

Autopilot:
FCOM 3.01.22 p1

SRS	>100' AGL
LNAV/VNAV	DA
NPA	MDA
Circling	MDA – 100'
ILS CAT1	160'
ILS CAT 2/3	0
PAR	250'
G/A	100'
ALL OTHER	500'

Note: OP DES/DES not permitted unless FCU > MDA or 900'

CAT 2: MDH 100', IF NO AUTOLAND THEN DISCO > 80'
CAT 3: FAIL PASSIVE: 50' AND A/THR REQ'D.
FAIL OPERATIONAL: 25' OR 75m RVR IF NO DH

F/O Handling Limits

X/W 20kts for 12 mths and 2 sims and then have completed 30kt Training *OMI 6.1.24*
Landing: PF only if ≥ Cat1 minima used. Ceiling > DA/MDA +200' and Min Vis +2000m *OMI 6.4.4.1*
Takeoff: Vis > 800m

2 Engine Pitch ° / Power %N1 / Config

250kts: 2.5° / 62% / Clean – These numbers need to be confirmed, they are rough guide only

Thrust %N1	50	52	?	?	??	??
Config	0	1	2	3	?GD	3/4
Pitch Degrees	6.5	4.5	?	?	??	??

Performance Penalties:

See **QRH SUMMARIES** for Dual HYD Fail, ELEC EMERG CONFIG
All others see QRH 2.32 and apply factors to QRH 4.03 **CONFIG FULL** Distance

Single Engine Ops FCOM 3.06.00

Driftdown technique – See **Diversion Strategies** below
Engine Failure in Crz – then set MCP .76/250kts and DES to about FL200 or 23/23 (230kts and 23000')
Driftdown takes about 35 minutes from 30K'
290ktsIAS is a good compromise between time to get home and LRC
290IAS = 387TAS between about FL300 and F190
Engine anti-ice penalty: approx 2,000' off Altitude Capability
Wing and engine anti-ice penalty: approx 7,000' off Altitude Capability
Configure fully for Final before starting Approach even if at 5000'

1 Engine Pitch ° / Power %N1 / Config

250kts: ??/?

Thrust %N1	60	62	62	65	70	??
Config	0	1	2	3/GD	4	3/4
Pitch Degrees	?	?	?	?	?	??

Set 72?% 3 nm before DES pt and Flap4

Diversion Checklist and Strategies FCOM 3.06.30

GRADE	STD Strategy	Descent @ MCT/M.78/300 LRC	FCOM 3.06.30
FRP or full Top Hat	ObstacleDescent	@ MCT/Green Dot/LRC	FCOM 3.06.40
Dist to go, plan descent	Fixed Speed	Descent @ MCT / Fixed Speed	FCOM 3.06.50

Fuel check, hold time avail – see Fuel Notes and SGR table below
Pressurization and landing elev.
Weather and other alternates
NITS and PA

FUEL OM1 Section 9
(CAR 91.403 and CAR121.75)

Flight Fuel	A to B and includes 200Kg manoeuvring allowance
Alternate	Missed Approach and B to C
30min APU/ Start / Taxi	120Kg
Variable Reserve	10% of Flight Fuel to a max of 1000Kg
Fixed Reserve	2 Eng - 30mins at 1500' and 1Eng - 10mins @ 1500'
Weather/Traffic @ 20000'	TEMPO + TFC 80mins max and INTER + TFC 60mins max
ETP Buildup + Wx	As req'd to meet ETOPS and 1200Kgs for INTER and 2400Kgs for TEMPO
Margin	

Fuel Notes: - TO BE CHECKED FOR J*

APU = ?Kg/hr on GND and ?/Kg/hr in AIR unloaded QRH

Taxi = ?Kg/min

2Eng **200nm/1000Kg**

DES

1Eng **160nm/1000Kg**

Flap out = +?Kg/min

Depress. **120nm/1000Kg**

Flap and Gear = + ?kg/min

Gear DN Crz = **10Kg/nm at F250** or **15Kg/nm at F100**

GEAR DOWN HOLD about **1800Kg for 30mins**

LRC in FMC or QRH is ??% of best SAR and absolute MAX Range = CI 0?

