



October-December 2006

Mauritania • Mali • Algeria

Expedition Report prepared for the
Royal Geographical Society, London
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by
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Horse-drawn 'Garamantean' chariots, Tim Missao Gorge, southwestern Algeria

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Objectives

- To collect dust samples from hitherto inaccessible locations in the Sahara for Oxford University's Climate Research Laboratory.
- To re-trace the route taken by the Joint Services West-East Sahara Expedition (see RGS report: 313) across eastern Mauritania.
- To continue as far east as possible while staying within the true bounds of the Sahara.
- To update existing- and log new routes for future editions of *Sahara Overland*, including 'R2' in Mauritania and the unlogged Tin Tarabine-Tadant-Tiririne route between Tamanrasset and Djanet in Algeria.
- To enjoy exploring a little-known part of the Sahara.
- The expedition also supplied information on remote locales for the Degree Confluence Project www.confluence.org/confluence.php?lat=20&lon=-6

The late Wilfred Thesiger's travels in the Arabian 'Empty Quarter' are well known, but the Sahara too has its barren expanses. In the east is the Libyan Desert, while the less well-known Majabat al Koubra spreads across the Mauritania-Mali frontier. These hyper-arid, million-square kilometre regions within the greater Sahara are barely touched by human presence; they represent the essence of the place known to the Arabs as al sahra: the desert.

In November 2006 our 2000-km crossing from Atar across the bandit lands of northern Mali to Bordj Mokhtar was a highly ambitious project which cost us one vehicle. By taking some liberties with border regulations and with a good measure of luck we got within a day's walk of the Libyan border having crossed over half the width of the Sahara.

Maps



Expedition members

Chris Scott, UK

Author of *Sahara Overland*. Over 27 years travel experience and as many expeditions in the Sahara.

Vehicle: VW Taro 2.4D

Roger and Sue Shuttleworth, UK

Several Saharan trips as well as expeditions to China and West Africa.

Vehicle: Toyota Land Crusier 80VX

Ron Bragg, UK

Two previous Saharan trips.

Vehicle: Toyota Land Crusier HJ60

Mohamed H

Algerian-based tour guide with Malian connections, assisted by Aissa and Ahmed H, (MR), a Mauritanian tourist guide hired to replace the deported Malian original.

Vehicle: Toyota Land Cruiser 80GX



Leaving Ouadane in Mauritania for the 2000-km, off-piste crossing to Algeria

Outline

The crux of the expedition entailed a 1600-2000 kilometre easterly traverse from Atar in central Mauritania to a little-known, smuggling compound known as Ikhalil in northern Mali, a few kilometres south of Bordj Moktar in southern Algeria.

Getting to Atar via Morocco, Western Sahara and Route R2 in Mauritania was straightforward. Once our immigration anomalies were resolved, so was getting from Bordj Moktar across southern Algeria to Djanet, close to the Libyan border.

The logistics for driving off-piste for up to 2000 kilometres were also relatively straightforward although extreme, even by Saharan standards. With modern turbo-diesel engines an average of 4 kilometres per litre (kpl) or around 15mpg was considered sustainable. It added up to a fuel payload of 500 litres. Sufficient water and provisions were carried for up to two weeks. Due to the need to keep a low profile, we would avoid what few wells there are in northern Mali.



Filling up in Layounne, Western Sahara

Dangers and difficulties

As they had been for the Joint Services West-East Sahara Expedition ('JSE') in 1975, our route included logistical issues of range and time, but the real dangers were political or security-related.

Since the JSE passed through Mali the area north of Timbuktu, east of Taoudenni and west of Tessalit has become insecure, is barely unvisited by legitimate travellers and is unoccupied, even by nomads. Over the last decade, since the largely failed Tuareg rebellions in Niger and Mali in the 1990s, northern Mali has become an area outside of the Malian state control.

Smugglers and bandits run contraband (including human traffic) to and from Algeria and Morocco and NGO vehicles have been robbed or stolen in the region of Timbuktu and on the Tanezrouft piste between Tessalit and Gao.

