

APPENDIX E – DISPLACED THRESHOLD LENGTH CALCULATIONS

INTRODUCTION

The following exhibit includes the runway takeoff length requirement calculations from the manufacturers' Airport Planning Manuals for a displaced threshold for a runway of 4,700' and 5,500' at Dickinson Theodore Roosevelt Regional Airport.

Aircraft	Airline	Destination Airport
CRJ200	Delta, United	DEN – Denver International MSP – Minneapolis/St. Paul International
E120	Delta, United	DEN – Denver International MSP – Minneapolis/St. Paul International
E135	United	DEN – Denver International
E145	United	DEN – Denver International

DIK - DEN 425nm
 DIK - MSP 420nm

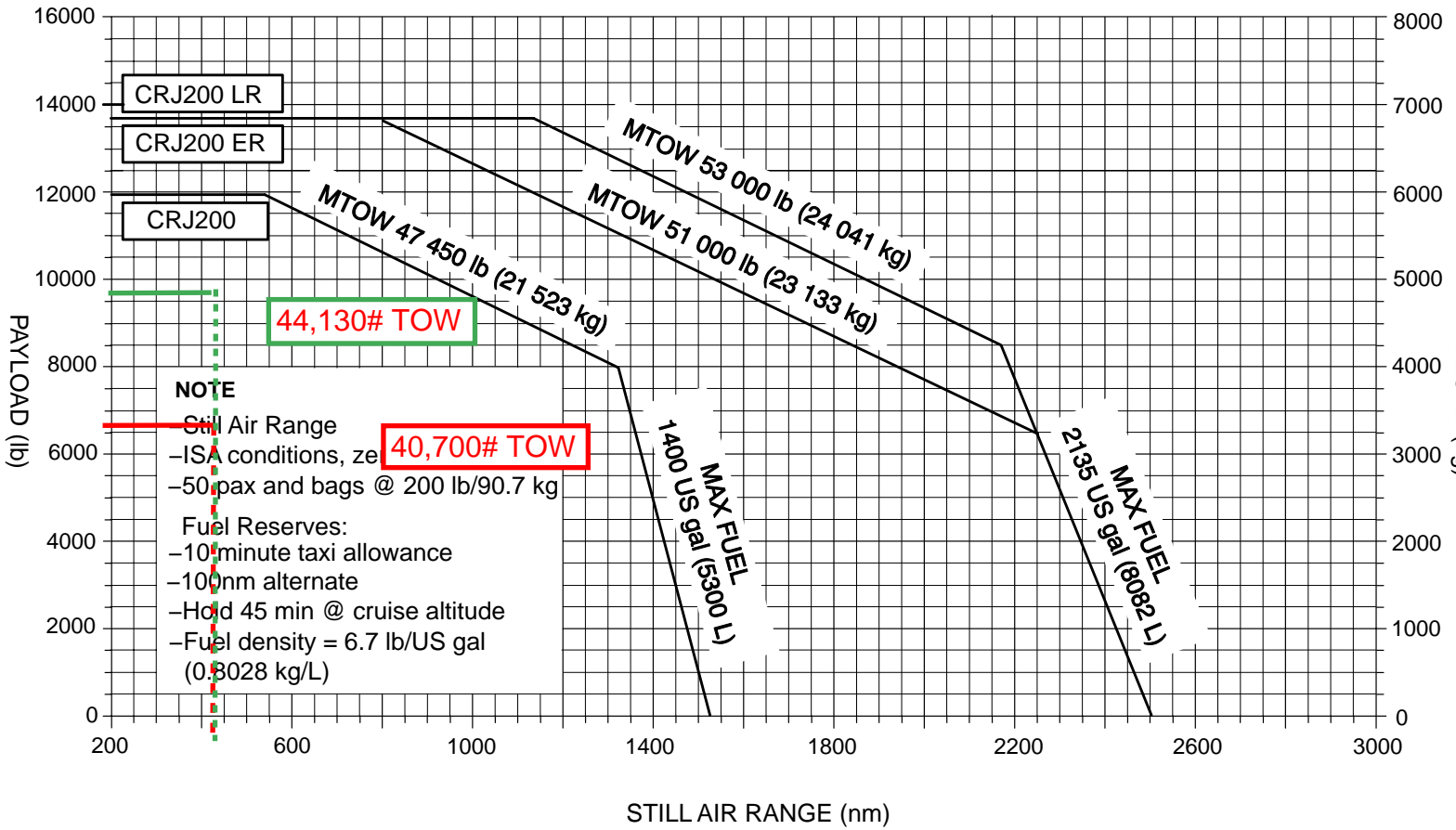
Payload: 6650 @240# = 27 pax
 Load Factor: 54%

