

### Flying the Sahara Desert

Five flights from Casablanca, Morocco to Giza, Egypt

By Dave Athay

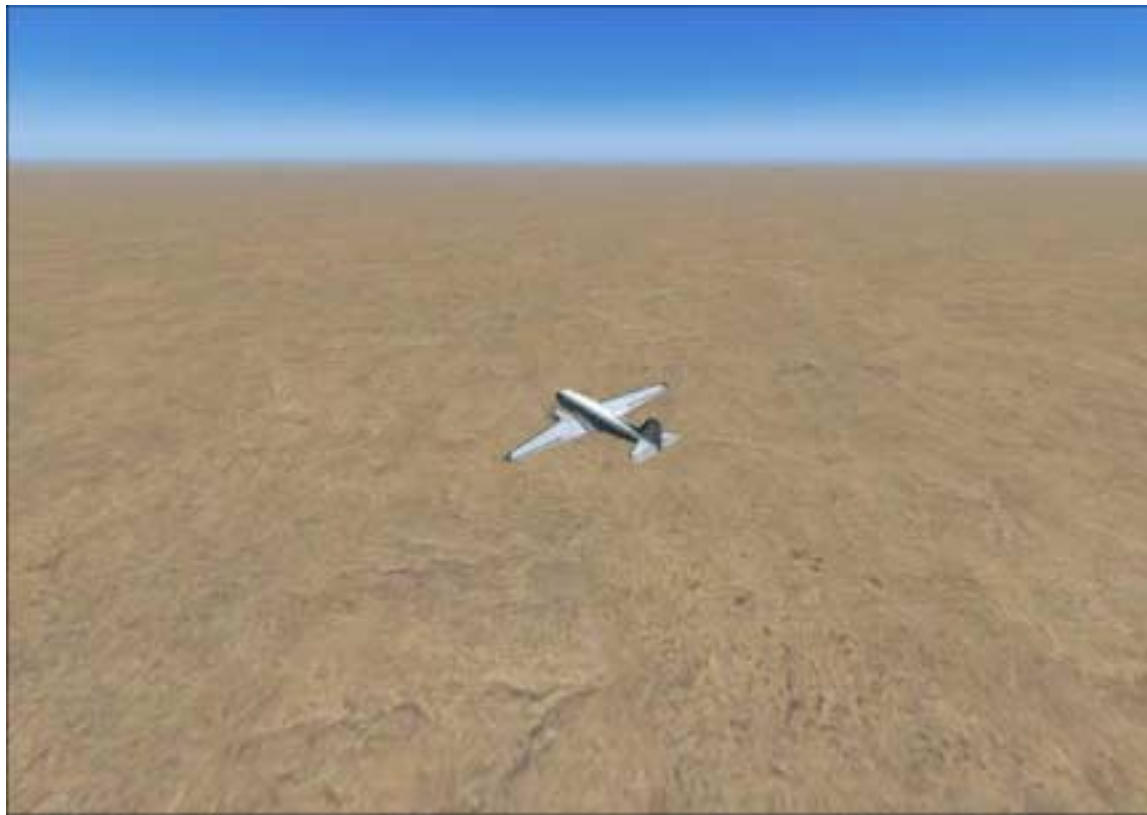
DCA 1315

The Sahara Desert is a vast, lawless region covering all of northern Africa. Settlements are sparse and limited to a few regions where water can be found.

Flying across the Sahara is in many ways like flying between islands. Navigation by dead reckoning is necessary due to the great distances between nav aids. In flight simulator, this can be accomplished easily by using a flight computer like the E-6B to calculate a wind correction angle and groundspeed for each leg. Maintain the corrected heading until the signal from the nav aid is picked up, and then fly directly to the nav aid. I find navigating by this method very satisfying when I pick up a signal after a long leg and find myself not far from my planned track.

All headings given are magnetic.

Special thanks to Tim Cook DCA 813 for helping me to publish this charter.



**Leg 1**

The first leg of the journey takes you from Casablanca, Morocco on the Atlantic Ocean, over the Atlas Mountains and into the Sahara Desert at Adrar, Algeria. Climb to at least 13,000 ft. to clear the mountains. It will be safe to descend at about the same time as reaching the OZT VOR. The remainder of the flight should be made below 10,000 ft.

There will be some blind spots between nav aids, but the signals are generally very strong. Expect to pick up VORs at ranges well in excess of 100 nm and NDBs at around 100 nm.

