



Anangu Pitjantjatjara Yankunytjatjara

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Anangu Pitjantjatjara Yankunytjatjara

Field Work

Emergency Manual

**A part of an overall
Occupational Health and Safety Plan**

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INTRODUCTION

Field work is a vital part of doing business on the Anangu Pitjantjatjara Yankunytjatjara Lands. You may often find yourself in a remote location with few people around at a time you most need assistance.

The following manual was provided from a variety of sources in order to give employees some useful information that may assist them in a time of emergency.

Special thanks go to Steve Weatherill, Nganampa Health Council and Lyn Broadbridge, PIRSA for providing information and technical assistance.

A handwritten signature in black ink that reads "Ken Newman". The signature is written in a cursive, flowing style.

KEN NEWMAN
General Manager

1. AVOIDING SNAKES

Snakes are one of the few wildlife hazards that may be encountered during fieldwork. The following suggestions may minimise the risk of injury by snakebite.

- Snakes are most active in Spring (even if cold weather) and Summer.
- Wear suitable clothing when walking in the bush: boots, long trousers and gaiters will protect the legs from snakebite.
- Avoid walking in long grass; if possible walk where you can see where you place your feet.
- If in an area where snakes may be present make noise as you walk by stomping the ground and talking. Snakes will generally get out of your way before you even see them.
- Don't put hands into hollow logs, rabbit warrens, or under rocks etc.
- Some snakes such as tiger snakes can be aggressive; avoid camping near or walking through reeds and swampy patches that they may inhabit.
- Keep swags rolled up and tents zipped up when not in use.
- Wear gloves when collecting wood for campfires.
- Wear long trousers, even when in the camp area.
- Never attempt to kill a snake with an improvised weapon, this is a dangerous practice.

Extract from Royal Flying Doctor Service website

Snake bites often are not painful and you might not realise you have been bitten. Take note if experiencing any of the following symptoms:

- Continued bleeding from bite site
- Tender or painful regional lymph nodes
- Headache, nausea, vomiting, abdominal pain
- Sudden and perhaps transient hypotension (abnormally low blood pressure) which may cause partial loss of consciousness
- Blurred or double vision
- Facial paralysis
- Muscle weakness and the diaphragm may be paralysed progressively.

2. BUSH SENSE AND SURVIVAL TECHNIQUES

a. General Survival Notes

Most bush fatalities are due to persons leaving their vehicles and not drinking enough water. Casualties are often found with water still in their water bottles. Once a serious level of dehydration is reached the person will become confused and forget to drink the water or try to save it for later when they become more thirsty.

- Prior planning is the key to survival. Ensure you follow your itinerary so if you become lost you will be found. Always take adequate equipment as stated in this manual.
- Only leave your vehicle if you are absolutely certain you can walk to the nearest place and it is not far away ie: less than 5kms and you know exactly how to get there and can carry enough water to undertake the walk without becoming dehydrated. Always leave a message at your vehicle stating your destination, time and date. Do not walk in hot weather conditions. Stay with your vehicle.
- If you are working alone and have adequate water and food to last until you are rescued, do not walk away from your vehicle.
- Always drink the water you have before you become disorientated and confused. Dehydration can cause you to make mistakes.

- Try to remain as calm as possible and think clearly.
- Conserve energy and minimise perspiration by resting in the shade.
- Remember to drink enough fluids. Unless you have lost your vehicle you should have plenty of water available.
- Stay with or near your vehicle.
- Keep out of the hot sun.
- Set up signal fires and make yourself as visible as possible from both air and ground.
- Keep busy. Survival is 80% will power. Your mental state will improve if you are busy.
- Avoid alcohol.
- Avoid bush tucker unless you are certain of what the food is. You will be rescued before you starve.

b. Manual Handling

Many injuries occur whilst people are engaged in manually handling equipment of some kind. Injuries may range from minor cuts and bruises to serious back injuries. Due to the variety of materials being manually handled during field activities, it is not possible to provide specific advice for individual tasks. However, the points below provide a general guide to minimise risk of injury.

