

**ARM Manus Research Station
RESET Visit 13M Report**

Visit Duration: 21 May 2001 – 02 June 2001

Papua New Guinea National Weather Service Momote Station, Manus Province
and
Papua New Guinea National Weather Service Headquarters, Port Moresby

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A. Introduction

The main goals of the TWP Operations RESET13-M Visit (routine) to ARCS-1 at Momote Airport on Manus, PNG were the following: 1) Replace and repair AdaM 2) Shaded PSP "Black & White" replacement 3) UPS battery change out 4) Install BBSS Omni directional antenna.

This Report is organized according to the planned tasks or work units performed during the RESET Visit. Within these work units the activities accomplished are arranged chronologically. Most of the information was out together by the RESET-13M members based on the actual visit, daily reports.

B. TWP Operations Management and RESET Visits

Once an ARCS Site is established, TWP Operations maintains the site and performs data reporting. TWP Operations also coordinated equipment retrofits at the established sites, accomplished by local NWS site personnel, routine RESET visits, and non-routine RESET visits.

Routine RESET Visits

Routine visits are scheduled on approximately six-month intervals and are focused mainly on routine maintenance, instrument calibration, instrument replacement, and training. A formal audit-in is performed upon arrival and audit-out before departure.

Non-Routine RESET Visits

Non-routine visits are intended for technical non-routine tasks such as emergency repairs, retrofits, and/or the addition of new instruments.

The work on the RESET visit is performed by the RESET team, but often in close coordination with the local on-site Observers. The team holds a daily, morning tasking meeting at the site using the proposed RESET visit, tasking schedule. After each day's work, the team meets to summarize work activities and an assigned team member writes a "Daily Report" and e-mails the report to TWP personnel in the U.S. Because of time-zone differences, necessary calls to instrument mentors in the U.S. are done in the morning.

Reset Members

- Bill Kornke
- Fred Helsel
- Kevin Widener
- Larry Yellowhorse
- John Glowacki (BOM)
- Rex Pearson (BOM)
- Troy Culgan (BOM)
- Francis Anuma and the Observers (PNG NWS)

C. Tasks Performed

1. Site Audit In(Kornke, BOM)

21May

- Audit IN complete./Glowacki

2. Train new BOM Personnel(Kornke)

28May

- BOM has gone home. Their brains were full. They did a fine job. Completed (Kornke)

3. Replace/repair ADaM(Widener)

20May

- Put original Adam back in rack; found fault on SCSI bus. Removed 4mm tape drives and re-terminated bus, ran fsck manually and got Adam up and running, left Adam in run level 0. Need info on how to switch Adam and Eve back to normal configuration, at that point I will bring Adam up to run level 3. /Helsel
- In more detail the first thing I did was put adam1 back in the box and booted it up! Of course it didn't boot the SCSI system disks error lights were on. So I disconnected the 4mm tape drives and re-terminated the SCSI BUS (different terminator) at the adam box. The error lights were out, looking good! Ran probe SCSI ALL and it found the 4 drives with no errors, looking better! Decided to boot adam1 it booted with no problem saw normal fsck's and super block fixes, looking fixed. Adam1 is up and running so I booted and rebooted a couple of more times no problems. Ran tests all no errors. Took adam1 back to ok prompt because didn't want adam1 to try to start the adam software. Looks like adam1 is fixed. Need instructions of how to switch eve back secondary box until then I will leave adam at ok prompt.

21May

- Attempted to get Adam to take control. The environmental variables PDEXEC_server=eve1 In-Charge=eve1, are set to eve1. Currently Adam is up and running. Phil or Annette needs to dial in and convert Adam software back to Adam1 or instruct me in what is required to change. /Helsel

22May

- Collected EVE3 and transported back to site, Unpacked EVE3 and inspected ,visual inspection found damage to drive crate (cause poor or incorrect packaging of equipment) further inspection found EVE3 to be inoperative.

