PART 2. TAKE-OFF

PART 2 TAKE-OFF

Figure 2.1 Ground run. With and without reheat
2.2 Accelerate stop distance
2.3 Distance to 50 ft following engine failure

(1) Unstick speeds

The values of unstick speed assumed vary linearly from

160 knots I.A.S. at 30,000 lb to

170 knots I.A.S. at 35,000 lb

(2) Airborne distance to 50 ft

The variations of airborne distance with temperature, height and weight are far less than the variations of unstick distance and can be approximated by the following average values:

No reheat	1750 ft
With reheat	1850 ft

Example (a)

A.U.W. 34,200 lb. Airfield height 500 ft, O.A.T. 15°C: 10 knots headwind

From Figure 2.1

Unstick distance with reheat	2250 ft
Unstick distance without reheat	3000 ft
Distance to 50 ft with reheat	2250 + 1850 = 4100 ft
Distance to 50 ft without reheat	3000 + 1750 = 4750 ft

(3) Acceleration to climb-away speed

Data for time, distance and fuel used in accelerating to a climb-away speed of 450 knots I.A.S. are given in Part 3.

(4) Acceleration stop distance

This is given in figure 2.2. The following explanation is required.

(i) the distances quoted are from wheels rolling.

(ii) a failed engine is assumed windmilling.

(iii) the delays assumed after engine failure were 2 seconds before *(live)* engine cut followed by 3 seconds to parachute streamed, brakes applied 1 second after engine cut.

(iv) nature of failure

one engine failed case: when take-off is abandoned because of one engine failing. No engine failed case: when the take-off is abandoned because of aircraft failure other than engines.

Example (b)

With distance available of 7500 ft, no wind, I.S.A., 1013 mb, dry runway, one engine failure, no reheat - the maximum failure speed for stopping to be possible, is 153 knots.

(5) Distance to 50 ft following engine failure

The figure 2.3 requires the following explanation:

(i) the distances quoted are from wheels rolling.

(ii) the failed engine is assumed windmilling.

(iii) the airborne distance from unstick to 50 ft assumes 1.1g normal acceleration.

Example (c)

Under the conditions of Example (b) above, the take-off may be completed if the engine fails above 106 knots I.A.S.

Note...
Figures 2.2 and 2.3 should be used in conjunction with Pilot's Notes.