OEW- 30,500
 +Payload 6,650
 +Fuel 3,350
 TOW= 40,700

OEW- 30,500
 +Payload 9,600
 +Fuel 4,030
 TOW= 44,130

Payload: 9600 @240# = 40 pax
 Load Factor: 80%

3.3.5. Payload/Range for Mach 0.80 Cruise at 37 000 ft. (11 300 m) CRJ200
 US (FAA) Requirements
 Model CL-600-2B19



NOTE
 Still Air Range
 -ISA conditions, zero
 -50 pax and bags @ 200 lb/90.7 kg
 Fuel Reserves:
 -10 minute taxi allowance
 -100nm alternate
 -Hold 45 min @ cruise altitude
 -Fuel density = 6.7 lb/US gal
 (0.8028 kg/L)

CRJ200



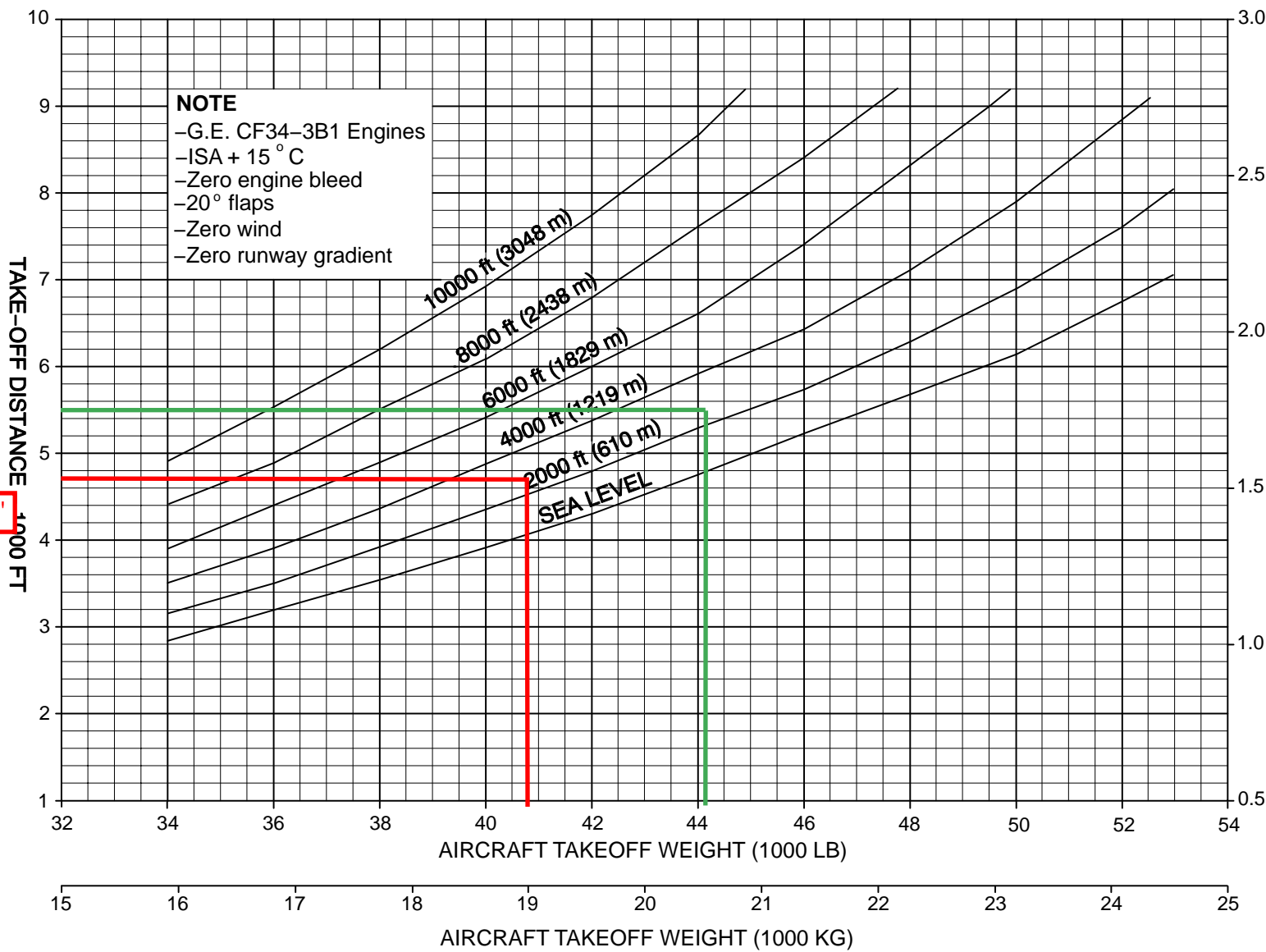
AIRPORT PLANNING MANUAL

PAYLOAD (kg)