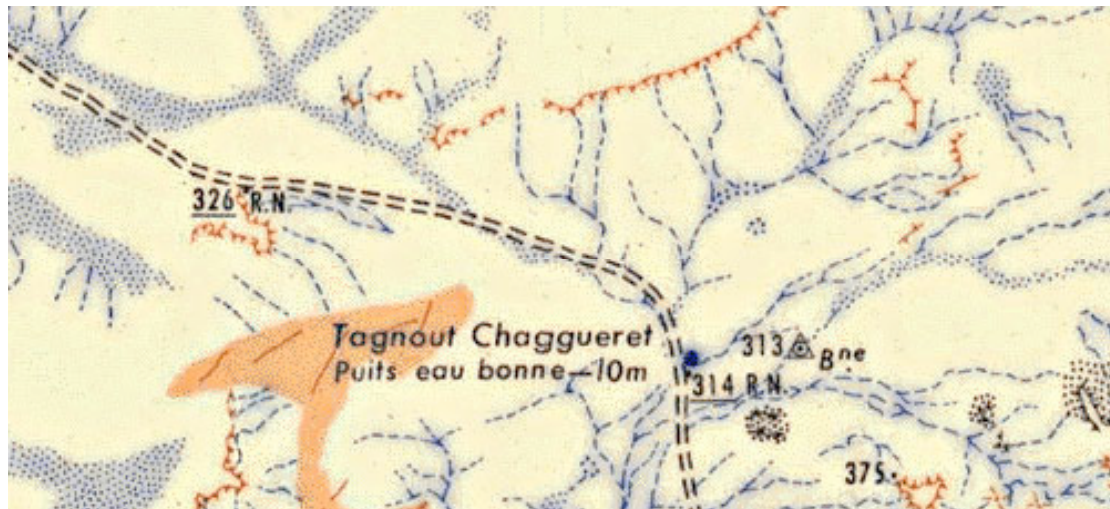
In the summer of 2003 an Algerian al-Qaeda-affiliated group known as the GSPC (*Groupe Salafiste pour la Prédication et le Combat*) hid out at an unknown location between Taoudenni and Tessalit with over a dozen European tourists. They had been kidnapped six months earlier in southeastern Algeria and all but one (who died of heatstroke) were released on payment of a ransom in August 2003.

In the Sahara it is important to separate such ideologically-based terrorist activities (extremely rare but conspicuous) with the more widespread, clandestine and traditional criminality involved in Saharan smuggling and banditry.

Deliberately off our itinerary was the town of Kidal and the Adrar des Iforhas highlands surrounding it. It is an area thought to be insecure since the 1990s due to ongoing Tuareg smuggling activities. Following the invasion of Afghanistan in 2001, Kidal came to the attention of 'bearded mullah' visitors from Pakistan and Afghanistan, presumably at the very least seeking support for fundamentalist Islamic practises among the Kel Iforhas Tuareg (with little success it has been said).

A Libyan-sponsored insurrection flared up around Kidal in the summer of 2006 a few months before our departure. Then as we left Atar in Mauritania it was reported a skirmish had occurred a few weeks earlier at Tagnout Chaggueret between the westward retreating forces of the Algerian-born smuggling 'emir' Moktar ben Moktar and Algerian-backed Malian Tuareg chasing him out of the Adrar des Iforhas. Moktar ben Moktar was at one time thought to have been behind

the 2003 kidnappings. This skirmish at Tagnout Chaggueret well was very close to the 3rd dust source sought by the OUCE.



Dust source 'C' centred around N21.55° W0.62° (just off the map top the north) would have required passing close to Tagnout well.

Despite notably low-key US involvement and even investment under the banner of the Trans-Sahara Counterterrorism Initiative (TSCTI: www.globalsecurity.org/military/ops/tscti.htm) clashes have since re-intensified in northern Mali following a more protracted Tuareg uprising in the Aïr region of Niger in the summer of 2007.