29100
24250
2300
1950
3150
2600

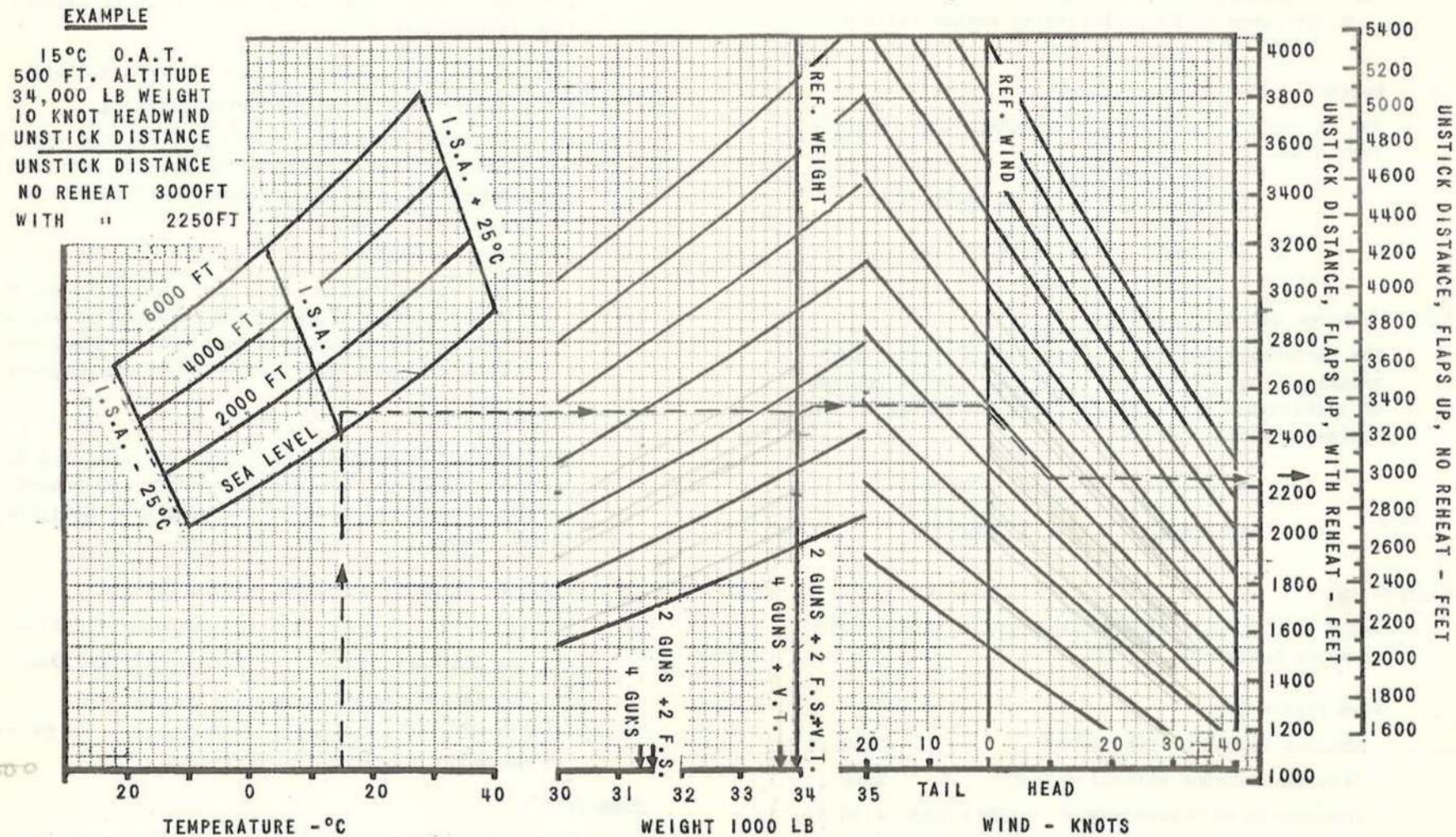

FIG 2-1. GROUND RUN WITH AND WITHOUT REHEAT

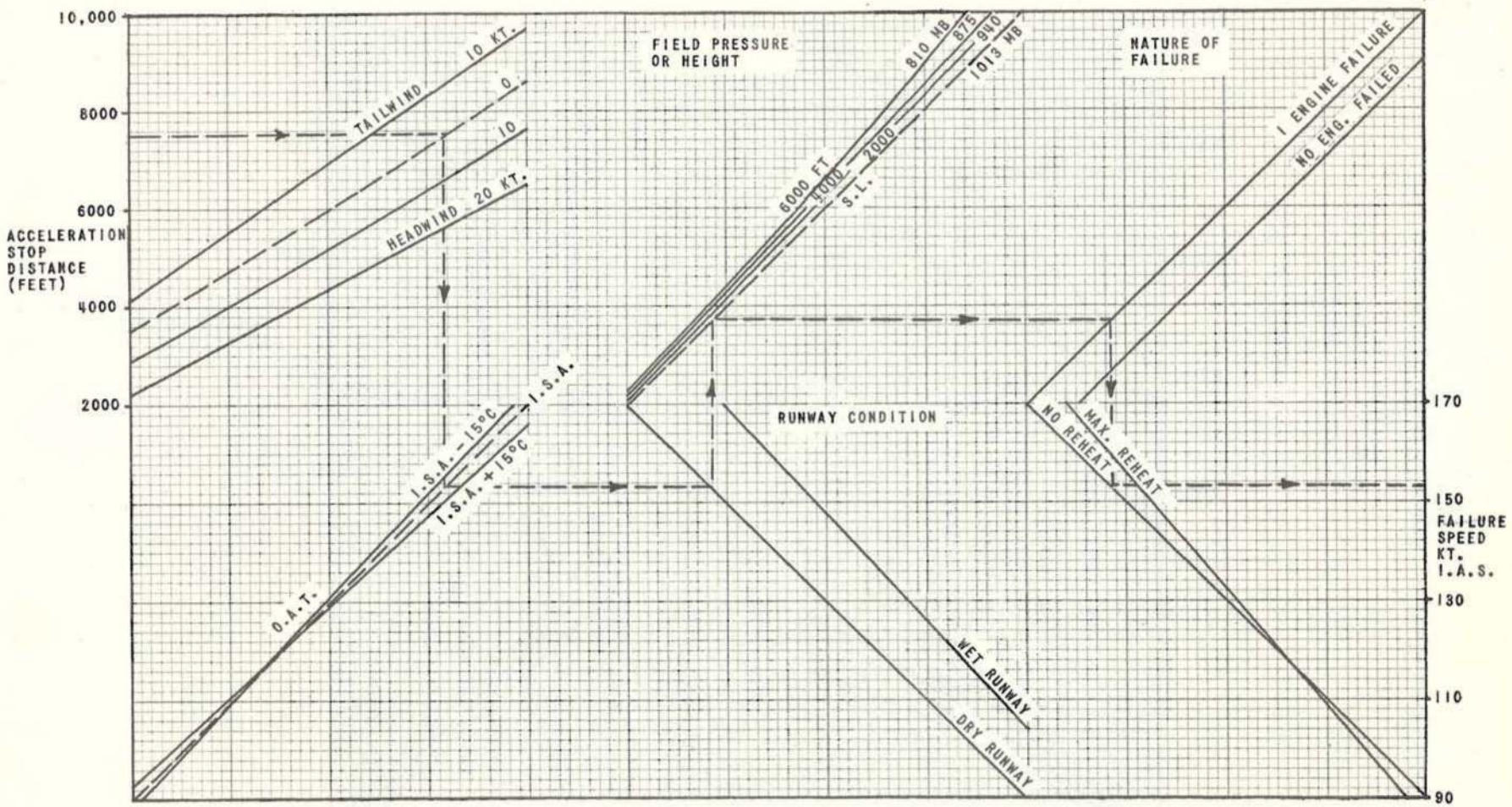