DIK-DEN or MSP
TOW= 40,700#

DIK-DEN or MSP
TOW= 44,130#

3.5.6. FAR Takeoff Runway Length
Model CL-600-2B19



5,500'

4,700'

4,700' - ISA + 15°C - CRJ200



AIRPORT PLANNING MANUAL

TAKE-OFF DISTANCE - 1000 m

CRJ200



DIK - DEN 425nm
DIK - MSP 420nm

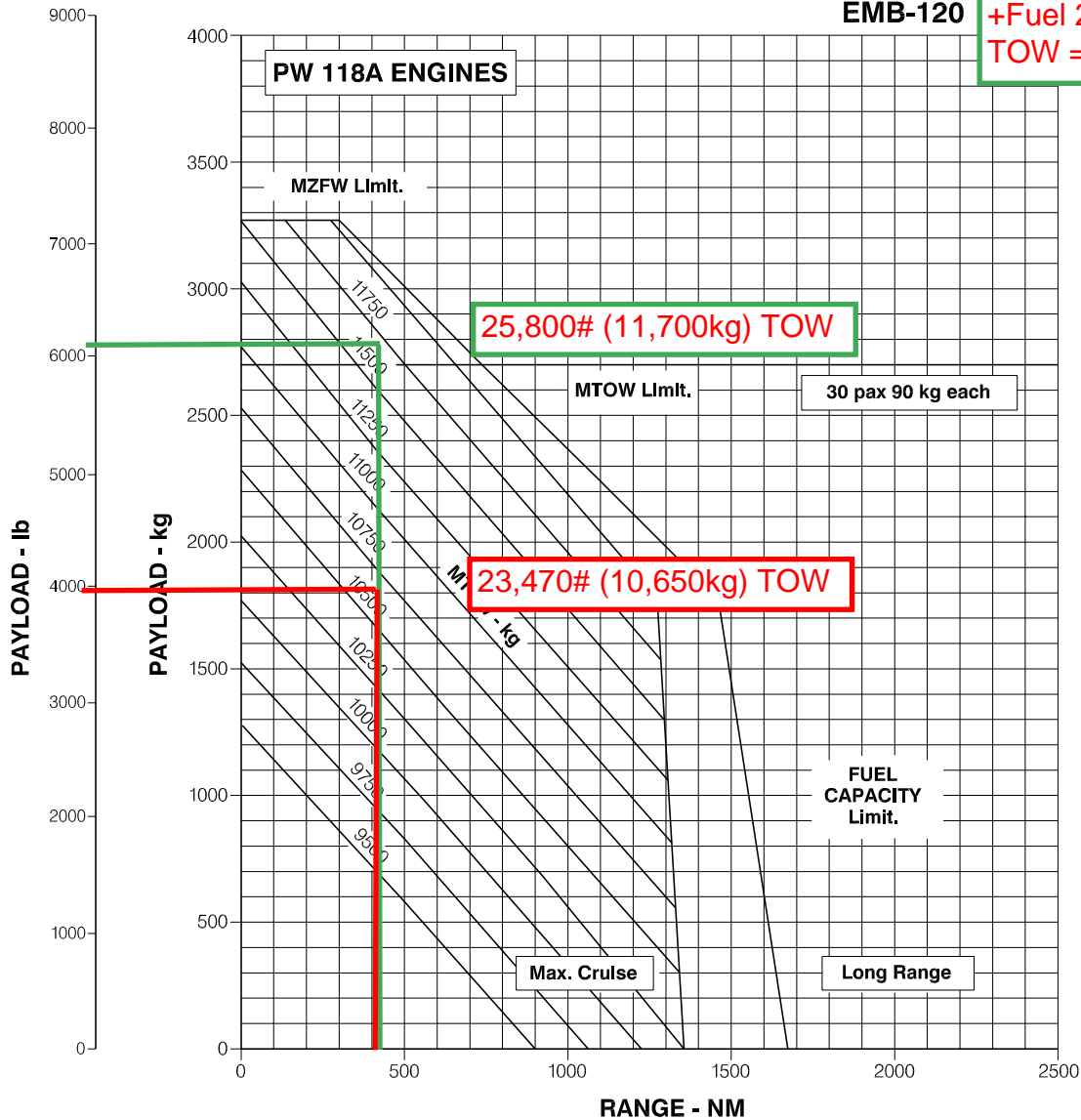
Payload: 3840 @240# (110kg) = 16 pax
Load Factor: 53%

Payload: 6050 @240# (110kg) = 25 pax
Load Factor: 83%

**PAYLOAD X RANGE
ISA**

OEW - 16,800# (7,628kg)
+Payload 3,840# (1,741kg)
+Fuel 2,830# (1,281kg)
TOW = 23,470# (10,650kg)

