

WORKING IN IRAQ- TRAVEL

Not all desert / tropical crossings are dangerous, but there are hazards in all these areas, and these include the possibility of water scarcity.

This in itself is the team`s main problem.

You must make your own mind up as to travel or stay where you are; once you have made this decision you must stick to it.

Before you make this decision think about the following points:

- How far do you have to travel?
- Who else knows that you are there?
- What equipment do you have, in case of a survival situation?
- What rescue facilities do you have?

If you are forced to walk to safety the distance you cover will relate directly to water available. With none, a temperature of 48 C (118 F), walking at night and resting during the day, you could cover about 40 km. Attempting to walk during the day you would be lucky to cover 8 km before collapse. At the same temperature with about two litres of water you might cover 55 km and last three days.

If you decide to travel, leave a sign for possible rescue parties and proceed slowly and carefully, keeping the priorities of survival in mind.

You should always try to travel in the early morning, night and late evening.

Maintain the desired direction and don`t travel when visibility is bad.

You may get 50 km per day on four litres of water provided that your perspiration is controlled and you travel during the cooler hours.

VEHICLES

You obviously require the best type of vehicle for use in these conditions.

If working / travelling in a rough terrain area then it is of utmost importance you use a 4 x 4 off-road vehicle. Necessary training should be sought prior to using a 4 x 4 vehicle. You should have it prepared with the correct spares, spare water, spare fuel, etc. to reduce the chances of breakdown.

The ideal vehicle for desert use is the one that has proved itself as regards dependability and toughness time and time again in these conditions. It should be non-automatic, have ground clearance and plenty of space for all the extra equipment, water and fuel that you should be carrying.

Ensure you have extra water and fuel.

A spare wheel is very important since desert travel puts considerable extra strain on the tyres.

Electrical fuel pumps are better than the mechanical variety, which tend to give trouble in hot climates.

Ideally the vehicle should not be more than two years old and be in a good condition. It should be fitted with a compass. If not, fit one. Ensure that it is adjusted to the vehicle's magnetic field, otherwise it will be very misleading. If fitting a compass to the vehicle - point the vehicle due north and then move the compass around the interior until you find a spot where it registers true north. Fix the compass there, and then point the vehicle south, east and west, checking that it is still registering accurately. Make a note of any error factor and stick it below the compass. It is always useful to carry a prismatic compass or Silva type compass to check bearings / directions, etc. Use this compass **away** from the vehicle; never use it inside the vehicle.

Tyres / Wheels

The wheels should be the largest possible for the make of the vehicle, bearing in mind that suitable desert tyres must be available for them.

Larger tyres and wheels increase the efficiency of travel over sand, and have a slight advantage in reducing the frequency of becoming bogged down.

Never try to compromise on tyres as in the desert they are going to be subjected to far more than the usual amount of strain, owing to the heat, the abrasive and bruising effects of sand and rock surfaces, and also to the periodic running in an under - inflated state for extra traction.

Tyres that are old, are of unsuitable types or are in a poor condition must not be used except in emergencies.

It is advisable to locate the special tyres that have been designed to operate at the low pressures in these conditions.

Deflation

If you are not using the special tyres designed for this type of travel and find yourself bogged down in sand, you will find you will get better traction if you let the air out of the tyres until they bulge. This will then increase the area of the bearing surface in contact with the sand and hence give you more grip.

It will be quite hard to gauge the degree of the bulge if you deflate the tyre when already stuck in the sand (unless you use a tyre gauge). Deflation should always be done in advance, while still on hard ground and you can see how much you are deflating the tyres.

Deflation will increase the fuel consumption to an even greater extent, and also increases the temperature on the tyres, therefore, keep the speed down to a reasonable level.

Ideally for desert travel the tyres should have inner tubes rather than being tubeless, the reason being that if you deflate a tubeless tyre too much the seal between the rim and tyre will be broken and the tyre will become completely flat. It is impossible to re-inflate a tubeless tyre with a foot pump or an engine pump. In this scenario a high pressure pump is required.

In the case of vehicles with dual tyres care must be taken not to deflate them to the extent that the bulges touch each other. If they do touch, even intermittently, the friction will soon ruin both.