- Training in manual handling procedures should be undertaken by all field staff.
- Avoid lifting heavy objects when possible.
- Use correct position and posture when lifting. Bend knees and keep back straight.
- Where possible mechanical lifting devices should be used. These include: hoists, cranes, levers, carrying frames, trolleys, hand trucks and forklifts.
- Arrange work areas and campsites to reduce risk from manual handling. Consider workplace layout and general environment, including underfoot conditions. Size, surface characteristics, shape, stability and weight of objects. Vertical and horizontal movements involved. Work postures and space requirements.
- Reduce pushing, pulling, carrying and holding tasks.
- Avoid the need for bending, twisting and reaching movements.
- Minimise the lifting and lowering forces exerted.

c. Water Collection

- Transpiration bags and desert stills can be used to collect drinking water.
- Salty bore water could be distilled, improvise using water bottle, billies and hoses from vehicle etc.
- Metal water bottles are useful for boiling water as well as carrying it.
- Grain feeding birds fly fast to water and slow from water.
- Thoroughly boil water collected from creeks etc. before consuming.
- Water purification tablets can be useful.

3. CAMP MANAGEMENT

Occupational injuries associated with camping include all those associated with cooking in domestic kitchens, (such as burns and cuts) and those caused by tripping, lifting, poor lighting or hygiene. A poorly chosen site can lead to risks involved with flooding or bush fires.

Larger camps should appoint a camp manager to ensure safe operation of the camp. Smaller camps may not require a manager but should designate specific tasks to individuals to ensure safe conditions.

a. Camp Location

- Respect the local wildlife when setting up camp. As well as disturbing wildlife some species may not be good neighbours (such as scorpions and bull ants) - check the area before setting up.
- Swags should be left rolled up and tents zipped up when not in use to prevent insects, snakes etc., from entering.
- Creek beds are picturesque campsites but may be hazardous if flash flooding occurs. Never camp in the main channel of a creek.
- Sites should be reasonably level, free of excessive obstacles, with a few shade trees if possible. In the best sites it is possible to walk about the camp without watching where you put your feet.
- Sandy to gravelly ground is preferable to clay soils that will break up with traffic and become dusty in dry weather or muddy in rain.
- Camps should not be placed beneath trees that may lose branches.
- If practical, vehicle access tracks should be downwind of the camp to keep dust from vehicles to a minimum.
- Avoid camping next to main roads and tracks.
- In some areas mosquitoes may carry Ross River virus. If camping in a mosquito infested area use mosquito nets and insect repellent and wear light coloured clothing.
- Observe all fire bans and restrictions for the area.

b. Campfire Safety

Wood collecting and campfires can be hazardous. The following points may help prevent injury or accidents occurring.

- Use gardening or leather gloves when removing pots from the fire or collecting wood.
- Avoid unnecessary wood chopping.
- Collect sufficient wood for the evening during daylight hours.
- Position the campfire in a safe place with reasonable clearance from tents, swags, vehicles and surrounding vegetation.
- Keep campfires tidy. Long pieces of wood left in campfires may be tripped over or start bush fires.
- Satellite fires used for cooking should be positioned away from main walking areas and should be extinguished after use.
- Some rocks may explode when heated sufficiently. Dig a shallow hole for the fire rather than using rocks to contain it.
- Do not refuel vehicles near campfires.
- Extinguish all fires before leaving camp and cover with earth.
- Wear adequate footwear around the campfire.
- Do not leave campfires unattended in windy conditions.

c. General matters

- Keep lids secured on water jerry cans when not in use.
- Ensure adequate lighting in the camp.- use torches.
- Wear sturdy footwear around the camp.

d. Generators

Using a generator at a more permanent camp can improve safety by providing good lighting and refrigeration facilities. Safe practice when using generators includes;

- Choose the correct generator for the job. Ensure it has been well maintained.
- Appoint a particular person to be responsible for the generator and associated wiring and equipment.
- Lay out cables so that they do not pose a tripping hazard or get wet.

