TRAILBLAZER

Overlanders' HANDBOOK

A ROUTE & PLANNING GUIDE: ASIA, AFRICA, LATIN AMERICA

CHRIS SCOTT

2 EDN

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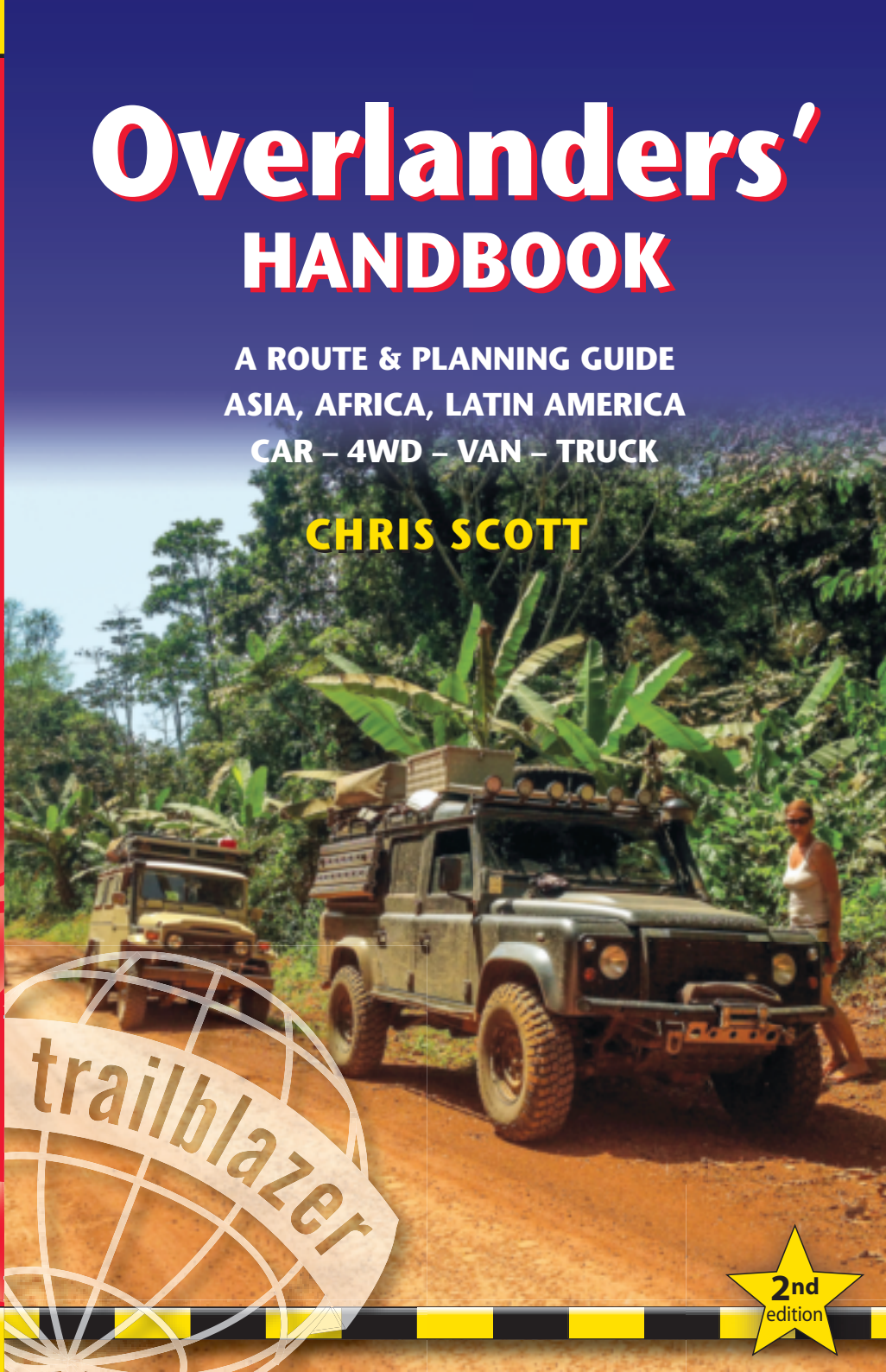
CAR – 4WD – VAN – TRUCK

CHRIS SCOTT



2nd edition

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TRAILBLAZER PUBLICATIONS


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Namibia
Botswana
Madagascar
Swaziland
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Lesotho
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INDIAN OCEAN
Tasmania
New Zealand
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Among other things **Chris Scott** is an adventure travel writer for whom good transportation is just a means to an end. He's cycled in the Himalaya and Hindu Kush, kayaked off the West Australian coast, packrafted in Scotland, France and Utah, and motorcycled across the Sahara where he's also travelled by bush taxi, truck, 4x4 and camel caravan. Occasionally, he runs tours in the Sahara.

His other titles for Trailblazer are the *Adventure Motorcycling Handbook* and *Morocco Overland.* His other books include the original editions of *The Rough Guide to Australia*, as well as *Desert Travels* and *The Street Riding Years.*

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CAR – 4WD – VAN – TRUCK

CHRIS SCOTT

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A request

Every effort has been made by the author and the publisher to ensure that the information contained in this book is as up to date and accurate as possible. Nevertheless things are certain to change; even before the ink is dry. If you notice any changes or omissions that you think should be included in the second edition of this book or have any other feedback, please email the author at the website below or via Trailblazer (address on p2).

Warning

Global travel in cars, trucks and vans is unpredictable and can be dangerous. Every effort has been made by the author, contributors and the publisher to ensure that the information contained herein is as accurate as possible. However, they are unable to accept responsibility for any inconvenience, loss or injury sustained by anyone as a result of the advice and information given in this guide.

overlanders-handbook.com

Photos Front cover: In Cameroon © Marc Heinzelmann
Back cover – Left: © Matthew Kelham. **Right**: © Chris Scott

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INTRODUCTION

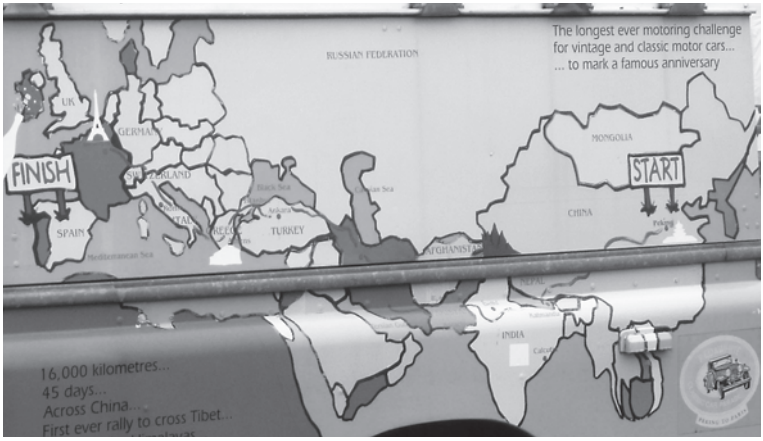
Many of us recall the thrill of getting our first cars and the new freedom they gave us. Vehicle-dependent overlanding might be said to recreate that adventurous epiphany, opening up an entire world of new experiences and encounters. It's one that won't require following a tour guide's raised umbrella, or surrendering yourself to the schedules and discomfort of public-transport services as you may have done as a backpacker.

The decision to pack it all in and take off for months or even years in your car, van or truck across the highways of Asia, Africa or Latin America can mark a major turning point in your life. It will also require a daunting amount of research and preparation, not least in the vehicle you choose.

The *Overlanders' Handbook* is the only manual to cover the entire undertaking, from the moment of inspiration through vehicle selection and preparation right up to the practicalities of living on the road.

As the miles roll by, the tyres wear down and the passport fills up, you can be sure that the challenges which initially seemed so daunting will become just another eventful day in your own unfolding road movie.

Enjoy the adventure!



PLANNING & PREPARATION

1

The decision to undertake a long overland journey in a vehicle can germinate from a moment's inspiration, a decision to take on 'the Big Trip' after a successful series of lesser journeys, or just the plain old desire to cut loose from the regimented lives many of us lead and have a big adventure.

Within a few pages you'll discover the mushroom effect of taking on such a venture. Choosing and preparing a vehicle might take up the lion's share of your time and the budget, but realigning your dream itinerary with the reality of visas, borders and regional security issues also takes a huge amount of research. And the situation won't stop once you're on the road, so the planning is never really over until the journey is complete. The more you learn the more there is to consider until you get to a magical point where, however briefly, you're ahead of the game. If you're very lucky, that moment of overlanding nirvana will coincide with your departure.

The extent of preparation varies between individuals. Some will want a waypoint for every fuel station and booked accommodation. Others will be satisfied with a good map, some guidebooks and a loose schedule for any visa applications that must be made en route. You need to find a level of preparation that satisfies you and gives you enough confidence in a venture that'll always have elements of unpredictability.

Getting the right **paperwork and visas** and sorting out your **money** are tedious but vital. It's common to worry about carrying masses of cash and acquiring visas or motor insurance on the road. Without just one of the several documents listed in this section, your trip will eventually grind to a halt, but the two key items are and always will be a passport and the ownership documents for your vehicle.

Do yourself a favour and set off knowing that, whatever happens, you've done all the preparation you hoped to do. The more effort you put into planning, the smoother your trip is likely to be.

You need to find a level of preparation that satisfies you and gives you enough confidence in a venture that'll always have elements of unpredictability.

A plan

Before the preparation comes **a plan**, an outline of the regions and destinations you'd like to visit. It's not uncommon initially to come up with a certain romantic flow or theme: following the Silk Road to Beijing, tracking the Pan American Highway to Cape Horn or setting off in an old Land Rover as your parents may have done before you came along. Then you discover there's no single 'Silk Road', the Pan-Am is impassable between Panama and Colombia, and these days modern 4WDs, including Land Rovers, are a lot more comfortable than they used to be.

Compared to the life you've been leading up to now, life on the road will be unpredictable and requires flexibility.

This is just the start. If you make it to p363 your expertise in the whole project will have multiplied exponentially. A few edges may have been knocked off your starry dream too, but you'll be in much better shape to take on what lies ahead.

Once you've got over that possible disappointment there comes another shock that can be paraphrased from the Prussian military strategist Helmuth von Moltke's famous quote: 'no plan survives contact with the road'. It's hard to imagine not having some sort of outline before you leave, if only to avoid undesirable interruptions and expenses. But sooner or later that original **schedule** gets derailed. It's rare to leave on your original departure date, so don't set this in stone. Compared to the life you've been leading up to now, life on the road will be unpredictable and requires flexibility.

Above all be wary of **over-ambitious goals**, or anticipate them and be happy to return home having done much less than you planned but still satisfied. Even in the right season (see opposite) most first-time overlanders greatly **underestimate** the time it takes to cover ground in parts of Asia and Africa, let alone the much under-rated value of simply slowing down.

To want to try and see it all is understandable when you consider the cost and effort you're making to get this far, but once you're inching out of a Far East container depot into the chaos of the city, or rolling off the end of a sealed highway into a remote area of tracks, reality bites. Sitting at the sharp end of your adventure, it then runs around and jabs you in the butt and your trans-continental expedition, unparalleled since the sweeping hordes of Genghis Khan, crumples like a paper cup. The good thing is: you're there.

WHICH CONTINENT?

Assuming most of us come from affluent countries of the developed West – North America, Europe, Southern Africa and Australasia – certain **classic overland routes** present themselves. They're sketched in each of the three Route Outline maps for **Africa** (pp414-5 & p427), **Asia** (pp366-7) and **Latin America** (pp438-9 & p448), with an overview map in the colour section.

The Overland Zone

(NOTE: NOT ALL COUNTRIES SHOWN ARE ACCESSIBLE OR SAFE TO VISIT)

It's worth comparing these three big continents in terms of difficulty. Assuming you live there, **European departures** offer the most overland options, with both Asia and Africa accessible without getting bogged down in shipping (the latter only by the Straits of Gibraltar at the moment). From Europe, the northern route across **Asia** reaches over to Far Eastern Russia. The southern route runs via India and now continues overland via Burma (with escorts) to Southeast Asia. China remains a special case – see p398. The southern route to India can be comfortably done in a normal car with as few as four visas.

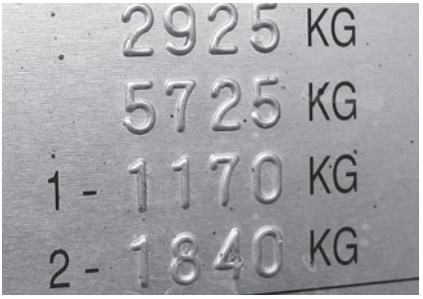
Alternatively, departing from Europe you can head down the length of **Africa**, typically ending at the Cape of Good Hope. With the situations in Libya and Syria blocking overland access to Egypt, Africa still represents a challenge, a real adventure both in terms of riding conditions, visa acquisition, security and even expense.

Many overlanders not from North America choose to start their transit of **Latin America** above the Arctic Circle in Alaska to end it some 25,000km (15,000 miles) later in Tierra del Fuego, just 1000km (600 miles) from the Antarctic mainland. Assuming you follow the easiest route, Latin America is the least challenging of the three big continental routes in terms of paperwork, road infrastructure and languages, while offering as impressive scenic and cultural attractions as anywhere, particularly in the Andean countries.

If you're intent on **ringing the globe**, shipping across the oceans that separate these continents is easily done from certain key ports described on p325.

SEASONS AND CLIMATE

The season and expected weather at certain key stages of your route must be factored in; it's still a wild planet out there. Seasons and the climate can be anticipated (💻 worldclimate.com); the actual weather on a given day cannot. In regions where the road infrastructure cannot deal with these extremities,



The VIN plate on this Mazda pickup shows the GVW of nearly 3 tonnes, the GVTW when towing, the payload when not towing and the unladen vehicle weight.

'tare' or 'UVW', which is unladen weight with fluids but no driver; and 'kerb weight': with a full tank and a nominal 75kg driver in blue overalls.

Leaving aside manufacturers' technical design limitations, in many countries a vehicle's GVW is a critical **legal designation**, separating domestic cars from commercial vehicles. As many commercial drivers are well aware, this has ramifications for operator licensing, insurance, tax brackets, what roads it can drive and bridges it can cross, tolls and so on. All in all, a list of regulations you're probably wanting to escape from and the sorts of concerns that don't exist in many African countries, where a vehicle's payload is only limited by its 'APC' or absolute physical capacity.

Calculating the permitted payload

In an overland sense, the GVW is a way of calculating the permitted **payload**. Deduct the vehicle's unladen weight from the GVW and you have the payload. This is something typically overlooked by first-timers, just as their vehicles are also routinely overloaded. Long before settling on your final vehicle choice and layout, establish its payload: both in terms of chassis and tyre loads.

Manufacturers set GVWs on the conservative side (or so you'd hope; in certain light-commercial categories you can't help wondering if marketing has more to do with it). However, in an engineering and safety sense, they're closely tied to the **axles**, what the **tyres** can safely handle, the **braking** set-up and performance, and the **suspension** as fitted from the factory. In this regard don't be surprised to find the standard suspension on a 4x4 squashed flat at its GVW limit. Uprating the tyres and suspension is almost mandatory for overlanding (see p147 and p143). Modifying the chassis and brakes is beyond the reach of normal overland preparation; in the States it's common to fit heavier-duty axles to 4x4s, though more to run huge tyres than improve payload.

Pushing the 'APC' in the Sahara.

Disregarding legal issues and the mistaken belief that 4x4s are immune to overloading, to ensure the safety of your vehicle and the longevity of its components, right down to the chassis, it's vital to recognise payload limits. Remember too that payloads can rise dramatically when fully loaded with fuel and water and can effectively be multiplied when driving off-road. Especially at

the lighter end of the scale, always aspire to **stay well below maximum GVW values** – 70% is a good figure to aim for.

The limits of payload will also become the governing factor when making extensive modifications or full-on self builds. Suddenly bull bars, second spare wheels, huge roof tents and spare fuel tanks edge you swiftly towards the GVW limit. The sources of this information of course vary wildly, but when you see how modest the typical payload is in the list of 4x4s below you may be surprised.

In Europe the 3.5 tonne GVW limit (in the US it's around 10,000lbs) covers private vehicles which don't require special licensing or training. Motorhomes can be an exception.