The need for local support

Because of the real danger of robbery or worse in northern Mali, it was decided it was worth hiring an Arabic- and Tamashek speaking local who knew the area. Mohammed 'H', a former smuggler of Berabish descent and now a guide in Algeria was recruited for this task during a film shoot in the Tefedest in 2005 and following a meeting in Algiers in May 2006.

Smuggling and banditry in the Sahara

As we found in the remote Gilf Kebir in Egypt a year or two earlier, many local small-time '*contrabandiers*' or even guest-workers are merely circumnavigating known patrols or Customs posts and the bribes or taxes imposed there. A huge disparity between basic commodities like fuel, flour, sugar from much-subsidised Algeria, Libya and Egypt ensures a regular flow of semi-officially sanctioned traffic between neighbouring nations.

Such operators usually avoid contact with passing travellers and indeed avoid regular pistes when engaged in delivering a consignment. But others are opportunistic and will pick on other smugglers, local travellers and of course European tourists or NGO workers in well-equipped 4WDs.

With good contacts around Timbuktu, Mohammed H in turn recruited a former Malian rebel leader to help secure our transit across northern Mali. It was thought this individual would be able to ensure a safe passage for our group among the Berabish smugglers who operate in the area north of Timbuktu. Furthermore, as we would be bending certain immigration rules in Mauritania, Mali and Algeria, being caught with a local would ensure better communications where French was not effective, and probably ensuring a better outcome for us.

The term 'guide' is commonly used but none of the locals recruited were expected to know the area we would cross any better than myself. See 'Navigation' below.

The cost of this local support was agreed in the form of a mid-90s European-spec Land Cruiser VX, delivered by myself to the Ikhalil compound in Mali a few weeks before the planned rendezvous in Atar. A few thousand euros were also made available to deal with unforeseen eventualities.

To cover these costs places were sold on the expedition for £3000. Applicants were vetted to ensure previous desert experience, a serious understanding of the risks and to eliminate the inevitable 'thrill seekers' attracted to the clandestine nature of the expedition.

Partly because of this final aspect, no sponsorship was sought and what route and timings given to applicants remained deliberately vague. Travellers I have met, as well as less discrete events like the former Dakar Rally, have been raided and robbed right across the Sahara by making their route intentions too well known in advance.



Mohamed H

Visas and paperwork

A two-week Mauritanian visa was acquired by on arrival at the Nouadhibou border with Western Sahara. We did not plan to check out officially from Mauritania as doing so (Atar was the only place) would arouse suspicions.

Although we would cross Mali, we did not plan to check in or out with immigration or Customs. The former would require a detour to Timbuktu, awkward questions and the real possibility of being followed out of town and robbed. By not doing so, checking out (something only viable at Tessalit, south of Bordj Moktar) obviously became undesirable for the same reason.

Nevertheless, a 30-day Malian visa was acquired in advance from Brussels in case we got caught or had to head for a Malian town.

An Algerian visa was also acquired in advance. How we would explain where we had come from and the absence of Malian stamps or even Mauritanian exit stamps would be dealt with on arrival at Bordj Moktar.

No carnets were required for this route. Motor insurance was bought at the Moroccan, Mauritanian and Algerian borders. Ferries back to Europe were booked out of Tunis and Algiers.

Expected terrain

The RGS's JSE report included detailed descriptions of the terrain they encountered. The impression it gave, very accurate as it turned out, was of few or no recognisable landmarks other than a presence or absence of dunes across the entire Empty Quarter.

A vast and featureless sand sheet with the Ouarane Sand Sea at its western edge is how one would describe the Empty Quarter. From breaking out of the Guelb er Richat crater near Ouadane in Mauritania until joining a smuggling piste in the vicinity of Ikhalil in Mali, less than half a dozen rock outcrops were observed, none of them more than a metre high.

As expected the NNE-aligned dunes of the Ouarane Sand Sea added up to the route's sole off-road driving challenge and here the waypoints and observations of the JSE report proved invaluable.

In the midst of the Ouarane and on the rolling sand sheet along the Mauritanian-Mali border, grassy tussocks also made driving extremely tiring at times. It was thought this grass only survived because it was well beyond the range of nomads' camels or any well required to sustain them.