- Tape up plugs where extension cables join power boards etc. to prevent moisture entering and accidental unplugging.
- Refuel, inspect and service the generator daily as required.
- Do not allow the generator to run dry of fuel or oil so it can not be instantly restarted. Oil should be changed weekly.
- Store fuel in a safe place in the correct containers.
- Position a fire extinguisher near the generator.
- Locate the generator so that noise levels and exhaust nuisance are as low as possible.
- Generators are extremely heavy. When moving ensure safe manual handling practices are employed.

e. Health and Hygiene

- Camping in remote areas often means there are no facilities for personal hygiene. Ensure hands are washed before handling food.
- Fridges should be operated for a period of time each day to ensure food is kept sufficiently cold.
- Keep fridges clean. Pay particular attention to meat products that may leak blood into the fridge. Meat can be vacuum packed at purchase to keep it fresh for longer periods of time.
- Cooking utensils should be washed after use and returned to a clean storage area.
- Food should be stored correctly and if possible in sealed containers. - Crows, dingoes and ants are notorious food scavengers.
- Fresh fruit and vegetables will keep longer if kept in a separate fridge set on a low setting. This will keep them cool rather than cold and prevent items from freezing. Avoid unnecessary handling of the fruit and vegetables as this may cause them to bruise and deteriorate more rapidly

f. Liquefied Petroleum Gas (LPG)

Bottled gas is heavier than air, and accumulates in confined areas where it can explode if ignited. It is a common cause of fires, explosions and injuries. Precautions include;

- Make sure all connections are tight. Check for gas leaks with a detergent and water solution that will bubble at a leaking connection.
- Store gas bottles away from naked flames and open fires.
- Do not keep gas bottles for stoves or refrigerators in confined places where gas can accumulate.
- Make sure that gas systems in larger or permanent camp sites are installed by a licensed gas fitter.
- Return or safely dispose of any damaged bottles.

g. Waste Disposal

- Correct disposal of food scraps, cooking and washing water is essential. For short term camps with only a few people, food scraps can be buried or burned, and water allowed to drain away naturally. Empty cans and bottles should be placed in a garbage bag for disposal at the nearest rubbish dump or recycling depot.
- Bury all human waste away from the campsite. Avoid using water catchment areas as toilet sites.
- Install a "long-drop" toilet if a group is camping for extended periods in one location.
- Carry your own water. Soap or detergents should not be used in any natural water course or stock watering point.
- Ensure all waste disposal methods used comply with current government legislation.

4. DRIVING VEHICLES

a. Driver Requirements

i. Training

- Drivers must have adequate training or experience in general driving, off road driving and collision avoidance.
- Drivers must have a current drivers licence applicable to the vehicle they are driving.

ii. Driving

- Excessive speeds greatly increase both the chance of **serious accidents** and of **damage** to vehicles and tyres.
- All vehicles must be driven within the **legal speed limits**. If drivers are caught speeding they are personally liable for the fines and other penalties. In addition, particularly on unsealed roads, speeds must be kept to a **reasonable and safe level dependant on the conditions** – usually well below the legal limit
- **Seat belts** must be worn at all times.
- Drive according to road **traffic rules** and conditions.
- Staff should not drive vehicles greater than 12 hours in any 24 hour period, even if driving is shared.
- Have **regular driver changes** or breaks when driving long distances.
- When travelling long distances avoid travelling alone unless absolutely necessary. Assess the risks prior to departure. Take regular breaks (two hourly).
- **Do not drive when tired or drowsy**. Where travel and work may exceed 12 hours in any 24 hour period, stay overnight.
- **Driving at night or dusk should be avoided if possible**. Assess the risks prior to commencing.
- Drivers should **not operate mobile telephones or satellite phones while driving** unless they are “hands free” telephones.
- APY employees must not drive a vehicle while under the influence of any drug or with a blood alcohol level in excess of the current legal limit of 0.05%.
- Staff are not to drive vehicles when adversely affected by alcohol and where the taking of medication or drugs may induce drowsiness.

b. General Safety Issues – Prior to Departure

i. Packing and towing

- Trailers and caravans must not exceed towing capacity of tow bar and vehicle.
- Ensure brake lights and indicators on trailers and caravans are fully operational and visible.
- Ensure the trailer or caravan is hitched correctly and is in good condition.
- Do not overload trailers or vehicles.
- Items carried outside the vehicle eg. roof rack, tray of ute etc. must be secured.
- Do not overload roof rack with heavy items.
- Load and pack with care. Place loose and dangerous objects behind the cargo barrier.
- Ensure tarpaulins used to secure loads are not covering brake lights or indicators.
- Ensure the fire extinguisher and first aid kit are easily accessible and in good working order.
- Pack frequently used and heavier items in easily accessible areas of the vehicle to avoid excessive lifting of equipment.