Vehicle Travel

Sand is cooler and more moist early in the morning therefore closer packed and firmer. As a result, travel is easier.

The best times to travel are early in the morning or late in the afternoon as the sun gives plenty of shadows which show up the textures of the sand and the dips and humps in the sand. Generally at noon all detail is lost as the sun is at its highest and sun-glare can be great.

Beware of patches showing a sudden change in appearance and consistency, e.g. hard dark surface changing suddenly into soft brown. Ruts left by other vehicles give a lot of information; look for sudden deepening and widening, as this is a sure sign of the sand becoming softer. Blurring edges and loss of detail of the tread can indicate an old track, but if all the tracks are similar in this appearance it is more likely to mean that the sand is soft. A chewed up appearance in which all detail has disappeared always indicates trouble and should be avoided.

Avoid over revving the engine unless you are moving fairly rapidly. If you have high revs when moving slow in soft sand it will dig you in deeper. If the vehicle starts to jerk, stop at once. If you don't the chances are that you will dig in more than you will move forward, until you are brought to an abrupt halt anyway.

If the surface is uncertain, keep going at a brisk pace enough to carry you through small, unexpected soft patches, but not so fast that you may cause damage if you hit a sudden hidden obstruction.

If sand conditions are gradually slowing you down and the appearances are that the sand is still getting softer, then change down to a lower gear before you think you need to, in other words, while you still have plenty of momentum.

Alternatively, change your direction and try to drive around the soft and difficult patch not forgetting to make a note of your new compass heading and mileage on the odometer so that you can revert to your original heading when the surface improves.

Whenever you start to cross a series of tracks running at right angle to you, slow down and watch out, because in the middle of these is often at least one main track which is very deep. If you hit this track at any speed you will be very likely to damage your front suspension severely. If you see this kind of track, cross it very gently and at an angle.

Sand Dunes

Remember that sand is not a constant medium but one which is constantly on the move, therefore be careful not to fall into the trap of assuming that the surface will be the same as it was the last time you travelled over it. Even a track you travelled on the previous day should not be taken granted and this applies particularly to tracks leading over sand dunes as sometimes wind action might cause the whole of one side of the dune to collapse, forming what is commonly known as `slip face`. These are extremely dangerous.

When you travel over dunes you no doubt will require excessive speed to get to the top but be prepared to slow down in case of an emergency stop.

If you find yourself going over the top of a `slip face` and heading fast down the other side the only thing to do is fight against your instincts and accelerate hard, this tends to bring the rear end of the vehicle down and you will then have to charge down the slope, doing your best to stay upright. If you brake instead of accelerating then you will inevitably dig the front of the vehicle into the sand and may find yourself and the vehicle somersaulting down the slope. If you go over the `slip face` at an angle rather than at right angles it is almost certain that the vehicle will roll over side ways.

If you are driving in an unfamiliar area and you find yourself at the top of a dune - stop and look around you as you could drive into a `ring dune` and once you drive into a `ring dune` you probably won't get out of it as the sides will be too steep.

If you fail to drive up a dune then back off it a good distance, let your tyres down further if you can (check with the tyre gauge), and charge at the dune as fast as you can, remembering to select your lower gears before you would normally consider doing so. Also remember to slow right down or even stop once at the top.

Driving on `Oil Roads`

In the Gulf there will be plenty of `oil roads` to be found throughout the region. These are roads made by grading the desert surface and then layering them with crude oil, which becomes compacted to form a hard, and for a time, smooth surface.

There are dangers even with these roads as they are often badly broken and irregular especially on each side of a rise, and can cause severe damage to the suspension. They are very dangerous when wet, being just as slippery as ice. This usually occurs early in the morning when there may be condensation on them. They are usually narrow so that to pass other vehicles, etc. you may have to have two wheels off the road entirely, in which case you need to be prepared for a sharp pull to the side as the wheels meet the increased resistance of the sand.