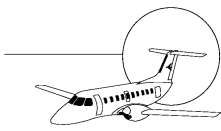
OEW - 16,800# (7,628kg)
+Payload 6,050# (2,745kg)
+Fuel 2,950# (1,340kg)
TOW = 25,800# (11,700kg)



- NOTES:**
- FLIGHT LEVEL..... 250
 - RESERVE..... 100 NM ALTERNATE + 45 min HOLDING
 - MAX. TAKEOFF WEIGHT..... 11990 kg
 - MAX. ZERO FUEL WEIGHT..... 10900 kg
 - BASIC OPERATING WEIGHT..... 7628 kg (standard configuration)
 - MAX. USABLE FUEL..... 2600 kg

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Payload x Range - (PW 118A Engines)
Figure 3-3 (Sheet 5)

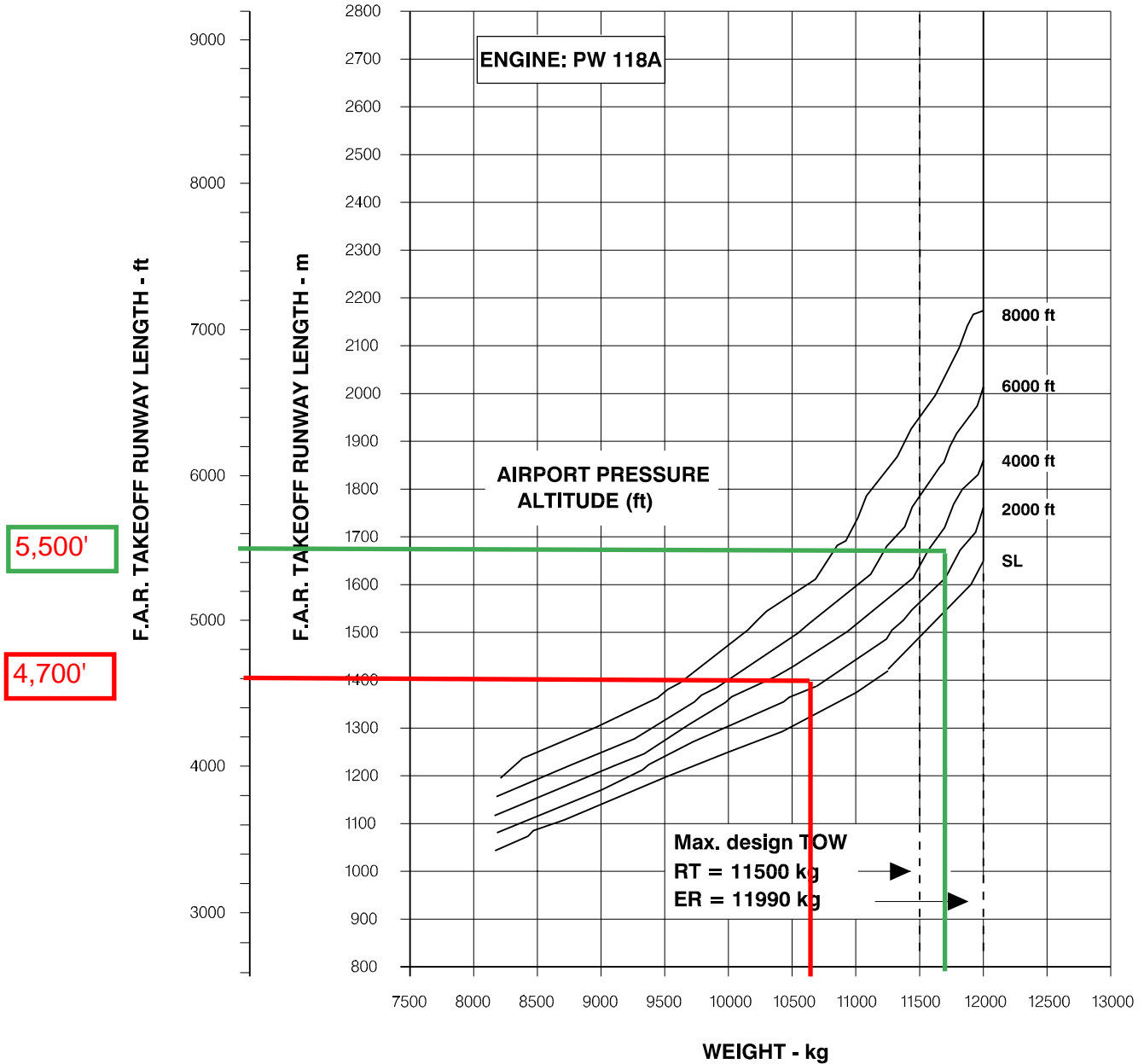


DIK-DEN or MSP
TOW=23,470# (10,650kg)
4,700' runway length

NING

DIK-DEN or MSP
TOW=25,800# (11,700kg)
5,500' runway length

F.A.R. TAKEOFF RUNWAY LENGTH
Dry, Paved
Bleed Off, EEC On
Flaps 15°
ISA + 15°C



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FAR Takeoff Runway Length Requirements - ISA + 15°C Conditions
Figure 3-6 (Sheet 2)