ii. Vehicles before departure

- When travelling to remote and pastoral lease areas ensure your vehicle is equipped with standard safety and camping equipment. Use the checklist and suggestions in the “Field Equipment for Vehicles” section of this manual.
- Take the appropriate vehicle for the terrain you are intending to travel over.
- Check the vehicle for problems before departing. Report any vehicle problems that occur while you are using the vehicle and ensure they are repaired.

c. Off- Road Driving

i. Driving Off-Road

- Ensure your vehicle is suitable for the terrain you intend to drive in. Ensure you have all the necessary safety equipment for this type of driving including spare tyres and puncture repair kit.
- Use tracks if appropriate in preference to travelling across country. Avoid damaging vegetation as much as possible.
- **Fire hazards:** avoid driving and parking in long dry grass and watch out for vegetation caught underneath the vehicle, particularly near the exhaust, differential and drive shaft.
- Take your time when driving off road and choose the safest route, avoid unnecessarily risky situations particularly if there is only one vehicle present.
- When fixing tyres ensure the jack is safe, properly set up and stable. Do not get under the vehicle.
- Check tyres daily for cuts, stakes or abnormal wear.
- Rabbit warrens, wombat holes etc. may collapse if driven over and could cause damage to the vehicle. Take extra care if in an area where these are present.
- In some areas extra care may need to be taken to avoid punctures, particularly where there are small bushes (eg. saltbush), stakes and sharp rocks (eg. slate) protruding from the ground.
- If uncertain about the vehicle being capable of getting through a particular obstacle, get out of the vehicle, have a look and walk over the proposed route first to decide if access is possible.
- **Descending steep slopes:** Use low range, low gear and a square-on approach. Avoid changing gears, allow the vehicle to descend on engine compression, don't use the clutch. If brakes are used, ease them on and off gently. If loss of traction occurs keep the vehicle pointing downhill, do not turn the vehicle.
- **Ascending:** Use low range, first gear and square-on approach, keep an even steady pace.
- Watch out for boggy areas and sharp gutters that can trap vehicles.
- Avoid salt pans which are usually underlain by mud.

ii. Mud Driving Tips

- Reduce speed on muddy roads to avoid sliding.
- Keep the vehicle moving, using momentum but not excessive power.
- Stop and inspect muddy areas with obstacles before crossing, once committed to the crossing keep the vehicle moving.
- Use low range second or third gear. Changing gears may cause loss of traction. In some instances muddy patches can be negotiated by driving slowly forward then back compacting the muddy surface to create a more solid base.
- Avoid “grassy” or “swampy” patches, “crab holes” and white, salty patches as these may be wet beneath the surface and the vehicle may become bogged.
- If becoming bogged, reduce acceleration to avoid digging in, look out side window to check if vehicle is still moving forward or not before you decide to try reversing out.

iii. Sand Driving Tips

- Use low range in sandy conditions. Keep revs constant and if necessary, deflate tyres slightly to improve traction. Reinflate tyres once out of the sandy area.
- If becoming bogged in sand reverse out slowly before the vehicle digs in too far then attempt to move forward again. Turning the vehicle sharply in sand can make the vehicle dig in. Try to keep the wheels as straight as possible while there is still momentum.
- If bogged, try turning the wheels hard to the left or right then in low range attempt to drive out. The vehicle may regain traction.
- Increase speed when traction is good. Use momentum to keep the vehicle from sinking into sand.
- If driving over sand dunes and you do not have enough momentum to make it to the top don't allow the vehicle to slide sideways back down the sand dune. Put the vehicle in reverse and drive it down.