From – To	<u>Flight Description.</u> "Allocated runways and related information may change when flying online or using Real Weather"				Course (Leg) Deg	Distance (Leg) nm	ETE (leg) HH+MM
	Dep. Rwy – 21	Init. Hdg – 171deg	Init. Alt – 13,500ft	Apt Elev. – 203ft			
Casablanca (GMMC) Morocco  To  Adrar (DADU) Algeria	<b>Departure:</b> To OZT VOR/DME, 116.70. After take off turn left to intercept OZT 171R. Direct to VOR.....				171	162.5	01+09
	<b>Enroute:</b> To HKI NDB, 511.0. Turn left to 145deg, and start your descent to 9,500ft. Direct to NDB.....				145	135.4	00+59
	To ADR NDB, 340. Turn left to 110deg. Commence your descent to 2,000ft 1hr 36mins after station passage HKI. Direct to NDB.....				110	278.5	02+03
	<b>Approach:</b> To runway. Turn left to 042deg for a visual approach.....				042	3.1	00+02
	Land: Touat-Ch Sidi Mohamed Belkebi runway 4      Length: 9,855ft      Width: 148ft      Surface: Concrete						
Flight: 1315-01-01	Arrival Airport Elev. – 918ft      Estimated totals for this flight>>>					580nm	04+12

**Leg 2**

From here, it's pretty much a sea of sand for the next 2,000 miles or so. Adrar and Illizi are both oases, and you'll find there's really not much in between.

From – To	<b><u>Flight Description.</u> "Allocated runways and related information may change when flying online or using Real Weather"</b>				<b>Course (Leg) Deg</b>	<b>Distance (Leg) nm</b>	<b>ETE (leg) HH+MM</b>
	<b>Dep. Rwy – 4</b>	<b>Init. Hdg – 107deg</b>	<b>Init. Alt – 7,500ft</b>	<b>Apt Elev. – 918ft</b>			
Adrar (DADU) Algeria  To  Illizi (DAAP) Algeria	<b>Departure:</b> To NSL VOR/DME, 113.10. After take off turn right to intercept NSL 107R. Direct to VOR.....				107	149.4	01+07
	<b>Enroute:</b> Turn left and track 095R towards ILZ VOR, 115.60. Commence descent to 2,800ft 2hour 9mins after station passage NSL.....				095	325.3	02+26
	<b>Approach:</b> To runway. When you can see the aerodrome, turn to 091deg for a visual approach.....				091	3.1	00+02
	Land: Takhamalt runway 9                      Length: 9,969ft    Width: 148ft    Surface: Bituminous						
<b>Flight: 1315-01-02</b>	<b>Arrival Airport Elev. – 1,778ft</b>				<b>Estimated totals for this flight&gt;&gt;&gt;</b>		<b>478nm    03+35</b>

**Leg 3**

Airports and nav aids are becoming increasingly scarce as you work your way into Libya. Sebha, however, appears to be the most well populated stop so far.

From – To	<u>Flight Description.</u> "Allocated runways and related information may change when flying online or using Real Weather"				Course (Leg) Deg	Distance (Leg) nm	ETE (leg) HH+MM
	Dep. Rwy – 9	Init. Hdg – 091deg	Init. Alt – 7,500ft	Apt Elev. – 1,778ft			
Illizi (DAAP) Algeria  To  Sebha (HLLS) Libya	<b>Departure:</b> To UBR NDB, 291.0. After take off continue on runway heading 091deg. Direct to NDB.....				091	223.9	01+41
	<b>Enroute:</b> To Fix 01. Turn left and track 075R towards SEB VOR/DME, 114.70. Waypoint reached when DME reads 45nm.....				075	46.5	00+21
	To SBH NDB, 263.0. Turn left to 069deg and commence descent to 2,500ft. Direct to NDB.....				069	43.2	00+20
	<b>Approach:</b> To runway. Turn right to 134deg for an ILS (110.30) or visual approach.....				134	3.9	00+02
	Land: Sebha runway 13						

**Leg 4**

From the middle of nowhere to the middle of nowhere.