If Stuck in Soft Sand

- Stop at once.
- Do not race the engine under any circumstance, as you will only dig yourself further in.
- Engage the lowest gear in 4-wheel drive.
- Without excessive engine speed try to drive out - gently.
- Because the reverse gear ratio is lower than that of first you can sometimes reverse out of the situation where you cannot progress forward.
- If this does not work, get out and check the tyre pressures with the gauge, lowering them further if possible.
- Clear the sand away from the front of all four wheels with the spade or with hands so as to make a gentler slope and then try again.
- If you have tried all this and still have no luck and there is no other vehicle to pull you out then jack up the vehicle using the wooden blocks under the jack for support, place something solid behind the rear wheels, place the sand belts (if you have them), otherwise use flat stones, branches, blankets, interior vehicle mats or even the spare tyre to place under the front two wheels. Lower the jack onto the `improvised track` and drive off. You may have to do this several times if the soft sand becomes a problem.
- Worth remembering to tie any item you may use to assist you getting out of the soft sand / mud with string cord so when you finally drive off you drag the additional equipment with you so there is no need to stop the vehicle to retrieve these items until you are on hard ground.

Your vehicle (depending on the age) may be fitted with a starting handle, if so the old trick is to remove the spark plugs, select the suitable gear, release the handbrake and wind the vehicle out of the place in which it is stuck.

Do not over exert yourself due to the heat and do not rush - take your time as you will inevitably tire quickly and you will perspire more, requiring more liquids to replenish the fluids you will lose. Be patient and remain calm.

If, however, you are definitely stuck, you will need to wait for assistance and this may be some time. **DO NOT LEAVE YOUR VEHICLE** unless you can see civilisation.

It is not easy to find a vehicle in the desert but it is virtually impossible to find a person on their own.

NEVER attempt to walk from the vehicle if you are thirsty and you are out of water. Never try to judge the distance to civilisation by eye, as this is one of the most deceptive things in the desert.

Getting Lost

Getting lost when driving is the result of sheer carelessness followed by panicky and muddled thinking. If you think you are lost - accept it that you are lost. If you do get lost, not only is it extremely dangerous to yourself but also to those who have to go and look for you.

If you become lost - **STOP** immediately unless you are in a gully or you can drive to immediate high ground. If there is no high ground - drive to the nearest open ground, where you will be able to see the local surroundings, here you **MUST STOP**.

- Reassess the situation - check your bearings if there are landmarks available
- Check your last known position
- If using a GPS (Global Satellite Positioning System) check the settings and re-confirm
- Use in-conjunction with the map
- Above all **DO NOT** panic - remain calm. Does it really matter if you have to spend a night in the desert especially if you are carrying all the right equipment?

You should always have a plan ready in case you become lost.

Never rely on instinct to show you the way - this is fatal!

On many occasions instinct has led to people going round in circles.

Work out how far you have travelled and in what direction - this should be easy as the compass bearing will tell you as will the odometer.

Check the fuel situation because after you have worked out where you are and where the destination is - have you enough fuel to get there?

Ask yourself - were there any major landmarks that you passed and where were they on the map?

How long will it be before you are missed?

Did you tell people where you were going?

Did you tell people what your estimated time of arrival would be?

Did you leave a route card with somebody in case you don't arrive at your final destination?

Most of the above is common sense but these questions must be sorted out before you finally decide whether to move off or stay put.

Direction Finding

If for some reason you have lost your map and compass, or your GPS failed on you due to power and you never took a normal compass with you and you are definitely lost ... etc, etc.

However, let's say you know that you have to travel west to find civilisation then it becomes necessary to find that direction, but how?

There are a few simple methods to find the directions of a compass by using your watch, for example.

If you have a watch which is reasonably accurate, point the hour hand towards the sun and note the angle between the hour hand and 12 o'clock; if you then bisect this angle, the resulting line points approximately south if you are in the northern hemisphere and approximately north if you are in the southern hemisphere.

If you have a digital watch then draw the clock hands, etc. in the sand or on paper.

If you have no watch at all, put a vertical stick or similar in the ground upright and watch the shadow it casts, marking the end of the shadow every half hour or so. The shortest shadow will occur at noon and when the sun is due south, a line from the base of the stick, along the shortest shadow will be pointing due north (again if in the southern hemisphere, substitute north for south and south for north, etc.).