Some 4x4 payloads

Jeep Wrangler V6	388kg (856lb)
Toyota FJ Cruiser V6	510kg (1124lb)
Subaru Forester 2.5i-L	536kg (1180lb)
Nissan X-Trail ST-L	537kg (1182lb)
Mercedes G-Wagen V6	588kg (1296lb)
Toyota Land Cruiser GXL	610kg 91345lb)
Land Cruiser Amazon	620kg (1367lb)
Land Cruiser 200 V8 diesel	650kg (1433lb)
Land Rover Discovery Td5	655kg (1444lb)
Land Rover Discovery 4	675kg (14884lb)
Toyota Prado 2.8D	750kg (1653lb)
Toyota Tundra 5.7 V8	943kg (2080lb)
Land Rover 110 Defender	1009kg (2224lb)
Ford F150 2.7 Eco Boost	1020kg (2250lb)
Mitsubishi L200 2.4D	1050kg (2315lb)
Ford Ranger	1190kg (2300lb)
LR 130 chassis cab	1200kg (2645lb)
Land Cruiser HZJ79	1410kg (3108lb)

... always aspire to stay well below maximum GVW values – 70% is a good figure to aim for ...

Before you rush out and buy an HZJ79 Land Cruiser from a Somali warlord, remember that not all vehicles are created equal. An excess load that will break a Toyota Hilux in half will be shrugged off by a similarly overloaded HZJ79. My old Mazda pickup had a claimed maximum payload of just over 1170kg (2560lb). I've loaded it to maybe 70% of that capacity while towing another 500kg, at which point the standard suspension would have been on its knees. But even with uprated suspension, running it for long at the claimed 1170kg limit would be hard on the tyres and the transmission, as well as the brakes on long downhills. Driven off-road in this state I'd fully expect something to break pretty soon. All the more reason then to treat the claimed payloads with a pinch of salt and **adopt broad safety margins**. If you expect to have a big payload, get a big vehicle.

ECUS AND CAN BUS TECHNOLOGY

But if I were in the middle of the Kalahari, I'd rather have two chunks of pig iron than some silicon chips that were designed and developed by four blokes in Banbury.*

Jeremy Clarkson

In all the time I drove my G-Wagen, the biggest problem I had was when the drive-by-wire throttle light came on. The vehicle went into limp-home mode. Driving it home from [southern Algeria] to Munich, Germany, in that mode was not fun. Three months of discussions pinned it on a random internal harness short. Sad to say, the ECU interprets a blown fuse as a global systems failure.

Tom Sheppard, writing on 💻 trucktrend.com

These days all new cars, petrol or diesel, are managed by **ECUs** or **electronic control units**. It's a system sometimes called '**drive by wire'**, only we're not talking the sort of push-and-pull wires that change the gears on your mountain bike. Electrical sensors report to a computer that calculates countless parameters several times a second in order to (among other things) optimise the efficiency, emissions or traction of your vehicle.

Having spent the best part of a century getting to understand the mechanics of engines, this complex digital technology featured on all common rail diesel engines can put some overlanders back in the Stone Age when it comes to self-diagnosis or repairs.

An OBD II reader

It's true that for decades we drove petrol-engined vehicles with capacitor discharge or electronic ignition, and electronic fuel injection (EFI) on diesels has been around for at least as long. The problem is that these days the main unit is connected on a network or 'bus' to many secondary ECUs – all part of a controller area network, or **CAN** – which monitor and react to everything. Although it's getting better, especially in a new model's early years, bugs in the programming, or just badly made connections, could immobilise a vehicle. Lately there's been a trend to make the critical power system a separate network from the less crucial body-control modules so if your electric window control fails your car will still run.

A typical overland journey will expose your vehicle to extreme levels of **dust, humidity, vibration and temperature**, all of which put these units and the sensors, let alone the mass of wires between them, under uncommon strain. Meanwhile the driver will be beyond the range of domestic roadside recovery services, and when faced with a malfunction indicator lamp (MIL) will quite possibly be unable to diagnose what's wrong or do anything about it. ECUs rarely have a 'reset to factory settings' feature and even if there's some sort of reset function – often something like turning the key on and off three times – it's not something you'll ever see in the handbook, but may unearth on vehicle owners' forums.

On-board diagnostics (OBD)

Since about 1996 most cars running ECUs have had to incorporate an **on-board diagnostics (OBD)** system that specifies what's malfunctioning in the vehicle. When the ECU registers something it's programmed not to like – such as poor fuel or the low oxygen levels found at high altitude, to give just two possible overlanding scenarios – the

*A small town in central England known for automotive research and development.

malfunction indicator lamp (MIL) lights up and one of 10,000 **diagnostic trouble codes** (**DTC**) may be displayed somewhere near the ECU or on the dash. Thankfully DTCs are largely analogous among all manufacturers; generally they're classified with prefixes relating to 'P' (powertrain), 'B' (body), 'C' (chassis) and 'U' (network).

If your vehicle doesn't identify DTCs visually (few do), buy an **OBD reader** from £20; these readers plug into the car's vehicle communications interface (VCI) via a 16-pin data-link connector (DLC) cable, enabling you to read off any DTCs (we're approaching an OLH acronyms-per-sentence record!). All 'OBD II'-compliant vehicles now have a VCI. (Modern Land Rovers are one notable exception, requiring their far more expensive TestBook system, but you can get round this with something like a iCarsoft TF930 for around £120).

Your enigmatic DTC must then be cross-referenced to a long list (available in your manual, on CDs or on websites like 💻 obd-codes.com and 💻 bba-reman.com, among others) to tell you where the problem is; or more accurately what the ECU thinks the problem is. Many of us won't remember exactly where we were when in May 2005 Toyota issued a service bulletin for the D-4D engine: 'If MIL warning light remains on and Fault Codes PO420 or P0430 can be read off ECU via OBD-II port then car needs an ECU software upgrade and a new catalytic converter with a modified cat matrix coating.' In other words, this wasn't an urgent fault and Toyota merely wanted to upgrade your ECU and change your exhaust pipe. Being able to *read and translate* the relevant DTC in the first place sure helps stave off panic.

A fault like the one described above won't stop your vehicle, it'll just make it **emit less cleanly**, something that you may not have even been aware of before the advent of ECU DTCs. After all, Mitsubishi Fuso dashboards are known to light up at an altitude of only 3800m (12,500ft), warning of insufficient oxygen (although oxygen masks won't drop from the cab roof). Again, all that will be happening is the vehicle has reached the limits of what it thinks is normal and will run rich. More serious diagnoses may put your vehicle in limp-home/limited operation strategy (LOS), as Tom Sheppard describes. No doubt you'll have heard similar stories like a BMW that stopped after convincing itself one of the tyres was punctured when clearly all were fine. This is the downside of ECU technology; even if the 'black box' itself is well sealed and reliable (and not all are; look up the saga of 1998–2002 Td5 Land Rovers on the web), tracking down loose, worn, dirty or wet connections or sensors adds a new range of complications to conventional diagnosis and roadside repair.

Get used to it: it's here to stay

It may well be that in a few generations we won't bat an eyelid about setting off for the Cordillera Blanca in a hovercraft propelled by a telepathic plasma drive, but right now CAN bus technology can be a worry for most overlanding mortals, while finding pre-ECU vehicles in good shape is getting ever harder as governments encourage the scrapping of older vehicles.

At the very least, **track down the location of your vehicle's main ECU** and its VCI *before* you need to know where they are and what they look like (on some 4x4s they're positioned well below a vehicle's maximum wading depth…). At the very least get an **OBD reader** or a Multi-System Diagnostic Tool, and print out or download a list of DTCs for your vehicle. Then you'll be able to identify and either ignore a petty fault, or be a step closer to knowing which system or component may be causing a problem. Note that carrying a **spare ECU** (from around £250 for a Tdi Land Rover, for example) is not so simple, especially on newer vehicles where it has to be programmed to match your vehicle's security codes at the very least.

If you take this path, get your spare ECU matched to your vehicle and establish that such a swap can be done in the field (in some cases careful attention must be made to the earthing of the unit). Or just give up and put up with an HJ60 or a Peugeot 504.

Choosing a car

A **large estate** or station wagon with the rear seats removed gives two people the chance to sleep in the back should the weather or climate demand it. The benefits of an old, non-electronically managed engine and manual transmission have already been discussed, and coil suspension is much easier to modify reliably than torsion bars (see p143). All over the world, old diesel estates of two litres or more weren't around for too long before they evolved into smaller, more efficient units, but big old **petrol** engines (although often mated to an auto box) are still around and inexpensive.

Another old Merc going where it shouldn't. © Jurgen Stroo.

Front- or rear-wheel drive?

Off the tarmac the jury is still out on which is better, but larger cars are usually rear-wheel drive (RWD) and tend to get stuck less. This could be a false impression as larger cars have bigger engines as well as more momentum, all of which helps off road. Certainly it contradicts the assumption that a front-wheel drive's (FWD) engine weight over the driven wheels is desirable for good traction.

All this only gets critical when the going gets rough and steep, but having one set of wheels steering while the others drive may have something to do with better performance off road. The complexities of driving and steering the same 'axle' can stress the **CV joints** of FWDs. Furthermore, on a steep, loose slope there's little weight over those front wheels to provide traction (only pertinent to a big, long van or motor home). If you take this route, get reconditioned CVs or a spare set, although don't expect DIY replacement to be as easy as changing a tyre.

If nothing else the traditional engine layout of a RWD car is easier to comprehend and work on as the engine and transmission are in line with the car. On a conventional FWD it's all packed in across the frame, and unless you know the vehicle well it can be hard to tell what's what, let alone get to it.

VANS AND PEOPLE CARRIERS (MPVs)

Any form of **light commercial load carrier**, be it for products or passengers, is far more suited to life on the road than a regular car, whose only real advantage is it's cheap and nippy. A van is built to carry loads so may cope better with what lies ahead, especially if you stay well below its GVW. A 3.5-tonne GVW is pretty small so a lightly built van won't be as tough as a 4x4, but it will cost less to run than bigger trucks and can be driven on a regular licence.

Unlike some unconverted 4x4s, you can easily **live and sleep** prone in a van, not be forced to live beside it most of the time. In the cold or wet, or when waiting for something like a border post to open or a ferry to arrive, this is something you'll appreciate. Vans and buses also have **tougher transmission** as well as **larger wheels** and firmer **suspension**; this is for carrying the load but also happens to achieve good ground clearance. What they won't offer, especially in older examples, is comfort and efficiency.

Which van?

In Europe at least the pick of the crop comes from Germany, such as Mercedes and VW, or from Japan, e.g. Mazdas, Mitsubishi L300s, Nissan Urvans, and various Toyotas; there's also Ford, Iveco and the French brands Peugeot and Renault. As with regular cars, rear-wheel drive is better, but less common in vans these days, as it enables a low and flat load bed. In the back, space and standing height, whether it's permanent, or temporary with a raising roof, are what you're after if planning on living in it for weeks or months.

Be warned that if you're planning to get your van professionally **converted into a campervan**, it's going to be expensive. A quality compact campervan conversion (especially on a VW) that won't fall apart after a few hundred miles of corrugations will easily double the cost of a plain van or add up to the price of a good 4x4. Full conversions with a sink, cooker and toilet start at around £4000 in the UK. Outlaying this amount on an old van is one reason why many overlanders try to do the job themselves or settle on a 4x4 instead, fitting a roof tent and adapting the interior to get a tough, go-anywhere machine that's not much more cramped than a kombi – or so it seems at the time. The other option is to buy an off-the-peg campervan: see p64.

RUNNING AN OLD VAN IN SOUTH AMERICA

For those reluctant to invest in a slick four-wheeler, buying a vehicle well past its scrap-by date may be just the solution.

Still, I was a little leery handing over $750 for an '82 Chevy 350 van. The number-one fear people have about travelling to distant lands is breaking down in the middle of nowhere. Stripped from your usual support networks, the thought of being stranded in an immobile hunk of metal can be daunting.

Breakdowns and repairs

One thing you'll find as a gringo/muzungu on the road is in the poorer, non-Anglo world people are less suspicious or indifferent to others in need. One time in Guatemala I hit a hole in the road and damaged the front end. The truck I'd passed speeding down the hill pulled over to help, even before he could see there was a woman driving. The man drove to town and returned with a friend who made a roadside repair. Three hours and $45 later I was on my way.

'South of the border' in the wider, global, sense, labour is cheap enough to invest in time-consuming repairs on an old crate like mine. Indeed the majority of drivers in the developing world will be running such a vehicle. Used parts and indeed vehicles are valued highly in poorer countries as the labour to keep them running is cheap. Part of the reason for cheaper labour is mechanical jobs aren't charged on an extortionate hourly basis but by the job, an advantage with an older vehicle with rusted components that haven't been touched in years. And though an older vehicle might be an eyesore back home, or worse still stigmatise you as a poor or unstylish individual, in the overland zone you'll just blend in better and be less of a target for robbery.

Which old banger?

Try and match your marque with the destination. Chevrolets are common in Latin America, as are some other American brands. Francophone Africa will have plenty of aged French or German marques while Toyotas and lesser Japanese brands are built and found all over.

Buy from someone you trust or have it checked by a mechanic before buying. Sure, things went wrong but I could afford regular maintenance and things breaking occasionally. And I have to admit I'm a bit smug. At the bottom of South America, owners of flashier vehicles reeled at the cost of shipping a road-weary vehicle back home (let alone the risks involved in doing so). After thousands of miles of driving, I have the option of either ditching it or recouping my costs by selling it for parts – and maybe even coming out ahead.

LORRAINE CHITTOCK

Mercedes vans

The choice of travellers for decades, **Mercedes'** rear-wheel-drive **T1 series** (the 308/310 was built from 1989) followed the similar, widely used **TNs** dating from 1977, whose snub-nosed profile survives today as the Vario. Just about all TNs sold in Europe featured a diesel engine; earlier 2-litre versions were not surprisingly underpowered, but all easily outlived the body (as did many engines from that era).

The longer 407, 409 and 508s with the legendary five-cylinder, 3-litre **OM617 diesel engine** up to 1986 are a safe bet and a version of that engine is still made in India. From 1989 the TN became a T1. In a long-wheelbase (LWB) 406D, 408D or 508D high-roof version, the basic four-cylinder 4-litre engine will never be too stressed and with payload to spare these make a great mobile home, although the higher GVW models have dual rear tyres and therefore certain limitations off road (see box p61).

From top. 1: Mercedes 508D resting in the shady overlanders' campsite in Islamabad. **2**: Spacious 406D; pretty good frontal angles too. **3**: Sprinter motorhome windjammer exploring the Middle East.

Most run 16' wheels and old camper versions can be found in the UK from under £2000. It's worth knowing that today Force Motors in India still make a van based on, although not a facsimile of the T1, so spares are available for everything except the locally modified engines.

These days it's the **Sprinter** that still leads Mercedes' van range. Common rail diesel 2.7- or even 3-litre engines are the norm, even in the US, with wheelbases up to 4.3m (170") and payloads of a tonne or more. A factory four-wheel-drive version is even available bringing some extra clearance with it, and Sprinters are commonly used as the basis for smaller motorhomes (see opposite).

Just remember, **rust** will be a problem with anything from pre-2000s and any van with **twin rear doors**, particularly long-bodied versions, will flex enough and suck in **dust** past the seals on dry tracks. Even 4x4 wagons with stronger bodies that are rubber mounted on a stiff chassis are prone to dust suction like this and it's one reason why most larger campers have side doors.

LAND ROVER CARAWAGON – STANDING ROOM ONLY

Picture the scene. Your convoy, Cairo-bound in the depths of winter, has been on the road all day. It's been dark for hours, the rain's lashing down and it's blowing a hoolie. Knackered, you pull into a campsite, deserted of course, and prepare for the night. Your mate has to climb onto the roof of his 4x4, undo the stiff and cold cover off his roof tent, his fingers already numb and wet. Once erected it should, at least, be dry if cold, inside and the bed will probably be made up.

I have witnessed these pitiful scenes a few times through the windscreen of my 1970 Carawagon 110 hybrid, while the heater emits its welcome breath of warm air. If I can be bothered, I'll get out and pop the top, (eight over-centre clips and a bit of heave ho inside). If not, I can just slip into the back, probably banging my head on something, pull my warm sleeping bag out and fall asleep, stretched out on a very comfortable three quarter-width bed with room for two if you're close.

Cozy Carawagon interior, everything in arm's reach, even the steering wheel.

The one downside with a bed in the back that all camper vanners know too well is that it shares the precious space with the clobber. There are two options to consider. Take much less – which is best – or put up with having to remove stuff from the boudoir before settling down for the night. On a big desert run I usually have ten jerricans lashed down to the floor in the back. Hell to unload for the first few nights, but getting progressively lighter as the miles roll by, at which point they can be stashed empty on the cab's roof rack. This chore complete, I have a proper living space with cupboards full of crisp white linen, a fridge and cooker, all ergonomically placed to enable easy cooking either inside, or outside, the gas cooker being mounted inside the rear door. I can stand up too, a bonus when dressing for dinner. I can deal with any correspondence at a desk, or invite soggy, roof-tent refugees round for cocktails, all within the confines of the back of a Land Rover.

