

**ARM Manus Research Station
RESET Visit 14M Report**

Visit Duration: 15 October to 26 October 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 RESET14-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-14M 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 (LANL)
- Bill Porch (LANL)
- John Glowacki (BOM)
- Troy Culkan (BOM)
- Elijah Garietz (POM PNG NWS)
- Francis Anuma and the Observers (PNG NWS)

C. Tasks Performed

1) Audit in:

16Oct

- Calibration files collected and FTP'ed to LANL. (Culgan, Porph)
- Sample data files are on the TWPPPO ftp site along with configuration files for data taken before we have done anything. Of interest is the PIR data for Chris Cornwall to look at. When this was taken the shaded PIR ventilator fan was barely turning.

2) Train new BOM technicians on Calibration (Porch)

16Oct

- Due to cloud delaying start of calibration procedures. Other tasks carried out.

17Oct

- Carried out electronic calibration of the cal data logger. Training BOM staff on calibration documentation and procedures and starting set out instruments for taking cal data - Porph.
- Made up radiometer cables for instruments to be checked as part of the calibration setup. Changed out fans on three ventilators for use on the calibration instruments. Worked with Glowacki periodically checking tacking of the shaded zones - Kornke.
- Culgan went through training on the calibration system and documentation with Bill Porph before assisting with electronic calibration of the data logger and the setting out of the instruments.
- Glowacki went through the calibration equipment documentation and procedures with Porph before going on with items on the task list.

18Oct

- Culgan worked with Porph on Calibration procedures.
- Porph / Culgan Downloaded data files. Porph is down loading cal data files and hope to FTP them today but if he runs out of time he will FTP them tomorrow.

19Oct

- Glowacki spent most of the day working with Porph on MFRSR instruments on the SKYRAD and CAL stands. Started working through the cal setup and procedure for the spare RAD data logger with Porph.

22Oct

- Culgan worked with Kornke doing the Cal procedure on the GRNGAD Logger.

23Oct

- Glowacki worked on the calibration procedure for the SKYRAD logger and SMET instruments with Culgan and Porph.

25Oct

- Task completed.

3) Install repaired MMCR TWT –power problem (Kornke).

16Oct

- We plan to do the mmCR amp change out early Thurs (your Wed). It would be good if Widener can be available just in case. Rex is the planned "go to" guy but a backup is extra insurance.

18Oct

- Kornke worked with Glowacki to change out the MMCR TWT unit and bring the system up using the procedure written by Kevin Widener. The old unit (WD24369) was replaced with a new unit (WD24366) Setup and start up still progressing.
- MMCR failing to start with an interlock problem. Rex was contacted but unable to help. Bill Kornke is going to try and contact Kevin Widener.

19Oct

- Culgan contacted Pearson about the MMCR TWT Interlock problem and then worked through the problem. The Interlock socket on the TWT unit was wired differently to the plug. Culgan changed the wiring on the interlock plug and set the unit to work. The system calibration for the MMCR was not completed and will be finished tomorrow.

20Oct

- Culgan completed the calibration procedure for the MMCR, recording the results and sending them off to Kevin Widener for COM.

21Oct

- Packed up the old MMCR TWT (sn# 016 WD24369) unit for shipping. Shipping detail given to Francis for processing.

22Oct

- Culgan went through the calibration on the MMCR after phoning Kevin Widener to clarify some points.

23Oct

- Culgan went through a MMCR calibration, with no results to show if it was successful.

24Oct

- Glowacki spent a frustrating day checking MMCR serial numbers.

26Oct

- Culgan talked to Kevin Widener to review the current status of the radar. It appears to be operational.
- Task completed.

4) Install IRT new gold mirror cover (Kornke)**19Oct**

- Kornke completed the installation of the IRT mirror on the SKYRAD instrument stand. Wired new IRT thru old IRT box. Photo of the installation have been sent to the IRT mentors for comments. Porch has collected data from the instrument and this has been FTP'ed to the TWPPPO site.
- Task completed.

5) Modify Rad Logger Real-time display (Porch)**24Oct**

- Kornke & Culgan attempted to set up real time modifications to RAD logger, not finished.

25Oct

- Task complete.

6) General Instrument Calibration (Porch)

18Oct

- Weather has cleared and therefore calibration commencing.

22Oct

- Porch collected and checked and Fated data from different instruments.
- Glowacki fitted a box with the chilled mirror electronics for SMET calibration.