Payload: 6,240 @240# = 26 pax
Load Factor: 70%

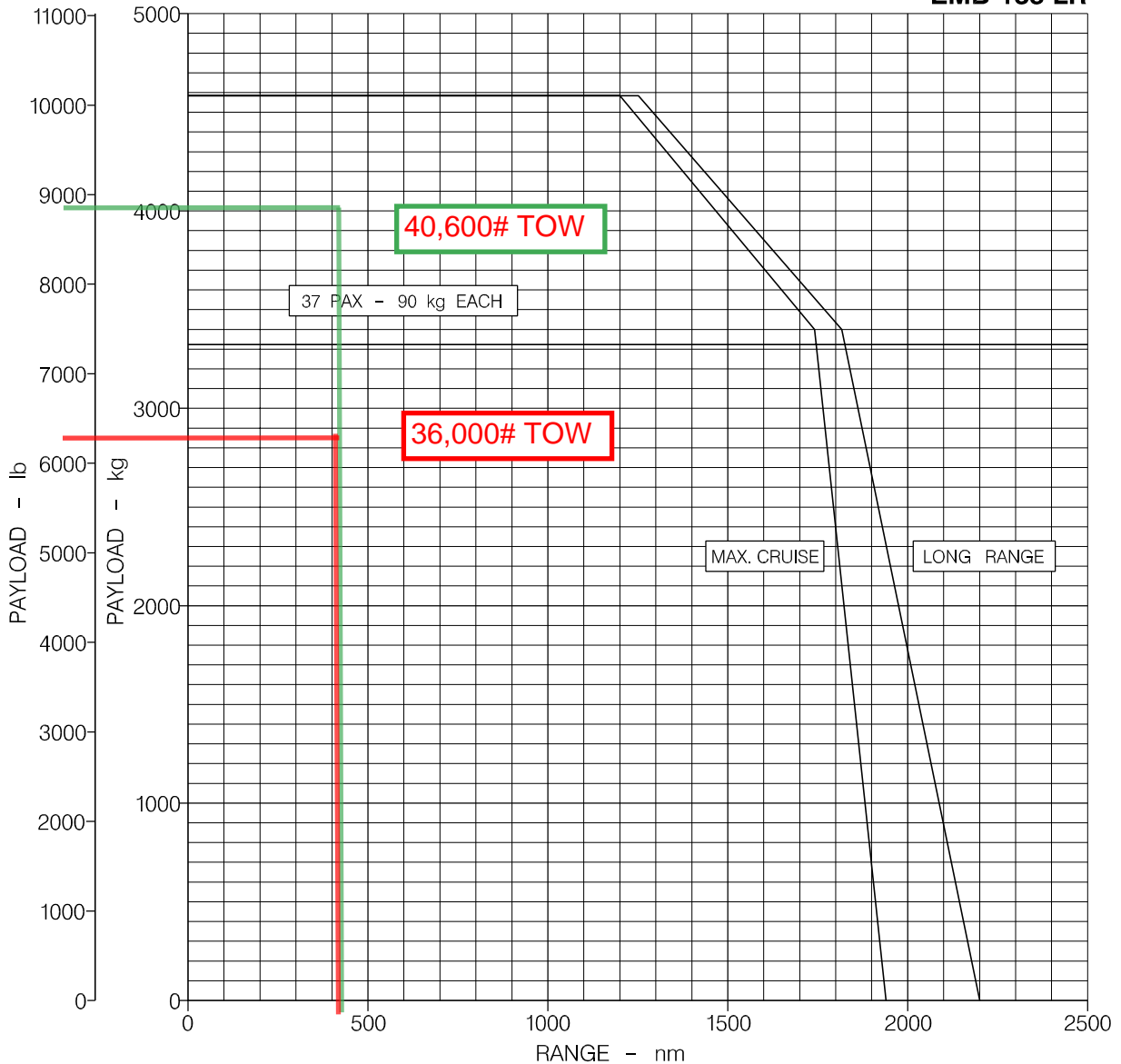
OEW-25,190#
+Payload 6,240#
+Fuel 4,500#
TOW=36,000#

Payload: 8,880 @240# = 37 pax
Load Factor: 100%

OEW-25,190#
+Payload 8,880#
+Fuel 6,530#
TOW=40,600#

PAYLOAD X RANGE
ISA

EMB-135 LR



NOTES: FLIGHT LEVEL.....370
RESERVE.....100nm ALTERNATE + 45min HOLDING
MAX TAKEOFF WEIGHT.....20000 kg (44092 lb)
MAX ZERO FUEL WEIGHT.....16000 kg (35274 lb)
BASIC OPERATING WEIGHT.....11426 kg (25190 lb)
MAXIMUM USABLE FUEL.....5187 kg (11435 lb)

