This document contains information regarding your personal safety on site. Emergency Procedures are provided in Sec. 1 and the Mopra Safety Manual follows in Sec. 2.

For security and technical alarms, please refer to the "Mopra Operations Manual", which describes the MAPS alarm system.

Revision History:

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<th>Version</th>
<th>Document Status</th>
<th>Remarks</th>
</tr>
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<tr>
<td>-1.x 1996-1998</td>
<td>First draft</td>
<td>Previous document by R. Otrupcek</td>
</tr>
<tr>
<td>0.1 May 2004</td>
<td>New document</td>
<td>Complete revision and expansion</td>
</tr>
<tr>
<td>1.0 November 2004</td>
<td>Official release</td>
<td>Complete and up-to-date manual</td>
</tr>
<tr>
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<td>Minor updates</td>
<td>AAT contact details; alarm pendants</td>
</tr>
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<td>Minor updates</td>
<td>Fire alarm; contact details</td>
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1. Emergency Procedures

The following emergency procedures are described in this document:

- Fire on site (poster)
- Bushfire emergency procedures (includes emergency evacuation procedures)
- First Aid (poster)
  (snake and spider bites)
- Release of toxic substances
- Bomb threat

Maps and plans are provided for your orientation. Points of contact are listed in Appendix A. In Appendix B a list of safety equipment on site is given.
FIRE FIGHTING FACILITIES

Several CO₂ fire extinguishers can be found on site. CO₂ extinguishers can be used on all fires. Care should be taken to retain an oxygen supply during use. A fire blanket is located in the kitchen opposite the cooker.

...IF THE FIRE IS LARGE...

Make sure everybody on site is removed to a safe distance.

...IF THE FIRE IS SMALL...

If the fire is small and you feel you can safely put it out - DO SO. Once the scene of the fire is safe, cancel the fire alarm and ring staff at Narrabri to inform them of the situation. If possible, direct another observer to the control room to answer the phone call that might come in from Narrabri.

Mopra is protected by a sensitive fire detection system (“MAPS”). If an alarm is triggered, an audible fire bell rings out. At the same time an audio alarm is triggered in the Narrabri PMON rack. The fire detection system consists of smoke and temperature sensors on the ceilings of the control room, the correlator room, the kitchen, the alidade room and the vertex room. Any two detections from these systems will trigger a fire alarm. The fire alarm can also be triggered manually using the fire alarm button in the kitchen or control room.

NOTE: THE FIRE BRIGADE IS NOT CALLED AUTOMATICALLY!

FALSE ALARM RESPONSE

1. Be sure it is a false alarm and there is no danger. The triggered sensor is displayed on the fire panel.
2. Insert the fire panel key into the top left lock on the fire panel. Turn Anti-Clockwise.
3. Press SILENCE then RESET
4. If an antenna sensor caused the alarm, seek assistance from Narrabri to restore antenna power.
5. Wait in control room for a call from Narrabri and confirm the false alarm.

DO NOT SMOKE INDOORS.
If the VESDA has triggered a false alarm, ISOLATE it before RESETting the alarm.

If a Fire is Detected...
1. Mains power is cut, but UPS active to maintain sensitive systems.
2. The fire bell rings and emergency lights come on.
3. A MAPS alarm sounds at Narrabri.
4. If the fire cannot be extinguished by you, call the fire brigade on the national emergency number 0-000.
5. In case of a fire in the building, evacuate all to the open area inside the compound. Close doors and windows before you leave.
6. In case of a large fire (e.g. bushfire) possibly evacuate the site, based on advise by the fire brigade on where to go.

Emergency services
0-000
1.1 BUSHFIRE EMERGENCY PROCEDURES

- Your response to a fire alarm in case of fire on site is described on the poster on the previous page.

- Response to a bushfire in the vicinity of Mopra

  If you spot a bushfire, report it to the Rural Fire Service (RFS; 0-000). Also inform Narrabri staff of the bushfire (x4000 during work hours; x4033 Narrabri observer or x4008/4009 Narrabri Duty Astronomer's room).

  Stay inside during a bushfire.

  If warned about a bushfire in the area by the RFS, keep in touch with them about developments. Especially, when advised by them to evacuate, follow their instructions.

- Evacuation of premises

  Prior to emergency evacuation, if time permits, the observatory should be left on generator power, with the antenna in its stow position. Windows and shutters of the building should be closed. In case of an emergency evacuation, leave the doors to buildings closed, but unlocked. Leave the gates open for emergency services to enter.

  If advised by the RFS, evacuate the premises immediately. Make sure that nobody is left behind.