23Oct

- Kornke worked on the chilled mirror electronics and power supplies.

24Oct

- Kornke repaired the tattle tail logger for the chilled mirror calibration equipment.
- Porch suffered a serious PC computer crash and is now with out a laptop. Glowacki tried to get it running again.
- Porch and Culgan collected chilled mirror data.

25Oct

- Culgan worked with Porch completing as much of the calibration as possible and down loading and backing up data files.
- Porch and Culgan did the calibration for the Ceilometer and both IRTs.
- Task completed.

7) Radiometer Comparison testing (Porch)

22Oct

- PSP and PIR inverted to compare with the global PSP and PIR.

24Oct

- Task complete.

8) Radiometer change out (Porch).

16Oct

- Started fabrication of 2 PSP and 2 PIR cables. Priority for Cab setup. (BK)

18Oct

- Set up change out NET Rad for comparison measurements.

20Oct

- Second PIR and ventilator mounted on the Kipp-Zonen tracker. PSP on the Kipp-Zonen tracker replaced with a black and white. SKYRAD instrument swapped out with calibration instruments.

24Oct

- Task complete.

9) MFRSR head comparison and shading check (Porch).

18Oct

- MFRSR file downloaded and FTP'ed to the web site. A thorough search of the site has failed to find the arm for the calibration of the replacement MFRSR and Culgan is going to talk to Lorengau Engineering to see if they can make a replacement.

19Oct

- Set up the test MFRSR on the cal stand – Glowacki.

22Oct

- Collected the MFRSR arm from Lorengau Engineering and after shaping the arm fitted it to the Cal MFRSR.

24Oct

- Set up MFRSR logger. Instrument is using arm manufactured by Lorengau Engineering.

25Oct

- Task completed.

10) Replace Net Rad assembly and send oldest one back (Porch).

18Oct

- Replacement Net Rad unit mounted out next to the current instrument Replacement unit connected to the data logger approx 0500GMT and the current instrument put back on line at 07:10GMT - Glowacki.

25Oct

- Task completed.

11) Replace Anemometers (Porch)

23Oct

- Porch worked with Glowacki and Culgan on SMET calibration tasks. Tasks for Anemometer, ORG, and Barometer completed.

12) Replace T/RH probe (Porch)

23Oct

- Porch worked with Glowacki and Culgan on SMET calibration tasks.

25Oct

- Garietz changed out the T/RH probe. Tasks for Anemometer, ORG, Barometer completed.

13) Calibrate Rad Logger and Spare Rad Loggers (Porch)

18Oct

- Kornke modified the spare Zeno data logger.

19Oct

- Started testing and calibrating the spare RAD logger – Glowacki, Porch.

20Oct

- Culgan also helped with the configuration file changes to the SKYRAD data logger after the equipment changes.
- Glowacki worked with Porch completing the calibration procedure on the spare RAD logger. Unit starts a reset and hangs up reporting watchdog timer and memory stack errors. After opening up the data logger and checking the seating of the memory board the logger booted up but only found chips one and two out of the seven.

21Oct

- Porch e-mails Chris Cornwall final details and config files for SKYRAD and rad logger. Collect Skyrad and RAD data for today and trying download them to the FTP site.
- Culgan replaced the memory card on the unserviceable RAD logger and appears to be functioning correctly, seeing all eight chips. Old flash memory card s/n231, replaced with flash memory s/n 219. **Do you want this card returned or locally disposed of?**

22Oct

- Kornke did GRNRAD data logger calibration.

23Oct

- Culgan worked with Glowacki on calibrating the SKYRAD data logger.

24Oct

- Task completed.

14) Calibrate SMET Logger and Spare SMET Loggers (Porch)

21Oct

- Commenced preparation for SMET calibration.

24Oct

- Task completed.

15) Calibrate Barometer in SMET Logger (Porch)

23Oct

- Porch worked with Glowacki and Culgan on SMET calibration tasks. Tasks for Anemometer, ORG, and Barometer completed.

16) Modify BBSS Sysgen as per Lesht (Porch)

23Oct

- Culgan completed BBSS configuration upgrade as per Chris Keenan/ David Reass e-mail. Task complete.

17) Switch Instruments to Kipp & Zonen tracker (Kornke)

16Oct

- Kipp-Zonen tracker – re-aligned tracker East position and leveling. Checked setup software settings and time in readiness for radiometer comparisons (Bill K, Glowacki)
- Started fabrication of 2 PSP and 2 PIR cables. Priority for Cab setup. (BK)

17Oct

- Glowacki worked with Kornke, periodically checking and making fine adjustments to the Kipp-Zonen tracker.