FIG.2.2. ACCELERATE STOP DISTANCE/FAILURE SPEED. 34,000 LB.

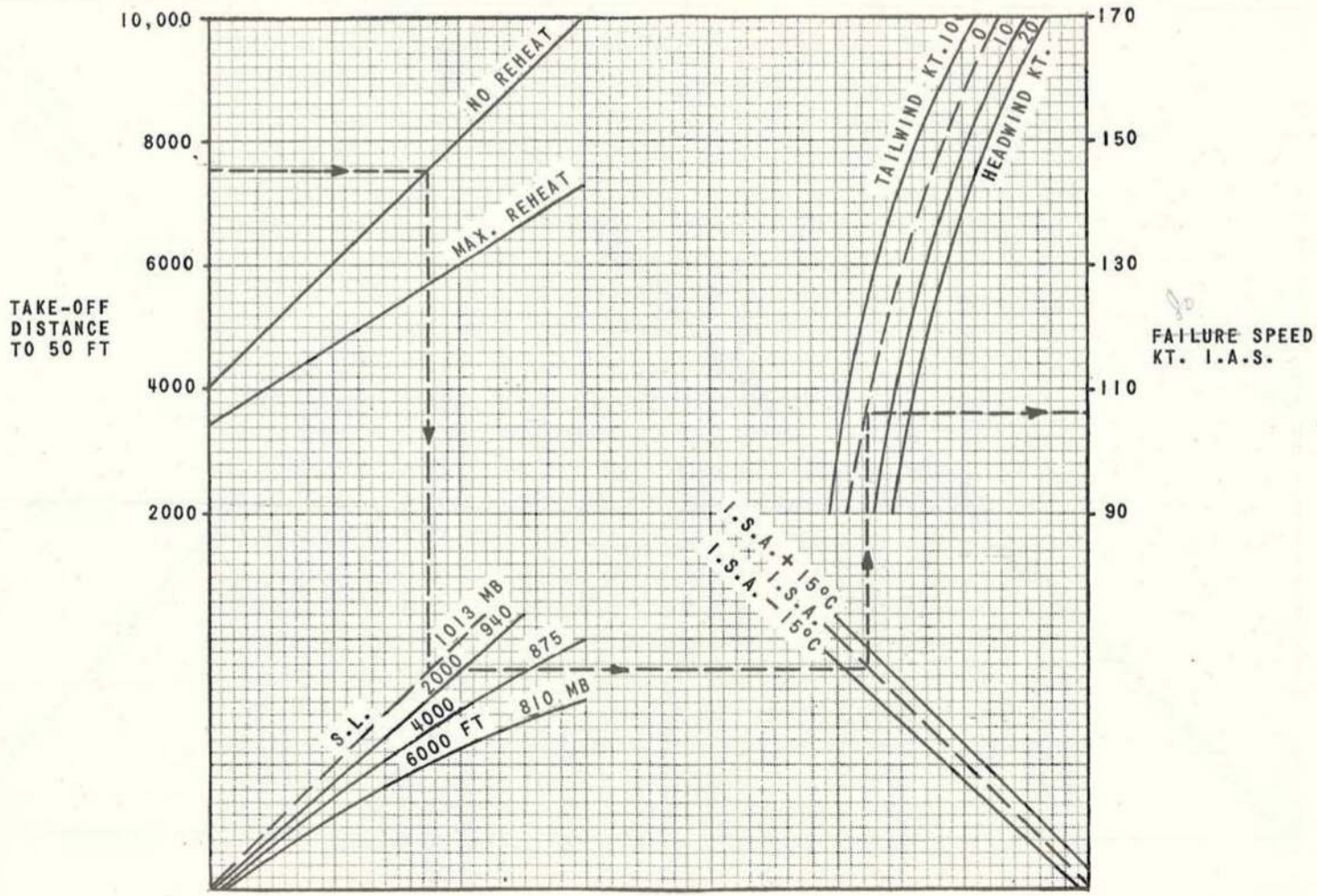

FIG.2-3. TAKE-OFF DISTANCE TO 50 FT./ONE ENGINE FAILURE SPEED 34,000 LB.