23May

- Annette or Phil need to dial in to EVE1 and have a look around, both Adam and EVE are up, but the ADAM software hangs. Error: EXEC: Attempting to start the process. :- built for level 3 release(at top of page)
- I have not done any changes to ADAM or EVE , I took down EVE to remove some cables from the rack and to label sat phone cable and ports. When EVE was brought up it boots fine, except for ADAM software hanging. Ran ADAM_test it comes back with iffexec,pdexec,duiexec and the disk 1 not started. The boarders of ADAM software come up, the clock works, system status OK (green). Instruments along bottom are up. Somewhere in ADAM software it hangs, No messages in /var/adm/messages for hint.
- Tried stopping using stop_adam.sh, rm /tmp/adam.lck and start _adam.sh hangs, same place as when cron starts it./Helsel

24May

- Retrieved TDB from back up tape as instructed. Re-modified the .xttyrc files for the MFRSR. Awaiting Annette to restart ADAM software. Suggest review of current back up

procedures.

- ADAM back up and running. The problem seemed to be the old 4mm tape drives we added from the old ADAM. These tape drives were added during the ADAM reset upgrade. From what I recall, Annette had some software she brought with her on 4mm tape and the new ADAM didn't have 4mm drives so we added 2 of old ADAMs tape drives. Anyhow the tape drive was hanging the SCSI bus so ADAM wouldn't boot (Now Fixed). After restoring the file server from a tape that was there from the last reset. Rex and I did a back up over an older tape that was at the site. Found even older tape with my junk under the table and told Rex to do it again for practice. Note: No 4mm tape drives are on ADAM or EVE at this time.

26May

- Rebooted EVE as data process manager for serial data had hung./ Kornke, Pearson

4. Shaded PSP "Black & White" replacement (Kornke)

22May

- In progress. / Kornke, Culgan

23May

- B/W PSP D installed for comparison, PIR is now unshaded during this period. This is the same configuration used at ARCS2 site./Culgan, Kornke
- During comparison we installed one BW on the Cal stand as a global. We removed the Shaded PIR from the tracker and put the other BW in it's place. The Shaded PIR was set near the IRT; although connected to the logger it is no longer shaded but is collecting data. It's just sitting there. Both BW however, are connected to the spare Skyrad logger.

24May

- Awaiting comparison data confirmation.

26May

- Reference B/W comparison setup :B/W PSPD (ser no;33251) situated on tracker in place of PIR (ser no 29925F3), which is now unshaded.Data from B/W PSPD is connected to spare logger. B/W PSPG(ser no 33213) is connected to spare logger. Current weather conditions have not been suitable for good comparison data apart from the snapshot of data already sent to ARM ftp site (24 May)

28May

- Since it's sunny, there will be skyrad and spare logger comparison PSP data at ftp.arm.gov. Remember, the shaded PIR is not shaded by the tracker since it was pre-empted for the shaded B&W PSP. The shaded PIR is sitting next to the IRT on the platform, expect non-consistent PIR data due to shadows.

01Jun

- Completed permanent installation of BW on tracker. Note that phones are down. Will post Zeno cfg and data to ftp site when possible.

5. Send Shaded PSP "Black & White" data to Cornwall(Kornke)

24May

- Send Shaded PSP "Black & White" data to Cornwall, data sent./Kornke

30May

- Not a good day for PSP data but I went ahead and submitted some anyway.

01Jun

- Completed permanent installation of BW on tracker. Note that phones are down. Will post Zeno cfg and data to ftp site when possible.

6. UPS battery changeout (Helse/BOM)

22May

- UPS D-Van unserviceable, Bill Kornke will arrange for replacement inverter module. D-Van is currently being supplied by UPS power from I-Van./Pearson, Kornke

23May

- I-Van UPS batteries changed out./ BOM
- UPS D-Van serviceable with temporary repairs, further investigation discounted the inverter module as the cause for open circuit fuses. Temporary fuse installed however a replacement is required. Details of fuse at a later date. Batteries replaced. /Pearson, Kornke
- Task complete.

24May

- D-Van UPS fuse required; manufacturer BUSS, class G fuse, Type SC, Ampere 50, Time-Delay

7. Replace/repair Digicora unit (Yellowhorse/BOM).

21May

- Replace/repair Digicora unit (new unit Serial number: T30102 old unit serial number S17401)/Yellowhorse/Culgan.