19Oct

- Made software adjustments to the Kipp-Zonen tracker to correct tracking error. Made a shim for the second NIP to correct miss alignment. Bill checked the data and both instruments reading normal values. Shading arm high adjusted and tracking well with instruments inside the shaded area.

20Oct

- Decided to keep the radiometers on the K&Z and leave the K&Z on the Calibration stand for the near future – at least until the next RESET Visit. The Bursag is to remain on the main stand operating as a backup in case problems develop with the K&Z.
- Removed shading arms from Brusag so as not to shade instruments on K & Z tracker.

22Oct

- Glowacki periodically checked the K&Z tracker.
- Task completed.

18) Inspect & test spare fiber line for new Kipp & Zonen tracker (Kornke)

17Oct

- Completed by Kornke.

19) Install new AC line for TSI. (Kornke)

16Oct

- Conduit run laid out for TSI power and data. No fiber optic cable on site that is long enough. I will advise length and diameter tomorrow (Bill K (B1))
- Bill Kornke needs to know what are the power requirements for the TSI in Manus. Like 110 60 Hz (50 Hz Ok?) or is it DC? What is the current draw? Do you want us to run the TSI off of the UPS in the I-van?
- Trenches to SKYRAD and TSI stand site backed filled by the Observers & others.
- Task completed.

20) Install conduit for data line for TSI. (Kornke)

16Oct

- Conduit run laid out for TSI power and data. No fiber optic cable on site that is long enough. I will advise length and diameter tomorrow (Bill K (B1))
- Task completed.

21) Install Observer Laptop w/new software. (Kornke)

16Oct

- Tried virus protection upgrade unsuccessfully.

21Oct

- Started setting up new observers laptop.

24Oct

- Task completed by Kornke and Glowacki.

22) Install Pearse Laptop (Old Observer Laptop) w/new software and web/email hookup. (Kornke)

16Oct

- We want to reformat the partitioned hard drive on the old observers laptop that we are going to give to Pearse. We have the Win98 CD. The question that we're not sure about is: Do we need a startup disk?

24Oct

- Glowacki reconfigured the old observers laptop for Dick Pearse. We have run into problems with the old observer's laptop. The product key on the provided pirate version of Windows (98?) SE has an error in the product key and cannot be installed. Windows 95 was then loaded and this reduced the desktop window, with no option to increase the pixel setting. Office 2000 failed to load with multiple errors. The product key on the disk is FWXHM-VFG46-FDFRP-WD374-Y96WW.

25Oct

- Glowacki loaded up the laptop for Dick Pearse only to run into problems with Office not finding a number of files. We also ran into a problem with the disk partitioning. The problem with the size of the display on the screen had to do with the driver windows

loaded up on the install. Due to lack of time we propose shipping the machine to Darwin for configuration.

23) Set new diesel fuel tank and recon for hook up. (Kornke)

- Not done because tank did not arrive

24) Change out BBSS UPS battery. (Kornke)

- Not done because did not arrive

25) WSI filter/shutter change out. (Kornke)

21Oct

- WSI Shutter assembly numbers old 64827, new 82881.
- Kornke checked and collected WSI images to be FTP'ed. While checking Adam the following message came up;
Error log on File Server message@00: 55GMT
Rdate: 161 exceeds tolerance, time unchanged.
Alarm had to be acknowledged
Acknowledged and cleared okay.

23Oct

- Porch tried to download the requested WSI data but was beaten by the poor phone lines. Task completed.

26) Install Electrolyser “earthing”(BOM)

16Oct

- Replaced Dangerous gases sign on Electrolyser room door (Glowacki).
- Need RBL release cable from BOM Melbourne.
- Culgan changed the demineralization filter on the Electrolyser.

18Oct

- RBL release cable (Cable has been shipped from Australia).
- Culgan got Lorengau Engineering to do a weld splice to the RBL release cable and then fitting it back on the balloon launcher.
- Task not completed.

27) Red mark ARCS-1 drawing book

- Not completed.

28) Radiometer ventilator work (Kornke)

- a) Complete ventilator hardware upgrade to (coated) silicon bronze because (adjusting screws are corroded and seized). Change out all Ventilators as needed.

16Oct

- Changed fans on shaded PIR and Global PSP (Glowacki)
- Task completed.