  If you consider staying at Mopra too dangerous and the telephone is still working, inform the RFS (and, if possible, staff at Narrabri) of your planned departure and obtain from the RFS, before leaving the premises, advice on whether it is safe to leave and in which direction to drive to avoid the bushfire.

  Do not return to the Observatory until told by fire fighting services that it is safe to go back. As soon as safe, call Narrabri staff (see extensions above) to inform them about your whereabouts and status.
First Aid

The biggest potential hazards in and around the Observatory are car accidents, mosquito bites, injury from falling and poisonous bites (in that order). If unsure of injuries incurred by any party, seek medical assistance at the earliest opportunity.

**SNAKE BITE FIRST AID**
First aid instructions for poisonous bites are given below. Assuming the bite has occurred on the lower half of a limb:

1. Reassure the victim and keep them calm.
2. Immediately apply a firm broad bandage to the bitten limb. Tightly bandage the limb, beginning above the bite and progressing down over the bite to the lower limb. This will restrict the blood flow sufficiently.
3. Call for emergency medical assistance.
4. **Do Not tourniquet the limb.**
   - If the bite is on the torso, apply pressure on bitten area to restrict surface blood flow. Do not restrict breathing or apply pressure to head/neck injuries.
   - A funnel web bite is treated identically.

**The First Aid Kit**
There are two first aid kits on site. The first is located in the kitchen in a green box on the shelf over the heater. The second is located in the alidade in a white box opposite the door.

**Red Back Spider**
In the 50 years since the invention of the red back antivenom, only one death has been recorded. Deaths are still reported in other countries though, so treat the wound carefully and quickly:

1. Reassure the victim and keep them calm
2. Cool the area of the bite, but **DO NOT** use compression
3. Seek medical assistance

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Ambulance</th>
<th>Emergency Services</th>
<th>Poison Line</th>
</tr>
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<tr>
<td>68422211</td>
<td>131233</td>
<td>0-000</td>
<td>131128</td>
</tr>
</tbody>
</table>
1.2 RELEASE OF TOXIC SUBSTANCES

- Shout to alert people working in the area.
- Shut off the source of the spill (if possible without personal risk).
- Remove from the area anyone affected. Arrange for first aid to be given.
- Evacuate the area and seal it off as effectively as possible.
- Ring 0-000 for emergency services, if necessary, and inform the Narrabri Safety Officer (see list of contacts in the back).

1.3 BOMB THREAT

- Record as much information from the caller as possible, e.g. location of bomb, type of device, what it looks like and when it is timed to explode. Listen for background noises, accents, and anything else which may help the police.
- Contact the Narrabri Switchboard (#4000) and pass on details. If possible answer questions located on the back page of the blue site telephone books.
- For bomb threats occurring after hours, contact the Narrabri OIC and 'on-call' staff member.
1.4 MAPS AND SKETCHES OF MOPRA OBSERVATORY

Fig. 1: Layout of the Mopra site

Fig. 2: Layout of the Mopra control building
2. Safety Manual

This document was developed in line with CSIRO’s guidelines for a safe working environment (see Narrabri OHS Manual for legal background information). Its contents provide persons staying at Mopra with the necessary information to do so safely. Anybody spotting something that is considered unsafe, be it equipment or work practices, is asked to report this to the Narrabri Safety Officer (see list of contacts in the back).

2.1 SAFETY INDUCTIONS

Everybody on site must have either an appropriate safety induction or be under constant supervision. What is the appropriate level of safety induction is outlined in the document "ATNF Narrabri OHS Induction Procedures". The basic rules are:

- **If you are under constant supervision** by someone who has had an induction, you can be exempted from an induction.

- **Children under 14 years of age** are exempt from inductions, but must be kept under constant supervision by a person who is not observing or working on the antenna at the time (see guidelines below).

- **Everybody else** on site must undergo a Mopra Observatory General Safety induction.

- **Observers** must also undergo a Mopra Observatory Antenna Safety induction.

- **Those performing major work** on the antenna or **working alone** on site (although this is in general discouraged!, see working alone policies as part of the Antenna Work induction material) must first receive an Antenna Work Induction.

- **Contractors** must either undergo a Contractors’ Safety induction or be under constant supervision by qualified staff.

The appropriate form sheets can be found in a binder on the table of the kitchen. However, inductions can only be given by authorised Narrabri (or UNSW) staff (see binder). If you have not had an induction yet, follow the instructions to get one immediately! Without induction you are not authorised to remain on site.