iv. Unsealed Roads and Station Tracks

- All field personnel must be trained or have adequate experience driving in off road conditions before undertaking fieldwork.
- State road rules apply to public unsealed roads. Drivers must have a current drivers licence and follow the road rules. Traffic infringement fines must be paid by the person driving the vehicle at the time of the infringement.
- If experiencing bad weather, check road conditions before driving on unsealed roads. Roads may be closed.
- Station owners do not appreciate persons driving on wet station tracks and damaging the surface. Consult with station owners if experiencing wet weather.
- Lock in 4WD hubs when travelling on unsealed roads in case 4WD is required.
- Unlock 4WD hubs when travelling on the sealed roads.
- Inspect tyres for damage after travelling off road and on unsealed roads.
- Reduce speed when travelling on unsealed roads and tracks. Be aware of potential sudden changes in the road surface. Gravel or bulldust patches entered at high speed can cause vehicle roll overs.
- Do not attempt to pass a vehicle in a cloud of dust. Drive with headlights on while on the Lands to make your vehicle more visible.
- Try to avoid travel at night and dusk on unsealed roads. If travel is necessary, reduce speed and be aware of animals crossing the road. Assume they will cross in front of you. Slow down and avoid swerving suddenly.
- Wet roads may be slippery and cause loss of vehicle control. Drive on wet roads only if safe to do so and travel at a reduced speed. Exercise caution at creek crossings particularly after rain as the road may be damaged. Transport SA sometimes place red flags at washed away creek crossings to warn motorists of the hazard.
- When travelling on station tracks or private roads extreme care should be taken.
- Always leave gates as you found them. Slow down when approaching dwellings to reduce dust.
- Slow down when stock are present near tracks.
- If you become bogged on a station track and have to dig the vehicle out, repair damage to the road as much as possible before departing.
- **Blowouts:** Do not brake suddenly or swerve. Slow down carefully and keep to the middle of the road.
- When driving near fences watch for pieces of wire that may become caught under the vehicle. Always stop immediately and check the vehicle if you suspect a piece of wire may be caught.
- Reduce speed at grids and gates.

v. Winches and Tow Cables

- Stand clear of cables when winching or towing.
- Check the cable is in good condition before use.
- Pull on the drum part of the winch not the cable. Unwind all but approximately 6 cable wraps.
- Always use gloves when handling steel tow cables or winch cables to avoid steel splinters.
- To assist the winch, have the bogged vehicle in low range first gear.
- Electrical winches will overheat and burn out if used for extended periods. When using a power winch use for short periods then allow the winch to cool down.
- Always have the engine running when the winch is in operation to prevent flattening the vehicle battery.
- Attach tow cables, winch cables and snatchem straps to towing points, not to tow ball.
- When winching is completed, clean the cable and wind back onto drum evenly.

5. FIELD EQUIPMENT FOR VEHICLES

All vehicles being used for travel in remote areas should be fitted with or carry the safety and field equipment listed below. Ensure all equipment is in good order before departing. A camping equipment list can be found in the Bush Camping Equipment section below.

It is your responsibility to ensure all field equipment is in good working condition before departing on a field trip. Replace any broken or damaged items.

a. Vehicle Equipment Checklist

STANDARD SAFETY EQUIPMENT THAT SHOULD BE IN THE VEHICLE (Note: Never assume items are in the vehicle, always check before departing.)	
Satellite telephone or UHF Radio	Check operation.
Mobil card and State Fleet vehicle repair slips	Usually in the vehicle glove compartment in a State Fleet folder.
Vehicle manual	
Cargo barrier	
Radio operations handbook and cheat sheet (if applicable)	Check these are in the glove compartment before departure
Radio and aerial (some vehicles)	Test operation before departing
Two spare tyres	Check that rims are the same as the ones on the vehicle and require the same number of fasteners. Depending on the area you are travelling to a puncture repair kit, bead breaker, tyre levers and spare tubes may be required. Check the tyre repair kit is suitable for the tyres (tubes, tubeless) Check condition of tyres
Jack, handle and wheel brace	A spare jack may also be of use. Hydraulic Jacks must be stored in a vertical position