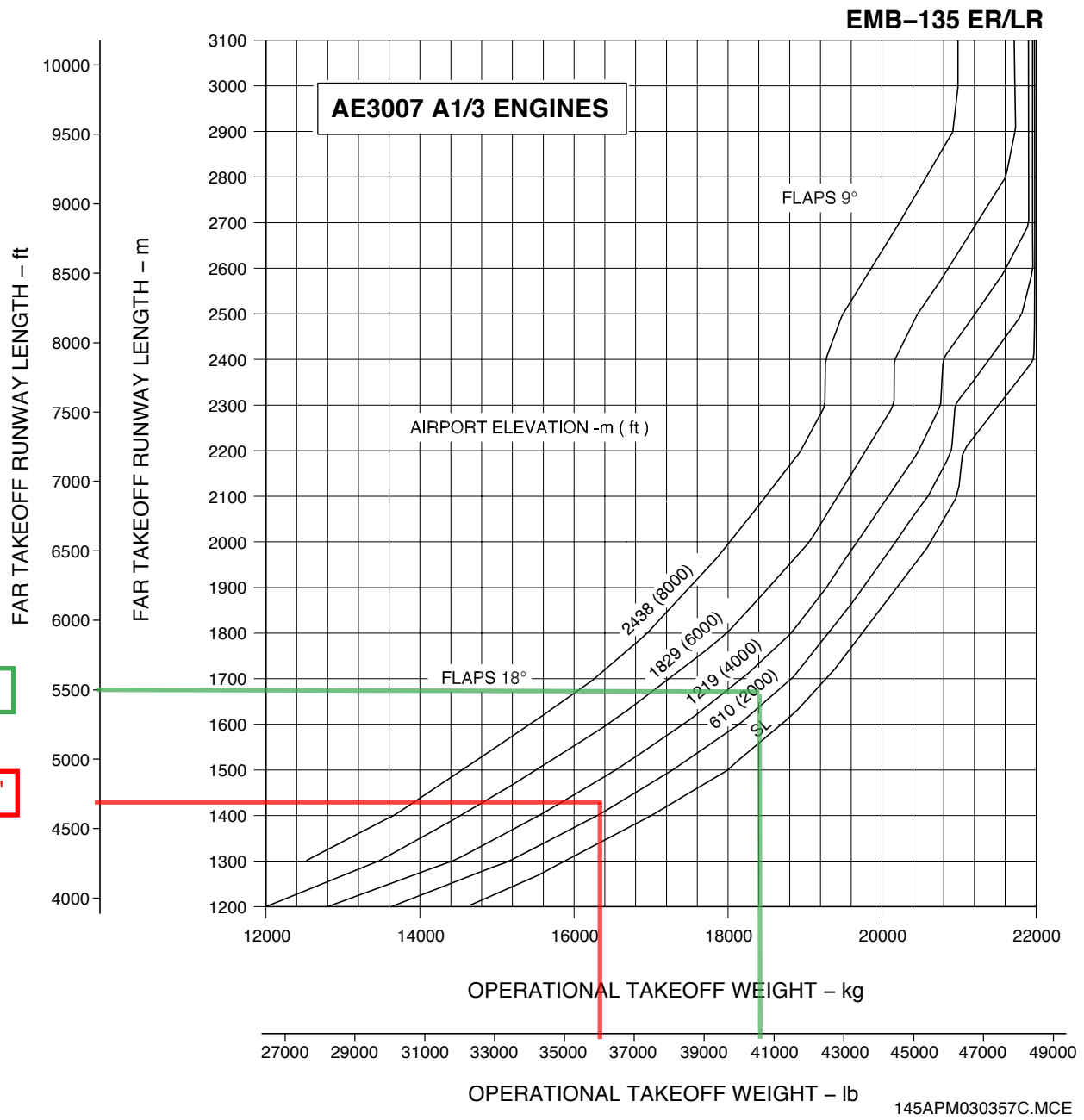
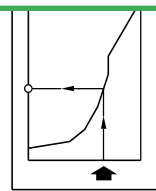
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Figure 3.2.1 - Payload x Range, Engine with Thrust Reverser
Sheet 2

DIK-DEN
TOW=36,000#
4,700' runway length

DIK-DEN
TOW=40,600#
5,500' runway length

TAKEOFF RUNWAY LENGTH
DRY AND LEVELED RUNWAY
FLAPS 9/18, TO1 MODE
NORMAL V2
ZERO WIND, ISA+15



5,500'

4,700'