Party over, within ten minutes, it can be a regular 4x4 again with no extra weight, no extra wind resistance and therefore no adverse effect on fuel consumption.

In 13 years of ownership I have, like most overlanders, tailored the Carawagon to my own requirements. Along with all the usual off-road stuff, I have introduced a few luxuries to make life on the road more comfortable. I cannot bear to be cold, so have fitted 'oil-fired' central heating. Three rather nifty and compact radiators were liberated from an Arctic spec. military Land Rover, along with the Webasto water heater. The Webasto sits under the driver's seat and is plumbed into the engine water system, so pre-heating the engine as a bonus. This hot water is then pumped round the radiators in the back, just like in a house. Drain on the auxiliary battery is pretty alarming when the engine's off, but a half hour burst gives an all-enveloping warmth hard to replicate with other forms of heating. That and a small propane gas fire ensure it gets pretty toasty in the back, despite the aircraft hanger insulation properties of the Carawagon roof.

The bed doesn't have to be an off-the-shelf item either. If you're a dab hand at the old D.I.Y., it should be possible to rustle something up with a few bits of plywood and your granddad's old penknife. Any long-wheel base 4x4 would be a suitable starting point. Old caravan bits and bobs are plentiful on eBay, gas cookers are cheap, but as we know, a good fridge can empty the budget wallet. Standing room is a luxury, but various varieties of pop-top have been around for years. Some are even water tight!

Ambulance-bodied 4x4s are usually a good starting point as the rear body tends to be well insulated and the layout is conducive to lying flat, even if you don't need a drip. Headroom is better too, although few offer true standing room like my old Carawagon.

TOBY SAVAGE

4x4s

3

Time to stop beating around the bush and pretending that there's anything other on your mind than a chunky fourbie. Sure, it's a lifestyle phenomenon with an image of aspiring adventurousness and the desire to (literally) stand above the crowd, but you're not aspiring, you're actually taking your four-wheeler right to the places that feature so commonly in the ads.

Or so you think. Once on the move most overlanders find the thrill of a road-bound journey can be satisfying enough. Fun though it is to explore the limits of your vehicle you've read so much about, the sort of off roading where you really need 4WD is actually quite slow, noisy and tiring. You may have yearned to park up in the absolute remotest corner of the Sahara but you'll soon find just round the back of that dune will do.

It's your adventure and you'll probably only do it once

It's easy to assume adventure = really hard off-roading but once out in the world, simply getting to Bolivia, Botswana or on the Baralacha Pass is an adventure. You'll spend more time drooling over gnarly tyres, raised air-intakes and radical clearance than you will actually using them. When you get back you may concede you might've managed in a Peugeot station wagon, but it's your adventure and you'll probably only do it once. If this is the one big trip you're planning before settling down, the vehicle is a big part of it.

Surely somebody's idea of a sick joke.

Toyota Land Cruisers

From the world's biggest motor manufacturer comes the world's best-selling 4x4 range. The reason for that popularity with tour operators, militias, outback ranchers, aid agencies, smugglers, mine contractors, the military, jihadis and overlanders is a consistent **build quality** and the reliability that comes with it, which adds up to **dependability**. These are the keys to successful mobility in remote locales or rugged environments far from a Toyota dealer.

You'll notice that list is composed of professionals and individuals who depend on their vehicles to do what they do, and less to express a kinship with a potentially adventurous lifestyle. Impressive performance figures and plush, gadget-laden interiors – which might be categorised as the 'urban' priorities of private owners – don't really come into it with Land Cruisers; they've never been fashionable in that way. If it's attention and admiration you're after, there are many flashier 4x4s to choose from.

Over the last forty years Toyota Land Cruisers have set the standards by which all other big working 4x4s are compared. As with Land Rover, the iconic and highly marketable name is now used to identify a range of models that differ greatly from market to market. Spartan load carriers, family SUVs and something the head of a UN delegation would expect to see waiting for them on a dusty African air strip – all now carry the Land Cruiser label.

WHICH LAND CRUISER?

It can all get very confusing, but you can start by dividing Land Cruisers into commercial workhorses with functional interiors – the 'J7' or 70 series – and station wagons: 60-, 80-, 100-, and now 200 series. The former mid-sized Prado (90-, 120- and now 150) adopted the Land Cruiser epithet, but its smaller four-cylinder engine separated it from the real thing's four-litre-plus sixes. A GX is a basic-spec vehicle; GXL is better and a VX is usually a top-spec auto.

What you settle on will depend on what's available in your market – there'll always be some sort of Toyota Land Cruiser – or how keen you are to go through the expense and hassle of importing your dream Cruiser.

Model history

40-series on ferry duty.

Like Rover in the late 1940s, Toyota copied and improved on the wartime design of the Willys Jeep, but it took the success of the **40-series FJs** before Land Cruisers began to register on our radars. By the 1970s, when Land Rover's Series III was stretching its 20-year-old technology to breaking point, the FJ became established in many of Land Rover's former markets as well as the US. In recognition of the plucky FJ40, from 2006 the funky **FJ Cruiser** sold in North America and Australia for a few years, a flawed SUV responding to the retro/homage craze.

Asia, South America and Africa took to the 40s, but Britain and much of Europe saw little of that series (Ireland and Germany were exceptions). The first Land Cruisers to appear here were the boxy **60-series** six-cylinder station wagons of the early 1980s which, in the UK at least, lagged far behind the Range Rover of the time in terms of comfort and style, if not long-term durability. Around the same time the utilitarian 40 series was replaced by the unstoppable **70 series** which survives today. The early 1990s saw the **80-series** bring Land Cruiser station wagons into the modern era with ABS, air bags and coil suspension, plus full-time 4WD on the VX models. The 80 became the even bigger 100-series in the late 90s, and since 2008 the broadly similar 200 series. Around this time the famed pre-CRD straight sixes, turbo or petrol, slipped quietly from Toyota's product lists in Europe, Canada and Australia.

Today **South Africa** and **Australia** have among the most complete range of Land Cruisers, while after a few years emissions caused the UK to drop the near-three-tonne 4.5 V8 twin-turbo. Currently only a 2-8-litre '150' Prado sells under the 'Land Cruiser' badge. Like the UK, the **US** never officially got the much-admired 70-series ute and hardtop. Instead, a 5.7-litre V8 petrol is unapologetically priced way above many locally built competitors.

Land Cruisers are a phenomenon, but are conservatively marketed and styled. As all-terrain limos, the high-tech flagships just can't compete with the best from Land Rover and Germany, but they survive on reputation and solid build, not looks or glamour. Apart from Australia, where the 70s are an

Since that reputation was earned Land Rover have diversified with great success and although the image of the classic Defender helped sell the brand, this venerable emblem only ever accounted for a fraction of sales. In part this is due to well-documented vagaries in production quality, but also because much more design and investment was lavished on the thoroughly modern and much better-selling Discoverys (LR4s) and Range Rovers.

The last of the classic hand-built Defenders rolled off the UK production line in January 2016, and at the time of writing there were no plans to move the old production line abroad. The Defender was a dinosaur that in terms of precision automated manufacturing and crash regulations, was an anachronism on a level with the Toyota 70 series. With both vehicles that's part of their appeal when set against the latest Range Rover with its heads-up windscreen displays, on-board cameras and the ability to be driven remotely from a smartphone. But take heart: the name is unlikely to die and some sort of 21st-century 'Defender' will be out shortly if not already, though probably more 'FJ Cruiser' capitalising on the name than farm yard workhorse.

Even with the final 2.2 TD, Defenders were so far behind the times that buyers convinced themselves its pedigree and **rugged simplicity** made it a good overlander. These are good attributes, but cabin noise and discomfort, fluid and rain leaks and a general lack of ergonomics can be traced back directly to the Series IIIs of the 1970s. Premature wear of core components as well as teething problems from new were incredibly frustrating, although this tendency is far from unique to Land Rovers. Complaints are commonly heard, but largely trouble-free ownership doesn't make headlines.

This suggests archaic design and what Overland Expo's co-founder Jonathan Hanson described as 'bipolar' **build quality**. Owning any kind of brand-new Land Rover product is still a lottery, something that even dyed-in-the-wool enthusiasts readily joke about. Once neglected, either by you or previous owners (a practice that the perceived 'toughness' of all 4x4s encourages), it can result in an endless string of minor faults. Used as a weekend runabout this is no drama, but out in the world, far from any recovery service or the huge support network in the UK, it can all get frustrating. Interestingly, it's an opinion shared by some US 4x4 fans about their no less iconic, Jeep.

This may all sound like a damning indictment, but the same criticisms can easily be levelled at any number of European, American and Asian marques. It's just that no one really cares if a Kia Cornetto or a Chevy Magnum Classic are crap cars. And anyway, even the worst automobiles these days are still 90% reliable.

The key is to approach **the Land Rover experience** with eyes wide open. Expecting the 'best 4x4xFar' (an advertising tag line from the 1980s) requires a positive attitude. As mentioned elsewhere, if you just want to get in, turn the key and drive off, get something else unless you know – or are prepared to get to know – your Defender well.

Many owners have come to do just that and even enjoy the challenge because, behind all the issues as illustrated with Jan Rudder's Puma on p104, there's no doubt that the Defender adds an expeditionary esprit to your overland adventure that no other vehicle can touch, and so it remains as popular as ever for overlanding.

BODY STYLES

The main market for Defenders is in the UK and Europe. One of the big advantages in the UK is that after-market accessories, parts, know-how and servicing are widely available and inexpensive, although for what it is, a Defender itself is comparatively expensive in the UK. It's hard to think why when an old Discovery (see p109) with near-identical technology and in a similar state can often be bought for half the price.

Defender 110s come in three body styles: pickups, including the high-capacity 'HiCap' version; three-door van bodies or 'hardtops'; and station wagons. The first two are regarded as the commercial models and so are basically equipped, but the five-door station wagons try to snare domestic SUVers so are better equipped and also have the largest interior volume once the back seats are ditched. Double-cab pickups and extra-long-wheelbase 130s are also available. With a great payload rating, the latter make more spacious platforms for campervan conversions.

With Defenders more than other vehicles, **age** isn't necessarily an indication of the condition. A renovated 20-year-old 110 on a new galvanised chassis may be in better shape than a rusty 300Tdi that was first registered a decade later. It's common, educational and fun to rebuild a Defender from the ground up if you have the means, and engine swaps are also common, but for overlanding you're much better off using an accessorised near-standard vehicle with few previous owners, ideally all of whom lavished lots of the right kind of attention on their Landie.

Finally, if you're concerned about Euro NCAP (New Car Assessment Programme) **accident safety ratings**, the antediluvian construction of a classic Defender makes it one of the worst cars to crash in or run someone over with. Other modern Land Rovers get near-perfect NCAP scores.

LIVING WITH A LANDIE

The Defender's cramped driving position jammed against the door has been a source of complaint since the second Ice Age and couldn't be fixed. But when it comes to **outfitting the vehicle**, the rectilinear interior is a definite plus, even if the wheel boxes on the hardtops waste a lot of space inside (you get

HEATERS AND DRAUGHTS ON A Td5

Earlier models up to and including the Td5 had the older-style dashboard and owners of 90s and truck cabs find heating more effective than 110 owners as the former have a smaller internal volume. The general feeling is the older-style heater is fine but that many vehicles suffer from the following issues:

• Ducting hoses behind the dash separate from the windscreen vents resulting in a limited or no effect. Easily remedied by resecuring them.

• Poorly adjusted control cables running back to the airflow flaps on the ducting and heater matrix. Again, easily remedied by following instructions on many LR forums. If replacing control cables ensure the routing is correct. Internally lubricated ones have a smoother action.

• Water from rain or wading gets in and blocks the wing air-intake leading to the heater matrix. This is thought to be the cause behind the windows misting up when turning on the heater. Check the drain hole on the wing air-intake isn't blocked with mud and dead frogs.

• Long-term water build-up rusts the exterior of the heater matrix, resulting in limited or no heating. Replace the matrix with a standard or upgraded part. Most think the upgrade isn't necessary unless you're heading to very cold places, in which case an additional and more powerful heater and pre-heater may be worthwhile (see p78).

• Defender diesel engines run fairly cool unless there's a problem somewhere and so take a long time to warm up, which gives the impression the heater isn't much good. In winter some people use a radiator muff or cardboard to hasten the warm-up.

• The viscous cooling fan also delays warm-up; some replace it with an electric fan like a Kenlowe or Pacet. Both claim improved power and fuel consumption but not everyone is convinced. Overlanders seem to prefer the standard viscous fan, although I upgraded my radiator to improve cooling as my 130" camper (pictured) is heavy.

Draughts

You only start to notice draughts in Defenders when it's very cold or on those magical days when you're travelling at high speed. The main sources are:

• The bulkhead vents, where the foam seal is either failing or has fallen off. It's simply and cheaply remedied by replacing the foam seal.

• Many Defender doors are poorly adjusted making rubber seals ineffective. Adjust the slam latch so the door closes 'fully in'; that's to say far enough into the door frame to fully compress the rubber seal and so eliminate draughts.

• Missing or damaged rubber seals at the bottom of doors are often overlooked. A simple and cheap replacement is the solution.

JAMES STEPHENSON

down). My own experience with an early Td5 Discovery on the fringes of Australia's Simpson Desert proved that, in the end, short of momentum there's no substitute for airing down, though the ETC did help pull the car through a few marginal situations.

Electronic Traction Control technology evolves and when, a few years later, I tested a Td5 Defender 110 on an off-road training course, I was struck by how easily the Land Rover crawled up very steep, wet, chalky slopes (and down again with the help of ABS), far exceeding what you'd ever expect to drive over while overlanding. A pair of axle diff locks and reduced tyres pressures may have been as effective in skilled hands, but on any 4x4 the magic of ETC turns you into an all-terrain pro.

From top. 1: This well-converted Leyland DAF GS did Africa and back. Full story at 💻 overafrica.org. © Steve Lorimer. **2**: Another Mercedes 1017 with what looks like a LAK body. **3**: Japanese Fuso 10-tonner from the US. **4**: A similarly modern, quiet, comfortable and economical MAN LE 10 220 – but probably twice the price of the Fuso.

the mention of the once-reviled 'L' word you just spotted next to DAF. A DAF YA4440 (4-tonne payload, 7 metres long, 153hp) is a post-British Leyland version and is comparable with a Mercedes 1017.

With German trucks of all brands, the **numerical naming** can be easily decoded as the payload plus horsepower, so a '1017' Mercedes is a 10-tonner (GVW is actually 12 tonnes) with 170hp, an Iveco 110-17 is about the same, and so on. These sort of horsepower figures would be a minimum at that size of machine; the 7-litre MAN 10.220 with an Allison auto box has been a popular choice for conversion to an expedition camper.

One thing to look out for is the presence of some sort of a **torsion-free subframe**. Being more or less in one plane, a 10-tonne flat-bed troop carrier like a DAF with a canvas cover can twist on the chassis relatively harmlessly off road; rubber mounts permit a little movement. A custom-made 'three dimensional' box won't survive that distortion unless it's as heavy as the truck. There's much more on the whole business below and on p218.

For an overland vehicle it's hard to see a need for more than **two axles** – i.e. a 4x4 – as the resultant payload of 3–5 tonnes is surely plenty. Fuel consumption on anything with three or more axles goes through the floor, plus manoeuvrability is compromised and there's premature tyre wear on the back tyres due to cornering scrub.

These NATO trucks will all be 24 volt with straight-six, aspirated or turbo **engines** of 6–8 litres making from 130–200 horsepower or more; all good numbers for overlanding as long as you're not expecting to lap the globe in eighty days. All follow the Western-European style of being '**forward control**' ('FC'; 'cab-over' or

'CoE' are terms used in North America, where this configuration is rare on articulated trucks). For overlanding purposes an FC means that none of the truck's length or wheelbase are wasted on a bonnet, and being perched high and forward gives you the best possible visibility, including easy front-wheel positioning which can be reassuring on the precipitous track to Skardu. You sit right over the front axle which in my experience can add up to uncomfortable bouncing when driving off tracks as you're launched constantly off the rebounding tyres. It's made worse with a suspension driver's seat where the seat belt is attached to the cab or floor; as you pogo up and down the belt binds up on you and becomes unusable, but we're talking off-piste here. If you've driving like this in mind, make sure the belt is attached to a suspension seat, not the floor.