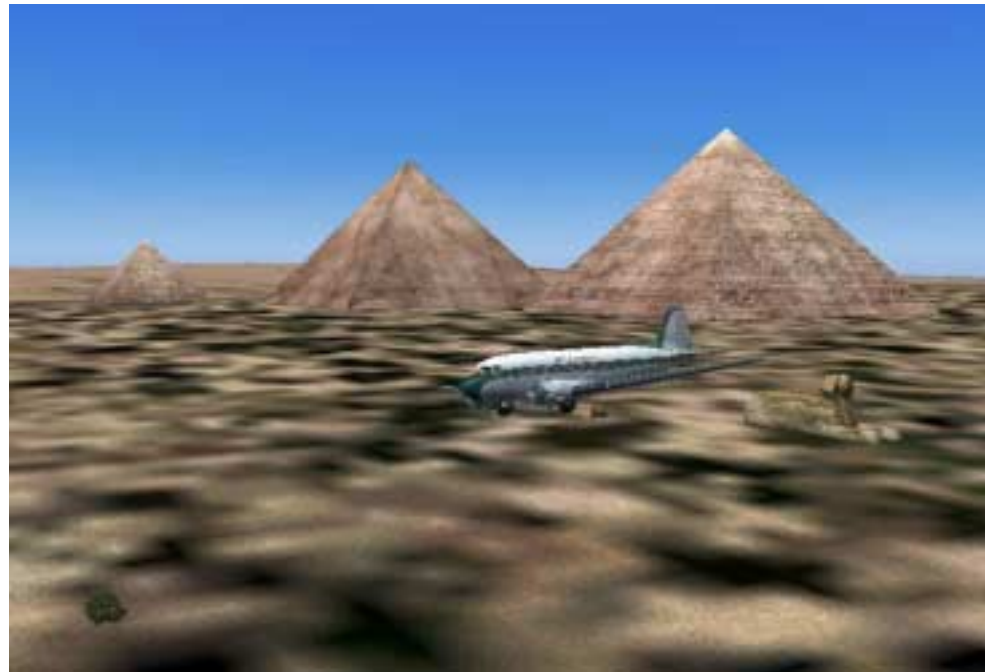
From – To	Flight Description. "Allocated runways and related information may change when flying online or using Real Weather"				Course (Leg) Deg	Distance (Leg) nm	ETE (leg) HH+MM
	Dep. Rwy – 9	Init. Hdg – 094deg	Init. Alt – 7,500ft	Apt Elev. – 1,472ft			
Sebha (HLLS) Libya  To  Kufra (HLKF) Libya	Departure: To Fix 02. After take off turn left to 094deg and intercept SEB VOR/DME, 114.70 100R.....				094	11.7	00+06
	Enroute: To TZR NDB, 269.0. Turn right and track 100R OB from SEB until you pick up the NDB. Direct to NDB.....				100	356.2	02+40
	To KRF VOR/DME, 113.20. Turn right to intercept KRF 126R. Commence descent to 2,500ft when DME reads 32nm. Slow to 120kts. Direct to VOR.....				126	151.0	01+08
	Approach: To Fix 03. Turn right to runway reciprocal 196deg and fly heading for 2 minutes.....				196	4.0	00+02
	To runway. Commence a procedure turn. Make a right 45deg turn to 241deg and fly Hdg for one minute. Make a left 180deg turn to 061deg. When you can see the runway turn left to runway Hdg 016deg for a visual approach.....				241 061 016	10.0	00+05
	Land: Kufra runway 2						

## Leg 5

The first viable navaid on the course into Egypt is the FYM VOR, which is very near Cairo. This means you'll have to cross almost all of Egypt simply by dead reckoning, or celestial navigation. Once you cross the VOR, head for Giza. If you have fuel, you may want to take a short diversion to see the Great Pyramids and the Sphinx, located only a few miles from your destination airport. You've come a long way- might as well see the sights!

If, somehow, you manage to get off course and miss the VOR- fly east until you hit the Nile river- an unmistakable landmark- and follow the river to Giza and the pyramids.

From – To	<u>Flight Description.</u> "Allocated runways and related information may change when flying online or using Real Weather"				Course (Leg) Deg	Distance (Leg) nm	ETE (leg) HH+MM
	Dep. Rwy – 2	Init. Hdg – 094deg	Init. Alt – 7,500ft	Apt Elev. – 1,368ft			
Kufra (HLKF) Libya  To  Giza (HEEM) Egypt	<b>Departure:</b> To Fix 02. After take off turn right to 065deg and intercept KFR VOR/DME, 113.20 047R.....				065	12.2	00+06
	<b>Enroute:</b> To FYM VOR/DME, 117.30. Turn right and track 047R OB from KFR. When you lose the signal from KFR retune to FYM and intercept FYM 047R. Direct to VOR.....				047	481.2	03+36
	To Fix 03. Turn left to 043deg, track 043R outbound from FYM. Commence descent to 1,200ft when DME 1 reads 8nm. Tune Nav2 to CVO VOR/DME, 115.20 and set the OBS to 062deg. Make sure you stay exactly on track. Waypoint reached when Nav 2 OBS needle centers.....				043	48.1	00+22
	<b>Approach:</b> To Fix 04. Turn right and track the Nav 2 062R. Again make sure you stay exactly on track. Waypoint reached when Nav 2 DME reads 11.0nm – anticipate the turn.....				062	8.2	00+04
	To runway. Turn left to 353deg and you should find the runway directly in front of you.....				353	3.2	00+01
	Land: Embaba runway 35                      Length: 3,782ft              Width: 115ft              Surface: Asphalt						
Flight: 1315-01-05	Arrival Airport Elev. – 59ft                      Estimated totals for this flight>>>					553nm	04+09



Thanks for flying my first charter. Please let me know what you think and/or share your stories and screenshots!

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