If you know of the prevailing wind in the region or the direction of the last strong wind, look around you for small bushes or shrubs or rock outcrops, you will find that the sand tends to pile up in a line behind the bush away from the wind, so by looking at the direction of this sand you can orientate yourself quite easily.

Pole Star

At night you can use the stars, the Pole Star (Polaris) being the most used star for direction-finding as it never moves more than one degree from true north. This star is easily found. First of all you need to find the `Plough` or `Big Dipper` as it is also known, then take a line from the two `pointers` (the end two stars on the `plough` bit or `dipper` bit). This line guides you almost directly to Polaris.

Orion

Another useful night guide is the `Constellation of Orion`, a group of seven stars, the three in the middle being known as the `Belt of Orion`. The top star of the `belt` will always rise due east and set due west, no matter where you are on the surface of the Earth.

Southern Cross

In the southern hemisphere, the most useful star guide is the `Southern Cross` constellation. If the two stars forming the stem of the cross are projected a further four times the distance between them, from the foot of the cross, then their final (imaginary) point is in the general direction of south.

Remember these basics

- Leave a route card and tell someone of your plans and estimated time of arrival.
- Ensure you carry a spare wheel.
- If in an area of soft sand deflate the tyres for greater traction.
- Keep the speed down with deflated tyres, otherwise the temperature of the tyres will rapidly increase.
- Tyres must have inner tubes. You cannot reinflate a tubeless tyre with a foot pump.
- Ensure you have correct equipment for the duration and terrain that you travel over.
- Do not overload the vehicle.
- Any spare spaces in vehicle should be filled with water containers (you cannot carry too much water).
- Ensure you have a substantial tool kit and jack.
- Check vehicle thoroughly prior to leaving.
- If possible - travel early or late, as sand is cooler and more moist.

- Travelling early or late will also cast shadows which show the lay of the terrain.
- Beware of patches showing sudden changes in appearance and consistency.
- Under no circumstances travel in a sandstorm or at night.
- Sandstorms occur when the wind is strong enough to lift the heavier grains of sand.
- Never rev the engine too much, this will dig you in.
- If you are starting to get bogged in - STOP.
- Engage lowest gear, try to drive out slowly.
- Remember sand dunes are constantly on the move.
- Always slow down at the top of sand dunes, look what's ahead.
- Don't forget to keep a check on the fuel, mileage, compass and water gauges.
- If you have broken down - stay with the vehicle.
- It is not easy to find a vehicle in the desert - it is virtually impossible to find a man.
- If you can see your destination, walk late in the afternoon or early morning.
- It is often the short, everyday trip that one gets careless about, rather than the long, adventurous one for the first time to a new area.
- Do not rely on instinct to show you the way.
- If lost, drive for the highest point of ground.
- Sit back calmly, take plenty of time and try to work out where you are.
- Work out how far you have travelled and in which direction.
- If you have a map - orientate it.
- If you have to signal to attract attention, then use either the mirrors, or make a straight line (as nature avoids them), use the spare equipment from the vehicle, seats, mats, suitcases, etc.
- Write SOS in large letters in the sand.
- Build a fire from use of spare oil and clothes, this will attract attention.
- Use the emergency air panel or tarpaulin sheet.
- Carry spare food and water - minimum sufficient for two days.

Sandstorms

There are two varieties:

- Sandstorms (proper)
- Dust storms

The latter are the result of fine dust being lifted into the air by prolonged winds, to a height of many miles and are most uncomfortable, making the very act of breathing sometimes impossible!

Generally they die out slowly as the light dust particles settle only very gently.

Sandstorms, however, occur when the wind is strong enough to lift the heavier particles of sand off the desert surface, and they rarely rise above five metres.

It is essential to wrap up against the abrasive effect of the sand.

If you see a storm coming your way or if caught in a storm - stop the vehicle immediately, ensure all windows and vents are closed, if fitted with a cover for the radiator ensure that is pulled down. Once the storm has passed, remove any additional build up of sand / dust on outside of vehicle and check all sand is out of engine where possible.

Mirages

This is an optical illusion. The most commonly recognised type is that in which owing to refraction of light by unequal densities in the layers of air, portions of blue sky are seen as if they are on the ground, the shimmering effect making them look not unlike pools of water.