Although a top-of-the-range stereo will be wasted once on the move, as long as you stick with the smaller, water-cooled units, **noise** needn't be too bad, with the engine below and behind you. The huge air-cooled V8s or bigger from Magirus or Tatra are another matter. Even if you find a handy 4x4 air-cooler (most of these are multi-axle), it wants to be a real bargain to outdo the water-cooled trucks listed here.

On a forward control there may be flaps on the front grill to access oil and coolant levels, but the engine is usually accessed by a **tilting cab**. With this set-up, if you're on the inner side of the wheel you can stand right by the engine and play it like a piano; all you need is a good tune. A tilting cab complicates 'crawl-through' access to a back cabin (see p223), but many such trucks often have a **spare tyre** mounted here on a winch.

From top. 1: Swiss Bucher Duro with a 4-tonne payload and a six-litre, 250-hp Cummins. **2**: From Italy, an older Bremach Xtreme with an Iveco engine. **3**: Their newer T-Tex model running various 3-litre CRD Fiat engines. **4**: An old 6WD Pinzgauer, probably with a 2.4 VW engine. All a bit narrow inside but this Pinz has an elevating roof.

Torsion bars

A **torsion bar** is a long bar with splined ends, often a component of IFS, or even used in all four corners of a car. One end of the bar is solidly clamped to a chassis cross member, the other attaches to a lever by the wheel. As the wheel gets lifted up and down the bar effectively twists and returns along its length.

It may not seem a very sophisticated system, but it works surprisingly well. Over a typical metre-long length, the bar needs to twist only a few degrees to translate to useful suspension movement at the wheel, though it will never articulate like a coil. Torsion bars are often adjustable at the fixed end, or you can try and remove the bar and replace it on the next spline to effectively raise the chassis, though chances are this will be too much. Heavy duty bars may be available and spares are easy to carry and fit.

Dampers and bushes

What most call a shock absorber is more correctly described as a **damper**, in that it subdues a spring's tendency to react to compression by bouncing, like a dropped tennis ball. The spring is actually the shock absorber but without dampers a car would pogo around uncontrollably.

Dampers play a vital role in controlling your vehicle's ride. They do so by pushing oil through valves in the body as they telescope in and out with each bounce of the spring. This action also creates heat which reduces the damper's effectiveness, so gas or external oil reservoirs are used to try and cool things. **Gas-pressurised dampers** still use some kind of fluid, but they run cooler and so last longer than old-style oil dampers.

Eventually a damper will wear out and before that happens it might leak, seize, burst, get crushed or break off at the fitting points. Such failures commonly occur when driving too fast on rough tracks or bad roads. You can still drive without dampers but the ride will be bouncy to the point where it'll limit your speed.

When it comes to uprating dampers owners are commonly torn between quality and price. What you're looking for is the middle ground from a reputable brand like OME, Koni or Bilstein. Dampers are a consumable item that can get damaged and will wear out sooner than you think in hot, overloaded, off-road conditions, so consider **spares**; they take up little space lashed out of the way on a chassis rail. Some off-roaders fit **twin dampers**, but this is usually a rally-racing modification and shouldn't be needed on an overlander.

When solid axles articulate over extreme terrain, one damper is compressed and the other can get fully extended, but dampers aren't designed for such loads; that's what the **rubber bump stops** and **axle straps** are for. The former cushions upward movement of the axle before the damper reaches full compression; the latter, not always needed on some suspension systems, limits the downward arc of the axle before the damper gets pulled apart. Too stiff bushings (see below) can also damage a damper. Unfortunately it's not uncommon for garages to make these mistakes and is one good reason to stick with standard, or tried-and-tested set-ups.

The worst terrain dampers have to endure is a washboard or corrugated track, when they're being pumped up and down several times a second. This creates very high temperatures that can lead to premature wear and seizure.

Bushes

Rubber and plastic bushes. There's a difference.

If you're upgrading your suspension on a solid-axle 4x4, take the opportunity to fit new **bushes**. Worn rubber bushes give vague steering and clunky suspension and transmission, especially on the radius arms that hold coil-sprung axles in place. Hard plastic **polybushes** take longer to wear out and come in a variety of densities, but aren't necessarily better than rubber. Because they're firmer, they lack the flexibility of rubber and can transmit rather than absorb stresses to metallic components like bolts and mounts. I once travelled with an early model Discovery that snapped a rear radius arm using red polybushes. To be fair we'd just come down a pass in the Hoggar Mountains that broke something on all our cars, but our feeling was that the rigid polybush exacerbated the Discovery's failure.

There's nothing wrong with **rubber bushes** other than that they need to be replaced more often and they don't come in a sexy range of colours; factors which make them unsuited to most consumers. While they last, they actually work better and a new set is typically half the price of plastic polybushes.

Tyres and wheels

In a typical overlanding scenario your tyres are required to support a heavy payload while coping with migraine-inducing Indian highways, Andean hairpins, sidewall-shredding detours into the Atlas mountains, speeding along intercity motorways to catch an embassy before it shuts for Lent, and pummelling over Namibian washboard. All this while possibly suffering neglect and enduring monsoons, heatwaves, unseasonal blizzards and dirt-road diversions for months on end until your budget, your vehicle or the tyre is well and truly finished. You wouldn't want to be a tyre.

For overlanding, tyre priorities centre around **strength, reliability and longevity**. A sports car tyre will grip brilliantly but wear quickly because, driving styles notwithstanding, softer rubber compounds are used to provide better grip at the cost of longevity. At the other extreme, an all-out mud tyre with an aggressive tread pattern is great in its element, but hopeless or even dangerous on the highway, where the chunky blocks can fling off at speed. As always, it's a compromise.

For the sake of the transmission's longevity, keep tyre sizes near standard, while recognising that, for example, on a 4x4 changing from 19-inch rims to far more **internationally common 16-inch rims** will make finding replacements out in the world much easier.

CONVERTING A VEHICLE

5

Converting a vehicle, be it car or truck, is about making the relatively small space into a comfortable and efficient place to use or spend time: a **home**. This may require no conversion at all: just sling your gear in the back, turn the key and hit the road. Or it can involve adapting the rear of a van or 4x4 right through to fabricating a motorhome-like cabin on the back of a flatbed truck and equipping it with running water, heating, auxiliary power, a permanent kitchen, shower and toilet, and a bed. Cabin fabrication is covered in the next section, which starts on p218; this bit focuses on less radical modifications that'll enhance your travel experience, specifically: how to increase your fuel and water storage capacity, designing a place to sleep, packing efficiently and facilitating easy cooking while on the road.

It might seem excessive to spend so much time and effort on making your vehicle more comfortable, but you'll soon change your mind after a long trip in a basically equipped vehicle where merely lying down for a rest or making a quick brew requires moving things around or getting them out. Sure, it all adds up to only a few minutes of effort, but as far as possible you want to imitate the convenience of home living.

Autohome Columbus.

Hardshell roof tents

Hardshell roof tents have a full-length base attached to roof bars or a rack, and either a lid that lifts vertically with hand cranks or is assisted by gas-struts, or a taller, hinged wedge that springs up on gas struts, such as on Autohome's Columbus, Autocamp's Freelife and Hannibal's Impi.

The single-skin sides are made with inexpensive canvas or lighter synthetics like Dralon that claim to be waterproof and breathable. They're comparatively poor insulators in cold weather and, as with all tents, you'll want a secondary layer of **mosquito netting** over any doors and windows.

As crucial is the **insulation** in the plastic shell's two halves. During the night our bodies release water vapour as sweat and exhaled breath which can recondense as water droplets on cool, smooth surfaces – just as our warm breath condenses inside a car windscreen on a cold morning. The inside of a roof tent's plastic shell is prone to unseen condensation below the mattress and behind the ceiling lining, creating dampness and eventually mildew and musty odours. Ways round this include introducing thick laminates and air cavities into the shells, and raising the mattress off the base's plastic surface with an open-cell mesh or lattice to allow air to flow, rather like a futon-bed pallet (more on p184). Making a GRP moulding with a hinge is easy enough, making a condensation-minimising shell suitable for sleeping in something else and, along with build quality, is what separates near-identical roof tents as well as racking up the cost and weight.

Benefits of a hardshell roof tent add up to:

- The bed, complete with pillows, sheets is always made up.
- There can be some cargo space up there for other light items.
- Opening and closing can all be easily done from ground level.
- The shell creates far less drag and noise than a fold-over.
- In high winds they don't flap like some complex fold-out.

Drawbacks include:

- Hardshells typically take up the full roof length of a 4x4 wagon or van.
- Lack of a canopy over the entrance and windows on some models makes getting in and out during rain tricky.
- Lacks the overhangs of fold-out RTTs, which allow a bit more versatility in design (ground-level vestibules and the like).
- They're up to double the weight and often more than double the price of a fabric fold-out.
- In all three axes, hardshells can still be on the small side. Low-volume examples like a crank-up Maggiolina means a warmer tent, worth considering if you're staying north or going high.

Despite these drawbacks once you've 'gone hard' it's rare to return to the fold-out lifestyle, particularly when you've pinned down a good set-up inside the vehicle and have an awning that can be deployed with as little fuss.

VOLTAGE-SENSITIVE RELAYS

We always use two-way voltage-sensitive relays (VSR), which are a solenoid controlled by a VSR controlled by a Zener diode. A Zener diode senses a given voltage and switches a solenoid or a small relay which in turn switches a bigger solenoid. As soon as it senses an increased voltage from the alternator kicking in at maybe 13.8 volts it'll parallel the batteries and then disconnect them when the engine is off at say 12.5 volts. It's wise to use an 'emergency parallel' switch with the VSR (some VSRs have them built in).

The two-way voltage-sensitive relays we use work in both directions. If your solar panels have charged the house batteries then the overflow tops up the starter batteries, perfect for when the vehicle is sitting around a while. Lately we've started using VSR-controlled motorised battery switches. They're like a normal manual battery switch but can also operate automatically most of the time. Here in Australia some of the most advanced electrical solutions for yachts and off-road vehicles come from a New Zealand company called BEP, or a very good Australian company called Rerdarc.

JOHN MARANO, All-Terrain Warriors

one while the other runs the engine until it goes flat (or just keep the engine running for as long as it takes). Driving in this manner, the battery will last even longer if you don't use any of the vehicle's electrics – even taking the brake-light bulbs out will help, but it's hard to see a modern ECU-managed engine agreeing to tolerate such treatment.

Mounting solar panels

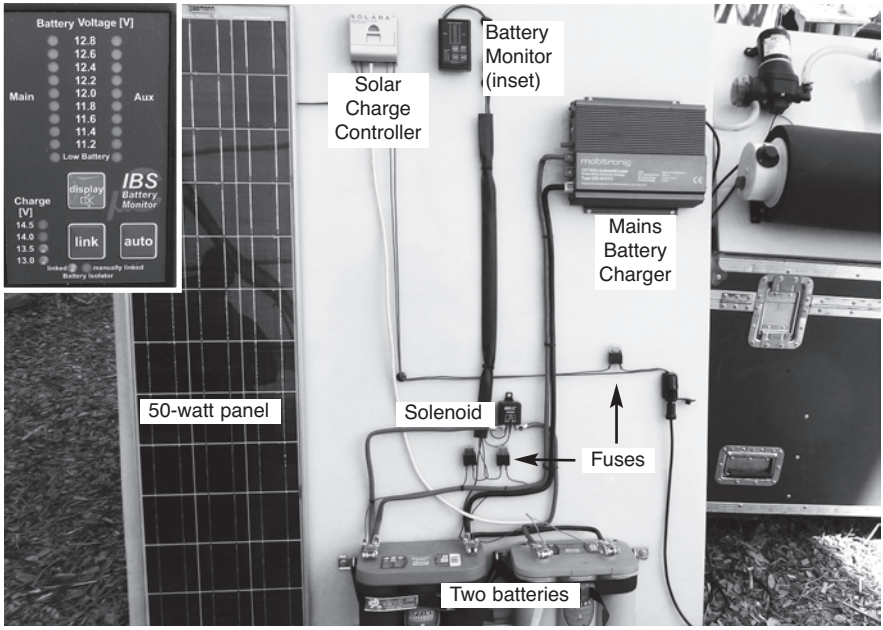
The roof or rack of your vehicle is the obvious place to **mount panels**, but consider making them **removable** or at least possible to lift, turn and tilt in order to adopt the optimal angle when parked up. There'll be times when you may want to park up under a shady baobab tree for a day or two. By removing and positioning the panels out in the sun on an extension cable, the vehicle can stay in the shade while the sun works on your batteries.

Output and panel size

As with batteries, manufacturers' stated outputs can require some decoding. When you want to park up and rely solely on your solar panels to replace the battery power, then for the 80Ah/day example given on p205 you'll still need 100Ah/day because of the batteries' 80% charging ability. A 'day' or 24-hour period in solar-panel terms is divided into **peak sun hours** (PSH) and PSH are the number of hours that a panel will be rated to put out over a day.

An 80-watt panel makes a handy spoiler for a rack of jerries.

For example, even on a near-22-hour day in mid-summer in Fairbanks in Alaska, the PSH is only 5.9, while in winter, with potentially nearly 4 hours of daylight, it's only 2.1. Online PSH charts give you an average yearly PSH at locations based on rainfall, cloud cover and latitude. Divide the power you need to replace by the number of PSH at a given location and it'll give you a solar array size. So 100Ah/day



Main picture: A complete solar/mains charging set up. **Inset**: The battery monitor.

divided by a pretty good 5.5 PSH gives you 18Ah. As panels are usually rated in watts, 18 amps x 12 volts = 216 watt/hours. Therefore a 216-watt solar array might be regarded as necessary to replace the daily load given on p205, but again it's still not that simple. If you need 216 watts of solar you're going to need more than that in panels.

Panel outputs are rated at their optimum **position**, in other words when the panels are pointed directly at the sun. When lying flat on the roof of your truck they're less efficient, so you can derate them by at least 20%, depending on the sun angle and your latitude. It's said for a given latitude north or south of the equator you should angle your panel at the latitude plus 15° in mid-winter and less 15° in mid-summer. So travelling anywhere between northern Mozambique and Eritrea in June, for example, your panels laid out flat on the roof will do OK during the middle of the day.

You also need to derate them for the **temperature** because as a panel gets hotter, as it'll do in East Africa in June, performance drops. Panels vary and the most efficient types in terms of generation are the most affected by heat and sun angle. Cell temperature derating figures should be specified under each panel along with the other specifications. So, if your panels are only going to provide maybe 75% output once you factor in these losses then you're going to need 290 watts of solar panels because 216 watts divided by 0.75 = 290 watts. This is all still rather optimised as apart from the expense and complication you've nothing to lose by having substantially more solar potential. The expense isn't so great these days; the question is have you enough roof space to mount more than 200 watts of panels.

THINK FIRST, SPEND LATER

Long before you set to your vehicle with a chainsaw have a long think. Research thoroughly and try to visualise your living space before you make expensive purchases or irreversible alterations. You want to have a near-crystal-clear plan because, just like your journey, it's unlikely to pan out as expected. There's no optimal design, but there are pitfalls, and chances are you'll return knowing exactly how to do things much better next time.

Trawl the net of course, but if possible also try and actually see a few cabin interiors at motorhome or caravan shows. Even better are **overlanding shows**, pre-eminent being the **German** Abenteuer & Allrad show in Bad Kissingen in June (💻 abenteuer-allrad.de), Overland Expo in **America** in May and October (💻 overlandexpo.com), or something like the Queensland Caravan Camping & Touring Holiday Show in **Brisbane** around mid-June (although every Australian state capital stages an equivalent). Bad Kissingen is the pick of the bunch, focused on overland travel and not 4x4s, and is where you'll see just about every permutation of overland camper and may even find your dream truck for sale.

Brits might be dyed-in-the-wool caravanners and the French keen motorhomers, but these Germans really are the experts in this niche field of building overland campers. The **catalogues** (all in German) from the likes of Woick, Tourfactory, AMR, Reimo (also in English), OutdoorWelt and, not least, Ormocar will give you an idea of the equipment and fittings available, as well as the thought-provoking prices.

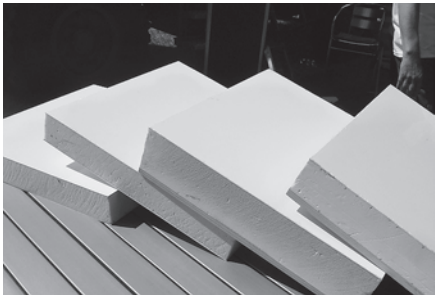
GETTING IT MADE

Alternatively, you could get your custom-made cabin professionally built for you – so-called **'coach building'**. As you can imagine, this isn't something you'll find in the Yellow Pages. In the UK at least campervan conversions specialise in fitting a roof and outfitting the insides for vans only. Instead, you might want to look to builders of **horseboxes**; these truck-based transporters are designed for getting show horses to multi-day events and generally incorporate basic overnight lodgings for the crew. This makes them a little more qualified than regular **commercial van** coach builders, who produce rear bodies for specialised applications only.