22May

- BBSS launch 1200 UTC 21 May unsuccessful due to power interruption to BBSS laptop(plug was out). /Culgan.

23May

- Unserviceable Digicora request return address for equipment repair. /Yellowhorse

8. Troubleshoot BBSS Laptop program problems(Yellowhorse w/Schmaltz)

21May

- More detail required as to nature/symptoms of problem./Yellowhorse

24May

- Digicora Sysgen configuration checked and loaded, cables and connectors checked. Yellowhorse to discuss options with Schmaltz. /Yellowhorse

25May

- Troubleshoot BBSS Laptop program problem, no fault found. / Yellowhorse

26May

- No fault found. Request Annette verify BBSS ingest data/ Yellowhorse

28May

- After the observers hit the ESC key two windows will appear on the laptop: NETSTAT and VERSION. They will stay there until you close them. It is my understanding that these shouldn't appear. I counted 8 binary files on ADAM for the day; two timestamped 11:55 and six at 13:41

30May

- See most recent contact for latest developments. We have several more days for resolution.

31May

- Continuing troubleshooting.

01Jun

- I have found the problem with the BBSS binary files. I found the observers were rebooting the laptop every morning--that is causing the problems or it may be the way PCMF12 auto starts. Here's the scenario: We have to use a good launch and successful file transfer to ADAM as a baseline, say a night launch. The files write normally on

DRIVEA, when the flight and PCMF12 terminate. Only then will files on DRIVEA move to DRIVEB and on to E:\DATA\send_dir where they're picked up by ftpcom bound for eve's/data/twpsondeC1.00/binary. DRIVEA and send_dir do not contain files after processes have completed but DRIVEB does. Now, it's time for the morning launch. The observers reboot the BBSS laptop, PCMF12 auto starts, and the launch and subsequent filewrites to DRIVEA occur. But this time, when PCMF12 is terminated the files stay on DRIVEA, last night's launch files are still on DRIVEB and nothing goes to send_dir, hence no recent binary files for adam. If you restart PCMF12 from the icon and terminate the program <ESC>, normal file flow will happen. I tested the above theory several times throughout the day by creating files on DRIVEA and activating PCMF12. Again, this only happens if the laptop is rebooted and PCMF12 auto starts. There's probably something in the laptop startup or elsewhere that might cause this. I don't know or have the time right now. In the meantime, I have told the observers NOT TO REBOOT and taught them how to monitor data flow all the way to ADAM (eve). Rather than reboot, starting the PCMF12 SW when file transfer doesn't happen would be better.

9. Install BBSS Omni directional antenna (Yellowhorse)

21May

- Install BBSS Omni directional antenna.(new antenna system model RB21 serial number : T322002 old antenna system model RM21 consisted of aerial s/n: S113 Base s/n: 21203 assembly RAA s/n S145.) /Yellowhorse,Glowacki,Culgan

10. Install MMCR OS-2 Y2K upgrade (Widener)

20May

- Task Complete./Widener

11. Modify MMCR software (Widener)

20May

- Task complete./ Widener

12. Repair MMCR

21May

- MMCR TWTA has faults, when wide pulse width modes are activated. Kevin Widener is sending e-mail to concerned parties explaining the two options we have: **1** operate in reduced configuration until replacement TWTA can be installed or **:2** Ship TWTA off for repair immediately . Expect option 1 is the best. /Widener

22May

- Kevin Widener sent e-mail requesting selection between two options, but as yet we have received no response. Have changed to mode 2 to operate at IPP of 142 us, 600 ns pulse width and 8 code bit. Unless otherwise instructed the radar will remain in this mode of operation until full repairs are completed. / Widener

23May

- MMCR is running with Mode 2 converted to same parameters as mode 3. This is how the MMCR will operate until the TWTA is replaced.

13. Review MMCR documents w/Observers, BOM (Widener)

24May

- Review MMCR documents w/Observers, Task Complete. / BOM ,Widener

14. Replace U-Van Power Trac Block(Helsel)

25May

- Replaced ACCESS TRH sensor in Genset side of U-Van , performed system check on SAM ACCESS and found all I/O blocks operational. Task Complete./ Kornke

15. Drawing book checking, redmark, photos(Yellowhorse/BOM)

24May

- Drawings out dated and are not of use for current RESET visit./Kornke

16. Put new shipping forms on Observer laptop (BOM/Observers)

31May

- Received email of new forms from Apple. I will be working with the Observers on Saturday.