You will almost certainly see the same effect, to a lesser extent, on roads in a hot summer at home.

Additional Equipment

This will depend on the duration and distance you are intending to go and the space you have available.

The following list should be used as a guide and items can be added / deleted depending on individuals / teams requirements. All essential items should always be taken, like spares for the vehicle, spare fuel, water, etc. but when compiling the list remember the final laden weight of the vehicle (manufacturer's recommended weight should be on a metal label on vehicle body or in the manual with the vehicle - check it first).

Tools

- Full set of standard tools (comes with vehicle)
- Feeler gauges
- Metal file
- Hammer
- Mallet
- Points file
- Strong hydraulic jack
- Strong wheel nut wrench
- Selection of spanners
- Tyre pump
- Tyre levers
- Tyre repair kit
- Tyre valve key
- Tyre levers (minimum two)
- Carburettor repair kit
- Fuel pump repair kit
- Water pump repair kit
- Clutch and brake repair kits

Spare Parts

- Can of engine oil
- Coil
- Bulbs (interior / exterior)
- Battery
- Gaskets
- Brake fluid
- Lubricating oil
- Penetrating oil
- Cables (brake / clutch / accelerator)
- Fan belts (minimum two)
- Set of fuses
- Points
- Spark plugs
- Condenser

- Windscreen wiper blades (minimum two)
- Emergency plastic windscreen
- Radiator water hoses
- Distributor cap

Additional Equipment

- Medical supplies (large comprehensive first aid kit)
- Jump leads
- Sand belts (used for extraction from being bogged down)
- Cooking equipment
- Tin openers
- Cleaning equipment
- Eating utensils
- Sleeping equipment (sleeping bags / Gore-Tex bags)
- Spare clothing
- Spare food (spare 24-hour rations for each person on board)
- Roll of heavy-duty tape
- Lamp
- Torch & spare batteries
- Fuse wire
- Waterproof matches / windproof lighter
- Insect repellent
- Sun screen / block
- Spade
- Pick
- Tow rope
- Vacuum flasks
- Water container or numerous smaller containers (never have enough - try to fit small bottled water in all spaces available)
- Self-tapping screws
- Maps of area
- Roll of strong cord
- Sheet of polythene / capes (can be used for emergency shelter)
- Tent
- Repair manual for vehicle
- Leatherman multi-tool
- Wooden blocks (for base plate for vehicle jack)
- Spare ignition keys (ensure all passengers know where these are kept)
- Spare fuel tank
- Spare wheel (ensure it is in excellent condition and has the right tyre pressure)

Ensure the vehicle has some form of metal container, which is fixed permanently to vehicle for storage of valuable items and can be locked.

Fire extinguishers - mounted in ideal positions (in the cab where you can grab them quickly - DO NOT mount in the engine compartment).

Ideally have a metal guard fitted on the underside of vehicle especially under the fuel tank and sump.

Lag the fuel pipes with fire-proof material at any points where they pass near the exhaust manifold, helps reduce fuel from vaporising due to excess heat.

Ensure tow hooks are fitted.

Seat belts to be fitted - apart from the obvious safety aspect the belts will assist in a more comfortable ride.

Think about a double roof (false roof) if vehicle has not already got one. This causes an air space between the two and reduces the temperature inside the vehicle.

If fitted with a good roof rack then you will be able to carry more stores but ensure the vehicle does not exceed the overall manufacturer`s weight or the vehicle doesn`t become top heavy.

Vehicle Checks

- Check oil levels
- Check fuel levels
- Check water levels
- Check tyre pressures (and the spare!)
- Check battery level (and spare if carrying)
- Check fan belt
- Check all tools
- Check all stores
- Check the vehicle jack
- Check compass and spare
- Check tyre pump
- Start the engine and listen for unusual noises / vibrations

Checks can be time consuming but invaluable.

IF DEPLOYING TO THE GULF REGION START THINKING ABOUT THE PERSONAL EQUIPMENT AS WELL AS VEHICLE EQUIPMENT THAT YOU MAY WANT TO TAKE WITH YOU OR OBTAIN ONCE THERE.