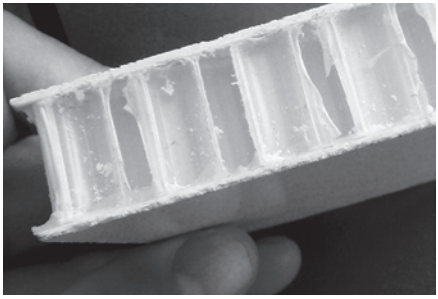
Better at fitting out the interior might be a **boat builder** (not least in the UK). In this application the principles of safety and rust proofing, as well as the quality and ruggedness of fittings in a compact space are well understood. Motorhome and caravan manufacturers you'd imagine have got their schedules full knocking out their own designs. The important thing to note is that only a boat builder is likely to appreciate the need for easy access in terms of maintenance and repairs on the journey, but neither will necessarily appreciate the reality of how it all holds up when bashing across the Kalahari for days. There is no oceanic equivalent of corrugations. Under-building might be expected from caravan makers, but **over-engineering** is equally flawed and adds unnecessary weight and expense.

Just as when getting the builders in at home, the safest bet is probably a place that's done a similar overlander-outfitting job before, or better still one that's been recommended by an overland traveller whose finished vehicle didn't come complete with hay bins and a loading ramp.

Be under no illusion that this work will add many thousands to the job, but if you've well-paid employment you may be better off earning and paying someone else to fabricate. Whatever your job, you may also recognise you just don't have the skills, the space, the time or the help needed to do it all, but you've sold the family jewels, the company or the house and instead have the money.



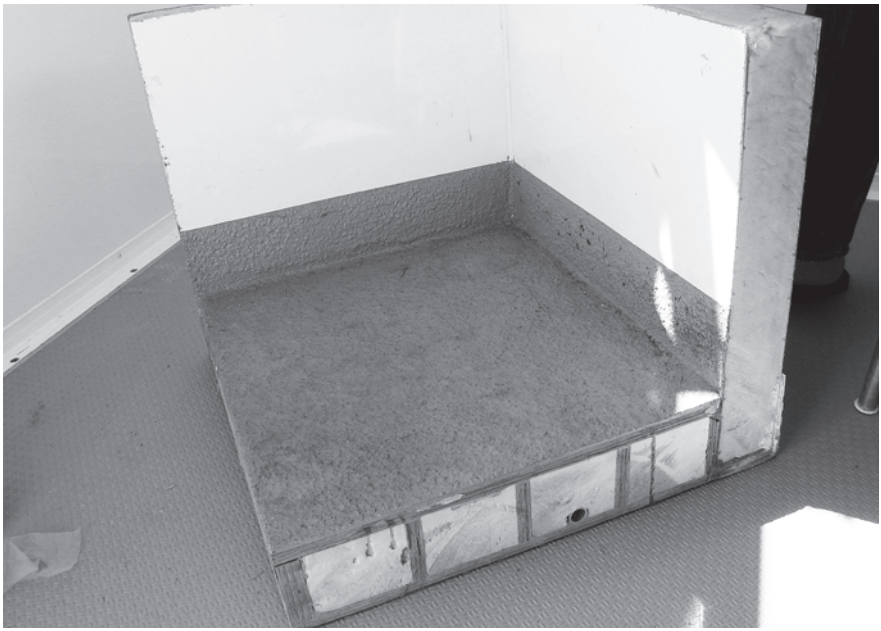
Foam sandwich panels, some with GRP skin and some with plywood on one side. Six of those plus some glue and you have yourself a cabin.



The NidaCore honeycomb alternative – with each cell sealed it's less prone to water migration in the event of a crack.

even on the few occasions it doesn't come ready painted in white, it still reflects UV rays better than both metals. And best of all you get no cold bridges or rusting while gaining excellent **insulation**.

The only flaws might be that you don't get a chance to tidy away the plumbing and cabling behind inner panels and so **ducting** will need to be fitted. As this can run inside cabinets along the top or bottom of the walls, it's no great loss compared to the insulation properties you gain, and at least means it's accessible.



Take a look at this sample corner from the GRP shell pictured on p224 and ask yourself if you can do as good a job. The floor panel is a solid ply and foam construction that can probably be mounted directly onto the torsion-eliminating trunnions as pictured on p227. The floor itself has a hard wearing coating and channels for underfloor heating pipes.

IMPROVISED REPAIRS

Making repairs is something that worries many overlanders, and there's often justified nervousness about getting a bad job done locally. You won't have the means to get a dealer's stamp in your service record, but often all you need is a **bodge** to keep moving and maybe fixing it for good. It's rare for a vehicle to be completely stranded and unrepairable and the more irresolvable the problem, the greater the ingenuity of you or the people around you in fixing it.

Use a systematic, logical approach to fault diagnosis and, if necessary, a lateral approach to problem solving. **Improvisation** is at the heart of many bush-mechanic solutions and is how the developing world's vehicles keep running. But with just about all the remedies listed below, it pays to initially drive slowly and check the repair frequently. Very often it won't be initially effective, especially if sensitive to vibration, and you may have to try something else. These ideas cover only vital items. Usually, if you get the engine running, however badly, you can keep moving.

All this messing around will no doubt get your hands dirty. If you're not using latex or nitrile **gloves**, wet your hands with soap, let them dry and go to work. Once the job's done you'll find with a little added soap, the muck will rinse off much more easily. Otherwise, washing your hands in a mixture of washing-up liquid and **sand or sugar** also removes oily grime. Don some **overalls** too: you probably don't have clean clothes to spare.

Binding broken leaves together can limit stresses spreading to other leaves and can even work if the main leaf is broken.

Broken springs

Broken coils or leaves, or burst dampers, need not be a show-stopper, though a snapped torsion bar is less easy to fix. With coils you may not even notice they've been broken for months and when you do, a bit of **rebar** can be welded alongside the snapped section.

With a leaf broken on the articulated 'shackle' side, you can limp along with the axle on the bump stop as the axle is still held in position by the other direct-to-chassis attachment point. Broken leaf springs are one thing that can be replaced in any sizeable town and it's always worth carrying a **spare shock** or two, though they too can be fairly easily replaced wherever other 4x4s are found.

ELEMENTARY FAULT DIAGNOSIS AND FIXES

If you don't know how engines work, try to be systematic: **will it start; will it run; will it go, steer and stop?** Engines won't start for two main reasons: a lack of electrical power or fuel. More rarely some mechanical issue like a broken starter motor may be the problem, or, more commonly these days, a relatively insignificant electronic malfunction has disabled your engine by default.

Should an **error code** appear somewhere on the dash, get on the internet to find out what it means. For cars, try 💻 obd-codes.com. Generally, they're

Tyre pressures on different surfaces

Below are guidelines for tyre pressures given as percentages of normal highway pressures. Actual pressures will vary according to your vehicle's weight and tyre size; a Mercedes 230D runs lower pressures than a Unimog.

Normal load and speeds	100%
Maximum payload, fast highway	120% (see vehicle's guidelines)
Good dirt track, max load	100%
Corrugated dirt track	80–90%
Occasional sand, mud or snow	70%
Sandy creeks, dunes, deep mud	50–60%
Emergency recovery	25–30%

FOUR-WHEEL DRIVING

The agility and indestructibility of 4x4s is frequently overestimated by first-time users, something not helped by adverts depicting SUVs scaling dam walls and mountain peaks. It's vital to have an understanding of just what your 4x4 can or cannot do before you tackle the north face of Cerro Gringo.

Your fully loaded four-wheeler is now a lifeline, just as a camel is to a nomad. Inexperienced tourists have perished in North Africa, the Outback and Namibia because they didn't take actions as basic as locking a diff, reducing tyre pressures or even putting the car in four-wheel drive.

You can't just turn a dial and drive anywhere: skill, judgement are still needed. Like any new skill it has a steep learning curve and satisfaction in its mastery. **Sympathetic, defensive driving** protects the vehicle as well as its occupants from damage.

When the text below advises to 'engage four-wheel drive' this corresponds to 'engage central diff-lock' on full-time 4x4s with a manually operated control. There's more on all that on p305.

DRIVING A 2WD ON TRACKS

As the wartime Long Range Desert Group and many overlanders have proved, a well-driven 2WD can manage much more than you think. **Ground clearance** is key but in a 2WD you're also missing a low-range gearbox. What this means is that at times you only have **momentum** to get you through. Maintaining momentum, knowing when and how much to accelerate and when to back off, is crucial to avoid getting stuck while not damaging your vehicle. With 2WDs at times it can be one or the other and because you're bound to get it wrong once in a while, this is where underbody protection is worthwhile.

As you have read, **reducing tyre pressures** gives you a bit more traction. This is at the cost of ground clearance and possible damage to tyres, but will be essential in the short term. As with 4x4s, go down to 1 bar or 14psi (including the axle without drive) when you're really stuck.

When driving through **deep ruts**, either sandy, stony or muddy, which a higher 4x4 could manage, a low-slung road car has to drive with one wheel on the centre ridge and the others off the track to avoid getting dragged to a halt. Up to a point the smooth underbelly (assisted by a large bash plate on which to slide) plus independent suspension enables the driven wheels to reach down into the ruts and maintain drive. But independent suspension (as opposed to a 4x4's solid beam axle) is less effective over rocks because when one wheel rolls over a rock or a hump, the body stays level, so compromising ground clearance (see diagram p40), something that a 2WD doesn't have to spare.

If at all possible, **use a container**. The sea-freight industry is optimised to move, store, track, transport and deliver standard-sized shipping containers either 20ft or 40ft long (see p41 for exact dimensions). If your vehicle is too tall, use the taller 'high-cube' version, but note that high-cube containers can be more expensive and range from being more challenging to impossible to obtain, especially in minor ports. Over-width vehicles are usually consigned to flat racks, although if your vehicle won't fit into a container and a genuine, guaranteed **RoRo** service is available, choose RoRo. **LCL** will likely delay your vehicle, so avoid it. It's far preferable to **pay for your own container** than have your vehicle sit for weeks on a dock waiting for space in a shared container.

Unscrupulous freight forwarders will often sell you RoRo services, and charge you premium rates, then allow your vehicle to be cradle lifted onto and off the ship instead, thus exposing it to potential damage. It's up to you to independently confirm that RoRo service is available on the shipping route you require and on the shipping line your freight forwarder plans to use.

Where RoRo is not available, put your vehicle on a **flat rack** and ship it via a container ship. Lock your vehicle to the flat rack to prevent the dock crew from using a cradle to lift it off the ship separate from the rack.

DOCUMENTS

Countries often take a dim view of bringing a vehicle for personal use into their ports. Even though crossing a land border may take up to a day, it is a relatively common occurrence. In contrast, bringing a used vehicle into a port is an uncommon occurrence, and the people who work in the Customs and inspection offices may never have seen their government's required documentation for the process, much less know how to fill it out.

SHIPPING BRIBES

Bribes are a popular topic of debate among overlanders. When, where, who, how, how often and how much are the usual questions, especially related to shipping. I've met overlanders who've been around the world and claimed never to have paid a single bribe. Conversely, I've shipped into most areas of the world and paid bribes when and where required to do so. You'll need to establish your own policy when you experience the shipping process. For non-shipping related bribes, see p205.

Shipping involves so many entities that it's difficult to discern where a service charge ends and a bribe begins. Typical shipping bribes are to **dock crews** or to gatekeepers of the shipping process such as **Customs** officials. It has been my view that a few extra dollars to ensure good handling or rapid paperwork-processing has been well spent. My preferred method is to have our freight forwarder or Customs broker handle all **the distribution of funds** related to the shipment. I'd rather pay the additional 'handling charges', which can include bribe distribution, than be personally doling out cash on the dockside. Putting the local freight forwarder or Customs broker between me and the transaction also gives me some plausible deniability in case things get ugly. Again, you'll need to determine what exactly your approach will be to bribes, should you find yourself in a position where they're required.

You must also be very conscious of your situation and the **local culture**. In many developed countries, an attempted bribe could land you in trouble. On the other hand, in some countries, without a small bribe your vehicle could rust clean away before you get the single stamp you need. As in all things overland, be aware of your surroundings, local cultural mores and local expectations.

This lack of familiarity with the process and incomplete knowledge of the required documents often leads to a complex kabuki dance of bureaucrats attempting to save face with their peers, while simultaneously maintaining their official haughty bureaucratic demeanour. Consequently, at all costs, avoid embarrassing the bureaucrats, especially in front of their peers. If you know where a signature or stamp is required on your carnet and the clerk across the counter is looking at it like it's Einstein's notebook, point subtly rather than shout it out. You could save yourself hours or days of delay.

When you're shipping a vehicle into a country, your final goal is either a **stamped carnet** or a **Temporary Import Permit (TIP)**. For many of the bureaucrats you meet crossing their particular 't' is one of the few sources of power and respect in their lives. Try to avoid getting caught up in minor conflicts along the way; keep your eyes on the ultimate goal: getting back on the road.

Documents to ship out of a country

- **Vehicle ownership document**. In the UK it's called a V5, in the US and possibly elsewhere, this adds up to two documents: the title and the vehicle registration. The title must be unencumbered (meaning no liens), or must come with a notarised letter from your lien holder authorising you to take the vehicle out of the country. The registration needs to be current and include the licence plate details. Use a two-sided colour copier in developing countries.
- **Carnet de passages**
- A **passport** that matches the identity on the vehicle's documents.

Documents to ship into a country

- The original **Bill of Lading** (B/L). This is prepared by your freight forwarder and created by the shipping company. Once your freight forwarder receives the B/L from the shipper they send it and the original titles and carnet (if required) via courier to your Customs broker. Even in non-obscure countries it can take four to six days for this delivery to arrive and clear Customs.
- **Passport** (for vehicle import). In countries that don't require a carnet, your vehicle will be brought in on your passport. Your Customs broker will need your passport and your entry visa for at least one day to process this transaction. Tip: Don't get involved in any bar fights or complex espionage while your Customs broker has your passport.
- **Temporary Importation Permit**. This will be issued by the Customs inspection office at the port of entry. They'll sometimes physically inspect the VIN of your vehicle before issuing this certificate. If you have motorcycles stored inside your vehicle it'll help to put an easily visible sticker on the bike stating: VIN ### and Engine: ####.
- **Proof of insurance**. Some countries will require basic third-party liability motor insurance before you leave the port. Buy locally or with a global policy, provide copies of your policy documents. Always provide copies, not the originals.
- **International Driving Permit**. Very rarely you may be required to show your IDP (more on p23) as part of the import process. Always provide copies, not the original.

Single-vehicle rollover; a common type of accident in Namibia. © pindoriapost.blogspot.com

If you've seriously **hurt or even killed someone**, most likely a pedestrian, then you're just going to have to ride out the events and hope for the best. This must be understood though: in the poor countries through which you'll be travelling it's a mistake to think a **pedestrian** should not have been wandering along the road in the first place. Even if it's a motorway of some kind, in most countries the road is also the pedestrian's right of way. In countries like India it's the right of way of a good few animals too, many of them extremely valuable.

Following an accident, it's best not to admit any liability, even though you may get locked up for a short while until things are sorted out. This is the time to get in touch with **your government's representative**, if there is one. If the details are not to hand (check the city listings in a guidebook), it may be simpler to call someone at home and ask them to track down the **contact details** online.

Motor insurance bought locally ought to cover you for such events, but it's not uncommon to regard it as having little actual value save being something to present at checkpoints. While having it may not greatly improve the situation, not having it will certainly make it worse.

If you're thought to be in the wrong, local mobs can gang up on you and, in some places, victims who are probably desperately poor can see the chance to make a quick buck. I read of some overlanders in Ethiopia being charged several hundred dollars for running down a cow. In some such situations, overlanders have been advised by well-meaning policemen to swiftly leave the scene. At other times the policeman or other authority figure may insist or suggest some sort of **on-the-spot compensation**. It's up to you to judge whether it's required, fair, or extortionate, but as a foreigner in a flashy vehicle, you won't have too many cards in your hand. Many travellers are so freaked out and indeed outnumbered that they'll happily pay anything to get out of there.