17. Swap out UVB (Kornke/BOM)

20May

- Swap out UVB model 501A V3 (Installed replacement serial Number : 1900 Removed serial Number: 1899 at 03:30 UTC); Task Complete./ Culgan

22May

- The UVB was replaced on Manus. I understand this will have a different coefficient; the S/N is 1900. UVB multiplier should be 0.2159. Cfg versions will be changed and data will be submitted.

18. Routine Maintenance tasks (Yellowhorse)

a) Changeout generator 12v batteries.

26May

- Changeout complete.

b) Change all AC unit filters.

24May

- Change all AC unit filters Task Complete. /Fore

c) Change out sensor cell in Gas Analyzer sensor cell for H2 Gen(BOM).

24May

- Change out sensor cell in Gas Analyzer sensor cell for H2 Gen. Task Complete /Glowacki

d) Change out Netrad Domes (Observers)

24May

- Change out Netrad Domes Task Complete./Pearson

e) Perform all MMCR maintenance checks (on CD of RESET Manual)

22May

- Task complete/ Widener

f) WSI manual maintenance(Yellowhorse)

24May

- WSI manual maintenance. Task Complete /Culgan

g) Oil WSI coolant pump bearings.(Yellowhorse)

24May

- Oil WSI coolant pump bearings. Task Complete /Culgan

h) Replace metal screen filter in WSI Blue Box.(Yellowhorse)

24May

- Replace metal screen filter in WSI Blue Box Task Complete./Culgan

i) Inspect and lube solar tracker arm(Yellowhorse)

24May

- Inspect and lube solar tracker arm. Task Complete /Culgan

j) MWR heater and/or fan assembly changeout(Helsel)

20May

- Task Complete./ BOM

k) Change out the DC Power System Batteries (Kornke/Yellowhorse)

20May

- Task Complete./ Pearson, Glowacki

l) Inspect D-Van battery(Yellowhorse)

24May

- Inspect D-Van battery, replace vent fan, measure 13.3 Volts DC under load. Task Complete /Pearson, Culgan

m) Check for water in logger, IRT, etc. boxes(Yellowhorse)

20May

- Report water ingress to connectors of data loggers./ Kornke

19. Observer training on BBSS Operations (Yellowhorse)

26May

- Observer training on BBSS Operations, task complete./ Yellowhorse

01Jun

- Worked with Observers on the BBSS.

20. Replace one AC unit on D, E, and I Vans. (Yellowhorse)

20May

- On the AC Bards in Manus. In the task it mentions replacing one AC unit for each van but should I have one unit as a spare? The U-Van has been replaced recently with an old unit, replace it?

22May

- Air conditioner unit replaced, E-Van. /Yellowhorse

23May

- Air conditioner unit replaced, D-Van. /Yellowhorse, Glowacki

24May

- Air conditioner unit replaced, I-Van. The old AC unit already installed on the U-Van was left in place. The other new AC unit is stored on site as a spare. /Yellowhorse, Fore

21. Install dehumidifiers(Yellowhorse)

24May

- Request more information, which Vans.

25May

- Installed dehumidifier U-Van Task Complete. /Yellowhorse, BOM

22. MWR moisture sensor adjustment(Kornke)

20May

- Task Complete./ Culgan

23. MFRSR memory card upgrade (Widener)

21May

- MFRSR memory card upgrade in progress, due to corrosion old data and control enclosure has been replaced memory card to be installed 22 May./ Pearson, Kornke

22May

- Task complete./ Pearson, Kornke

24. Emergency Generator – calibrate Transfer switch (Kornke, Yellowhorse)

25May

- Calibrated Transfer switch, Task Complete. / Kornke

25. Emergency Generator Maintenance – change out battery (Yellowhorse, BOM)

22May

- Inspected Genset valves and rockers, no apparent signs of wear or discoloration./Helsel, Yellowhorse, Culgan
- Obtained electrolyte for Genset batteries. / Helsel

26May

- Emergency Generator Maintenance change out battery, Task Complete./BOM, Yellowhorse

26. Old MACS/COMS hardware dismantling(Yellowhorse)

22May

- Old MACS/COMS Inmarsat C hardware dismantling; request information regarding return/disposal.

