



ADR ASIA-PACIFIC DEVELOPMENT REVIEW

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STEPS TO RECOVERY

Your vehicle has slipped off the road, you are in a developing country and there is no help available. Harald Pietschmann explains what to do



Bruce Ellstrom



Bruce Ellstrom

LEFT: Using recovery gear is a dangerous activity – always consider all options before reaching for the recovery tools

Recovery means something has gone terribly wrong. Some of us have been in such situations – we all made it out somehow in the end. Proper recovery training might have given us a better, safer chance of getting moving again. Obtaining outside help is another option. Solid training about vehicle and driver limits may have been a good tool to prevent the incident – but since even well trained drivers make mistakes, recovery knowledge comes in handy.

So how do you prepare for something you hope will never happen? Instruction and hands-on training are best, while books and training videos are also valuable. Depth and content of recovery training depends on the particular challenges of the area in which the vehicles are employed. Even though recovery and self-recovery skills are perishable skills, it is better to have been exposed at least once to safe effective solutions than never at all.

4WD schools can be found in many countries and most schools offer only brief insights into safe recovery techniques since, rightfully so, they prioritise teaching techniques to prevent situations that would require the extraction of a vehicle. Few, however, offer training that focuses solely on safe recovery techniques.

The courses include recommendations of suitable recovery gear, effective techniques and guidance on how to manage the stressful demands of vehicle mishaps. The most important thing to do after something unplanned like a serious stuck situation or even a roll-over has happened is to stay calm – there's no need to add insult to injury. A cool head is one of the best tools to have.

Level-headed evaluation and planning is paramount since in addition to a potentially dangerous incident, ranging from stuck in the mud to slipping off the road, comes the operation of dangerous recovery gear. All recovery gear, without exception, is

dangerous to the operator and bystanders. Extreme care needs to be taken when employing their assistance. That's why as part of the evaluation alternative, less aggressive and dangerous steps should be taken before chains, straps and winches come into play.

Vehicle-mounted recovery gear – usually winches powered by electric motors, a hydraulic source or connected to the vehicle's transmission – is probably the most effective when it comes to getting yourself or someone else out. More straightforward tools like HiLift jacks and comealongs are helpful when nothing else is available, but they are quite limited. A wide variety of support tools are needed to employ either kind of tools – ranging from ground anchors and tree savers over chains and straps to pulleys and snatch blocks. This is quite a confusing multitude of add-on gear – so confusing in fact that many wish they could leave the job to someone else. But this is not an option if no outside help is within reach.

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One amazing recovery tool has become very popular recently: the kinetic rope. It is small, lightweight and very effective. But it only works with a second vehicle present. So, again it's not an option for the individual traveller.

As valuable as professional recovery gear is for travellers in less developed areas, a mindset focused on prevention has a much higher value. But in order to develop that mindset one may need training to even be aware of possible disasters.

One thing that is often overlooked is that there might be options other than reaching for the serious and dangerous recovery tools immediately. It's a very wise idea to exhaust all other options to regain traction before getting involved with the recovery gear, mainly because using recovery gear is a dangerous activity and so few are trained to use them properly. If time is not a pressing issue calling for help may be safer than attempting the rescue alone. A satellite phone should be in every car's emergency kit.

In deep soft sand deflating the tyres to as low as 10 psi will often get the vehicle moving again. Of course, one can only resort to airing down if the tyres have not been spun in panic and have dug so deep that a second chance is not available. Spinning

tyres by uneducated drivers is the number one cause of preventable stuck situations. Force can never be the answer in low traction situations. Sometimes a creative restoration of the roadway (taking only a few minutes) can prevent a vehicle from becoming immobile.

Once involved in recovery action, one must constantly monitor progress and be aware of unwanted developments. Most often there are early indicators that the method chosen will not net the anticipated results. Time to reevaluate. Time to chose a different approach, especially for recovery actions or extractions where multiple persons and more than one vehicle are involved. These are prone to creating new problems before the initial one is solved. Since it is unlikely that the 'team' that has found itself together by chance has trained in extracting a vehicle together, there are many chances of new mishaps. If at least one person involved has had recovery training he or she could instruct others about the procedure and necessary steps to ensure safety for all involved. This person might even act as an onsite coordinator or director.

When extracting another vehicle, careful planning is essential. It is bad enough that one vehicle needs help, so getting the helping

vehicle in trouble too would be really tragic. Unfortunately it happens often, and it can be as silly as getting too close to a mud bog for recovery. But even when the assisting vehicle stays on high ground the list of possible mishaps is long. As an example, when attaching an extraction line and fastening it to car parts that are not strong enough to support the pull, the ripped-off parts can become missiles.