8 ASIA ROUTE OUTLINES

From Istanbul or the Urals to a stone's throw from Alaska – and from above the Arctic Circle to below the equator close to Australia, **Asia**, the world's biggest landmass, just about has it all. And for an overland driver it's all getting easier, with new overland routes and visa-free regimes. Asia offers sealed highways from the Bosphorus to Singapore and right across Russia to Vladivostok.

Part of the appeal of driving in Asia is its rich and diverse historical and architectural heritage, a range of fabulous cuisines as well as the **low cost of living** in the south of the continent (potentially much less than in Africa or Latin America). In places fuel prices can be among the lowest in the world too, though they're finding other ways of making you pay.

HOT SPOTS

Apart from North Korea which won't be opening to overlanders any time soon, hot spots remain. **Syria** as well as all but the Kurdish part of **Iraq**, **Yemen** and **Afghanistan** away from the Wakhan Corridor are very risky, less so parts of the **Russian Caucasus**.

Saudi, China and **Vietnam** severely restrict or complicate independent travel with motor vehicles, and importing a car into Japan gets difficult and expensive. **Pakistan** has laid on border-to-border transit escorts for years, but that is more down to security. The great news is **Myanmar** is now open between India and Thailand and maybe China too, even if Thailand and adjacent countries may have taken a backward step (more on p401).

VISAS FOR ASIA

Visas will have a major impact on your route because getting them for Russia, Iran, Pakistan, India and some of the Central Asian 'stans' can't always be done in a neighbouring country in a day or two, let alone at a border. Assuming this may ease up for Brits, if not Americans as things stand, Iran will still take weeks to acquire, something that's best done before you leave. In Turkmenistan you might find yourself racing across, simply because a quick transit visa means you don't have to pay out for the 'escorted tour' that's required with the longer tourist visa. Russia offers an easy solution: one long duration visa. More details follow.

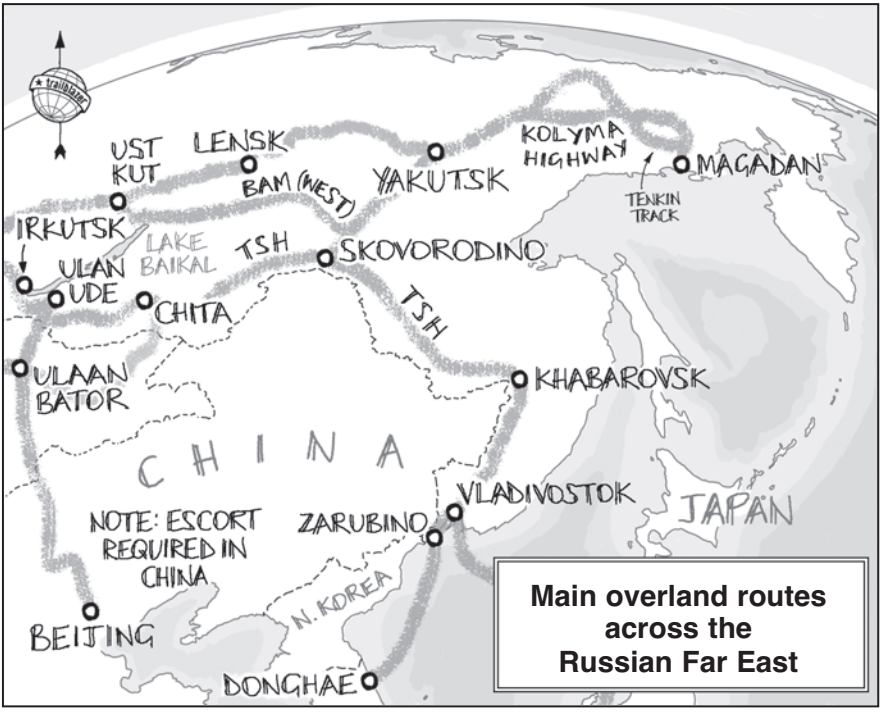
Aldan, there's more traffic than you'd expect and along the way there are plenty of roadhouses and towns. Getting into Yakutsk itself requires ferrying across the Lena River, now 4km wide, about 80km upstream from Yakutsk.

THE AMUR HIGHWAY TO VLADIVOSTOK

Beyond Skovorodino is the Amur Highway to Khabarovsk. How this highway will survive the road-wrecking 80°C temperature variations of the Siberian seasons remains to be seen. They say sometime around 2012 the length of the new highway was intact, before frost heave, pounding trucks and floods began to break it up, along with the money to do anything about it.

Roadhouses with **food and fuel** are plentiful, although secluded wild camping isn't so easy as the road is built up over the swamps and Armco may stop you getting off the road to good spots. **Khabarovsk** is a relative late developer, but along with Vladivostok is now among the biggest cities in Far Eastern Russia, with up to three-quarters of a million inhabitants. You'll see many Japanese and South Koreans establishing businesses here, and with a **Chinese consulate** at the Lenin Stadium (N48° 28.8′ E135° 02.8′) on the west side of town just north of the city beach, there's a chance to nip over the Amur for a day trip to China (without the car, of course).

Vladivostok and the end of this particular road are just 850km away, through the wooded hills where the huge Amur Tiger once harried the railroad builders of the late 19th century before its private parts got ground down into aphrodisiacs. Perennially miserable weather doesn't make it the most inspiring place to end your trans-continental trek. But chin up, you're here!



GETTING OUT OF VLADIVOSTOK

Arriving at Vladivostok most will put their vehicle on a ferry to South Korea. Conventional cargo shipping out of Vladivostok is possible, but costs and bureaucracy issues make it a less than attractive option. DBS Cruise Ferry (🖳 dbsferry.com/eng) operates between Vladivostok, Donghae (South Korea), and Sakaiminato (Japan). Offices are in room 239 of Vladivostok ferry terminal, right behind the Trans-Siberian Railway terminal. If going on to Japan after visiting South Korea, you can take DBS again or the less expensive Korea Ferry (🖳 en.koreaferry.kr) from Busan to Hakata. Even leaving the country, customs procedures in Vladivostok can be difficult; it may help to get in contact with Yuri Melnikov at Links, Ltd. (🖳 links-ltd.com). You'll almost certainly need help with customs getting into the country.

Korea doesn't accept **carnets**, but you may be required to make a refundable deposit. Japan does require a carnet in most cases. If you do your research into the laws and procedures, and have the time and patience to work with the bureaucrats, you may get into Japan without one. If you decide to take the less stressful route and use a carnet, you still need to have it validated by Japan Automobile Federation (JAF). Information is available in English on the JAF website (🖳 jaf.or.jp/e). Procedures will go faster if you fax a copy of your document in advance. There are JAF offices near Sakaiminato and Hakata ports, and the ferry company personnel should be able to direct you to them (or even give you a lift if you ask nicely). My website 🖳 www2.gol.com/users/chrisl/japan has plenty of details on the temporary import scene.

From Korea or Japan, most of the major shipping companies provide services to help you get on to your next destination. Shipping agent Wendy Choi in Korea (🖳 wendychoi2@gmail.com) may be able to help you get your vehicle on a ship to someplace.

CHRIS LOCKWOOD

Central Asia

Assuming you're wanting to get round the north side of Afghanistan, the four smaller 'stans' of Central Asia offer a much more satisfying alternative to hauling along the Trans-Siberian Highway or the interminable steppe of Kazakhstan away from its eastern corner. The highlights here are the yurt-dappled pastures of **Kyrgyzstan** and the stunning Pamirs of **Tajikistan**. The fiery deserts of Turkmenistan and Silk Route cities of Uzbekistan cap off a rich cultural experience. As in much of this part of the world, central Asian people – be they Kazakh or Kyrgyz, Turkmen, Uzbek or Tajik – are amongst the most hospitable you'll meet, making the irritations just about worth the effort.

Language, maps and money

Although **Uzbekistan** and **Turkmenistan** are slowly moving to modified Roman alphabets, learn the **Cyrillic alphabet** (see p371) so you can read the road signs. **Russian** is still the lingua franca throughout the 'stans although the universal '*Salaam aleikum*' of Islamic lands goes down well.

Gizi Central Asia and Kazakhstan **maps** (1:3,000,000) cover the entire region effectively and the German *Reise Know-How* (1:1.7m) provides better detail and information on smaller routes. As for **guidebooks**, Lonely Planet is the major player for Central Asia.

* * * * TRIP REPORT * * * *

RTW – Land Rover Defender

Name, Year of birth, Job Roy Rudnick, 1974, writer; Michelle Weiss, 1984, photographer
Where and when Second RTW, started in 2014
Duration, distance, cost So far 900 days, 109,000km @ $65/day
Vehicle model and year Land Rover Defender 130, 2004
Modifications Cabin, susp, winch, air lockers, tanks, heaters
Vehicle's strong point Small outside, big inside
Vehicle problems Diff, susp, pumps, brakes, rocker shaft, engine fire
Biggest headache Robbed twice
Biggest surprise Very kind people in Wakhan Valley, Afghanistan
Favourite places Bolivia, Russian Far East, Mongolia, Tajikistan, Afghanistan
Next trip Ushuaia with '48 Series One

Photo Mangystau, Kazakhstan © Roy Rudnick & Michelle Weiss

* * * * TRIP REPORT * * * *

Trans global – Land Rover Defender

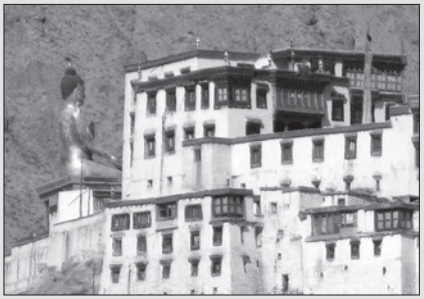
Name, Year of birth, Job Haydon Bend, 1985, British Paratrooper
Where and when Trans global, departed June 2016
Duration, distance, cost 2 years, 50,000km so far, £30,000 est
Vehicle model and year Land Rover Defender, 2011
Modifications Winch, long range fuel tank, wheels and tyres, snorkel, spots, compressor, shower, roof tent, 60L water tank
Vehicle's strong point Off-road capability – which we often use
Vehicle problems Roof stressed from the extra weight; standard bushes and ball joints needed replacing after 50,000km
Biggest headache Thailand changed vehicle entry regulations
Biggest surprise How easy it is to travel with a vehicle
Favourite places Tibet
Next trip Africa and India

Photo Kyrgyzstan © Haydon Bend

KASHMIR AND LADAKH:

Driving from Srinagar east then south to Manali via Leh is the overlander's equivalent of the Haute Route across the Alps from Chamonix to Zermatt – although much, much higher. If you've made it up to Kashmir, rest up for a few days and take in the beauty of Lake Nagin (far quieter than the heavily touristed Lake Dal) before setting out again; these mountain roads will need you to be on good form.

Set aside at least ten days for the trip as you'll want to spend a few days exploring the monasteries of Ladakh and probably a few days acclimatising in Leh (3560m, 11,678ft). It takes at least two days to cover the Leh–Manali highway. Note that **Srinagar** periodically erupts in anti-government protests led by the Islamic population at which time, most recently in 2016, curfews descend on the town and it's probably a good time to move on or avoid the place.



We set off from Srinagar on a sunny, late August day and drove through the lush Gund valley towards the grassy, high plateaus of Sonamarg. Beyond here National Highway 1D deteriorated as we began to climb through cliff-hugging, vertigo-inducing switchbacks that have been carved out of the fragile rock-face approaching the 3528-metre (11,575ft) Zoji La Pass, the first of the major passes on the way to Leh.

After the pass the road flattens out; there's not much traffic up here except for the endless convoys of very slow moving Indian Army trucks, belching out black fumes as they creep up the hills at 10mph. This whole part of Kashmir is one of the most militarised regions of India, as the country faces down what are thought to be its encroaching foes in Pakistan and China. Within an hour, we had lost count of how many trucks we'd passed. The ceasefire **Line of Control** with Pakistan was close to the north, although the relaxed faces of the soldiers we passed at the few checkpoints indicated relations were at that time much better.

We stopped for the night at **Kargil** – not an inspiring town by any means but the only logical stopover. India's northernmost city lies just three kilometres from Pakistani territory and the town reminds us, to a degree, of Gilgit and Karimabad (Skardu is less than 100 kilometres away) – although ironically the people here are far more traditionally Islamic. We stayed in a hotel just off the main street but got little sleep, thanks to the town's mosques ringing out reminders to pray and eat every two hours through the night – it was the middle of Ramadan.

Bleary-eyed next morning, we missed the bridge leaving Kargil and instead drove two hours southeast into the Suru valley in beautiful **Zanskar**, an interesting side trip but not one we were planning this time around. By 10am we were back in Kargil and this time took the correct road northeast out of town. A couple of hours later the scenery and the culture started to change, first imperceptibly, then dramatically. The jagged peaks, precipitous valleys and poplar-lined avenues around the villages now gave way to a more rounded, barren plateau – a sweeping high-altitude landscape of rocks, sands and undulating, snow-capped peaks. Soon we spotted our first stupa, a decaying white mound beside the road, next to a Buddhist prayer wheel. At the tiny village of Mulbek suddenly Islam was behind us and Tibetan-style Buddhism was all around. It was an extraordinary transition, like crossing a border, but without the usual four hours of paperwork and sixteen stamps. This is **Ladakh**, culturally more akin to Tibet than India – in fact some say it's more like Tibet than Tibet itself now that the Chinese have interfered so much with the traditions there.

We pushed on, snaking up the gravelly, desolate Namika La Pass (3700m, 12,198ft) before freewheeling down the far side, gasping at the myriad colours that the mountain's mineral deposits have left in the rocks.

BORDERS

Throughout Southeast Asia you'll need your vehicle ownership documents, your domestic driving licence and an IDP. Your vehicle isn't stamped into your passport in any Southeast Asian country, but some issue TVIPs. **Singapore** is often considered more hassle than it's worth with a foreign car; for more information visit 💻 lta.gov.sg. You need an **International Circulation Permit** (ICP; S$10 in Singapore) in both Malaysia and Singapore – a blue tax disc without which you can't buy insurance.

In an attempt to control issues resulting from a surge of uninsured Chinese RVers in Chiang Mai, in 2016 **Thailand's** Department of Land Transportation introduced much stricter rules for foreign vehicle entry, and in 2017 they became stricter still. Initially, special permits combined with motor insurance costing some 7000 baht ($200) were required and having a carnet helped greatly. It seemed that Laos was also making similar demands, and although Chinese RV visits (which must come via Laos) collapsed, in 2017 the rules were extended to require tour **agency escorts**, as in neighbouring Myanmar. A couple of tour agencies were assigned to issue these permits and escorts, but as this situation is still evolving, keep up with what's happening on the HUBB's Asia page: 💻 horizonsunlimited.com/hubb/southern-asia and the Facebook group linked from there. It's possible it may all get revoked once it's recognised as an over-reaction.

Crossing to **Cambodia** from any of its neighbours is refreshingly efficient and corruption free (Thai customs officials aren't averse to conning tourists out of a few dollars for 'form fees', so have lots of £1 bills to spare). A **carnet** is optional (there's no TVIP here) and so is motor insurance. Hunt around for a Lao-Viet Insurance Company kiosk or get it when you can – no one seems too strict on this, but as you can see, such relaxed attitudes ended badly in Thailand.

Shipping from Singapore to **Indonesia** can be easy with companies such as Samudera (💻 samudera.com) who regularly ship containers to Batam, Palembang and Jakarta in addition to numerous other smaller Indonesian

MYANMAR: THE ROAD TO MANDALAY

Another hue to Asia's diverse cultural palate awaits overlanders in Myanmar which, as predicted, now allows **escorted drives** between India and Thailand.

You can get in from Thailand without a tour, but due to the sensitive border area alongside India's Manipur province, an escorted transit (with a bit of sightseeing) is required to secure the border permit. It's up to you to contact agencies like 💻 burma senses.com and finding other overlanders crossing at the same time will reduce costs.

Border crossings are **Mae Sot** (Myawaddy) in Thailand and Tamu/**Moreh** on the Indian side, about 1400km apart, via a direct route. The above agency quoted $1200-1400 per vehicle for a mixed group of bikes and a Land Rover for the 12-day crossing. This includes B&B accommodation and all other fees except other meals, your visa and fuel which goes for about $0.90 a litre.

E-visas for Myanmar are only valid for fly-ins, not transiting overlanders, so you'll need to apply at an embassy for around $25. Validity is one to three months with 28 days in the country. Nearby consulates include Dhaka, Bangkok, Kunming, New Delhi, Kuala Lumpur, Kathmandu and Bangkok where they can do it in a day for 810 bhat.

It's said there's no overland crossing to Bangladesh for foreigners but a border crossing with Laos may be on the cards.

