

AuScope VLBI Operations

Background I

- AuScope is a federally funded infrastructure project : “Structure and Evolution of the Australian Continent”
- Geospatial is a component of AuScope. Investment in:
 - three 12-meter radio telescopes and a software correlator
 - about 100 GPS receivers
 - upgrade of existing SLR facilities
 - an absolute gravimeter and three tidal gravimeters
 - improved computing facilities
- AuScope VLBI : auscope.phys.utas.edu.au

Background 2: VLBI

- VLBI provides Earth Orientation Parameters (EOP) and ties the inertial Celestial Reference Frame (CRF) to the Terrestrial Reference Frame
- It's the only technique capable of this
- 3 observatories connect new GPS array to the CRF, help address lack of geodetic VLBI sites in the southern hemisphere.
- Built and operated by UTAS



AuScope VLBI and you

- 7 million dollars
- 4 years
- 3 observatories operated remotely
- 1 person in control.... you

Operator Observing shifts

- start - 9.10 AM
- 4.50 PM to end
- Rosters go like this:
 - Observer A : start - 9.10
 - On-call person : 9.00 AM - 5.00 PM
 - Observer B : 4.50 PM - end
 - Gap (\geq 30 min)
 - Observer B : start - 9.10
 - On-call person : 9.00 AM - 5.00 PM
 - Observer C : 4.50 PM - end
 - ...
- Note 10 min overlap with On-call

Nomenclature

- The Operations Wiki is your friend
auscope.phys.utas.edu.au/opswiki
 - Hb = Hobart
 - Ke = Katherine
 - Yg = Yarragadee

Stuff you should be familiar with

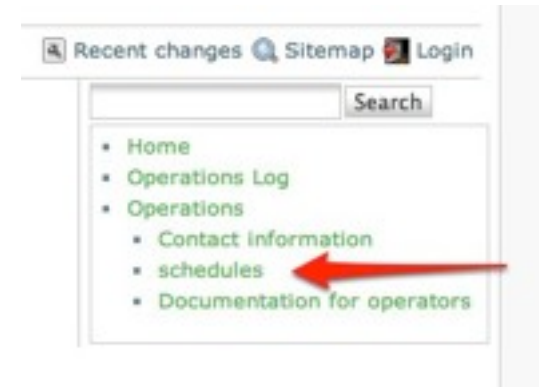
- Windows and Linux/UNIX environment
- Linux:
 - vi and emacs editors
 - Unix shell (ls, cd, cp, mv, ps, cat, less, grep, find, kill, df, sed, awk, ssh, sudo)

Schedules, Rosters

- Available from wiki
- Link to IVS Master schedule
- Google calendar with roster and on-call allocations. You should be able to edit it
- Roster order is:

Jay, Warren, Anita, Dave, Claire, Andrew, Holly, Yme, Jaquie, Vasaant

Reserve: Courtney



Obs code, Antennas, Operators (start, end), On Call

Tue	Wed	Thu	Fri	Sat	Sun
2	3				
	(3:30am) *CANCELLED				
9	10	11	12		
(3:00am) R1495 [HbYg] Andrew, Holly. On Call: Jim	(4:00am) CUS53 [HbKeYg] Yme, Jaquie. On call: Stas				
	(3:30am) AUST02 [HbKeYg] Holly, Yme On call: Jay		(4:30am) R4495 [KeYg] Jacquie		

AUST02 [HbKeYg] Holly, Yme On call: Jay
Wed, August 10, 3:30am – Thu, August 11, 3:30am
Calendar AuScope
Created by jojovel@gmail.com
[copy to my calendar](#) | [Delete](#) | [Edit event details](#)

On-call person

- For each experiment, someone is scheduled On Call, the first point of contact if there's a problem you can't solve yourself, or if there's anything you don't understand, doesn't look right etc.
- Currently Jim, Jamie, Stas or Jay
- Also someone at Ke, Yg to call on in emergencies. Ke and Yg people also do occasional maintenance, change disk modules etc

