



Safety considerations for flux stations

Or – “How to run a flux station without killing yourself...”

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Safety issues?

- Some are obvious e.g. don't fall off the tower...
- Other things are less obvious e.g. vehicle reliability.
- Think about the risks i.e. risk assessment.
- Accidents do happen: to *you* or those you work with.



What do we want to protect?

- People:
 - People are hard to replace and the paper work is awful after an accident, court is even worse...
- Equipment:
 - Equipment is expensive and hard to replace.
 - Accidents delay our science.
- Our Environment:
 - We must not destroy or damage where we work and live.



Main issues for flux stations:

- Towers and working at height.
- Electrical and power systems.
- Site conditions.
- Travel to/from site.



Working at height -1

- Standards AS/NZ 1891:
 - Get copy, review & understand.
- State & Federal legislation:
 - Know it exists at the very least!
- Training 'Working At Heights':
 - Every 2 years.
 - Legal obligation to be trained.
 - Keep training records.



Working at height -2

- Obtain and use quality and correct safety and climbing equipment:
 - Your life depends on that rope...
 - Check gear **every** climb.
- Ability to perform vertical rescue:
 - Rescue kit.
 - Training & practice as often as possible.
- Regular & professional tower inspection.



Electrical safety - 1

- Appropriate conductor sized and protected, especially on towers:
 - Mechanical & Ultra Violet light.
- Current limiting:
 - **Always** use fuses or circuit breakers.
- If 240 Volt, use earth leakage protection or transformer isolation:
 - Test protection.



Electrical safety - 2

- Short Circuit protection of batteries:
 - Risk of serious fire, burns, boiling acid.
- Correct earthing of exposed metal.
- Install Lightning protection:
 - Standard AS1768.
 - Finials, protective earthing.



Electrical safety - 3

- Explosion risk through released Hydrogen:
 - Maintain ventilation, no sealed containers.
 - 4% Lower Explosion Limit
- Corrosives:
 - Sulphuric Acid or Potassium Hydroxide.
 - Maintain ability to neutralise and flush.
 - Wear appropriate protective clothing when working on batteries.



Site safety - 1

- People on ground under towers:
 - Things fall or get dropped... wear helmets.
 - 2 way radios are really useful.
- Weather can change quickly esp. Alpine:
 - clothing, water, source of warmth/coolth...



Site safety - 2

- Personal needs:
 - Insect & snake bite etc.
 - Sunscreen, hats, gloves, long sleeves.
- First aid kit & training:
 - Inform all visitors of site procedures.
- Working alone policy:
 - Do you know where people are?
 - Contact & logging procedure?



Site safety - 3

- Site security:
 - Risk of theft or vandalism?
 - Storm or fire damage?
 - Building access?
- Maintain emergency contact numbers & information:
 - Must be readily available!



Travel safety - 1

- Vehicle:
 - Suitable & reliable (wheels falling off... don't laugh)
 - Winch, rope, axe, shovel, spare tyre etc.
 - Are you or your co-workers able to change a heavy 4WD tyre?
- Travel with partner if possible:
 - Share driving.
 - Rest breaks (policy??)



Travel safety - 2

- Travel plan & notification:
 - Notify 'base' before going & after return.
 - Develop, document & use com's procedure.
- Carry mobile phone or satellite phone in remote areas.
- Keep up-to-date contact phone numbers.



Travel safety - 3

- Carry 'Emergency Position Indicating Radio Beacon' (EPIRB):
 - Register it!
 - Keep contact list up to date.
 - Know how to use it.
 - Expect a long wait before help arrives...
- Allow adequate time for travel.



Care of environment

- Removal and appropriate disposal of rubbish:
 - not at the nearest service station...
- Chemicals used on site:
 - Fuel, acids, solvents, gases etc.
 - Minimum spillage & unintentional release.
- Appropriate toilet facilities esp. for campaigns.



Other issues

- High pressure gas cylinders:
 - Correct storage & transport.
- Bush fire risk?
- Site remediation at end of work, plan at beginning.
- I've probably forgotten some...



Paperwork & documentation

- It's inevitable...
 - What are your organisations policies for travel & field work?
 - Know what and where they are.
- Write your own work instructions and Standard Operating Procedures:
 - At least they will suit your purposes,
 - or risk having them thrust upon you...



The end

Thank you for the opportunity to talk. I'm happy to assist if possible.

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