A list of safety induction material is included here in Appendix C.
Working At Mopra

Working at Mopra observatory is not a dangerous business. However, the risk of an incapacitating injury while working in and around the telescope is not negligible and adherence to the precautions outlined below minimises the risk and consequence of an incident.

Observer Precautions:
- Observing runs at Mopra observatory require a minimum of two observers
- A car must be available to these observers
- If an observer is working alone on the telescope, an alarm pendant should be worn
- Observers must be familiar with the Mopra alarm system
- The observers must be familiar with the emergency procedures

Emergency Medical Care

The observatory has engaged the services of a private medical care team to provide aid in the event of a medical emergency. This service, intended for the older residents of the community, provides a medical alert system suited to the needs of observatory work.

This scheme provides several buttons around the site with which to request medical assistance in the event of an emergency. These buttons are situated on special phone units in the control room and the kitchen, on an alarm box in the vertex room and on two personal pendants. Each of these units holds a red emergency button. Pressing this button sends out an urgent alert to the medical care team in Tamworth. The team then directs an ambulance to the site and calls people in nearby homes to request assistance on your behalf.

Hard hat

Antenna maintenance is carried out routinely and many items are taken in and out of the telescope every week. Wear a helmet while within the white boundary.

The Alarm Pendant

An alarm pendant should be carried when working alone. The pendants are composed of a red button and a radio transmitter. In the event of a medical emergency press the Red Button and a call for medical assistance will be relayed.

Testing the alarm pendant

1. Place about 1 m from control room or kitchen telephone
2. Press the red button on the pendant
3. Telephone should acknowledge with sound
4. Press "Cancel" button within ca. 5 seconds

Cancel the Medical Alarm

In the event of triggering the alarm accidentally: Press the 'cancel' button on the medical phone in either the control room or kitchen. If uncertain, call the care team (Dr Alex Brown and Co.) in Tamworth on 07662939 and confirm the alarm was falsely activated.
To avoid the risk of injury or other health problems, observers are not allowed to work (or observe) for more than 16 hours per day. Observers should not embark on a long drive by car right after a long observing run without getting sufficient sleep first.

### 2.2.2 Restricted access areas

**ACCESS TO THE ANTENNA**

The antenna and the area around it marked by the concrete sleepers are a potential hazard zone. Therefore, everybody is required to wear a hardhat while in this area. No vehicles are allowed inside this area without special permission.

Before accessing moveable parts of the antenna either an E-stop should be pressed or, especially in case of major work, a full current isolation should be performed, as outlined in the "Antenna Work Induction" document. Such work must be performed by trained and inducted staff only.

Access to the antenna is strictly on an as-required basis only. Persons that have no business on the antenna are not allowed to access it. Persons authorised to access the antenna are

- ATNF staff or contractors for performing work duties,
- Observing astronomers while carrying out tasks relevant to their observations (in coordination with instructions by staff)
- Visitors being shown the antenna, only while accompanied by authorised personnel. No more than 8 visitors are allowed to access the antenna per accompanying staff member. Before walking onto the antenna, staff must ensure that visitors have no fear of heights, wear closed-in shoes and encourage them to use the handrails.

With the operation of Mopra as a millimetre observatory the shape of the reflecting surface becomes very important. To minimise the risk of misalignment or damage to the reflecting panels, the following restrictions apply.

1. General access to the antenna surface is prohibited.
2. When access to the surface is essential the following rules must be followed:
   - wear clean (grit free), soft soled shoes;
   - tread only along the rivet lines where the surface is supported;
   - allow at most one person on any single panel;
   - protect the surface from falling objects or placement of heavy objects on unsupported areas.
WORKING AT HEIGHT

Working at height (in an exposed position, e.g. on the antenna, or using the cherry picker or HIAB) requires special authorisation by a Group Leader, as well as protective gear and training. Work at height must not be done while working alone (see Sec. 2.2.3, below).

ACCESS TO THE GENERATOR, UPS UNIT AND OTHER ELECTRICAL EQUIPMENT

Other areas with restricted access, on an as-required basis, are the generator, the UPS and other electrical equipment with dangerous voltage (such as the outside electrical board). Access to these is permitted only for qualified personnel. Unauthorised persons are advised to stay clear of such devices.

2.2.3 Working alone policies

GENERAL

Observers: A minimum of two persons must be present on site at all times. For an extended duration of stay a vehicle must be available while on site.

Staff: Working alone at Mopra should be avoided whenever possible. Details of working alone practices for staff are outlined in the Antenna Work Induction document listed in Appendix C.