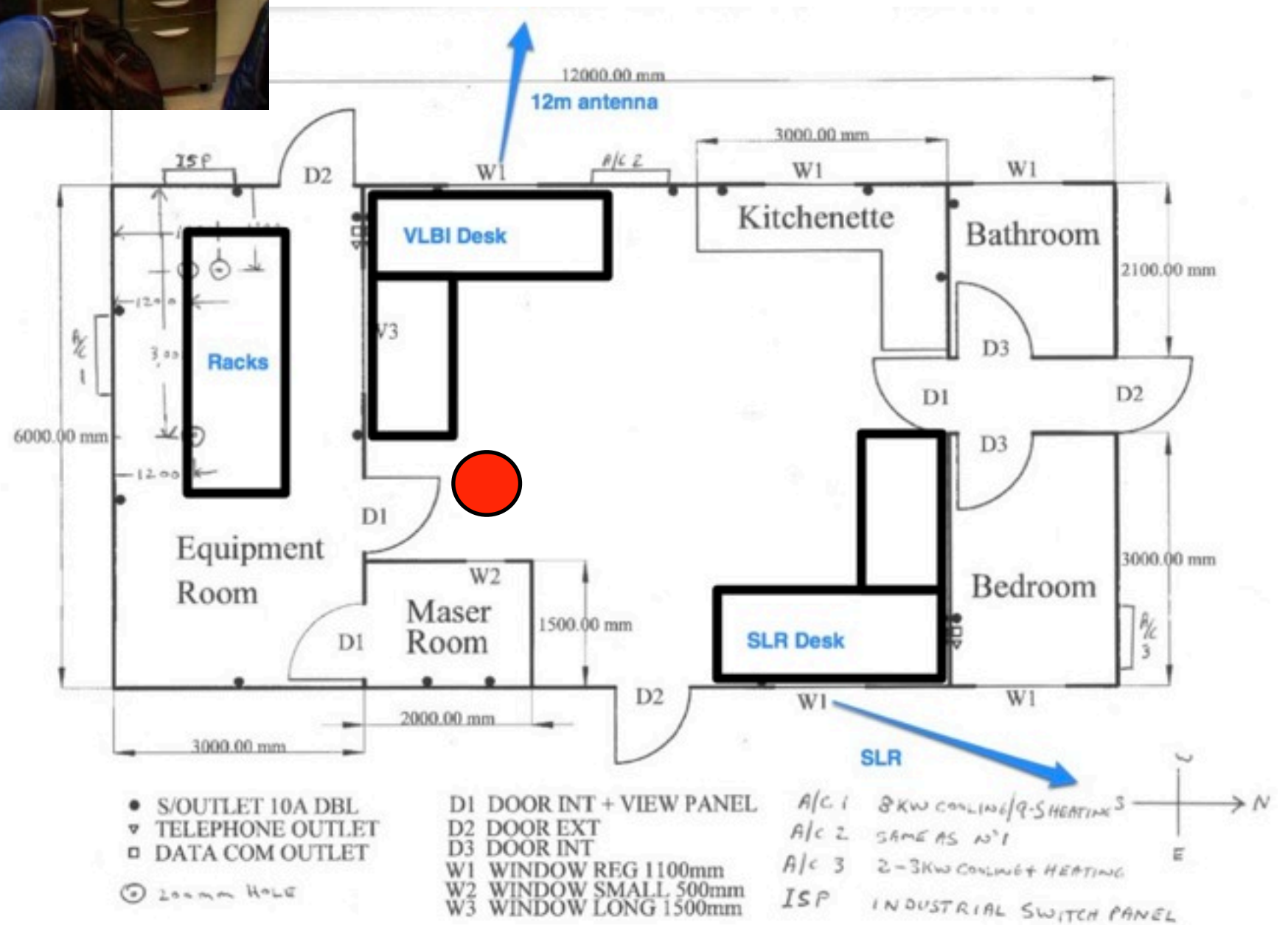
Sites: Yg

- Co-located with a Satellite Laser Ranging (SLR) facility, operated 24/7. SLR operator is our local contact.
- Co-located with Universal Space Network (USN) and NASA tracking facilities