The terrain in the Ouarane Sand Sea was rarely much harder than this

Navigation and Maps

Much use was made of the Mauritania and Mali sections of JSE's detailed report at the RGS. Their waypoints were transposed to a map to help visualise a route through the Sand Sea and imported into a GPS to aid direction finding.

Once in Mali we followed our own route to Ikhalil, making the diversion to collect dust samples for the OUCE at the point indicated.

Except when aiming for this location, once beyond the critical break out of the Ouarane Sand Sea broadly following the JSE's path in Mauritania, route finding would simply be 'ground-to-map'; following the desired easterly bearing as the terrain allowed with the aid of a compass.

Once in Algeria we were led by local guides and followed recognised pistes.

Maps

With no landmarks to relate to, maps became simply a way of recording our progress across the Empty Quarter. They included:

- 1958 IGN map of Mauritania
- A full set of 200,000 IGNs on disc covering our part of Mauritania and Mali. These would have been useful in the unvisited Tagmout dust sample #2 area and navigating from there east to Ikhalil or Bordj Moktar.
- The more common and usable 1 million-scale IGN sheets: Ouadane NF-29, Taoudenni NF-30 and Tamanrasset NF31 in paper. These were used nightly to record our position.
- Google Earth (below) and much higher resolution NASA satellite imagery downloaded from the web. As the terrain proved to be so uniform, these proved to be more useful in getting to know the lay of the land beforehand.



Satellite Communications

All members of the expedition (each car) carried a Thuraya satellite phone; the standard unit used right across the Sahara and a favourite among smugglers and bandits.

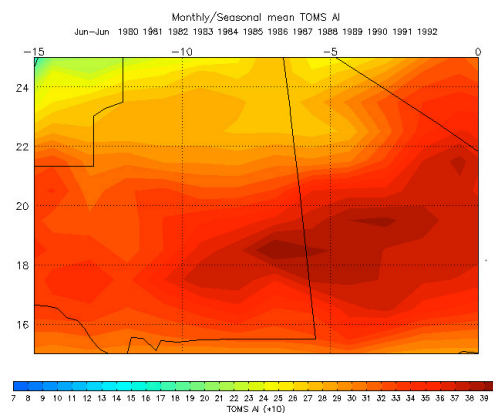
Locals I'd spoken to have experienced unregistered pay-as-you-go Thurayas being blocked or scrambled, presumably by US satellites engaged in anti-terrorist activities.

Assuming that Thuraya transmissions can be tracked by agencies other than Thuraya, we agreed not to use our handsets in Mali unless in an emergency. Because of our plan to keep our transit across Mali unofficial, we did not want to announce our presence there by using the phones in barely-populated regions and while following an unconventional and so suspicious west-east route.

Dust samples for OUCE

The expedition collected dust samples and imagery for the Climate Research Lab at the Oxford University Centre for the Environment (OUCE). In 2005 OUCE scientists - partly funded by an RGS grant - visited the Bodelé Depression in Chad to collect similar samples (see link below). The Sahara is thought to be the largest dust source in the world; most comes from the Bodelé followed by the Empty Quarter. Dust samples from the Empty Quarter have never been obtained before.

Saharan dust has an important effect on global climate, including Atlantic hurricane development. The map below shows three dust-generating 'hot spots' straddling the border of Mali and Mauritania. The westernmost hotspot in eastern Mauritania was too great a deviation for our expedition's reserves; samples were collected from the second spot in Mali at N19° 19.9' W03° 09.2' (pictured below right). Following the skirmish with Moktar ben Moktar described above, it was considered too risky to attempt to collect samples from the third spot close to the Algerian border, seen on the right edge of the left map below.



www.ouce.ox.ac.uk

www.geog.ox.ac.uk/research/projects/bodex

Neolithic artefacts and pre-Islamic structures

One of the surprises of our traverse in the Empty Quarter was the frequency of widely-scattered Neolithic and Paleolithic artefacts once south of the Ouarane Sand Sea and right across northern Mali. At even the briefest stop and most nights, artefacts were easily found within just a few minutes.