Figure 3.3.2 - FAR Takeoff Runway Length Requirements - ISA + 15°C Conditions
Sheet 2



DIK - DEN (425 NM)

Payload: 6,960 @240# = 29 pax
Load Factor: 58%

Payload: 11,520 @240# = 48 pax
Load Factor: 96%

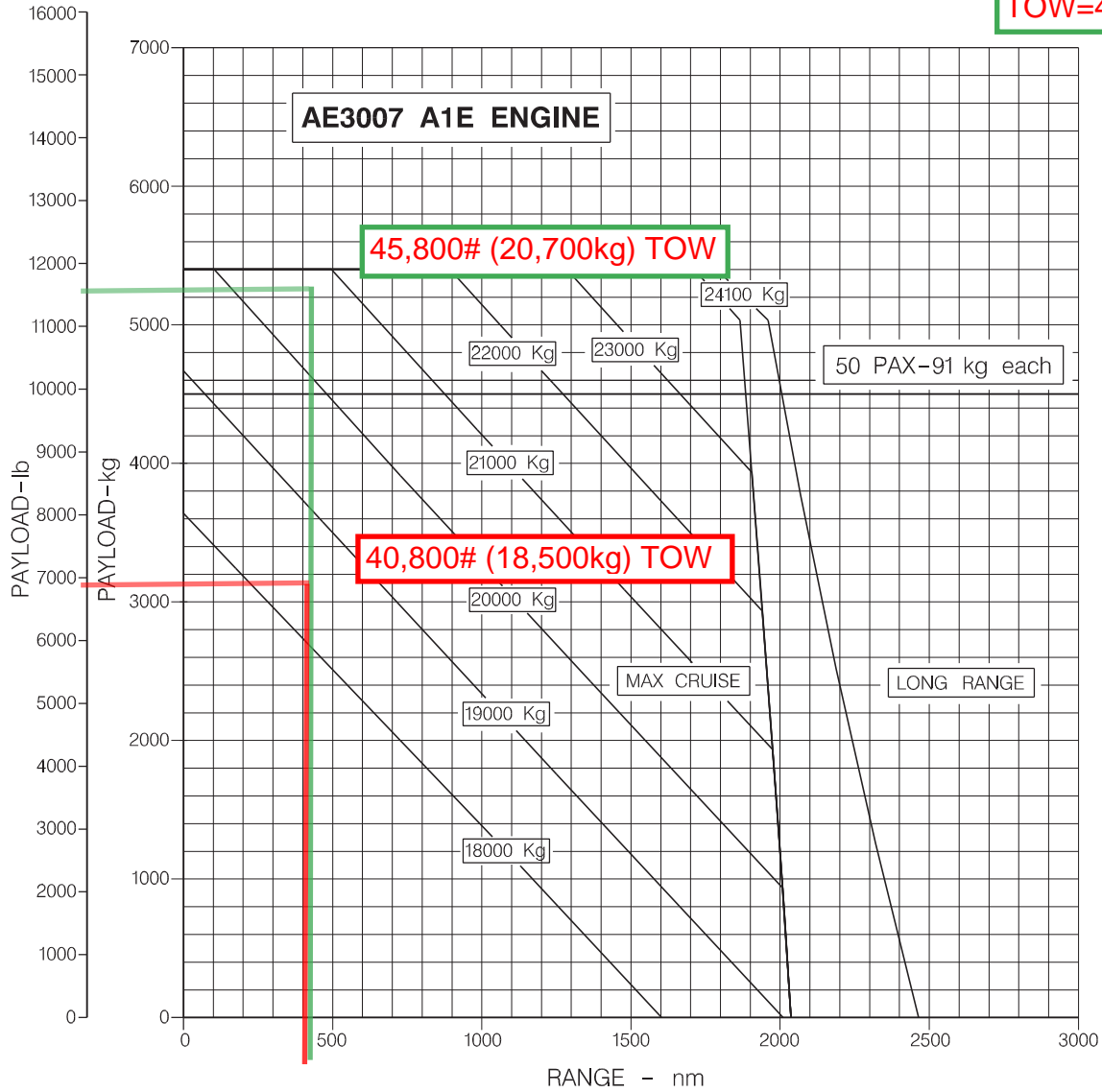
PAYLOAD X RANGE

ISA

OEW-28,881#
+Payload 6,960#
+Fuel 4,959#
TOW=40,800#

OEW-28,881#
+Payload 11,520#
+Fuel 5,399#
TOW=45,800#

EMB-145 XR



NOTES: FLIGHT LEVEL.....370
RESERVE.....100nm ALTERNATE + 45min HOLDING
MAX TAKEOFF WEIGHT.....24100 kg (53132 lb)
MAX ZERO FUEL WEIGHT.....18500 kg (40786 lb)
BASIC OPERATING WEIGHT.....13100 kg (28881 lb)
MAX USABLE FUEL.....5987 kg (13199 lb)