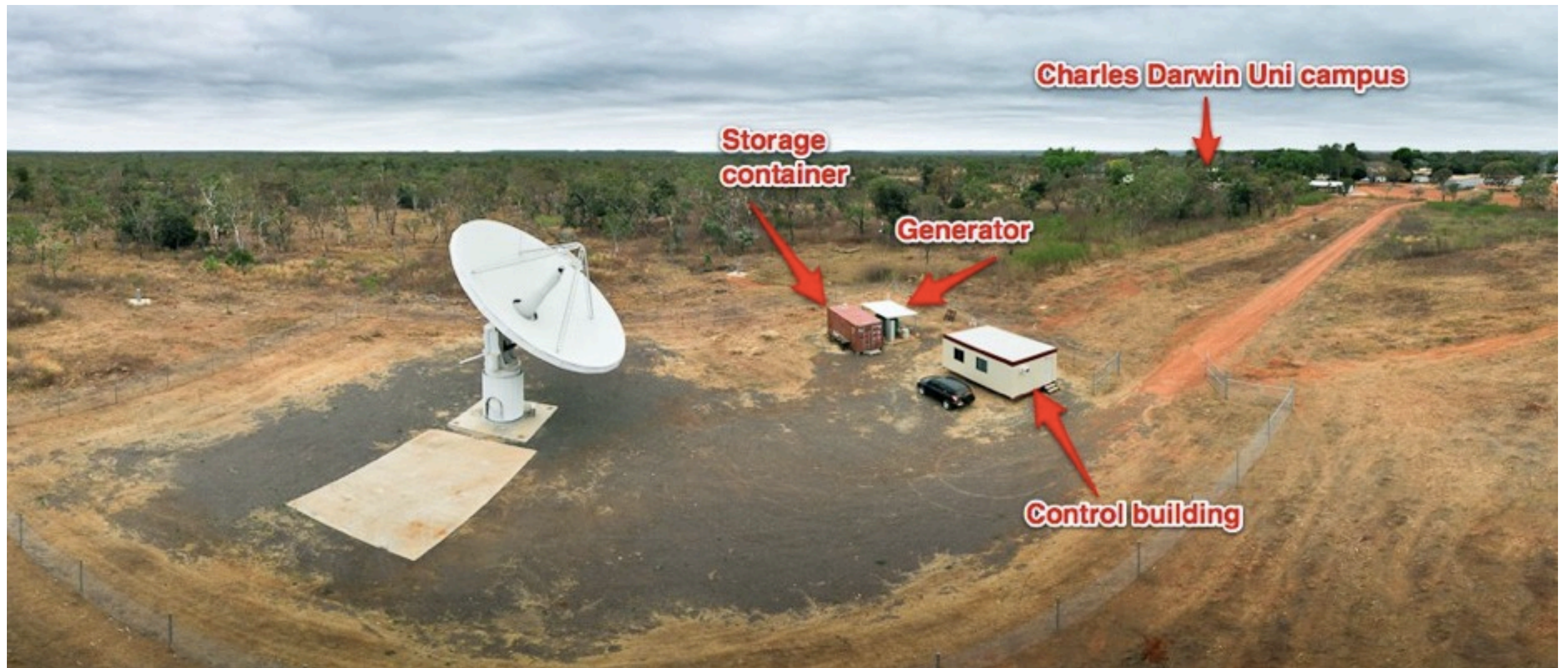