Especially dangerous are straps with attached hooks. A driver in the US almost killed himself when a hook came loose during an extraction - the hook penetrated the windshield, the driver's headrest and the rear window. The hook missed the driver's head but knocked him unconscious. His example of reckless use of recovery gear is now used by all 4x4 driving schools to underline the dangers of either improper gear (straps with attached hooks should never be used for extractions!) or the wrong use of otherwise suitable recovery gear. **ADR**

Harald Pietschmann is a journalist, 4WD consultant and a two-time Camel Trophy finalist. He runs The Adventure Company, which offers specialised 4x4 training courses to individuals, companies and government agencies, in various locations. Visit www.4x4abc.com

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Based in Thailand – which is recognised as the global centre for the manufacture of one ton pick-up trucks – GFS operates from a vehicle modification and production plant located in the export-processing zone at the deep-sea port of Laem

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SORV

The ERV (Emergency Response Vehicle) was developed after conversations with local field offices from NGOs and host governments. The requirement was to provide a cost effective vehicle that satisfied the needs of users, and could be maintained easily in remote locations. GFS's ERV is based on the Ford Ranger and met these criteria.



ERV

The SORV (Special Off Road Vehicle) was developed after witnessing the disintegration of conventional 4x4s that were being used in extreme conditions. They were supplied by European traders without any knowledge of the uses of the vehicle, needs of the user and quality of in-territory support – for example high altitudes, extreme temperatures and the need for communications equipment. GFS's solution is a fully mobile vehicle that can be used in a variety of roles and conditions.



MOBILE MAINTENANCE

The Maintenance Truck was developed after listening to the requirements of users operating vehicles and other equipment in remote locations where there are no service centres. The maintenance truck provides an excellent platform for performing everything from routine maintenance to heavy repairs of vehicles and equipment in remote locations. Incorporating a welding set, diesel generator, air compressor, tools, potable water tank, work bench and waste oil disposal mechanism, this vehicle is the one step solution for remote technical work.

HYDRAULIC
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Tipplers and limited edition packages are examples of other vehicles built by GFS using the Ranger platform.

This range of conversions, bolstered by those currently on the drawing board, have all added to GFS's reputation within Asia-Pacific aid and development, as well as worldwide.

GFS's conversions are world class. After-sales support is also an essential aspect of GFS's service, with warranty support and service offered by GFS or a local authorised Ford dealer. **ADR**

For more information visit GFS's website www.globalfleetsales.net



ALUMINIUM FLAT BED

Bruce Elfstrom

Driving in water, sand, snow or mud is difficult at all times, but it can also prove to be dangerous. Good preparation is always necessary

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THE FOUR ELEMENTS

Prepare to confront the unchained elements! Bruce Elfstrom shares his tips for driving safely through mud, water, ice and sand

Mud and water are not good elements on which to drive, and along with sand, can basically be likened to sandpaper. All the bearings, joints and exposed moving parts of the vehicle are susceptible to the action of this 'sandpaper'. So avoid these elements if possible.

MUD

Always walk the area, find out how deep it is, where the rocks or logs are, what the bottom is, etc. Assuming you have no choice, take mud in a higher gear, ie lower torque. Use a bit of momentum and the high gear to cross the mud without spinning the wheels.

Spinning wheels just means digging in and becoming stuck. The trick is to roll over and across the mud and not dig through it. Keep your momentum up; if momentum is lost then do not let the wheels spin for long. Carefully try backing up enough to get a new running start onto the fresh mud using the same technique - gentle throttle, no wheel spin, and momentum. If you must, try going through spinning your wheels, but only if you have forward momentum. When this is lost do not keep the wheels spinning and get yourself deeper into trouble.

The worse case scenario is being stuck or being in such deep mud that the engine's air intake draws some into the engine (very bad). Make sure you know the depth of the mud and the undercarriage clearance of your vehicle.

WATER

Clearly it is vital to determine how deep the water is and the wading limit for your particular vehicle. While surveying the water crossing determine where any hidden obstacles might be and what is on the bottom. Use a long stick or pole and feel the bottom as you pull the stick across the water. Make a grid-like pattern so you are confident of the location of everything of concern.

Approaching any water needs to be done with the vehicle's engine RPMs as low as can be. If you hit the water with the engine at high RPMs the engine-cooling fan will twist and puncture the radiator, or the fan will break apart and drive through the radiator. The results will be an overheated and seized engine within a few minutes. Slow RPMs will allow the clutch



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on the engine-cooling fan to stop with the resistance of the water so the cooling fan will remain straight and intact.

Water comes in two basic types: flowing clear water and isolated silty water. Clearly there is a continuum between the two, but clear flowing water tends to have a hard bottom since the soft material eroded away long ago. Isolated water tends to trap mud and debris. If the water is shallow enough to cross without the engine's air-intake submerging, then cross it at a slow to moderate and even pace. Do not 'push' the water fast or a wave will form and rise up into the engine bay and into the air-intake. If the bottom is silt ridden or deep in mud, then you will need to cross this like a mud crossing (see above).

If the water gets close to the height of your air-intake, a slow crossing will not do. In this case you must make what is known as a bow wave. A bow wave is formed by pushing the water with your front bumper at an even pace, making a wave in front of your vehicle. This wave needs to be kept against the bumper; too fast and you run through it, too slow and it moves ahead of you.