29) Install Zeno logger tin roofs (Observers)

19Oct

- Waiting for units to arrive.
- Task not completed.

30) Emergency Generator Maintenance (Hastings/Deering-Lae)

18Oct

- Hasting/Deering people due on Friday.

19Oct

- Hasting/Deering people were due today (Friday) but did not arrive.
- (Actually H/D trip was postponed by Apple due to low hours on GENSET)
- Task not completed.

31) Install 4 new AC Units on Vans (Kenmore Daikin-Lae)

18Oct

- Awaiting units Dick Pearce Trying to track these

22Oct

- Glowacki checked one of the E-Van AC units that leaked during yesterday's rain.
- Task not completed.

32) Clean out obsolete parts from storage Vans, old AC Units leaving 2 spares

21Oct

- Listed what appeared to be "surplus" equipment. Need direction on how to dispose of equipment.

24Oct

- Kornke started to clean out red van.

25Oct

- Kornke and Glowacki cleaned out some of the junk out of the storage vans.

33) Repair Skyrad steps, van deck. (Observers)

18Oct

- Awaiting materials to arrive.
- Task not completed.

34) Coat Y-Van roof leak, Paint Y-Van front. (Observers)

18Oct

- Awaiting materials to arrive.
- Task not completed.

35) Remove Site Sign Post (Observers)

16Oct

- Removed information boards from sign near the gate. (Culgan, Glowacki)

18Oct

- The remaining site sign sections of the information board were taken down and stored.
- Task completed.

36) Baby-sit site for 2 days

25Oct

- Sorry, told to get out of Dodge!
- Task not completed.

37) Other

16Oct

- Dick Pearse has some gear in customs that he is hoping to clear tomorrow.
- The MPL data for Conner was put on the TWP ftp site. When we got here the MPL was off the hole so the light was reduced about 10 to 20 %. See if he can tell from the data and ask how we should better secure the telescope (it wiggles to the touch and the platform slopes down from the weight where it looks like it would be better if it were tilted up a little.

19Oct

- Elijah Garietz has arrived on site. There is no room for him at the Harbor side Hotel and a room will not be free to until Sunday.

22Oct

- ADaM View Sonic VPA145 Monitor. The unit for ADaM (sn A951100360) has started to develop a problem with its back lighting and has very poor brightness and contrast.
- Kornke collected data off ADaM, investigating the problem with the ADaM monitor.
- Porch did seawater temperatures for MTI.
- Garietz and Kornke prepared documentation of the SAM PLC system.

23Oct

- Kornke worked with Elijah to document SAM configuration files.

26Oct

- Genset was running for the last 48 hours. The CAA staff serviced the transformer and found the cable going to the pole needed urgent attention. The site was refueled yesterday.
- The MPL computer was rebooted.
- The MFRSR is back up and running. The program had hung up EVE.

38) Audit out (Observers)

- a) Spares inventory
 - Task not completed.
- b) Config files from Rad Loggers, MFRSR, Ceil, MWR, etc.
 - Task completed.
- c) Replacement records
 - Task completed.
- d) Re-label faded labels per Porch direction.
 - Task not completed.

39) Routine Maintenance tasks (BOM):

- a) ADaM backup. – Deferred till next trip.
- b) Ceilometer – check glass.

22Oct

- Glass is ok, cleaned glass, task complete – Culgan.

c) IRT corrosion, shutter, lens check.

19Oct

- IRT checked as part of audit in. Shutter assembly removed with new mounting setup, task complete – Kornke.

d) Logger (Zeno) pressure check.

23Oct

- Pressure checked, task completed – Glowacki.

e) MFRSR – level and align.

22Oct

- Checked and leveled, task complete – Glowacki.

f) MMCR maintenance:

17Oct

- Shut down 13:45 restarted 16:45 Local time
- i) Check Operation of 12VDC Fan for Lotech MUX 488/64

17Oct

- Fan had stopped and a replacement fan installed. Spare fans will be required in re-supply Type Prpst type 412, or sunonKDEW1204PKS2, one and one quarter inch 12Vdc (Glowacki).

ii) Check Operation of Antenna Heater Element

17Oct

- Checked okay (Glowacki).

iii) Check Operation of Antenna Heater Blower

17Oct

- Fan running very hot and noisy, replaced with a spare. One spare fan still in stock (Glowacki)

iv) Check Radome Fabric

17Oct

- Checked okay clean tight and in good condition (Glowacki)

v) Clean Receiver/Modulator Interface filters

17Oct

- Cleaned (Glowacki)

vi) Clean Computer filters (foam)

17Oct

- Cleaned (Glowacki)

vii) Change-Out Antenna Heater Filters

17Oct

- Filter was clean and did not require changing. (Glowacki)

viii) Change-out Fan for Radian Receiver, 12VDC

g) MPL – clean top glass, check shade mechanism.