Sites: Yg



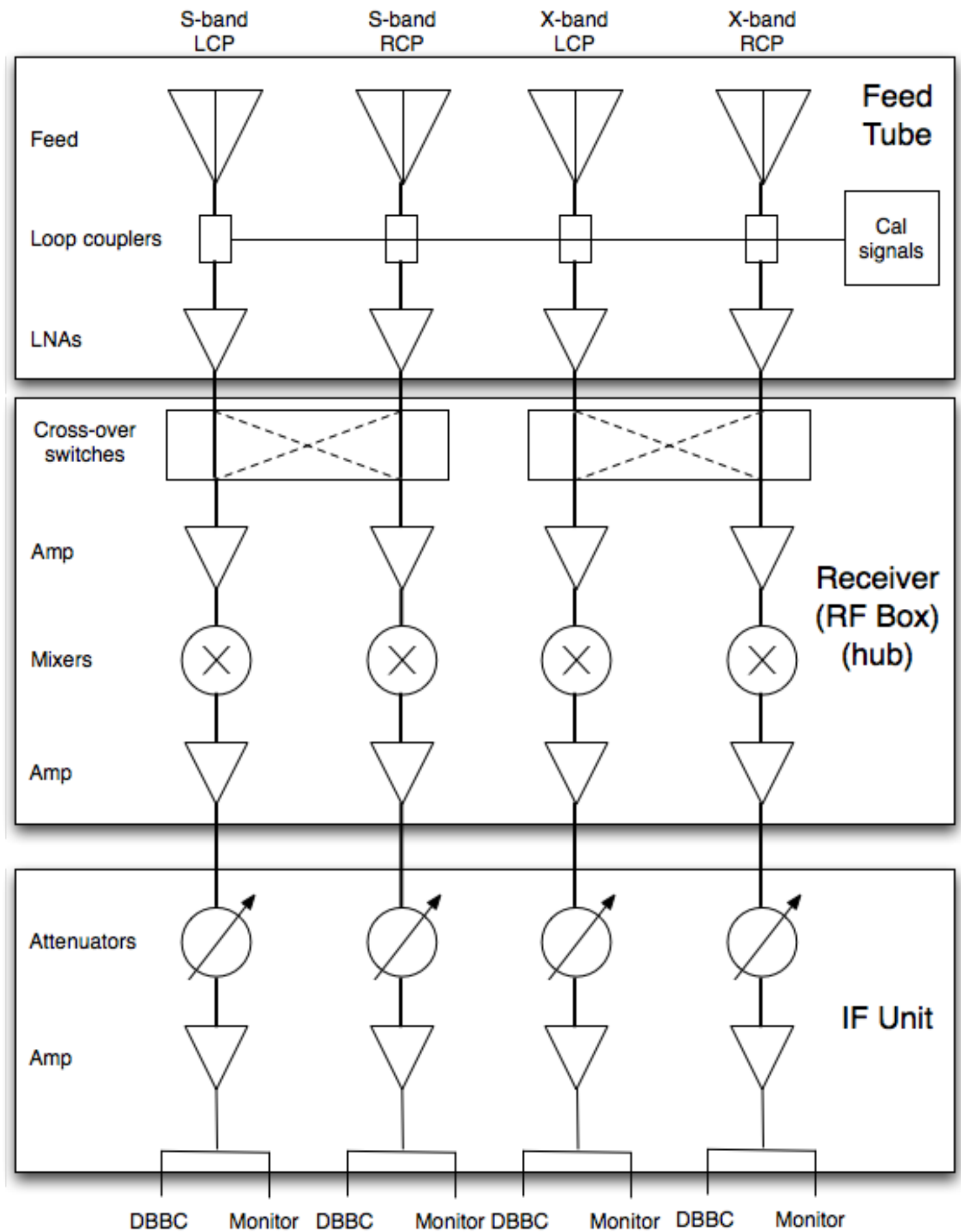
