Fuel Plan Examples

Example 4-10

Using the following data, show the fuel calculations for a day VFR flight in a small aeroplane, of 139 minutes - based on full tanks at take-off. See figure 4-24.

- Cruise: 8 USG/hr
- Capacity: 40 USG (usable)
- Taxi allowance: 1 USG (includes start-up, taxi and take-off) If a taxi allowance has not been stated, you can assume that it is included in the climb allowance figure.

		USG		USG		USG		USG		USG
FUEL CALC.	Min	~~L/Kg/.....~~	Min	~~L/Kg/.....~~	Min	~~L/Kg/.....~~	Min	~~L/Kg/.....~~	Min	~~L/Kg/.....~~
Climb										
Cruise	139	18•5								
Altn.										
SUB TOTAL	139	18•5								
Variable Reserve										
Fixed Reserve	30	4								
Holding										
Taxi	—	1			①		②		③	
Fuel Req'd	169	24			169	24	169	24	169	24
Margin	124	16				16	124	16	124	16
ENDURANCE	293	40				40		40	293	40
FROM	ECH									

These steps are not part of the calculations you would show on the flight plan. They are included to show our reasoning.

FUEL-1.EPS

Figure 4-24 **Working for Example 4-10. Note fuel quantitiy is USG.**

Example 4-11

You will be flying a small piston-engined aeroplane with full tanks of 30 USG, and which has a fuel consumption of 7 USG/hr. No allowance is required for taxi fuel. Show the fuel calculations for a flight of 1 hour 17 minutes expected duration. See figure 4-25.

		USG		
FUEL CALC.	Min	~~L/Kg/.....~~	Min	L/Kg/.....
Climb				
Cruise	77	9		
Altn.				
SUB TOTAL	77	9		
Variable Reserve				
Fixed Reserve	30	4		
Holding				
Taxi				
Fuel Req'd	107	13		
Margin	150	17		
ENDURANCE	257	30		
FROM				

FUEL-2.EPS

Figure 4-25 **Example 4-11.**

Example 4-12

What is the minimum fuel that you are required to carry on a 110 minute flight from a country aerodrome to a capital city aerodrome when there is no suitable alternate aerodrome and 30 minutes holding due heavy traffic is in the NOTAM for that aerodrome. The aeroplane's fuel consumption is 8 USG/hr. See Figure 4-26. If you decided to carry no more than the minimum fuel required, then you would show this as your endurance. In this case, there would be no margin fuel. We have left the fixed reserve at 45 minutes, as you would for an IFR flight - as added insurance. As a general rule, this is an unlikely scenario.

USG

FUEL CALC.	Min	~~L/Kg/.....~~	Min	L/Kg/.....
Climb				
Cruise	110	15		
Altn.				
SUB TOTAL	110	15		
Variable Reserve				
Fixed Reserve	45	6		
Holding	30	4		
Taxi		–		
Fuel Req'd	185	25		
Margin	–	–		
ENDURANCE	185	25		
FROM				

FUEL-3.EPS

Figure 4-26 **Example 4-12.**

Example 4-13

You are planning a VFR flight of 120 minutes duration in a large piston aeroplane, with a flight fuel (burn-off) of 70 litres. Cruise consumption rate is 33 litres/hour and you decide to carry full tanks of 182 litres usable fuel. Show the fuel calculations in litres/hour. See Figure 4-27. (note fuel quantity is in litres).

The bracket in this and subsequent examples indicates that the climb and cruise have been taken together, and an allowance has been included for time and fuel on the climb.

FUEL CALC.	Min	L/Kg/.....	Min	L/Kg/.....
Climb				
Cruise	120	70		
Altn.				
SUB TOTAL	120	70		
Variable Reserve				
Fixed Reserve	45	25		
Holding				
Taxi		–		
Fuel Req'd	165	91		
Margin	166	91		
ENDURANCE	331	182		
FROM				

Note that the actual margin time is slightly more than 158, and to be safe, we round down to 158.

FUEL-4.EPS

Figure 4-27 **Example 4-13.**

Example 4-14

You are planning a Charter flight as follows, using a cruise consumption rate of 8 USG/hr.

- DEP to DEST: 80 min
- DEST to ALTN: 25 min, and the ALTN requires 20 min holding due traffic (an ATC advisory).

Show the fuel calculations that would appear on the flight plan if you depart with full tanks of 30 USG. See figure 4-28.

Note: You should always check and recheck your fuel calculations. Use a rough check to make sure that you have made no gross errors, e.g. 30 gals at 8 gph = about 225 min endurance.

USG

FUEL CALC.	Min	~~L/Kg/.....~~	Min	L/Kg/.....
Climb				
Cruise	80	10•7		
Altn.	25	3•3		
SUB TOTAL	105	14•0		
Variable Reserve				
Fixed Reserve	45	6		
Holding	20	2•7		
Taxi				
Fuel Req'd	170	22•7		
Margin	55	7•3		
ENDURANCE	225	30		
FROM				

FUEL-5.EPS

Figure 4-28 **Example 4-14.**