TWP ARCS-1 Site
RESET VISIT-11M Report

Manus: 09 July – 21 July 2000
PNG NWS Momote Station, Manus Province and
PNG NWS Headquarters, Port Moresby
Papua New Guinea

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1.0 INTRODUCTION:

The main goals of the TWP Operations RESET-11M Visit (non-routine) to ARCS-1 at Momote Airport on Manus, PNG were the following; 1) Replace the MPL Laser Diode and 2) Perform DC Power Upgrades. Details of the RESET visit planning are found in Attachment 3.

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 put together by the RESET-11M members based on the actual visit, daily reports.

2.0 TWP OPERATIONS / RESET MANAGEMENT:

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

Routine RESET 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.

Nonroutine RESET visits are intended for technical nonroutine tasks such as emergency repairs, retrofits, and/or the addition of new instruments.

The work on a 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-11 Manus Members:
- Dennis Morrison, Sandia, 09 July to 21 July 2000
- Bill Kornke, LANL, 09 July to 21 July 2000
- Elizah Gareitz, PNG NWS, 09 July to 21 July 2000
- Grant Jeffery, Australian BOM, 14 July to 18 July
- Paul Johnston, NOAA, 17 July to 21 July
- Laurie, NOAA, 17 July to 21 July

PNG NWS On-Site Observers:
- Francis Anuma – OIC
- Mary John
- Hymson Waffi
- James Pepa

3.0 RESET PREPARATION:

Preparation for RESET visits requires a long lead-time to arrange reservations, visas, inoculations, medication, documentation, procedures, and training plans. Close coordination well before the departure date with ATOSS, instrument mentors, and shipping personnel is critical. Prioritization and task rejection is a difficult and important part of RESET visit preparation.

4.0 MANUS TASKS PERFORMED:

A.   Train Observers:

15Jul00
- Installed weather trainer software on observer computer.
16Jul00
- Bill is training Elisha on the fiber optic terminations.
19Jul00
- Had a training session with the observers, about 1.5 hrs. We covered the observer laptop along with the Windows tutorial with its newly acquired sound capability; the Weather Trainer Software; and the TWP Manuals CD. The TWP Manuals CD worked fine. We covered the DCP installation and re-initialization procedure, and we went over the phone manager setup.

B.   Upgrade BBSS DCP:

11Jul00
- Completed installation of the DCP system for the BBSS, will monitor it to see if the data makes it to Wallops.
12Jul00
- Have not been able to connect with Wallops Island at either the site or the hotel to check if the DCP data is making it; please have Jeff Schmaltz check and see if the transmissions are making it. I can see that there is a transmission but need to know if it is being received.
20Jul00
- Morrison checked the time on the Digicora, and it was OK. He then tried to check the time on the DCP, but got the error "could not initialize DCP" on the Digicora.. He has tried various combinations of power OFF/ONs, but cannot get the Digicora to connect to the DCP. He has not seen this problem previously. He left

a message with Barry Lesht (BL) and will try to call Larry Yellowhorse (LY) at home for help. He will continue to diagnose the problem as well as possible. TWPPO will coordinate a response from BL and LY tomorrow.

21Jul00

- Evidently the DCP worked fine the first ten days and then failed. A new unit is needed.
- Morrison worked via phone with Yellowhorse of ATOSS and Chris Keenan of Vaisala to try to get the DCP to work – it appears to be a faulty unit. The DCP system failed at Manus.

C.   *Changeout Observer Laptop:*

10Jul00

- 02:00GMT - Installed Observer laptop (this was stolen from the ARCS-3 Ceilometer in Albuquerque) and connected it to the network. I set up a connection for the ISP but all of our connections from the site are sporadic; I hope it will improve with the new lines. I have not located where the driver CD is for the network printer; if anyone knows let me know.
- Found out later that ARM ISP passwords had been changed but not communicated to RESET team.

D.   *Replace MPL Laser Diode:*

10Jul00

- 01:00GMT – I installed MPL Laser Diode Power Supply and fired it up; will check H&S.

E.   *Connect New Phone Lines and Redo Phone Manager:*

10Jul00

- 05:00GMT – I began working on phone line system, and after tracing out the lines, discovered that the two new phone lines are extensions of 9193. We have talked to Telcom and they will come out and fix the incoming lines. After this we will be able to connect on all three lines. This is probably a cause of many of the phone problems here; the lines are pretty confused.

11Jul00

- 02:00 GMT – We still have problems with the phone lines; we are waiting for Telcom to come out.

12Jul00

- 03:00 GMT--Telcom came and worked on the phones; 9193 will be fixed back at their office. The two new lines were fixed and are now available. 470-9384 is connected to the Dvan phone, and 470-9427 is connected to the ADaM modem.
- The lines at the site need to be sorted out and organized, which will take some doing.

13Jul00

- 23:00GMT--The problem with the phone line (9193) has been that a pin# was established which locks the phone from making long distance calls. I don't know who did this; I will check with Francis.
  ⇒ To lock the phone, enter *33*3569#
  ⇒ To unlock the phone, enter #33*3569#
  ⇒ So 9193 works now. Do we want to keep this feature?
- 6:00GMT Began work on phone lines, sorted out and traced lines to understand how the lines are set up.