Tool kit	This is an additional tool kit, not the standard vehicle kit. Check contents are suitable and in good condition.
First Aid Kit	Check contents are intact and the use-by dates have not expired
Fire extinguisher	Check extinguisher is full
Puncture repair kit	Ensure the correct type for tyres of vehicle, tubeless or tubes and that all components of the kit are there.
Field Safety and Procedures manual	Usually in the side pocket of door
Jacking boards or plate	
Compressor / Tyre pump	
Tyre pressure gauge	
Tow cable	Check condition.
Jumper leads	
Shovel	Long handle shovels are best when bogged to avoid reaching under the vehicle.
Water	More than one jerry can in case of leaks or spills. Traytop vehicles may be fitted with a water tank, ensure the tank is full.
Fuel jerry cans	Most vehicles have long range fuel tanks so jerry cans may not be required unless travelling to a remote area that does not have fuel available.
Oil and brake fluid	May need to purchase, ensure correct type.
Matches or lighters	Water proof matches, several packets should be taken
GPS	Spare batteries
Torch	Spare batteries
Relevant maps and aerial photographs	
Local order book, cash or Government credit card	For unexpected expenses, NB: credit cards may not be accepted in some locations
Camping equipment suitable for the field work being undertaken.	See suggestions in the "Bush camping Equipment" section of this manual
Spare food for emergency use	At least one weeks supply of food with a long shelf life, eg; Rice, pasta, canned food not requiring water to prepare, dried fruit, nuts, barley sugar etc.

6. EMERGENCY SIGNALLING DEVICES AND PROCEDURES

a. Signal Fires

Emergency signalling can be achieved through signal fires

- Position signal fires in a clearing for maximum visibility.

- Use a smoky fire during the day and a bright fire at night.
- Keep the fires burning at all times whilst waiting to be rescued.
- Quickly increase the intensity of the fire if you hear an aircraft approaching.
- Keep plenty of wood ready to add to the fire.

b. Search and Rescue Symbols

MESSAGE	CODE SYMBOL
Require doctor, serious injuries	I
Probably safe to land here	∂
Require medical supplies	II
Require fuel and oil	Λ
Unable to proceed	X
All well	ΛΛ
Require food and water	F
No	N
Indicate direction to proceed	K
Yes	Ψ
Am proceeding in this direction	↑
Not understood	[]

c. Other Signalling Options

- Emergency thermal blankets make good signalling devices. Hang them over trees or bushes to attract attention.
- Items such as brightly coloured sleeping bags and clothes can also be used.
- A chemical light tied to a piece of string can be used to create a large circular light.
- Audio devices such as a whistle, car horn, banging rocks together can be useful for attracting the attention of ground search parties.

7. SAFETY DURING THUNDER STORMS

Extract from Bureau of Meteorology (BOM) website

- Seek shelter in a 'hard-top' (metal-bodied) vehicle or solid building but **avoid** small open structures or fabric tents.
- **Never** shelter under small groups of (or single) trees.
- If far from shelter, crouch (alone, feet together), preferably in a hollow. Remove metal objects from head/body. **Don't** lie down flat but **avoid** being the highest object in the vicinity.
- If your hair stands on end or you hear 'buzzing' from nearby rocks, fences, etc, move **immediately**. At night, a blue glow may show if an object is about to be struck (St Elmo's fire).
- **Stay away** from metal poles, fences, clothes lines etc. that may act as lightning rods.
- If driving a vehicle, slow down or park away from trees, power lines etc. Stay inside metal-bodied (hard top) vehicles or caravans but **don't** touch any metal sections.
- When struck, people do **not** glow or 'fry to a crisp' but the heart and breathing **are** often affected.
- Only about 30% of people struck actually die, and the incidence of long-term disability is low, particularly when appropriate first aid is applied **promptly**.
- If your clothes are wet, you are less likely to be seriously injured if struck, as most of the charge will conduct through the wet clothes rather than your body.
- **Avoid** touching brick or concrete, or standing bare-footed on concrete or tiled floors.
- **Avoid** the use of fixed telephones. In emergencies, make calls brief.

8. SERIOUS MEDICAL or OTHER EMERGENCY PROCEDURES

- Don't panic.
- Do not endanger your own life.
- Use your first aid skills as best you can.

Contact the RFDS. Telephone: 08 8642 2044 or Emergency 000

- Remember to give a good description of your location including the State name and if possible, have a brief assessment of medical aspects of the incident ready before calling.
- Give a GPS location, if known.
- If possible keep your telephone switched on during the emergency for communications. This may not be possible if battery power is limited. In this case organise call back times and numbers with the emergency service assisting.
- Write down any instructions.
- RFDS will give you instructions for first aid.
- If in a difficult to find location, unable to drive out but able to leave the patient for a few minutes, do so and erect some signalling devices so you can be located more easily. See Emergency signalling devices section in this manual.