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Figure 3.2.1 - Payload x Range for Long Range Cruise at 37,000 ft, Engine with Thrust Reverser
Sheet 9



DIK-DEN
TOW=40,800# (18,500kg)
4,700' runway length

DIK-DEN
TOW=45,800# (20,700kg)
5,500' runway length

TAKEOFF RUNWAY LENGTH REQUIREMENTS
FLAPS 9/22 ET/O THRUST MODE, NO ENGINE BLEED FOR
AIR CONDITIONING
DRY AND LEVELED RUNWAY, ZERO WIND
ISA+15°C

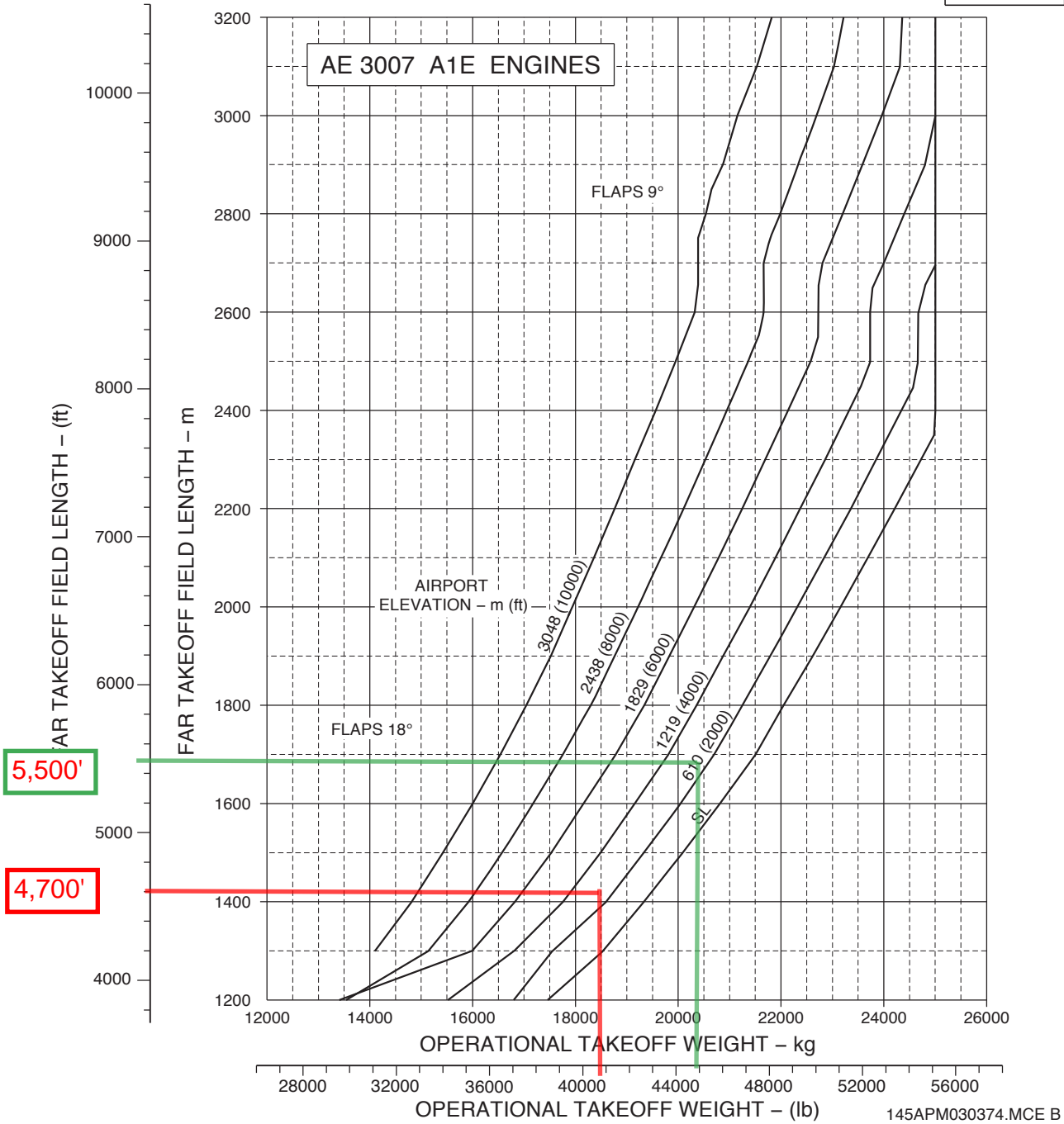
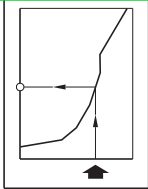


Figure 3.3.2 - FAR Takeoff Runway Length Requirements - ISA + 15°C Conditions
Sheet 3

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