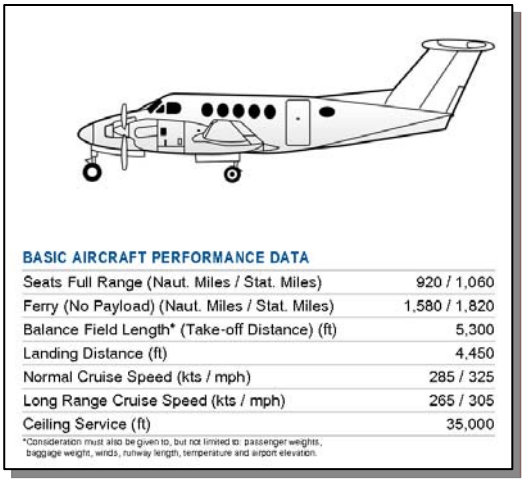
RISK ASSESSMENT

INTRODUCTION

The performance data for a particular type of aircraft is developed during testing and it will have at least met, and probably exceeded, the minimum performance standards required by the regulations for the type to be granted a Certificate of Airworthiness.



BASIC AIRCRAFT PERFORMANCE DATA

Seats Full Range (Naut. Miles / Stat. Miles)	920 / 1,060
Ferry (No Payload) (Naut. Miles / Stat. Miles)	1,580 / 1,820
Balance Field Length* (Take-off Distance) (ft)	5,300
Landing Distance (ft)	4,450
Normal Cruise Speed (kts / mph)	285 / 325
Long Range Cruise Speed (kts / mph)	265 / 305
Ceiling Service (ft)	35,000

*Consideration must also be given to, but not limited to: passenger weights, baggage weight, winds, runway length, temperature and airport elevation.

The aircraft must have demonstrated its ability to cope with foreseeable contingencies including critical failures at critical times when operated within the parameters detailed in the regulations. The level of “acceptable risk” can be assessed and will be taken into account when the Flight Manual is constructed.

Provided the aircraft is operated according to the requirements of the Approved Flight Manual and flying skills are up to standard, pilots can be assured that the performance calculations of their aircraft will include more than adequate safety margins.

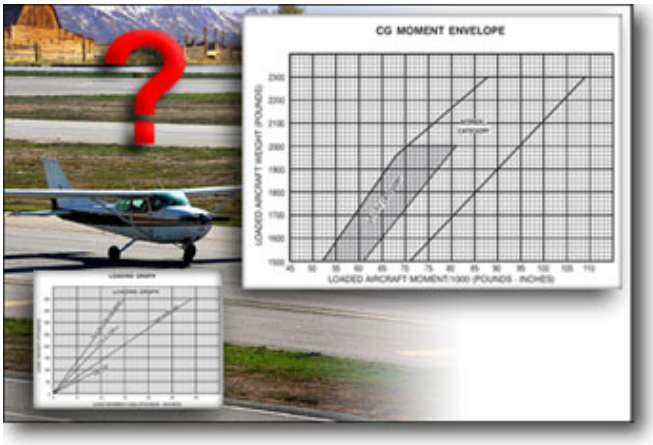
Risk Assessment Table:

Description	Probability	Example
Frequent: Likely to occur often during the life of each aircraft.	10^{-3}	• Reduced engine power
Reasonably Probable: Unlikely to occur often but may occur several times during the life of each aircraft.	10^{-5}	• Engine Failure.
Remote: Unlikely to occur to each aircraft during its life but may occur several times during the life of a number of aircraft of the same type.	10^{-7}	• Low speed over-run. • Failing to achieve net take-off flight path. • Minor damage. • Possible passenger injuries.
Extremely Remote: Possible but unlikely to occur in the total life of a number of aircraft of the same type.	10^{-9}	• High speed over-run. • Extensive damage. • Possible loss of life. • Double engine failure on a twin engine aircraft. • Hitting obstacle in the net take-off flight path.
Should not happen, or Extremely improbable.		• Aircraft destroyed- multiple deaths.

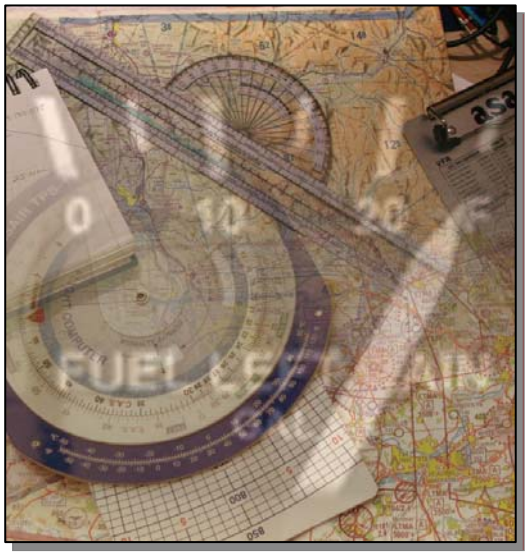
LOAD ~ PERFORMANCE RELATIONSHIP

The ranges of weights, centres of gravity and load distribution limits within which the aircraft may be safely operated are set in the appropriate certification document and will be found in the Flight Manual specific to the aircraft under consideration.

Maximum weights corresponding to operating conditions, (eg. take-off and landing), environmental conditions (climb limits) and load conditions, (weight distribution, centre of gravity and zero fuel weight) must be established so that compliance with structural load and flight requirements is shown. Furthermore, the extreme forward and rear centre of gravity limits must also be established for each separate phase of the flight.



FLIGHT PLANNING ~ PERFORMANCE RELATIONSHIP



In the context of performance assessment, flight planning primarily determines the amount of fuel required for the intended flight from which the pay load may be determined, but first the maximum permissible take-off weight appropriate to the departure aerodrome must be known. This could be a climb limit, a field length limit or possibly an obstacle clearance limit.

The main fuel requirement for the intended flight will usually depend on the en-route weather forecast and the selected altitude, which may also include selection of the cruise technique to be used, ie. best endurance speed, best speed for optimum range - long range cruise, or a high speed cruise; wind effect will also be taken into consideration by selection of the best altitude (if possible) for the most advantageous wind component.

En-route terrain clearance will also be taken into account when determining the maximum permitted take-off weight.

The maximum zero fuel weight places an absolute limit on payload which, when fuel requirements are known, may be restricted so that take-off and landing weights can remain within maximum permitted limits.

Thus, flight planning will ensure sufficient fuel is carried for the flight, including allowances for any contingencies en-route and/or any diversion from the planned route whilst the performance assessment will ascertain the aircraft's performance capability in accordance with the appropriate Regulations.