Optional Fuel Management Module

Initial Fuel Range = 2 x Target Zone # x 1.3 (FRU)

(Fuel is measured in 'cruising range zone equivalent'.)

Remaining Fuel Range (at end of zone travel) = Previous range -1 + - extra consumption/loss/gain per table.

Keep running total of remaining range on zone worksheet.

Note the consumption is the same <u>regardless of the number of moves per zone</u>. Slower flight uses fuel less quickly, but this is notionally offset by the longer time taken to traverse the zone.

NOTE: This module is designed to introduce fuel management as an operational consideration within the game – it is intended to establish a link between manoeuvre and consumption, it does NOT attempt to accurately reflect the relative consumptions.

Condition/Circumstance	Incremental Fuel Consumption	
Evasive action	0.1Z per evasion manoeuvre	
Wind (1d10 roll in each zone).	1-3: 0.1Z per zone (head wind)	
If previously head or tail, any roll other than a	4-7: No modifier - neither head/tail	
repeat is a shift to 'no modifier'.	8-10: -0.1Z per zone (tail wind)	
Off course	0.1Z per off course zone	
Low altitude	0.1Z per zone	
Climb to high altitude	0.5Z per climb	
Descent from high altitude	-0.5Z per descent	
Stopped engine not feathered	0.1Z per zone	
Engine hit fuel leak**	0.2Z per zone until engine stopped	
1 st tank leak; transfer and isolation by FE*	1/8 off present range FRU	
2 nd tank leak; transfer and isolation by FE*	1/6 off present range FRU	
3 rd tank leak; transfer and isolation by FE*	1/4 off present range FRU	
Tank leak NOT isolated	0.5Z per zone	
Bombs onboard	0.1Z per zone	
Any control surface or control cable hit	0.1Z per zone	
(Not cumulative)		
'Going around' (target zone)	0.1Z	

*Only available if FE station manned and crew member not seriously wounded.

** Postulates engine fuel leak that cannot be isolated without isolating fuel supply to engine. Can save fuel but may be obliged to go to low altitude or make two moves/zone.

MODS TO DAMAGE TABLE 6 OF PILOT'S NOTES:

Disregard note h), use $1^{st}/2^{nd}/3^{rd}$ tank leak from table above as appropriate.

Replace coolant hit and note f) with 'Engine hit fuel leak' as table above.

MOD TO MECHANICAL FAILURES:

Replace 4.3 note e). If a 'Fuel System' failure, assume a compromised tank transfer capability. Roll 1d6: 1-5 repaired, 6 remains faulty. If remains faulty, treat as tank leak in table above. If zone is in first third (FRU) of operation: 3rd tank, if in second third: 2nd tank, otherwise 1st tank. (No actual leak but fuel becomes unavailable. Later in flight, key transfers more likely to have already taken place.)

Fuel Uncertainty:

Apparent Remaining Fuel Range	Roll on 2d6 for 'running on fumes'	If 'running on fumes' roll 1d6.
3	12	1-3 'engines out' this zone.
2	11	4-6 'engines out' next zone.
1	9	
0	9-12	If 'next zone' is Z1, roll 1d6:
-1	7-12	1-3 'engines out' before
-2	2-12 (certain)	landing, 4-6 after landing.

(Gauge inaccuracy, consumption/loss better/worse than table values.)

Example Operation:

Say 8 zones to target: therefore 16 zones in operation.

Initial Fuel Range = $(2 \times 8) \times 1.3 = 21$ (FRU)

After Z1 fuel used = 1 + 0.1 (low altitude) + 0.1 (carrying bombs) Fuel Range = 19.8

After Z2 fuel used = 1 + 0.1 (bombs) + 0.5 (climb to high) Fuel Range = 18.2

After Z3 fuel used = 1 + 0.1 (bombs) + 0.1 (head winds) Fuel Range = 17.0

After Z4 fuel used = 1 + 0.1 bombs + 0.1 (Off Course) Fuel Range = 15.8

After Z5 fuel used = 1 + 0.1 bombs + 0.1 (Off Course again) Fuel Range = 14.6

After Z6 fuel used = 1 + 0.1 Fuel Range = 13.5

After Z7 fuel used = 1 + 0.1 Fuel Range = 12.4

After Z8 fuel used = 1 + 0.1 Fuel Range = 11.3

After Z8 (INB) fuel used = 1 (NO bombs) Fuel Range = 10.3

After Z7 fuel used = 1 Fuel Range = 9.3

After Z6 fuel used = 1 + 0.1 (Evasion) Fuel Range = 8.2

After Z5 fuel used = 1 Fuel Range = 7.2

After Z4 1st tank leak hit isolation 7/8 x 7.2 (FRU) therefore new Fuel Range = 7, fuel used = 1 Fuel Range now 6.0

After Z4 fuel used = 1 + 0.1 (control surface hit) Fuel Range = 4.9

After Z3 fuel used = 1 + 0.1 (control surface damaged remains) Fuel Range = 3.8

After Z2 fuel used = 1 + 0.1 (control) + 0.1 (head wind) Fuel Range = 2.6

Fuel Range <3 roll 2d6: 12 (!) – 'running on fumes'

Roll 1d6 for when 'engines out': 4 (next zone – phew!) Next zone is Z1 - Roll 1d6: 2 'engines out' BEFORE landing.

Z1: Crash land ('engines out').