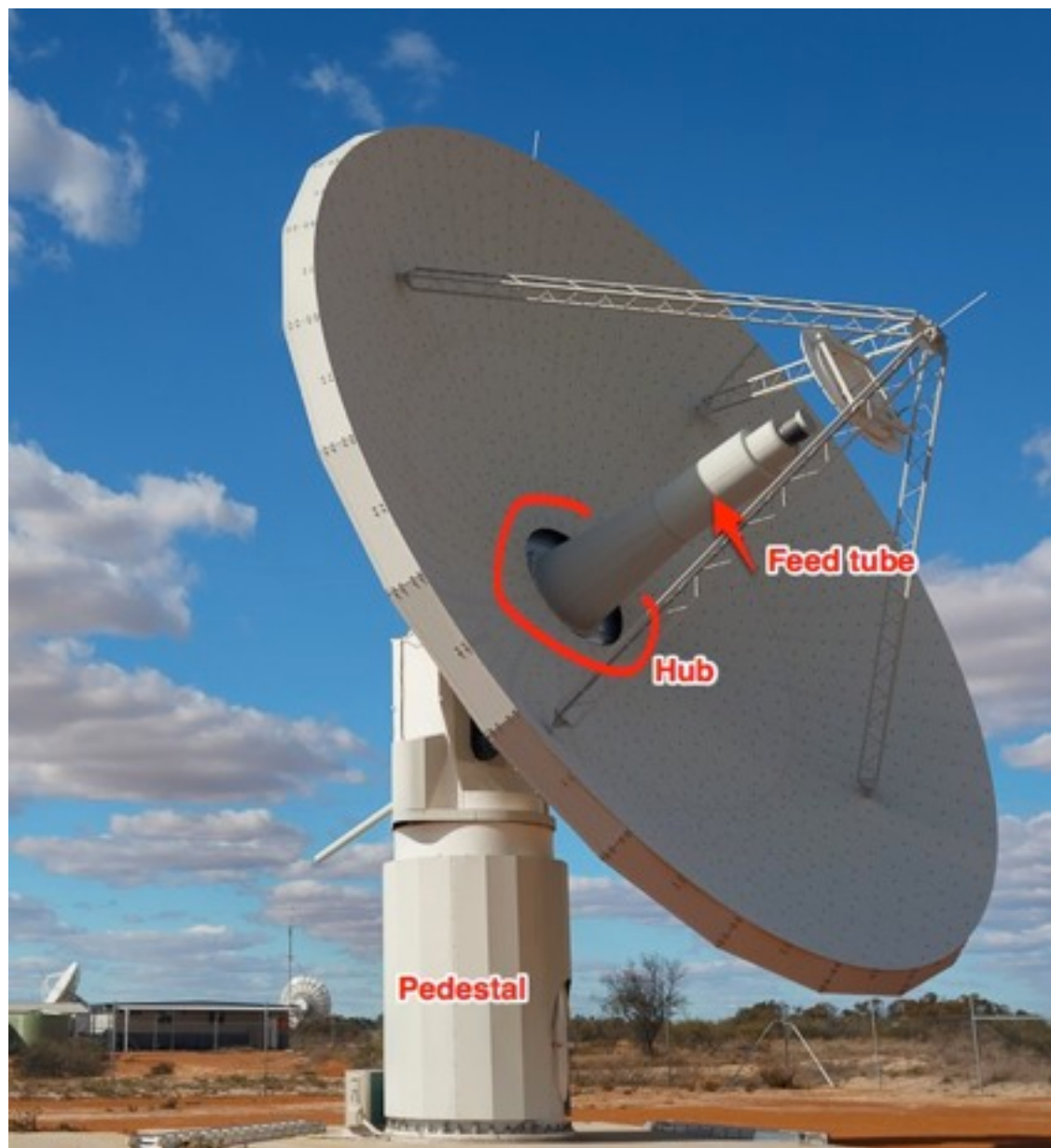


