

FOKKER F.VIIb-3m SOUTHERN CROSS FUEL TANKS

Location	Number	Capacity USG	Total USG	Weight (lbs)	Source	Remarks
Wings	4	96 ea	384	2304	1, 2, 3	
Forward Locker	1	107	107	642	1, 2, 3	See Note 1.
Main Fuselage	1	807	807	4842	1, 2, 3	In forward cabin behind pilots.
Aux. Fuselage	1	330	330	1980	1	Later removed. See below. See also Note 1.
Total	7	1628	1628	9768		For Endurance Record Attempt. See Note 4.
Aux. Fuselage	-1	-330	-330	-1980	1	Removal of Aux. Fuselage tank. See Note 1.
Total	6	1298	1298	7788	3	For Pacific Flight.

HOW MUCH FUEL? (Listed in pounds)

9120	Source 1 states (p.57): "On one of these flights the petrol alone weighed the equivalent of 57 men each of 160 pounds." (The quote refers to one of a series of load test flights before the Pacific flight.) This equates to a total weight of 9120 lbs. Presumably, greater fuel loads were uplifted on subsequent load test flights.
9132	Source 2 states (p.13): "It was the morning of January 17, 1928, that Pond and I took our seats in the cockpit of the <i>Southern Cross</i> to make our attempt on the world's non-refuelling endurance record. We had stripped her of every possible portion of equipment which would add to her weight; we had filled her tanks with petrol to the total of 1522 gallons, so that she weighed over seven instead of the normal five tons." The gross weight for this flight is shown on page 14 as 15807 lbs. This fuel uplift indicates that the 330 USG auxiliary tank in the fuselage must have been removed subsequent to this flight but before the Pacific flight. From his experience designing the <i>Southern Cross</i> replica, Bill Whitney advises that the cg would have been well aft even without the 330USG tank.
10880	Source 2 states (p.19): "We had failed to beat the record, but the Southern Cross had not failed us. She had lifted a weight of fuel equivalent to that of 68 people." Unfortunately, the book does not record a body weight on which this is based. If this calculation is based on the same constant used in Source 1 (160 lbs) a total fuel weight of 10880 lbs results! Note that this exceeds the theoretical capacity of the fuel tanks so presumably a lower body weight was used.

NOTES

1	Source 1 states (p.33): "After discussing this problem with the engineers of the Boeing Aircraft Factory, we decided to add two additional aluminium tanks to the existing tankage of the Fokker. One of these, capable of holding 330 gallons, was fitted just behind the existing main tank, that held 800 gallons. The second, with a capacity of 110 gallons, was fitted under the pilot's seat." Bill Whitney (designer of the <i>Southern Cross</i> replica) advises that the tank said to be fitted under the pilot's seat was actually installed in a baggage locker under the floor of the cockpit. Source 1 states (p.48): "We removed a 300-gallon petrol tank from the fuselage, and now have tanks sufficient to carry 1,298 American gallons."
2	1 USG of gasoline weighs 6 lbs.
3	To convert Imperial Gallons to U.S. Gallons multiply by 1.2 To convert U.S. Gallons to Imperial Gallons multiply by 0.8327
4	"My Flying Life" (p.32-33) states a total fuel of 1,522 gallons and a gross weight of 15,807 pounds.

SOURCES

1	"Story of the <i>Southern Cross</i> Trans-Pacific Flight 1928" by C.E. Kingsford Smith and C.T.P. Ulm, Penlington & Somerville, Sydney 1928.
2	"The Old Bus" (p.22) by Sir Charles Kingsford Smith, Herald Press, Melbourne 1932. Quoted fuel figures are stated to be in "American Gallons".
3	"My Flying Life" (p.41) by Sir Charles Kingsford Smith, Melrose, London .1937