Monday to Friday 8am, 1pm and 5pm.
Saturday, Sundays and Public Holidays - 9am only.

RFDS BASE		TELEPHONE
VJD Alice Springs	RFDS Central Operations	08 8952 5355
VNZ Port Augusta	RFDS Central Operations	08 8642 5555
VJC Broken Hill	RFDS South Eastern Section	08 8080 1777

9. TYRE MAINTENANCE AND REPAIRS

a. Battery Problems

- Many vehicles are fitted with dual batteries. This will reduce the likelihood of a flat battery occurring. Jumper leads should be taken in case the main battery is flattened by leaving lights on or by faults with the auxiliary battery.
- The second battery provides power for the fridge, satellite phone. If the fridge is left on overnight the vehicle may need to be started and left idling for 30 minutes to charge the battery enough to use the radio in the morning.
- Care should be taken when operating a refrigerator via the cigarette lighter that is wired to the main battery. When not using the vehicle often, start the vehicle engine and leave running for at least 1 to 2 hours each day. Operate the fridge on a low setting for a few hours when the vehicle is not being used, if the vehicle is being used, run the fridge on a higher setting. Always run the fridge on a lower setting at night or switch it off.
- See the SOP's below for instructions on jumpstarting.

b. How to Repair a Split Rim Tyre

i. Equipment required: Tyre levers, ground sheet, rubber mallet, compressor, bead breaker and puncture repair kit. Ensure the puncture repair kit contains patches of varying sizes, glue, chalk, valve tool, rasp and stitcher. Spare valves and a spare tube should also be taken.

- Remove flat tyre from vehicle and lay tyre face up on the ground sheet.
- Release all air from tyre by removing the valve core with the valve tool, put valve core in a safe place where it won't get lost.
- Break the bead using a bead breaker. If no bead breaker the bead can be broken by carefully driving over the edge of the tyre.
- Mark the position of the split in the ring and the position of the valve on the tyre with chalk.
- Stand on the tyre and insert the tyre lever into the join in the ring and push down.
- Insert the other tyre lever into the manufacturer's notch on the inside of the ring.
- Pull up on the lever and lever the ring out, working around the rim as necessary.
- Remove the rim, having something under the rim (such as a rock sample) makes this task easier, the tyre can then be pushed downward and comes off easily.
- Remove the tube and rim liner.
- Locate the puncture in the tube and remove any items that may have caused the puncture from both the tube and inside of the tyre.
- Mark out the puncture with chalk.
- Ensure area to be patched is dry then roughen with rasp and clean with a cloth.
- Apply vulcanising cement and allow to dry for a few minutes.
- Peel backing off patch and apply patch over the hole and vulcanising cement.
- Roll the stitcher repeatedly over the patch from the centre outward until the patch is firmly adhered
- Test for leaks.
- Place the tube back inside the tyre and partially inflate.
- Place the rim liner in the tyre over the tube.
- Place the tyre over the rim, with the rim facing upward.
- Locate the valve and insert through the rim.
- Align the valve with the chalk marks on the tyre.
- Replace the split ring in the original position align with chalk marks made earlier.
- Hammer or push on the ring, working around the ring until completely seated in position.
- Extreme care must be taken when reinflating a split rim tyre. With the tyre under the vehicle or leaning against vehicle, split rim facing into vehicle or ground under the vehicle inflate the tyre.

c. How to Repair a Tubeless Tyre

i. Equipment required: puncture repair kit (plugging string type), includes tyre pliers, rasp/probe tool, insertion tool, strings and glue. Compressor.

- If the puncture is on the outside wall of the tyre it may be fixed whilst still on the vehicle, if on tread or inside wall of tyre, the tyre will have to be taken off of the vehicle.
- Remove the foreign object from the tyre with pliers.
- Clean out the hole using the rasp/probe tool.
- Apply cement to the hole.
- Centre the "hole plugging string" in the middle of the eye of the insertion tool and coat with cement.
- Firmly push the insertion tool with hole plugging string into the puncture.
- Twist tool to release string and remove tool from hole.
- Cut of any excess string.