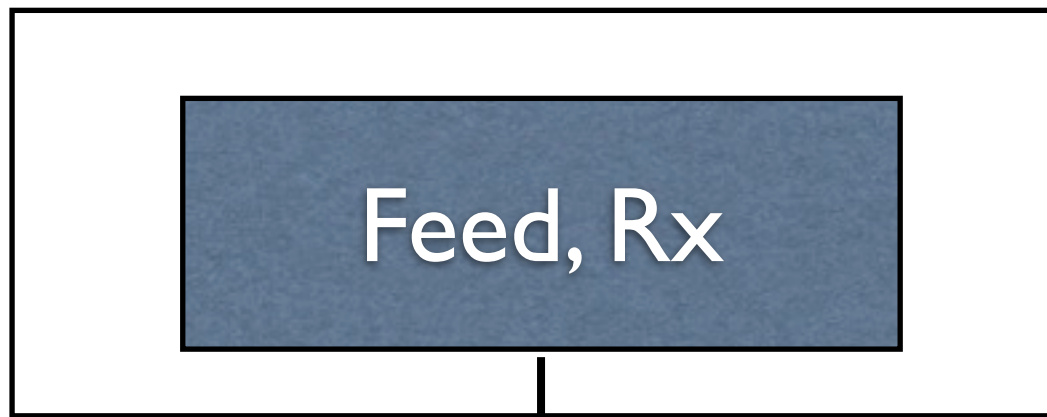
Sites: Ke

- Co-located with Charles Darwin Uni rural campus, 16km north of Katherine township
- Local contact is Martin Ephgrave