Either case results in the water entering your engine bay and air-intake. As with most

marginal and technical driving, do not do this for the first time in the field, but practice before a trip.

There are two worse case scenarios: being stuck in the mud or drawing in water to the engine. If you're stuck you may be able to recover yourself (remember, backing up first might be best). If your engine has ingested water you're in trouble. A diesel will often just break apart. Due to its high compression, water doesn't compress much, and therefore the metal rods and shafts will break or bend. A petrol or gas engine will usually lose its electronics and damage tends to be less than a diesel. Mechanically there are ways to save the engine if it is just wet and not too damaged.

ICE AND SNOW

Snow and ice, while rarely encountered in the tropics, can be an issue at high altitudes. Every aspect about driving in snow and ice is done to avoid wheel spin, brake lock-up and skidding, and digging in. As with all off-road driving, driving in snow and ice is analogous to walking. How do you walk up an ice-covered slope? You do not push as hard as you can since this will cause your feet to slip out from under you. Instead you walk on ice and

snow by pushing on the ground just enough to move your body and no more. You use a bit of momentum if you need it so that on the ice all you do is keep direction and balance and you are not attempting to gain more speed. Drive like you walk - low torque gears (high gears in number), gentle changes in direction, gentle brakes or none at all, and do not spin down through the snow unless it is very shallow. There is no general worse case scenario, as snow and ice can cover almost any type of road condition. Snow and ice just makes everything you drive across much more slick and therefore dangerous.

SAND

Driving in sand takes experience to master. A lifetime of 'regular' off-road driving will not prepare you to drive perfectly in sand unless you grew up in sand. Sand does not hold the grip of tyres well at all. Sand always moves away easily from something pushing it and hot sand moves more easily than cool sand. Here are some tips:

- Air down your tyres - letting air out of your tyres spreads the weight of the vehicle over a larger area so you sink less and push more softly.

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- Carry a ground anchor, sand ladders, and large base for the high-lift jack. Walk the sand first and make sure you walk an area you will not drive over – do not break the crust of the sand you plan to drive on.
- Avoid wheel spin with lost forward momentum. First high can often be used to allow a vehicle to idle with wheel spin as long as forward progress is still made – never dig in.

In sand with a soft top layer and hard under layer, try to use high ratio gears, but if momentum is consistently lost use low ratio with high gears. Between all gears and ratios, the correct speed and torque ratio is usually available. Test out all options while you can still move, but remember all vehicles are different, so do not generalise or listen too much to passengers who think they 'know' the correct gear and speed.

Assess sand type and conditions: here are some general lines to follow on a scale of 1 to 10, 10 being bad.

Dry sand types: Cold shady – 1; Cold sunny – 3; Hot shady – 6; Hot sunny – 10.

Wet sand types: Cold shady – 1; Cold sunny – 1; Hot shady – 4; Hot sunny – 6; Very wet – 10.

Assess texture: waves – usually means fairly firm – 1-6; smooth – 3-10 – walk it; hillside (dune) – usually loose and deep 7-10; Crusty – 1-4.

Assess colour: lighter than surrounding – softer and dry; darker – firmer and wet.

Assess terrain in dunes: top of hills – usually firmer due to soft sand being displaced by wind; leeward side of hill/dune can be very soft so take care; troughs of hills are soft, usually accumulations of light blown sand.

Depth perception is very easily lost in sand, so pay close attention to texture and colour changes. A change in colour or texture may very well be a dip, hill or hole, so take care – at high speeds this can spell disaster. Avoid other vehicles' tracks in soft sand. Stay on other vehicle tracks on hard sand as this minimises environmental damage and avoids sinkholes. Avoid vegetation – sand vegetation systems are very sensitive and delicate ecosystems and they hold rocks and other objects that will puncture tyres. Use high ratio and higher speeds in soft dune areas.

Ascend very large soft dunes at an angle to hill grade. Rarely do you turn your side to a hill, but often you must to keep up the momentum to climb the dune. This minimises loss of

traction due to grade of hill, but remember that once sand starts to 'avalanche' it is hard to stop it. Large dunes may have to be traversed in large zig-zag motions in order to keep the general line of direction. The turns during the zig-zag should be smooth and even. Once the summit of the dune is reached lift throttle and slow momentum – do not go over the top of the dune. At the top slow down and turn to drive along the ridge of the dune. Get out and check sand on leeward side for structure type and drivability.

Driving down dunes, use higher gears and don't brake. If your nose begins to sink or the rear of the vehicle begins to lift, apply throttle and steer straight down the slope to regain control. In the troughs of dunes, as you descend a dune don't ascend the next. Instead, turn gently parallel to the dunes to gain or retain speed or find hard sand. Keep your momentum until safe! Remember, the lee and trough of a dune holds the softest sands. **ADR**

Bruce Elfstrom is the founder of Overland Experts, which offers base training to advance preparation courses in New England, California, or on location. For further information visit www.overlandexperts.com

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