- Reinflate tyre and test for leaks with soapy water.

d. Repairing Punctured Tyres

Some safety hazards may be encountered when repairing tyres;

- Before travelling to an area where no assistance for tyre repairs is available, ensure adequate training in tyre repairs is undertaken.
- When removing and replacing tyres follow the procedure in the “Tyre Repair SOP” below. Extra care may need to be taken to ensure the vehicle is stable on the jack when punctures occur on uneven ground or rough terrain.
- Keep one spare tyre repaired and useable at all times.
- Take care when lifting tyres and operating tyre repair equipment.
- Repairing punctures is potentially hazardous when working with split rims, particularly when reinflating the repaired tyre. Always place the tyre with the split rim facing the vehicle or under the vehicle or stand well away from the tyre with the vehicle between people and the tyre, the split rim may come off once under pressure if not refitted properly.
- Ensure tyres are inflated to the correct pressure, check with tyre pressure gauge. Consider load weight and terrain.
- When repairing a tyre (split rim type) work on a tarpaulin to avoid; losing valves and other small pieces of equipment, kneeling on rough ground, getting dirt inside the tyre.

e. Vehicle Checks Whilst in the Field

The following should be checked during the field trip, particularly extended trips into remote areas:

i. General vehicle checks

- Operation of all lights.
- Check free wheeling hubs if fitted – ensure in correct position as required.
- All accessories – eg radio, sat phone, compressor, fridge.
- Check for damage to body panels, lenses.
- Check aerial mounts and connectors (especially in rough corrugated road conditions)
- Check water tanks if fitted
- Check vehicle winches or cranes if fitted

ii. Under bonnet checks

- Engine oil level
- Auto transmission oil (where fitted).
- Brake and clutch hydraulic fluid levels.
- Power steering oil level.
- Radiator hoses – check for leaks and tightness of clamps.
- Battery fluid level, cleanliness and tightness of terminal fittings, integrity of battery holders, – also check attachment of earth cables to body and engine.
- Radiator – check for blockage of core fins, check integrity of radiator cap and seal, check coolant level.
- Belts – check radiator, power steering, air conditioner belts for integrity and correct tension.
- Air filter – check for build up of dust – clean as required.
- Check washer reservoir level.
- Visually check other equipment eg electrical accessories (connectors/fuses), air intakes. **Look for problems before they stop the vehicle.**

iii. Under vehicle checks

- Check ground under vehicle for evidence of leaks – investigate as required.
- Check suspension springs and shock absorbers for damage, distortion and integrity of mounts and fittings (especially in rough corrugated road conditions)
- Ensure there is no build up of vegetation under the vehicle that may ignite or affect other equipment.
- Check towbar/bullbar mounts (especially in rough corrugated road conditions)
- Visually check brake lines/cables for damage.

iv. Wheels and Tyres

- Visually inspect all tyres (including all spares) for bulges, splits or embedded objects that may lead to failure.
- Check and adjust pressures for optimum performance based on expected road conditions and vehicle loading.
- Check tightness of wheel nuts.
- Inspect rims for cracks or distortion.
- Repair or replace tyres/wheels if required.

v. Trouble Shooting

Refer to the vehicle manual for details. All vehicles are provided with a user manual in the glove box. Topics such as changing fuses, bleeding the fuel system after running out of fuel, checking radiator coolant levels etc. are covered in vehicle manuals.

With all of the above – if you are not sure – ask for help

10. APY COMMUNITY CONTACTS

Community	Office Phone	Clinic Phone
Amata	08 8954 9019	08 8956 2910
Anilayla	08 8956 2853	
Irintata	08 8956 7559	
Iwantja (Indulkana)	08 8670 7982	08 8670 7986
Kalka	08 8956 7525	
Kaltjiti (Fregon)	08 8956 2944	08 8956 2918
Mimili	08 8956 7935	08 8956 2974
Nyapari / Kanpi	08 8956 7523	
Pipalyatjara	08 8956 7500	08 8956 7441
Pukatja (Ernabella)	08 8956 2966	08 8956 2946
Tjurma	08 8956 2917	
Tupul	08 8956 7988	
Turkey Bore	08 8956 7922	
Umuwa (APY)	08 8954 8111	08 8954 9045 (Nganampa)
Wallatinna	08 8670 5077	
Watarru	08 8956 7080	08 8956 2852
Watinuma	08 8956 7714	
Yunyarinyi (Kenmore Park)	08 8956 7450	