Rough idea if Leading edge is stuck out: then **add 5% to FMGC Fuel predictions**

Icing: If TAI used then add .5Kg/nm (Eng Anti-ice only) or ? Kg/Hr (Wing and Eng Ant-ice)

Severe Icing fuel burn increases by (3xT in hours) %. Moderate = 1.5xT in Hours – *NB this is guidance from Boeing*

Specific Ground Range QRH Perf Inflight

@ 60000 Kg	ALT	HW			TW	
		100	50	0	50	100
ENG INOP	F220	9	7	6	5	4
DEPRESS	A100	11	9	7.5	7	6
NORMAL	FL370	6	5	4.5	4	3.5
NORMAL	F250	9	7	5.5	5	4.5
LED EXT	F150	13	10	8.5	7.5	7
GEAR DN	F250	16	13	10	9	9
GEAR DN	A100			15		
INOP + G DN	A090	22	16	12	11	9

Fuel Notes - Generic

Enroute/Step Climb uses **135-225 Kgs** Fuel for a 4000' climb

ISA + 10 = 1% increase fuel burn

Optimum – 2000' = 1%-2% penalty

Optimum – 4000' = 3%-5% penalty

Optimum – 8000' = 8%-14% penalty

For each M.01 increase in CRZ Speed above LRC = 1% to 2% increase in Trip Fuel

CI = 0 is Max Range Cruise = LRC – 1%

Compressibility gives a TAT rise of .5 to .7 degrees / .01M

For each **60 kts of tailwind ECON CRZ is reduced M.01**

For each **100 kts of headwind ECON CRZ is increased M.01**

CRZ below FL310 and it wasn't planned then use LRC

What fuel is saved between ECON CLIMB and 250/10000'? About **25Kg**

LRC = M.76 within 2000' of Optimum and gives best Buffet Margin

Low Fuel comes on at ? **Kg** so always plan to land with 1800Kg or more

Discretionary Fuel:

Anti-ice: If TAI used then add 45 Kg/Hr (Eng Anti-ice only) or 140 Kg/Hr (Wing and Eng Ant-ice) **FPPM**

Ice accretion: **FPPM** Moderate = 1.5x time in hrs Severe = 3x time in hrs

Alternates Notes

Departure Alternates must be within 1hr S/E = 421nm
 West Australian coastal ports with **ETA 1400-2400Z** require Alternate
 Alternate requirements per **Jepps ATC**
 Company Preferred Alternates **QRH 8.6**
 Curfew. If ETA within 20mins – Alternate required

Approach Notes

Cat C Speeds **Initial 240, Final 160, Circling 180, Missed Approach 160 intermediate / 240 final**
 Circling Area **4.2nm Jepps**
 Procedure Turn in FMGS based on ? **TAS**
 Stabilised App Criteria by 1000' IMC, 500' VMC

Visual Approach**New Zealand:**

Must "Request Visual Approach"
 Visual reference at or above Initial App Altitude
 At night u must have Runway lights in sight {Approach or REIL lights are insufficient}

Australia: Jepps ATC AU-706**Day –**

Visual reference and Vis 5000m
 Within 30nm
 500' above CTA step and at safe altitude.

Night –

Visual reference and Vis 5000m
 Within 30nm OR
 Vectors at LSALT to Final or within 5nm
 Within Circling Area or 5nm on centreline or 7nm for ILS runway or 10nm 16R @ SYD

Weight and Balance

Observer ? Kg (inc 5Kg carry-on) Cabin Crew? Kg
 Adult 83kg Child 47Kg Infant 16kg
 Bags DOM 14kg INTL 18kg

HOLDING ICAO - New Criteria Jepps ATC AU 707 and Jepps ATC New Zealand and Pac Is –1