25May

- Hardware dismantled, Task Complete./ BOM

27. Recon ACCESS for Wilcox (Kornke)?

02Jun

- Task complete. Photos and diagrams with Kornke.

28. Reconnaissance for future AC power run to instrument field (Kornke)

02Jun

- Task complete. We have the wiring and 100 ft of 1" conduit. We need at least 150 ft total. Need 50 ft more. This will exhaust the current supply of wiring and conduit.

29. Radiometer spare ventilator repair (Kornke)

30May

- Task complete./Kornke

30. Find and ship back Wilcox laptop, sn 78CGTM5

23May

- Confirm Wilcox laptop, sn 78CGTM5; GOES/SAM laptop. Will leave in place. Task complete.

31. Ship back equipment - redmarked drawing books, etc.(Yellowhorse)

23May

- Reference 50 Sondes without batteries collected are from failed launches, serviceability unknown. request return/reuse procedure.

30May

- I've packed up ADaM3 with plenty of foam. It has adequate protect from all but most severe impact.
- Packed up APC for Nauru. BOM will connect this one to the UPS in Nauru to carry the instr's until the Clary UPS inverter comes back on. Don't buy more UPSs than can be

immediately implemented which means this one on Manus we are shipping will suffice for Nauru.

32. Other

21May

- Re-align rain shutter IRT (observed incorrect operation)./Pearson,Kornke
- Report access stairs to skyrad deemed unsafe, will attempt repairs if local materials available./Kornke

24May

- Smoke detector batteries changed out. /Glowacki

25May

- Remove obsolete cabling in D-Van./ Glowacki

30May

- Consolidating and removing "junk" from brown van. We are just about out of room at this site.

31May

- Diagramming SAM/ACCESS, I-Van instr power cord map, phone system.
- Consolidating and removing more "junk" from brown van.
- Drew up and documented lesson plan and procedures for observers. This plan includes:
 - How to follow the data files from the sonde launch from the BBSS laptop and on to ADAM.
 - Basic Solaris/Unix. How to bring up a terminal/xterm.
 - ADAMisms -checking ingest dates, check_pdmgr, kill processes.
 - Using the Fluke multimeter and soldering.

01Jun

- Land phone lines are out.
- Continued lesson plans and procedures with Observers.
- Diagrammed SAM/ACCESS, I-Van instr power cord map, phone system.
- Consolidating and removing more "junk" from brown van.

33. Nauru Remote Troubleshooting(by phone)

26May

- Need Nauru Brusag repair and diagnostics ideas. Configured terminal server in Nauru to allow remote access to Brusag tracker. Observers in Nauru connected tracker to port 11 of term server to allow remote access to perform parameter checks and alignment tests as instructed by Chris Cornwall. Site date and time were correct as were Brusag configuration parameters. Due to loss of communication to Brusag further examination ceased. Kornke,BOM

28May

- Worked with Nick for a while on the SAM/ACCESS problem. I asked him to check the I/O blocks for flashing LED fault indication. He found none. The GOES time is good according to Nic.

31May

- Will advise Nauru Observers to remove connections and power down the Brusag Tracker.

34. Audit out

a) Spares inventory

02Jun

- Task complete./ Glowacki, Kornke

b) Config files from Rad Loggers, MFRSR, Ceil, MWR, etc(w/Porch)

31May

- Observer Laptop has MS Office VER4.2C, Licensed to Ackerman.

c) Replacement records

02Jun

- Task complete./ Culgan, Kornke

d) Relabel faded labels

02Jun

- Label media unsuitable for outdoor use./ Kornke

D. Future RESET Visits

- Fiber optics for Ceilometer and MWR.
- Sno-coat or other roof sealant for Y van.
- Material to make stringers for new steps on SKyStand and CalStand; tread material can be purchased locally.
- Massive cleanout of the brown van. I've already done some but much more needs to be done. John Glowacki is good at this sort of thing and he inventories everything.