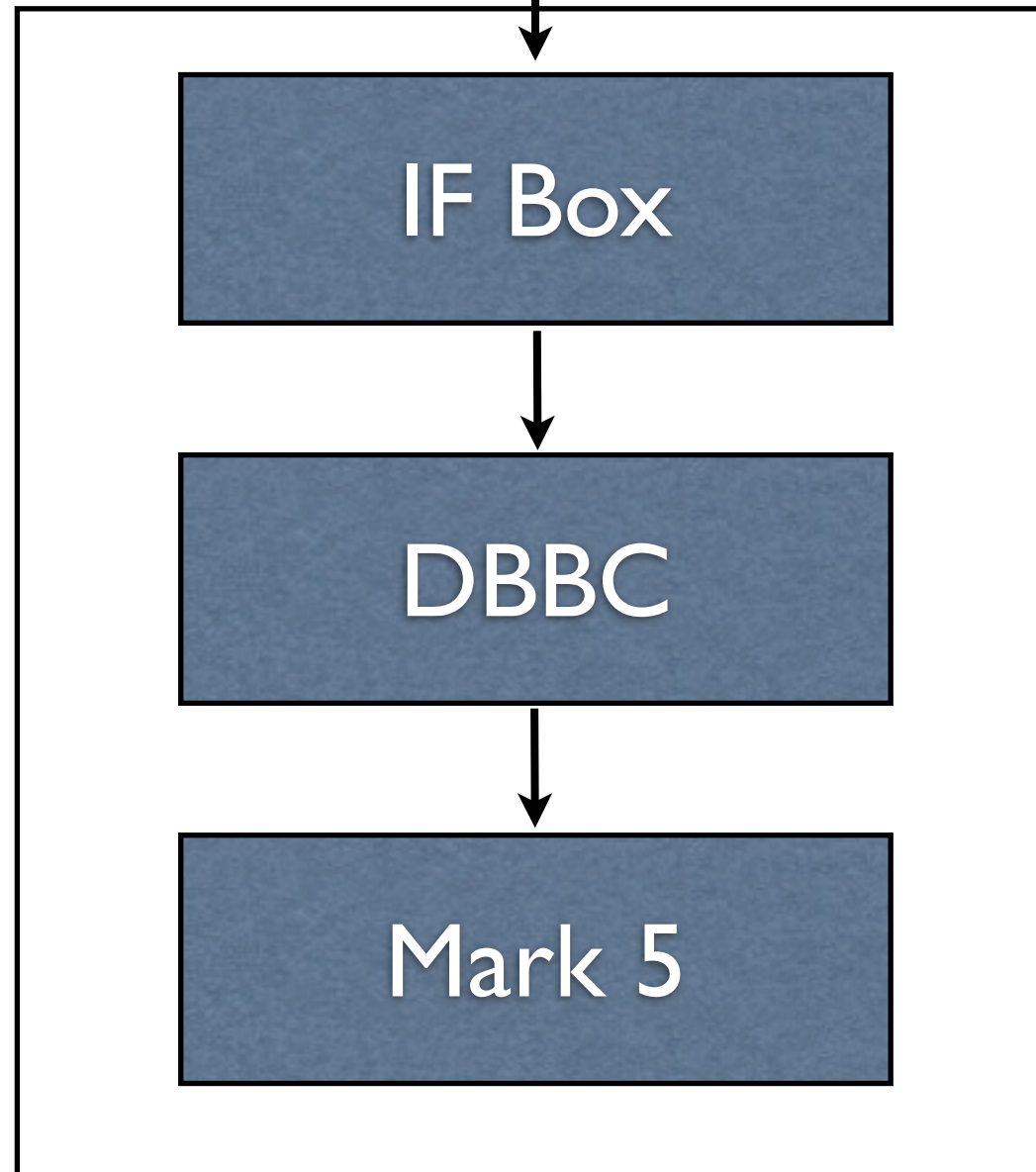


Signal Path and equipment





Telescope



Control
Room

Racks

- Numbered the same at Ke, Yg with same equipment in each
- Hb numbered and arranged differently

Yg racks



Ke racks



Hb racks



Computers

Type	Function	Computer Name			Access with...
		Hobart	Katherine	Yarragadee	
PC Field System	Linux PC that runs Field System software to control the antenna, DBBC and Mark5	pcfshb	pcfske	pcfsyg	ssh, VNC (display 1)
Mark5 recorder	A Linux PC inside the Mark5 recorder which runs dimino, a program the PCFS communicates with to control data recording	mk5hb	mk5ke	mk5yg	ssh
Timing PC	Windows PC that monitors the H maser, the CNS-II GPS clock, shows the wind speed and direction, and runs HMI: a GUI for controlling and monitoring the antenna	timehb	timeke	timeyg	VNC display 0
DBBC	A Windows PC in the DBBC which runs a server (and optionally a client) program to allow control and monitoring of the DBBC	dbbchb	dbbcke	dbbcyg	VNC display 0

- User account is “observer” on all PCs except pcfs and mk5 where it’s “oper” and DBBC where user = dbbc, password =
- Password is the same everywhere except the DBBC :
- Root password on PCFS machines is:

Operations Room

- Main operations PC is ops4 (4-monitor PC)
- Ops2 for other observations, screen space (e.g. Ceduna, Mt Pleasant 26m, 14m)
- Also a Windows PC, PCs for status/public display on walls
- ops-serv2 in rack in 'kitchen' (username observer) for admin, serve shared directories etc.
- “Lounge” with PC (ops6) to echo alarms etc.
- Two phones:
 - x2407, “Admin” desk, next to Ops2. Cordless : take it with you.
 - x7528, “Operator” desk, next to Ops4

Use of Operations Room

- Note In Box for printed schedules, mail etc
- Discard used schedules, printouts after a run
- Please keep kitchen area clean
 - Clean coffee machine after use
 - Replace coffee beans when gone
 - BYO
 - Water in Jim's office, tea room downstairs
- “Lounge”
 - If you use the sheets, take them home and wash them after your shift.

Sequence of events

1. Before an observation
 - 1.1. Retrieve and prepare schedule files *
 - 1.2. Configure and check hardware **
 - 1.3. Start the observation
2. During the observation
 - 2.1. Regular checks, at least every 2 h
 - 2.2. Respond to warnings, alarms
3. After the observation
 - 3.1. Terminate the field system software
 - 3.2. Prepare and send log files *
 - 3.3. Ship data *
 - 3.4. If another observation is to follow, go to 1.1

* = currently done by On Call person

** = usually done by On-call person prior to experiment but not when there's a follow-on

Yg quirks

- Neighboring USN antenna transmits at S-band sometimes and saturates our LNA (we think)
- So we stow during USN transmissions.
- Make sure the antenna goes to stow and stays there during these times

You should be able to

- Start up an observation from scratch
- Run through the checklist
- Know how to fix common problems