15Oct

- Miss-alignment between window and MPL corrected.

17Oct

- Top glass cleaned, task complete - Glowacki

h) MWR - check Teflon window, fan, screen, and heater moisture sensor.

22Oct

- Completed by Glowacki, Culgan.

i) Net Rad – change domes and gaskets.

Task completed – see earlier task.

j) Phone Manager – check setup.

16Oct

- Used phone patch panel to hook E-van fax to 9427
THE ARCS-1 Landline fax is 9427! (Bill K)

k) PIR, PSP ventilators – check operation.

22Oct

- Checked, task complete – Kornke.

l) Power-Battery box – check for water, corrosion.

16Oct

- Checked, task complete – Kornke.

m) SAT Phone – check tracking.

22Oct

- Checked correct configuration downloaded.

n) SMET – check anemometers, TRH fan, change TRH probe.

22Oct

- Task completed by Porch, Culgan.

o) Tracker – check tracking.

22Oct

- Tracking checked at various days and times, task completed.

p) Vans – inspect for rust, check dehumidifiers.

q) WSI

20Oct

- Kornke worked on WSI with Garietz and Culgan.
- Task completed.
 - i) Check Coolant Flow
 - ii) Check for Cloudy Coolant in lines
 - iii) Check for Corrosion
 - iv) Check both Sealants to Verify Seal
 - v) Check to See If N2 Change Is Needed
 - vi) Check heater operation
 - vii) Oil Coolant Pump Bearings
 - viii) Service AC unit on White and Blue boxes

- ix) Change-Out Corrosion Prevention in ARC Drive
- x) Change-Out Replace Metal Screen Filters in Blue Box
- xi) Change-Out Shutter Assembly
- xii) Change-Out Desiccant in Camera Housing

40) Observer Training (Kornke)

- a) CD of Manuals use

24Oct

- Task completed by Kornke, Glowacki.

- b) ADaM HD change w/Obs Man, Monthly Ops, PRO (ADAM)-033.002

- c) Laptop Virus Protection (Porch).

23Oct

- Virus protection installed, task completed.

41) Ship back equipment (Observers)

- a) ARCS-1 drawing book with red marks

- b) Used NET rad assembly.

- c) MFRSR head to PNNL

- d) Old T/RH probe.

- e) Old Anemometers.

- f) Old MMCR TWT

21Oct

- Packed up the old MMCR TWT (sn# 016 WD24369) unit for shipping. Shipping detail given to Francis for processing.

D. Re-supply items needed

- Spare MMCR fans will be required in re-supply Type Prpst type 412, or sunonKDEW1204PKS2, one and one quarter inch 12Vdc (Glowacki).
- MMCR Antenna Heater Blower Fan running very hot and noisy replaced it with a spare. One spare fan still in stock (Glowacki).
- 4 spare radiometer ventilators at each site.
- 8 Ventilator Fans.
- Fiber cable for TSI.
- View Sonic VPA145 Monitor. The unit for ADaM (sn A951100360) has started to develop a problem with its back lighting and has very poor brightness and contrast.
- Radiometer securing brackets.
- Desiccant canisters for WSI.
- Silicon sealant.
- BBSS spare UPS batteries.
- MMCR spare UPS batteries.

E. Tasks for next RESET Visit

- Seal roof of I-Van to prevent leaking at MMCR antenna area.
- Install Diesel Tank
- Modify IRT wiring to replicate setup on Nauru.
- Get new laptop for Pearse. Ship old Observer laptop to LANL.
- Set and connect additional Diesel fuel tank.
- Change out BBSS UPS Battery.
- Install Electrolyser “earthing”
- Red mark ARCS 1 drawing book.
- Order extra spare radiometer fans and ventilators.
- Install Zeno logger roofs.
- Clean out Z-Van.
- Repair Skyrad steps, Cal Stand Steps, and Van deck.
- Coat Y-Van roof leaky paint Y-Van front.
- Repair I-Van roof leak.
- Laptop MaCaffe virus protection.
- MMCR Calibration (Moran)