9 AFRICA ROUTE OUTLINES

Of the three continents covered in this book, Africa presents the biggest challenge, or at least that's how some perceive it. Many overlanders have travelled the world and the seven seas, but have never set foot in Africa. As always, it's not as bad as you hear – the hotspots are well known and easily avoided. Moreover, the Chinese 'roads-for-resources' programme has sealed the gaps on the main routes through Congo, north Sudan and northern Kenya, now making the trip viable in a regular 2WD. Of course it remains to be seen how these rapidly built roads will themselves handle a few monsoons or Saharan summers under the wheels of the typically overloaded local transportation.

The headaches of crossing Africa include regional conflicts, road conditions, the climate (in the wrong season) and petty corruption, but above all getting a **visa** (a **yellow fever** certificate is often required). Some countries only issue visas easily in your home country; on the road consulates will present hurdles, delays and eye-watering tariffs while as elsewhere, former border visas are becoming online **e-visas**. This all depends on your nationality, where you apply and where you cross a border, and not least, the cut of your jib or their mood on the day (things often change when consular staff move on). What works for one overlander with a Colgate smile gets you nowhere, and all your advance planning can unravel. Yes it's part of the adventure, but what can't be sorted can lead to unplanned expenses. Having a **second passport** can definitely help when making visa applications, as well as having enough **paperwork** (relevant, kosher or otherwise) to choke a full-grown hippo.

© Rob & Ally Ford

And yet behind all this aggro is the iconic lure of the landscapes and, less expected by overlanders, the generosity and warmth of the ordinary people you'll encounter who struggle to survive under some of the most mismanaged kleptocracies on earth.

GOING REGIONAL

As much as any other continent, overlanders feel compelled to take on a **trans-African crossing** from Casablanca or Cairo down to Cape Town, not least because it's one of the great overland routes. When starting from Europe, once you're south of the Sahara you may as well keep going, although crossing the Sahara these days can be just a two-day road drive. Even then, getting to Senegal from Morocco, and especially Sudan from Egypt, is quite a trek and once in these countries your regional roaming options are still limited by topography, climate and politics. So, unless you're an old hand, initially most will see Africa as somewhere to cross rather than a place to explore.

One exception is **Morocco** (see p408). With enough of an edge to keep you on your toes, it offers the perfect introduction to Africa and makes a great place for a shake-down trip in advance of longer travels in Africa or elsewhere. Another is **southern and eastern Africa**. Relatively stable, sharing time zones with Europe, and with winter coinciding with the northern summer vacation period, many tour operators offer **fly and drive tours** here. From South Africa itself, visits to half a dozen nearby countries can be ticked off as far north as Uganda and Kenya, and on tour you can have the drive of your life, even if – or is it because? – it's all organised for you.

In between lie the feral republics of **central Africa**; principally the Democratic Republic of Congo (DRC). No one heads here for kicks as they do in the places mentioned above, as complications with Angolan visas can mean an onerous 2400km run through southern DRC to or from Zambia (see p418). Probably more than anywhere else in Africa this is a place to test yourself and as such, along with the former central Saharan crossing (see p407) it's the bit you dread most but remember best.

MAPS AND GUIDEBOOKS

The three 1:4m-scale **Michelin maps** (# 741, 745 and 746) are the best paper maps for planning a trans-Africa trip, though in central Africa they're not keeping up – no paper map is. For the GPS Garmin's **North Africa Topo Light** is well worth a look as it's inexpensive and produced in collaboration with OSM (see the detailed review and comparison on 💻 sahara-overland/maps).

Lonely Planet, Rough Guide and Bradt produce regional guidebooks in paper or e-book form with useful titles for parts of North, southern and East Africa, but don't keep up with the less visited countries. For that you have the internet: LP's **Thorn Tree** (💻 lonelyplanet.com/thorntree) or of course the **HUBB** 💻 horizonsunlimited.com/hubb.

FUEL PRICES, MOTOR INSURANCE AND CARNET

While in Algeria **diesel** costs $0.12 a litre and in Egypt it's just over twice that, in Sudan, Ethiopia, as well as Nigeria and Mozambique you pay around $0.60 cents a litre and overall **$0.80 cents** a litre is the norm for diesel (85c in Morocco, less in Western Sahara). In Namibia it's also 80 cents, in South Africa 90, but at this time in DRC, Zimbabwe and Zambia fuel cost nearly the same as Europe. **Petrol** (probably low octane) is cheaper in Nigeria and Mozambique, but overall budget on around **$1 a litre**. Unleaded is virtually ubiquitous and new laws intend to have high-sulphur diesel (imported from Europe, not just produced locally) banned or restricted in East and West Africa.

ASKING DIRECTIONS IN AFRICA

On stopping to buy water, a snack or confirm directions at times young men were 'in my face' and the attention could be intimidating. One time a local farmer among the group seemed especially aggressive. I didn't take it personally and it was interesting to note that when I addressed him directly, answering his questions genuinely and asking some myself, he seemed to come around – indeed warning off a couple of other young smart asses who were suggesting exacting a 'toll' from me.

I had a similar experience in Cameroon. Stopping for directions at a fork, I chose someone whose appearance suggested some 'worldliness'. He was a teacher who instantly took responsibility for the situation but as the inevitable crowd gathered the usual argument broke out and things became quite heated. I was to experience this further into central Africa and knew it was a cultural trait that didn't necessarily mean what it would back home in Ireland.

Remaining unperturbed was the best strategy. My defender had a stand off with one chap, accusing him of saying 'silly things' about me. The other guy backed off, things calmed down and the teacher would not let me go before I knew exactly where I was, the name of every village and even the hills all the way to Bamenda, my destination.

HUGH BERGIN
kilkennytocapetown.com

Southeast for Ojo (Congo)

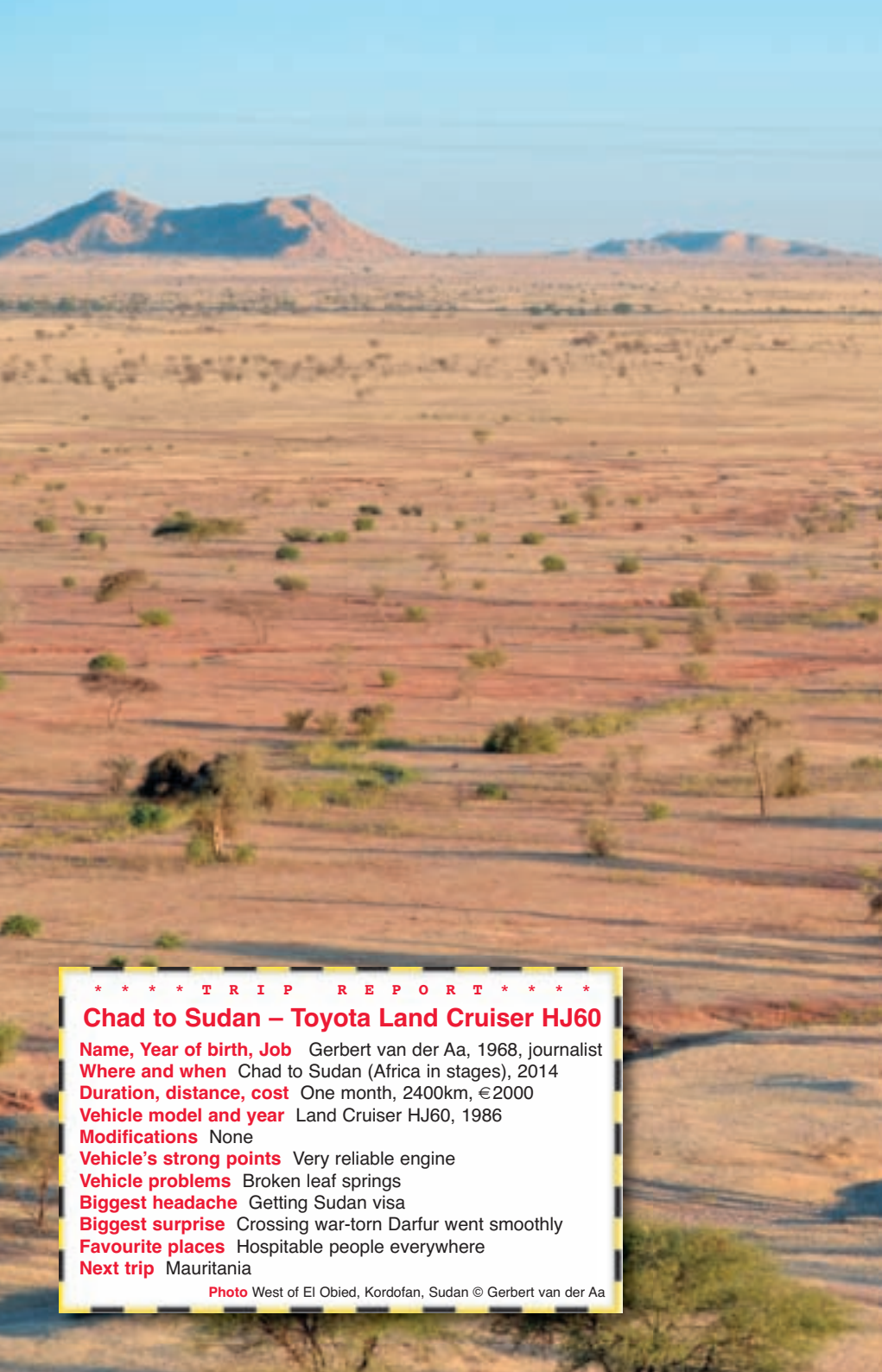
Roadwise, the rot may well set in south from Mevang in Gabon, and as far as Lambarene and the Congo border at Doussala is the usual central African scenario. So take the road east out via Lopé National Park to Lastourville (probably sealed by now), after which it's tar to **Franceville** all the way to the border at Lekoni. **Border formalities** are said to be easy enough; maybe a little trickier if heading west into Gabon from Congo. Few maps show this yet, but once in Congo it's 200 kilometres of newly sealed road over grass-covered high plains via Okoyo to Oyo, 450km from Brazzaville.

In **Congo** the people are friendly again and, for a central African capital, **Brazzaville** manages to be an agreeable city – until you get too close to the ferry port, that is. Many overlanders camp for free at *Hippocampe Hotel* (S04° 16.4′ E15° 16.7′) where great Vietnamese food is served. If heading north and in need of Gabonese or Cameroonian visas, see the box on p419.

Southwest for Pointe Noire and Cabinda

Backing up to Mevang in Gabon, most pass on expensive Libreville and once over the bridge at Lambarene, 160km down the road, head southwest 700 kilometres to Pointe Noire on the coast of Congo-Brazza. From here you'll be crossing the Angolan enclave of Cabinda for DRC so make sure you have an Angolan visa strategy in place. Once in Congo, immigration is done 50km after the border at Nyanga, where there's also a Catholic mission.

An alternative route to Congo turns off at Moanda, and takes a little-used route south via Bakoumbe to the border and Mbinda for immigration. **Mila Mila** (S03° 42.9′ E12° 27.1′) is a junction that doesn't appear on most maps and where a corner-cutting track leads through the hills 150km to Pointe Noire. Otherwise continue south to Dolisie junction and the railway and turn west. At Pointe Noire camp at the Yacht Club (S04° 47.3′ E11° 50.9′) and hope they'll give you an **Angolan transit visa** (S04° 47.5′ E11° 51.6′) to get you across Cabinda. You don't want to waste your 30-day tourist visa from Accra here.



* * * * TRIP REPORT * * * *

Chad to Sudan – Toyota Land Cruiser HJ60

Name, Year of birth, Job Gerbert van der Aa, 1968, journalist
Where and when Chad to Sudan (Africa in stages), 2014
Duration, distance, cost One month, 2400km, €2000
Vehicle model and year Land Cruiser HJ60, 1986
Modifications None
Vehicle's strong points Very reliable engine
Vehicle problems Broken leaf springs
Biggest headache Getting Sudan visa
Biggest surprise Crossing war-torn Darfur went smoothly
Favourite places Hospitable people everywhere
Next trip Mauritania

Photo West of El Obied, Kordofan, Sudan © Gerbert van der Aa

* * * * TRIP REPORT * * * *

Around Africa – Land Rover Defender 110

Name, Year of birth, Job Gee CM Hurkmans, 1952, teacher
Where and when Around Africa solo with my dog Thimba, 2014
Duration, distance, cost One year, 65,000km, € 15,000
Vehicle model and year Land Rover Defender 110 Tdi, 1991
Modifications Roofrack, awning, fridge, water filter, compressor etc
Vehicle's strong point A bush mechanic can fix anything!
Vehicle problems Lost fifth gear, broken transfer box
Biggest headache Would my wife still be waiting for me when I got home after a year? **Biggest surprise** Yes, she was!
Favourite places Guinea, Liberia, Sierra Leone (West African Ebola countries). They deserve so much better.
Next trip Morocco again (5th time)

Photo Desert wild camp in the Sudan near Meroe pyramids © Gee CM Hurkmans

Make sure you have enough fuel when you enter from the north to get 300km to N'zeto where the first reliable fuel supplies start. **Land mines** are still thought to be a problem in rural Angola and because of this **bush camping** takes some effort or risk, but as always there's a network of missions.

Trans Angola

If not trying Matadi–Noqui, at Songololo turn south to **Luvo**. Change your dollars on the Angolan side. No carnet needed, the TIP lasts up to a year and it should be cheaper fuel and a good road to M'banza-Kongo and another 250km to **N'zeto on** the coast. From here the 200km down the coast to Caxito could be brand spanking new tar, or crumbling at the edges.

From Caxito it's tar to **Luanda** where the few have benefited greatly from Angola's recent boom. A Via Expresso **ring road** speeds up your transit: from the north stay on the good sealed road that descends into a potholed mess within the city limits until you see a motorway overpass (S08° 46.2′ E13° 23.2′) and roundabout. This is your ticket around Luanda if that's what you want. Otherwise, see if they still let you **camp for free** in the secure car park at the *Clube Nautico* (Yacht Club) down in the marina (S08° 48.1′ E13° 13.4′).

Leaving Luanda

South of Luanda follow the coast 540km to **Benguela** on mainly good tar. The humidity finally begins to drop off, the land turns to savannah and at night you can enjoy the cool again. The checkpoints, desperate scams and general hassle of the equatorial countries drops off too. Maybe it is the climate after all.

From Benguela head inland towards Lubango, rising up to a cool 1500m, or continue along the coast via the impressive **Leba Pass**. Lubango to the border can be done in a day if you leave early. The main border crossing is at **Oshikango** (Namibian side), but if it's not too wet, try the track from Xangongo down to Ruacana in Namibia.

Crossing the border the strain of the previous weeks lifts. Some find the adjustment quite a shock and in a perverse way miss the struggle that gave each day a purpose. Ahead lie the fabulous desert landscapes of **Namibia** so don't be in a rush just because the pressure's off. Just make sure you **drive on the left**. The finale down to Cape Town is a piece of cake, as long as you're vigilant in Namibian cities. South Africa's on p434.

NORTHBOUND VISAS IN LUANDA AND BRAZZAVILLE

LUANDA

DRC visa
Largo de Joao Seca, just south of the South African embassy and near the hospital.
S08° 49.52′ E13° 13.74′

Congo visa
Rua de Joao de Barros, by Meridian Hotel.
S08° 48.22′ E13° 14.55′

Gabon visa
Near the Miramar Park and just east of the Congo embassy. S08° 48.51′ E13° 15.0′

BRAZZAVILLE
Both just south of the Meridian Hotel and a ten-minute walk north of the Hippocampe Hotel.

Gabon visa
Boulevard du Maréchal Lyautey.
S04° 16.12' E15° 16.65'
Possibly same day and 45,000CFA.

Cameroon visa
Rue Gouverneur Général Bayardelle.
S04° 16.17' E15° 16.54'
Two days and from 51,000CFA.

LATIN AMERICA ROUTE OUTLINES

10

Of the three continents covered in this book, the countries south of the US border offer the easiest destination in terms of language and documentation, along with about as much geographical diversity as one planet can offer. For Americans in particular, Latin America also conjures up images of banditry and corrupt police. Living standards and the state of security vary greatly from country to country or even regionally, but as usual, once you actually go there the reality is far more benign.

Above all, compared to parts of Africa and Asia, the lack of requirements for carnets and for most, visas in advance, greatly **simplifies border crossings**, particularly in South America (Central America still likes to make a meal of it). Instead, right across the region a temporary vehicle import permit (**TIP**) is readily issued and usually lasts three months. Just remember to cancel it before leaving a country; it's not always demanded but if you come back your vehicle will still be registered and you may have problems. The absence of an expensive carnet also makes **buying a vehicle** possible, either locally or more easily, from another foreigner, enabling a fly-in trip which time or budget might otherwise forbid. Check the tips on the Horizons Unlimited South America forum, the best resource for travelling down here. And whatever its value, a **yellow fever certificate** may be required at some borders.