They included basic pottery shards, stone knives and axes as well as Neolithic-era grinding stones and querns. This is the typical range of artefacts found right across the Sahara, usually (or most easily seen) in sandy or dune areas. This prevalence we put down to the fact that virtually no one has passed through this area to collect them since they were last used, thousands of years earlier.

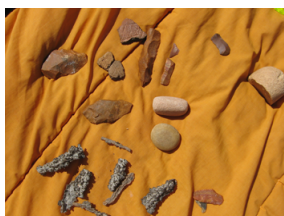
Several pieces of fulgarite were also usually found in the same places, as were fragments of ostrich shells.

In Algeria we visited many well-known rock art sites, from Tim Missao gorge with its rare depictions of 'Garamantian' chariots (see title page), to Jabbaren on the Tassili N'Ajjer, a few kilometres from the Libyan border. In between we passed the now much-visited sites around Tin-Tarabine which included engravings of fauna and abstract imagery, as well as pre-Islamic mound tombs.

Quern stone



Stone tools, grinders, fulgarite



'Flaky' (top) and 'straw' fulgarites



Of interest were the hitherto unencountered 'ring tombs': carefully paved double or triple rings of cobbles about 10-metres in diameter. Many of them were close to oueds or watercourses so it seemed all the more remarkable that they'd survived undamaged, presumably since before the Islamic era.



Wildlife

No easily seen fauna was encountered in the sand sea, most probably because all concerned were concentrating on driving. At one point what was probably a white-tailed hare was spotted.

From the breakdown point (plagued with 'khanfoussa' beetles, below right) towards the Malian border half a dozen fennecs or desert foxes were seen early one morning.

A migrating dove was seen on the first morning in Mali near our camp, acting erratically. As with the very tame egret at Tadant gorge (below right and with many seen later at Algiers airport), they were probably on their last legs, exhausted while trying to migrate across the Sahara.



Baking bread in the sand

As we expected to be away from towns for up to two weeks, experiments were made baking UK-sourced bread mix in the sand. *Tagela* is an unleavened bread commonly made by guides or local cooks on desert tours, but being a heavy dense bread it can be an acquired taste. The powdered semolina dough is formed into a thick pizza-like base and buried in the hot sand beneath a fire and then recovered with embers.

We adopted a slightly different technique for our Wrights self-raising mix by wrapping a risen, rounded lump of flour-dusted dough in tin foil, dropping it into a hemispherical stainless steel bowl and inverting the bowl onto pre-heated sand. Embers were then pushed back over and on top of the bowl (below left).

Providing the bread had been mixed correctly and had a chance to rise fully (a hit and miss affair), an hour later a tasty loaf was ready to eat. The trick was keeping the bread warm during the rising stage. Wrapping the dough in a sleeping bag or placing it wrapped up in a still-warm engine bay worked best.



The inverted bowl covered in embers with the dough inside.



Lovely fresh bread an hour later.

Dealing with the breakdown

The 80,000km-old VW (same as a Hilux 2.4D) had been quietly knocking for a day or so but with the low mileage it was assumed to be relatively harmless CV joints. The sound became much more pronounced and clearly engine-related as we emerged from the more punishing traverse out of the Ouarane Sand Sea. Mohamed H recognised it as a big end on the way out. Our location was about as remote as it got; beyond the dunes but not near anywhere else yet. There was little choice but to keep going. The engine was nursed for another two hours with ever-louder knocking until that suddenly became a raucous clatter and the clutch was dipped.

Removing the sump quickly confirmed the destroyed #4 big end. Options to locate a new big end shell included Nema (600 kms round trip), Timbuktu (a more likely source) 1200km, or Atar, a tough drive back through the sand sea (800km). Doing so might mean waiting at the spot for up to a week, eating into precious water supplies and risking unwelcome encounters.