Call-back procedure: When going onto the antenna alone (e.g. in case of a technical emergency), the alarm pendant must be used. Persons working on the antenna alone are also strongly advised to let a person outside the observatory know when they go out onto the antenna and to ask that person to call them back if they do not report back off the antenna by a certain, prearranged time.

During working hours Robin Wark (x4052), Michael Dahlem (x4023), your supervisor or the Switchboard (x4000) are potential points of contact. After hours possible contacts to call are the Narrabri observer (x4033), or the Narrabri Duty Astronomer (x4031 in the computing area, or x4008/4009 if in their room).

USE OF WORKING ALONE ALARM PENDANT

There are two alarm pendants for emergency calls to a 24-hr medical emergency centre. They are located in the control room, on a hook near the fire panel.

To activate alarm:

- push the PRESS button on either of the two pendants, or
• push the red-lit HELP button on either of the four special phones.

To cancel a false alarm:

• push the CANCEL button on any of the four special phones equipped with one and also check whether the alarm has been triggered on a second phone receiver. If so, press its CANCEL button as well as quickly as possible.

The four special telephone receivers have been placed in:

• the control room (back desk)
• the kitchen, northern corner of western wall
• the alidade room of the antenna
• the vertex room of the antenna – the box on the wall with lights pointing downward

There should be a small Owners Manual near each of the 3 ground-floor telephones. The aged care team regularly checks the system, although their checks might not usually be apparent. This alarm system has somebody on-call 24 hr, with a list of telephone numbers to ring in case of an emergency. They currently have the following numbers:

• The ambulance station in Coonabarabran, 13 1233;
  They have been supplied with an antenna key, should they need to reach someone in an emergency.

• The Police station in Dulgarno Street Coonabarabran, at 6842-1044.

To report a false alarm raised by the pendant, call the 'Private Aged Care Team' run by Dr. Alex Brown (121 Johnston St, Tamworth, NSW 2340) on 6766-2939. The equipment is supplied by 'Smart Caller' Personal Alarm System, Mentone Victoria.

TESTING THE ALARM PENDANT

Visitors are encouraged to test the alarm pendant upon arrival.

1. Place the pendant about 1 m away from one of the special telephone handsets.
2. Push the red button on the pendant.
3. Virtually immediately the telephone handset should acknowledge by making a sound.
4. Push the “Cancel” button on the telephone within about 5 seconds to cancel the alarm.
2.3 Local environment

WEATHER

Those unfamiliar with the climate of central Australia please note that the heat around Mopra in summertime can be extreme, with temperatures up to and above 40 C and extremely low relative humidity, sometimes paired with strong winds. To protect yourself use sunscreen for your face and exposed skin, sunglasses and a hat. To avoid dehydration, especially (but not only) when outdoors, remember to drink sufficient quantities of water. The weather can turn suddenly cold any time of the year, so bring a light jacket or pullover for summer and a warm jacket for winter. In winter moisturiser may prevent your skin from cracking in cold dry air.

FAUNA

Mosquitos in inland Australia can carry Ross River fever. This is a disease with symptoms very similar to malaria that will make you seriously sick for months! Transfer is by being bitten by a mosquito that has previously bitten an animal or person having the disease. Like malaria, Ross River fever can be suppressed by medication, but not cured. Please use the insect repellant provided by ATNF to protect yourself against mosquitos.

Venemous snakes and spiders can come in from the bush (see poster). Closed-in shoes and long trousers can guard against bites and are therefore recommended. When coming close to a snake, stay calm so as not to arouse it and try to retreat very slowly, unless attacked (e.g. by a brown snake). Sightings of snakes are very rare and there are no reported incidents at all yet.

Do not approach feral pigs, which are sometimes seen around Mopra. Especially when having young they can be aggressive and dangerous.

Do not feed kangaroos. They will become tame if fed, but once used to it they can become quite nasty when somebody will then not feed them. Especially male kangaroos have the potential to cause severe injuries by ripping open the abdomen of their adversary with their hind legs.

FLORA

Don't eat local mushrooms or berries unless you are absolutely sure that they are indeed edible. Don't eat blackberries at all, because they will have been poisoned by local farmers who are required by law to spray them.

TERRAIN

The mountain terrain around Mopra is rocky and steep. If you plan to go hiking, remember to wear closed-in shoes with well-gripping soles and take normal hiking
precautions (see above re weather). Note that closed-in shoes are also required to access the antenna.

**MOVING AROUND AT NIGHT**

Caution should be exercised when moving around the site at night. Use the torch provided by ATNF to prevent slips, trips and falls. No permanent lighting is permitted apart from the orange (Na) safety light outside the lodge door, because artificial light contributes to light pollution of the night sky which might degrade the quality of the observing conditions at Siding Springs Observatory.