<FL140	>FL140	FL200-340	>FL340
1min/230kts	1.5min/240kts	265kts	.83M

Holding **FCTM Jepps ATC NZ and PAC IS –1, AU-707**

Reduce speed 3 min before hold

>FL250 Per FMGS

<14000 230kts

<20000 240 kts

<34000 265 kts

>34000 M.83

250kts when exiting hold

@F150 180° Turn = 2 Min

@F210 180° Turn = 2.5 Min

@F310 180° Turn = 3.5 - 4 Min

FMS Notes:

OPT CRZ Min cost for CI, GW, CRZ ALT – NB: not less than 15min level or 10mins going to ALTN @ LRC
 OPT ALT **Normally about 1.5G to Buffet**
 Cost Index 0 Maximum Range
 LRC 1% less fuel economy than max range. See Cost Index 0
 Max Altitude Residual Climb for 100'/min @ CI Thrust, CRZ Thrust Limit, 1.3g Buffet Margin or Structural (pressurisation)
 Max Angle GRN DOT
 Max Rate GRN DOT + 50 then .76
 Engine INOP Climb **FCTM**
 Optimum Altitude = min cost or min burn in LRC. May be as little as one minute in CRZ

Descent Notes:

FMGS will decelerate in DES at approx 500'/min till reaching Command Speed
 M.78/280 2200'/min clean and 3000'/min with speedbrake
 250 1700'/min clean and 2300'/min with speedbrake
 GRN DOT 1100'/min clean and 1400'/min with speedbrake

Deceleration

280 to 250 25 seconds and 2nm
 250 to GRN DOT 35 seconds and 3nm
 Note: Speedbrakes reduce these by 50%
 Speedbrakes in by 1000'

Jetstar guys use **AMP** at **5000'**

A Activate Approach

M Manage Speed

P Performance – use V/S -700 This will ensure meeting Company limit of 210kts below 3000'

ETOPS

Adequate: Long and Strong enough
 ATC/AFIS including Aerodrome Advisory Service and Met reports
 VHF
 1 NAVAID
 VASI/PAPI
 Sufficient Lighting
 RFFS per Ops Man
 Crew must be qualified to operate to this airfield – Category C or X

Suitable At Planning stage a 60 min buffer applies to Forecast for ETA **CAA AC 121-1**
 Single ILS: Higher of: Cloudbase 600' and 3KM or DA +400' and RVR +1.5KM
 Two ILS: Cloudbase 400' Vis 1.5KM or DA+200' and RVR+800M
 NPA: Cloudbase 800' Vis 4KM or MDA+400 and Vis+1.5KM

CP/PNR/PSD

Dist to CP = $\frac{\text{Total Dist} \times \text{GS Home}}{\text{GS Out} + \text{GS Home}}$ Time to PNR = $\frac{\text{Flt Fuel (minutes)} \times \text{GS Home}}{\text{GS Out} + \text{GS Home}}$

Where is PNRDP?

Take Fuel avail at CPDP and subtract CPDP fuel required. This = fuel avail to go past CPDP and return to CPDP at FL100
 So SGR is 8.5 + 5.5 Kg/nm = 14KG/nm. So PNR Dist = Fuel avail /14.

Low Vis: T/O Vis < 800M and LDG in less than Cat1 OMI 6.2.8.3 and QRH 8.30

T/O MINIMA Each port is specified in *QRH 8.30*

Lighting: RVR 400 - 500M requires 60m REL and clearly visible RCLM
 RVR 350 - 400M requires 60M REL and RCL and max X/W is 10kts

Lo Vis Ops = Captain Only as PF

Weather Deviations without ATC Clearance

If deviating LIGHTS ON/Watch TCAS/121.5 and 123.45/ If >10nm change altitude by 300' as follows
Track 000-179 and deviating LEFT then DES
Track 180-359 and deviating LEFT then CLB

Wake Turbulence Separation: OMI.6.1.10 and Jepps ATC

2 min after Medium and **3 min** after Heavy

ARR after HVY 5nm/2min and MED 3nm/2min. If B757 4nm minimum.

DEP after HVY 5nm/2min and MED 5nm. HVY fm intersection 3 mins.

Displaced threshold means >150m and requires 3 min separation instead of 2 min