More crucially, it was not possible to ascertain whether the crankshaft was actually broken. As the engine was pushed to the point of destruction, it had to be assumed that it was which, even in Africa, made engine replacement the best option but not one that could be achieved in less than a few weeks.

Despite the expense it was decided to recover the vehicle to Ikhailil with the hope of obtaining an engine or a suitable site for repair there or in adjacent Bordj Moktar.



Itinerary and observations

From southern Morocco to Djanet, southwestern Algeria.

31 October 2006

Three UK cars rendezvous in Tata, Morocco. Night spent west of Assa.

Tarmac

Hot. Alt 607m. Max temp 32°C

1 November 2006

Head south via Tan-Tan to Layounne Plage campsite.

Tarmac.

Light rain. 41m. 28°C

2 November 2006

Fill all fuel tanks at Layounne, Camp inland off the highway. Snails on plants, as described in *Skeletons of the Sahara* about the 1815 shipwreck of the brig, *Commerce*.

www.sahara-overland.com/books/bx-histo.htm

Tarmac

128m. 28°C

3 November 2006

Continue south, camp on shore south of Dakhla. Unusual succulent plants. Many old bottles and oak ship's beams with wrought iron fittings, probably from early European shipwrecks.

Tarmac

11m. 26°C

4 November 2006

Enter Mauritania, straightforward procedure. Camp by tree west of Bou Lanour.

Much hotter. Tarmac then sandy piste.

152m. 35°C

5 November 2006

Continue east over dune bands alongside railway and then before Choum head south, cross-country. Sandy piste and low dune cordons.

230m. 37°C

6 November 2006

Arrive in Atar. Stay at Auberge Monod for 3 days. Corrugated piste then tarmac.

243m. 35°C

9 November 2006

Chinguetti. Stay at Auberge Bien Etre. Tarmac then corrugated piste.

500m. 32°C

10 November 2006

Corrugated piste then all tracks end at Ouadane which had an unexpected fuel hand pump. Camp at the last tree 20km beyond Ouadane, south of Guelb at N20° 59.6' W11° 21.6'

380m. 33°C

11 November 2006

Initially follow JSE waypoints east along dune corridors. Windy but cooler. Sandy and tussocks once beyond the rings of Guelb. No trees or rocks. Camp at N20° 36.2' W09° 39.0'.

378m. 30°C

12 November 2006

Terrain as above. Camp early at N20° 47.4' W08° 51.0': the 'dune head' to prepare for the expected complex dune crossing in the cool of the morning.

376m. 28°C

13 November 2006

Dune crossing negotiate in two hours without great difficulty. VW starts ailing – drive about 100km until engine breaks at N20° 04.0' W08° 00.0'. Stone tools and fulgarite found nearby. Many 'khanfoussa' beetles on grass blades.

330m. 29°C

14 November 2006

Abandon and redistribute loads, organise recovery from Ikhalil and carry on east with VX towing the VW. Smooth rolling sand sheet while at other times bone-shaking tussocks. Camp at N20° 03.0' W07° 25.0'.

331m. 29°C

15 November 2006

Cross into Mali, take confluence reading at N20° W06°. Pass a knee-high rock, first since Guelb. Cross north-south smuggling tracks. Camp with no lights on flat sand sheet at N19° 59.9' W05° 32.0'.

289m. 32°C

16 November 2006

Rendezvous with recovery lorry, robbed twice on the way from Ikhalil. Spend some hours digging a ramp to load the VW. Fulgarite and neolithics abound. Continue east to camp at N20° 10.0' W04° 33.0'.

270m. 34°C

17 November 2006

Carry on east to camp at N20° 01.0' W04° 06.0' before the Taoudenni-Timbuktu piste. Leave oil drum marker. Fulgarite and neolithics again found close to the camp.

273m. 30°C

18 November 2006

Cross camel- and then lorry tracks of Timbuktu-Taoudenni salt caravan piste. Possibly see a distant lorry on the dune hill to the south heading away. Head southeast to avoid previous robbery areas. Dust samples from near point B collected at N19° 19.9' W03° 09.2'. Camp at N19° 13.0' W02° 46.0'.