**DRIVING TO AND FROM MOPRA**

Driver’s fatigue, e.g. after a long observing run, is extremely dangerous and should be avoided. Allow yourself a rest after your observations before heading off in your car!

Driving between Mopra and Coonabarabran can be dangerous, partly because of the narrow and winding road, but mostly because of kangaroos. Especially at night, and in particular near dusk and dawn they graze near the roadside – so please drive slowly! Lights on high beam can dazzle kangaroos; therefore, when seeing them, lower your headlights and reduce your speed. If kangaroos jump out on the road, brake or swerve only when it is absolutely safe to do so. Most accidents occur when trying to avoid hitting kangaroos.

**FAMILY VISITS**

When planning an observatory trip with children, observers should consider the "boundary conditions" first, i.e. the number of children taken along, age and personality of children and the capability of the second carer, so as to ensure their safety at all times. Large families are encouraged to use the Warrumbungles Motel, situated 9 km from town on the Timor Road. It is geared for family use, very economical and is a member of the Youth Hostel Association.

**SMOKING**

Smoking is prohibited in the control building, on the antenna and near the generator and diesel tank at Mopra, not only for health reasons. VESDA is a very sensitive smoke detection system and smoking within the range of its detectors may set off a false fire alarm.

**ALCOHOLIC BEVERAGES**

... are prohibited while on duty.
Appendix A: Points of contact

All emergency numbers are listed on the “First Aid” and “Fire” posters (see above).

To report a false alarm raised by the pendant (see “Working at Mopra” poster, above), call the 'Private Aged Care Team' run by Dr. Alex Brown (121 Johnston St, Tamworth, NSW 2340) on 6766-2939.

Addresses and telephone numbers of the nearest neighbours are:

<table>
<thead>
<tr>
<th>Name</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robina Otrupcek</td>
<td>6842-2615</td>
</tr>
<tr>
<td>John and Jan Shobbrook, 'Springbrook', Timor Road</td>
<td>6842-2292</td>
</tr>
<tr>
<td>John and Elaine Atkin, 'Warriwood', Timor Road</td>
<td>6842-2187</td>
</tr>
<tr>
<td>Llew and Edna Denning, 'Mopra', Old Timor Road</td>
<td>6842-1494</td>
</tr>
<tr>
<td>Bob and Janette Fenwick, 'Echo', Timor Road</td>
<td>6842-3177</td>
</tr>
</tbody>
</table>

Narrabri contact numbers:

<table>
<thead>
<tr>
<th>Service</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reception/Switchboard (working hours, 8:00-16:00, only)</td>
<td>x4000</td>
</tr>
<tr>
<td>Duty Astronomer (sometimes also on x4007 or x4029)</td>
<td>x4008/x4009</td>
</tr>
</tbody>
</table>

The ATNF Narrabri Safety Officer, who is responsible for safety at Mopra, is:

Michael Dahlem, x4023 (work), 6793-2060 (home)
Appendix B: List of safety equipment on site

FIRST AID KITS

Kitchen
- on the self above the microwave

Antenna
- alidade room; opposite the entrance door

FIRE EXTINGUISHERS

a) Control building

Control room
- 2x CO₂ ext. (3.5 kg)

Generator
- Foam ext. (9 kg)
- CO₂ ext. (3.5 kg)

Kitchen
- CO₂ ext. (3.5 kg)

b) Antenna

Alidade room
- outside, near door dry powder ext. (2.3 kg)
- inside CO₂ ext. (3.5 kg)

Vertex room
- dry powder ext. (2.3 kg)

FIRE BLANKET

Kitchen
- near office door
Appendix C: Mopra Safety Induction documentation

Note: Induction materials are subject to short-term changes and therefore not included in this document. The original documents can be found in the following locations:

- “Induction procedures for Narrabri and Mopra” (internal document)
- “Mopra Antenna Work Induction” and “Contractors Induction” in the OHS area on ningadhun-cj (restricted access).
Appendix D: Mopra Hard Hat Policy

WEARING OF HARD HATS AT MOPRA OBSERVATORY

Hard hats MUST be worn by people when they are:

1. within the circle of white concrete markers placed around the Mopra antenna;

2. within 15 metres of the Cherry Picker when it is in operation; or

3. within 10 metres of the HIAB crane when it is in operation.

Dave McConnell
Officer-In-Charge
ATNF Narrabri

27 June 2000
Acknowledgements:

Part of the material collected here was reused or adapted from an earlier version of the Mopra Safety Manual compiled by Robina E. Otrupcek.