The cost of living isn't always so modest and compared to the US, in most places **fuel** will be more expensive. But whatever the season (see p450), there's a decent network of sealed roads so a 4x4 isn't necessary (though there's as much off-road action as you can cram in). Most will find the crazy local driving standards adventure enough, particularly in Peru.

No surprise that the **US dollar** is the most useful hard currency and is the *actual* currency in El Salvador, Panama and Ecuador. Elsewhere, wait until you're in the country and then change just enough to get you to an ATM where you'll get the regular exchange rate, except in Venezuela (see p464), where a currency black market thrives. Above all, outside Brazil and the Guianas, knowing or **learning some Spanish** will transform your experience and reduce 'gringo' taxes. Early on, consider parking up for a month and attending a school. It's an easy language to learn.

'Two days' can of course become two weeks, with all the associated expenses. Unfortunately, these sorts of delays, as well as plain old overcharging, are all par for the course in the wretched world of single-vehicle shipping.

See what's new on the usual forums but in Panama City you need to visit the places below where, as in any city away from the central tourist or business district, you want to be sure your vehicle is secure or better still, someone with a scowl is sitting in it. As you might have guessed, you'll also want several copies of all your paperwork and documents. The receipt or proof that you paid for the shipment may help in retrieving your BoL at Cartagena port where they don't know you from Adam.

- Having made contact, secured a date and paid the fees, get a **Bill of Lading** (BoL) from the shipping agent or company in Panama.
- When you're ready to go, **dress formally** (no shorts) and visit the Policia Tecnica Judicial (N08° 57.9′ W79° 32.68′) who'll inspect your vehicle and issue a **report** affirming the VIN on your TIP matches that shown on your ownership documents and the actual VIN plate on the vehicle.
- Visit the Secretaria General right across the busy road from the PTJ who'll have forwarded your report to them. Once here, get permission to export the vehicle from the *control de vehiculos* office. You now have eight days to get the vehicle shipped out.
- When the time comes, drive up to Cristobal harbour (N09° 20.57′ W79° 54.54′ – small entrance fee) in the port city of Colón, 60km from Panama City. Get the *aduana* to cancel the *entrada con vehiculo* stamp in your passport and have the vehicle inspected. Then arrange the loading paperwork with the shipping office also located here.

It can all feel a little disorganised at Cristobal because what you're doing isn't a common procedure at any commercial port. If going to the expense and security of using a **container** rather than Ro-Ro or Lo-Lo, politely resist offers to drive and load your vehicle for you. You know what's at stake and so do they. The whole point of using a container is to eliminate your vehicle's exposure to pilfering, as well as the need to spend time taking measures against that. It's most reassuring to attend the slamming, clamping and sealing of a container door, including adding your own padlock, rather than dropping the keys of your pride and joy into the hands of a troop of drooling wharfies.

VEHICLE RELEASE IN CARTAGENA

Once in **Cartagena**, again it's possible to be out of the port in a day at a cost of around $200, while remembering that from around 11.30am to 2pm all activity ceases. Better to set aside two days. Employing a local agent can expedite things and may well end up costing a little less.

There are various ports in Cartagena, but chances are you'll use the centrally located Muelle Del Bosque with the harbour office to be found, rather inauspiciously, on Isla Diablo, at N10° 23.9′ W75° 31.63′. If doing it all yourself the procedure is as follows:

- Retrieve the original BoL from the shipping company's office.
- Take that to the office for *Formulario de Importación Temporal de Vehiculos* at the Customs office (DIAN) a couple of km round the harbour

(N10° 24.53′ W75° 32.03′) along with photocopies of your Colombia passport entry stamp and all the usuals. A Customs inspection will be arranged back at Muelle Del Bosque, but probably not the same day.
- Escorted by port staff, locate and unlock your container, 'unstuff' the vehicle (wharfies may do this), get it inspected and pay any port fees.
- Go back to the DIAN where you'll be issued with your TIP.
- With a TIP you can now buy your third-party insurance or SOAT (*Seguro Obligatorio contra Accidentes de Tránsito*). Expect to pay around $20 for a month's cover from Previsora (💻 previsora.gov.co) on Calle de Arsenal (N10° 25.1′ W75° 32.8′), number 10-25. It's less than a kilometre from the DIAN and there are several hotels in this district.
- With your SOAT you can return to the port and get your *salida permiso* (exit permit), after another inspection and a weighbridge.

Getting yourself to Cartagena

You can **fly** from Panama to Cartagena in a little over an hour for about $350, but a more interesting alternative is to spend a few days **sailing or cruising** across the Bay of Darien, passing along the San Blas Islands. The Panamanian archipelago is home to the protected Kuna Indians, but most of the 340 or more islands are uninhabited. The tiniest can be just a cluster of a dozen palms on a white sand platform and the area is ideal for snorkeling.

There are several scheduled cruises that will cost at least twice as much as flying, and although once you leave the archipelago the crossing of the Bay can get rough, few overlanders regret taking this option. When they're based there, the 100-year-old German-run Stahlratte sailing ship (💻 stahlratte.org) allows you to get involved in the crewing on the passage to Cartagena.

For smaller craft, visit the marinas like 💻 shelterbaymarina.com to see if anyone wants help crewing over to Colombia.

From Panama you can catch a plane to Cartagena or you can join a cruise on a variety of craft passing the San Blas archipelago on the way. © thedarienplan.com

* * * * TRIP REPORT * * * *

Alaska to Argentina – Jeep Wrangler TJ

Name, Year of birth, Job Dan Grec, 1982, engineer
Where and when Alaska to Argentina, 2009-2011
Duration, distance, cost 22 months, 40,000 miles, $27,300
Vehicle model and year Jeep Wrangler TJ, 2000
Modifications None
Vehicle's strong points Lightweight
Vehicle problems Zero problems
Biggest headache Selling the Jeep in Argentina
Biggest surprise Bolivia – friendly and supremely beautiful
Favourite places Bolivian Altiplano, Uyuni Salt Flats, Patagonia
Next trip Around Africa (see Trip Reports, Part 9)

Photo Huascarán, Peru © Dan Grec

Viva La Panamericana.
© thedarienplan.com

Peru

Improbable though it seems, Peru has it all but in greater quantities: the deepest canyons; the tallest peaks; uncounted miles of desolate coastal deserts alongside a substantial chunk of Amazon jungle; fantastic roads and moderate prices.

It's over 1000km to Lima, and from the north initially at least, it's tempting to follow the arid Pan-Am across the coastal desert before cutting east over to Cusco by whichever route you fancy. Don't make the mistake of proceeding directly into northern Chile, unless you're on some sort of high-speed, record-breaking caper. Do the right thing and pay your respects to Machu Picchu before carrying on from Cusco into Bolivia, or maybe over into southern Brazil (see p468). A glance at a Peru map will show roads resembling artfully arranged ribbons of tagiatelle; if you have a Dynamic Cornering Response button on the console, press it now.

Tyres and many other **parts** are cheap in Peru; postponing repairs until Bolivia may be tempting fate and Chile, Argentina or Brazil may cost you double. Lima has the best selection, but parts are also found in Cusco or even Ica, because avoiding Lima's notorious traffic is another one of Peru's must-dos.

Entering Peru from Ecuador, there may be no apparent lodging along the Pan-Am for a couple of hours, so time things with that in mind. Having temporarily forsaken the scenic Andean plateau it's likely you'll be in a mild state of over-oxygenated under-stimulation, surfing arrow-straight highways over barren, trash-strewn scrub. Furthermore, the instant you cross into Peru **driving standards** collapse. Pedestrians don't stroll across the roads here; they get their heads down and sprint. Other hazards lie down this coast too: ferocious crosswinds and drifting sand that's more dangerous than it looks when hit at speed.

So stay alert or better still, get off the Pan-Am; it's the Andes roads you want, from smooth *pavimento* to dirt tracks through boulder fields with stream crossings and gaping washouts. Just remember, passes reach well above 4500m or 15,000ft so swift climbs from near sea level may give you a headache if rushed.

Perusing Peru

From the north the first obvious side trip leads into the peaks of the **Cordilleras Blanca and Huayhuash** rising to over 6500m/21,500ft. At only 3000m **Huaráz**, 430km north of Lima, is a favourite base. There are various approaches, including from Santa on the coast (just before Chimbote) into the **Cañon de Pato** for Carza on Ruta 3 north of Huaráz. The road follows a former rail grade through countless tunnels (which may exclude tall trucks) as well as a few airy bridges over the churning Rio Santa below. Another is the 14A leaving the Pan-Am at Casma, ascending more precipitous slopes before dropping directly into Huaráz. For more check out Trailblazer's cycling route guide to this mind-blowing region at 💻 blancahuayhuash.com.

THE WAY TO MACHU PICCHU

Machu Picchu can be done as a long daytrip from Cusco or by overnighting in Aguas Calientes (now aka: Machu Picchu Pueblo) below the ruins. But you're in a car so can leave the herd and head into the Sacred Valley to spend some time exploring the numerous ruins in the area.

Ollantaytambo is a good base; catch the train to Machu Picchu from here – buy your train and entry tickets online in Cusco .

The back way into Machu Picchu, which climbs on pavement to a high pass past Ollantaytambo, then turns to dirt and descends to river level, has become increasingly travelled since big floods washed out the railroad. It's still not possible to actually drive all the way to Aguas Calientes, but you might get to a town called Hydroelectrica, where you can park by the police station and walk along the seldom-used railroad tracks to Aguas. A small tip will ensure continued access.

© Bingham Thomas

However, if the latest landslide hasn't been cleared you may get only as far as Santa Theresa, 10km from Aguas. Walking is still an option, as is the train.

You'll find basic lodgings in Santa Theresa, which is also a base for exploring the tracks into the highland jungles beyond. It should go without saying that inquiries should be made locally before pinning your hopes on any of these roads; all are prone to landslides as recently as 2016.

MARK HARFENIST

Cruising the cordillera to Cusco

The roads from Huaráz through the cordillera are world class and the possibilities numerous, including following Ruta 3 south then west onto 14 for a superbly twisting descent to Paramonga on the coast. Or take any number of single lane dirt tracks up into the Cordillera Blanca for glaciers, lakes and ancient ruins. Careful study of maps, blogs and forums will reveal one- to three-day loops past remote villages, high passes and through deep canyons. By now you're understanding why you left the Panamericana to the crows, but inquire locally before venturing too far afield, as security can be a concern.

Heading inland, at Ruta 3 junction south of Huaráz continue down to Huánuco over the vast and infinitely variable altiplano ringed by spectacular mountain views and lined with hardscrabble Quechua villages. It can be a rough 330km so allow a full day, if not two. Pushing on from Huánuco, keep going to Huancayo. You can make no bad choices here: the two routes reaching southeast from Cerro de Pasco are equally stunning. Down in Huancayo more superb roads extend to Ayacucho where you can bail onto the paved Ruta 24 to the coast at Pisco.

Ayacucho is a splendid colonial-era town set deep in the Andes and well off the popular routes to Cusco, yet easily accessed by the paved highway from Pisco on the coast. This was a prime battleground during the *Sendero Luminoso* (Shining Path) years, and there's a moving museum and memorial to all victims of that struggle. The road over to Abancay is another knockout; allow a full day from Ayacucho, joining the main route from Nazca to Cusco.

Back on the coast, **Lima** is one of the largest cities on the continent, but transiting on the main highway is actually surprisingly painless. With composure

Venezuela, the Guianas and Brazil

At the top of the continent most overlanders stayed west for the high roads and cooler temperatures through the Andean countries, partly because eastward to Venezuela and the three countries known collectively as **Guianas** had a reputation for high prices and an uninspiring coastline. From Georgetown in Guyana to Macapa in Brazil you're stuck on a single transit route which still isn't entirely sealed and is prone to weather-induced delays. Add the low elevation and it's **hot and muggy**, year-round. Plus even with a 4x4, **inland exploration** in the Guianas takes some commitment, and anyway there's no way into Brazil east of Venezuela.

The incentive to transit this area was further reduced in 2016 by which time **Venezuela**'s simmering economic crisis had boiled over. As a distraction to the ongoing strife, in 2015 all Venezuelan borders were closed, supposedly in an attempt to combat criminals smuggling of Venezuela's subsided commodities. Around the same time the currency was devalued to undermine the thriving black market. The border from Brazil may be open, but at present Colombia can only be entered on foot. As there is no road to Guyana, coming up from Boa Vista in Brazil, you may end up trapped as the country's economy unravels with resultant civil unrest. Shipping via Caracas was never recommended, even in the less bad times.

This doesn't mean Venezuela is a bad country to visit, but your **security** requires attention here (as it does in parts of Colombia). **Caracas** in particular has been famously corrupt and sometimes violent; even before it all blew up overlanders avoided the capital.

All of which is a great shame as Venezuela has plenty to offer: great scenery and still pretty cheap fuel. Even by South America's elevated standards you'll find unique landscapes among the tepui mesas, Caribbean beaches and islands, lowland jungles where cocoa evolved, serrated peaks draped with remnant glaciers, and inland wetlands teeming with bizarre wildlife which, if you've come from Peru, may well include yourself.

While the Colombia–Venezuela border remains blocked, the only through route here runs between Manaus up the BR-174 to Boa Vista for Guyana and the Guianas, then down to Macapa, back on the Amazon estuary. But as you'll read on p469, getting in or out of Manaus *overland* is a hefty proposition, which means that – unless **shipping** via Paramaribo – this 3000-km arc to Macapa isn't the best way to fill your passport pages, when you think of all the wonders to be seen elsewhere.

The other Road to Oxiana. © ihana.com

THE GUIANAS

Like Belize, Guyana, Suriname and French Guiana – the **Guianas** – have a Caribbean rather than Latino culture, and like Belize, few made the diversion even before the Venezuelan situation, so there's a sense of trailblazing rather than following the hordes. The route is obvious; in fact from one end to the other there's no choice.

The colonial history of the Guianas saw the rice and sugar plantations develop with the help of immigrants from the former British and Dutch territories in India and Indonesia as well as Hmong refugees from Laos and Maroons; descendants of African slaves. The less accessible inland regions not suited to cattle ranching remain largely pristine, unlogged jungle populated by protected Amerindian tribes.

Rain and muddy roads will be much more significant impediments to travel. August to November is the main **dry season**, with a dry pause in February, although downpours can hit at any time you forget your brolly.

Guyana

There's **no road link** between Venezuela. Access from the west is via the road from **Boa Vista** in Brazil, some 200km south of the Venezuelan border, for what it's worth. At Boa Vista head northwest 140km to **Lethem** on the Guyanese border over the bridge on the Takutu River. Coming from Guyana, Brazilian immigration can be slow.

As you cross the bridge start driving **on the left** and speaking **English**. An IDP may not be accepted, so along with **insurance** you may need to acquire a local driving permit if you're here (as well as in Suriname) for more than a month. Note that if coming from Suriname to Guyana at Moleson Creek (see below), you'll have to get insurance at Corriverton, 12km up the road.

Still known as 'The Trail', the once-notorious dirt road 460km to **Georgetown** is OK even during the rainy season, with a couple of mudholes on the northern section. Note that **maps** of this route are inaccurate – not least Google. Realistically, it's a two-day drive so plan to take a break halfway.

Guyana's government runs more red tape than a Marxist Morris dancer; legacy of those pedantic Brits. In **Georgetown** ordinary folks are friendly, though at night a cautious person might not stagger around drunk with pocketfuls of cash. Scotia Bank's offices have possibly the only international **ATM** in the land. Food, lodging and services are a notch or two below Suriname, but so are prices. The *Melbourne Hotel* on Sheriff Street is in a good neighbourhood and has secure parking. To get there set course for N06° 48.95′ W58° 8.15′.

Suriname

Suriname has an odd mixture of British and Dutch place names befitting its colonial past. Towns called Glasgow or Manchester are a few kilometres from Europlodder, while Bombay is just down the road and Hindu temples dot the countryside. It's also one of the few South American countries where you'll probably need a **visa or 'tourist card' in advance** (check 💻 surinameembassy.org). They're available back in Georgetown (near Anira St and New Garden St; N06 48.88′ W58 08.9′; look for the red and green flag) same day for around $25. In Cayenne (French Guiana) it's €40, from the consulate at 3 Avenue Leopold Helder (near N04° 56.39′, W52° 20.06′).

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