261m. 30°C

19 November 2006

Now heading northeast on a well-worn smuggling piste from Timbuktu (not shown on any maps). Camp at N20° 27.0' W00° 50.1'.

333m. 30°C

20 November 2006

Arrive at the 'Ambassade' smuggling compound in Ikhail. N21°11.6' E01°02.3'. Following damage in transit, sell VW to pay for recovery. Advised too risky go to Tessalit (Malian immigration post) 100km to the south as, among other reasons, I may be recognised from the Land Cruiser delivery of a few weeks earlier.

Alt and temp unrecorded.

21 November 2006

Lengthy Algerian immigration at Bordj Mokhtar. Mohamed H has a fortunate encounter with a soldier from his home town who helps support our story and lack of Malian stamps. Fuel restrictions in town to counter smuggling. Stay at Mohamed friend's house: N21°18.9' E00°57.4'.

Alt and temp unrecorded.

22 November 2006

Tim Missao well. Not visited since late 1980s. Now an army camp nearby but the gorge is still clean. Find famous 'chariot' depictions (see title page) and other rock art. Exact position unrecorded but is N21°54.2' E03°05.6'.

Alt and temp unrecorded.

23 November 2006

Arrive at Tamanrasset, stay for 4 nights at Camping Dassine south of town (main campsite from the 1980s – now largely empty). Everyone ill, possibly from Bordj Mokhtar meal or maybe relief of SEQ stress.

1110m. 23°C

27 November 2006

Head with new guides southeast from Tamanrasset to Taghera region. Pass ring tombs and volcanic plugs. Clear piste. Camp in Oued at N22° 20.5' E06°01.0'.

923m. 23°C

28 November 2006

El Gesr rock art, engravings and waterhole. Clear piste. Camp at N21° 49.0' E06°28.0'.

725m. 20°C

29 November 2006

Taghera eroded 'mushroom' domes. Popular tourist camp.

600m. 25°C

30 November 2006

Join large Tin Tarabine oued, a major south Algerian desert watercourse. Unusual eroded ramp in mid-channel with many large engravings of fauna. Head north along the oued past dunes and outcrops. Many engravings. While clutch repaired on white 80 I walked north past pre-Islamic tombs towards spiky outcrops possibly from 1988 trip (*Desert Travels* cover).

635m. 22°C

1 December 2006

Head east towards the new well before Tadant gorge. Visit unusual step-carved sentinel with engravings just past Tarabine valley found by Ron B on previous trip. More ring tombs. Very tame ibis at lunch camp, possibly dying. Camp at N22° 17.0' E06° 24.0'.

720m. 19°C

2 December 2006

Follow the well-worn piste past Tiririne well, camp before Erg Admer dune crossing at N23° 32.0' E08°21.0'. Freezing night.

996m. 19°C

3 December 2006

Cross Erg Admer dunes and camp below spectacular Tassili N'Ajjer cliffs, an hour out of Djanet.

980m. 23°C

4 December 2006

Djanet.

5 December 2006

Walk up to Jabbaren rock art site on the Tassili plateau. On the ascent up the cliff we were followed by a group of Nigeran illegal immigrants being met by a guide to lead them for the day's walk over the plateau to Ghat in Libya.

6 December 2006

Head north for Hassi Messaoud and Tunis

Conclusion

Despite the loss of my vehicle, nearly all the objectives of the Empty Quarter Expedition were achieved.

Even before we left UK we suspected a visit to collect samples from the third dust location north of the Tagnout Chaggueret well would be too risky. The two robberies of the recovery truck as it crossed Mali to meet us underlined the risks. And the Empty Quarter, is indeed largely empty. Only evidence of prehistoric occupation remains.

Analysis of the dust samples collected from the Empty Quarter are underway and partly as a result on the intelligence gained from our crossing, an OUCE expedition is planned in 2010 to position three Automatic Weather Stations in the Empty Quarter of Mali and Mauritania.



Tim Missao Gorge, SW Algeria