14Jul00

- Even though we have more phone lines, the connections are poor. We are unable to look at H&S.
- 9:00 GMT--Continued work on the phone lines; we will have three lines in both the D- and E-Vans, and two separate lines running from the D- to the E-van; these lines will be used with the phone manager, if we loose one or two of the main lines. I will do a schematic when done.

15Jul00

- Continued work on upgrades and phone lines. I switched the main phone/fax line from 9193 to 9384; this is due to a problem with 9193. For some reason this line rings on a regular basis which causes the fax to print out a page, and the Observers take the phone off the hook so they don't have to listen to it. I will see if I can get 9193 fixed, but for now use 9384 for phone and fax, and 9427 will remain strictly modem.

16Jul00

- Completed more tests on the phone manager to make sure it was working properly.

18Jul00

- We ran a test on the modem today by dialing into it with a laptop and had no problem connecting to the terminal server.
- Inspected phone line to site. The direct burial conduit from the Airport to the D-Van was exposed and the conduit scraped away and the phone wires were exposed. A possible test to see if a new overhead line would help would be to test the quality of the NWS office phone line (470-9194).

19Jul00

- We received the fax on the phone manager setup and phone diagnosis. The three phone lines were tested for their ability to connect a laptop to the terminal server. The results are as follows:
  ⇒ 9193 and 9427 both made connections at 9600 baud max, 9193 was slightly better based on fewer attempts to connect and longer connect times. However, 9193 is the line we have had the problems with the phone ringing on a regular basis that results in the observer taking the phone off the hook.
  ⇒ 9384 - would not connect to the modem at all, tested down to 2400 baud.

- ⇒ Francis has checked with Telcon about the problems with the 9193 line, they have told him the ringing phone problem is caused by the wet phone lines. (We had massive rain today.)
- ⇒ I recommend we use 9427 for the ADaM modem, and 9384 for incoming phones and fax, and 9193 for incoming/outgoing calls. The phone manager would be connected when we lose one or two lines.

20Jul00

- Phone manager is connected to 9193 line only.

F.   *Upgrade and Label Seacon Connector:*

16Jul00

- I began working on the logger connector upgrades.

17Jul00

- I worked with Bill rewiring the logger cables on the ground and Skyrad. Both of these were completed, and we would like to have the appropriate people look at the data very closely to make sure there have been no mistakes. The sooner the better on this, so we can have time to correct any problems.
- Left old impulse connectors on unused terminals in the field to protect the terminals from weather. Need seacon plugs to replace terminals.

18Jul00

- I have placed configuration files for the Ceil, MWR, and BBSS, as well as data for the Skyrad and Grndrad, on the **arm.gov** site. We had some good periods of sun today around noon and 1:00, so this will hopefully help in checking the data.
- Bill finished rewiring the cable and connector upgrade for the SMET.

19Jul00

- At 07:30 GMT--Bill switched the wires on the net radiometer. We have had rain most of the day, but the sky lightened a little during this time, so Chris may be able to see a difference. If this fixes the problem, it was my fault --I spliced that cable.
- I offloaded pertinent data, e.g., Gndrad, SMET, MFRSR. I need someone to look at SMET data!

20Jul00

- The NETRAD "looked" OK so far on the GOES H and S plot; another hour will confirm it.
- Kornke finished the correction to the SMET RH problem, and will check the results on the logger.

G.   *Perform DC Power/Fiber Data Line Modifications:*

10Jul00

- 7:00GMT--Bill worked on the power/data line upgrade.

11Jul00

- We are making progress on the power upgrades. All the junction and power boxes are installed and we will pull cable tomorrow. This was accomplished despite of the fact that it's raining a lot. I did get to observe one thing today that is

of some concern. I had the lids off of the Quartzite utility boxes (those ugly gray things protruding from the ground). They were completely filled with water to the point were the hydraulics were forcing the water level above grade. All cables in those conduits were under water. It drained quickly though. The whole field conduit system should be replaced with the type of system I'm installing now. I'll send pictures.

12Jul00

- 00:00GMT--Ran the DC power lines to the field.
- 07:50 GMT--Bill ran data cable for the loggers. All cables are run for the upgrade.

13Jul00

- 04:00GMT--Rain once again interrupted our power system fieldwork. One thing I'm finding, which is very frustrating, is the lack of good design and foresight. The Sky stand power distribution box has a stainless steel panel that is used for a heat sink. There are two problems with that: 1) S.S. is a lousy thermal conductor and 2) it's almost impossible to drill and tap in the field, which we must do to mount the new DC-DC converter. My NWS tech is having a difficult time, and we've spent a half-day only to do a temporary install. I am recommending removal of the S.S. panel and installation of the proper aluminum as on all the power distribution boxes of my design. If the panels are not available in aluminum you can have Reliance cut one for you; it costs no more.

14Jul00

- 22:50GMT—I shut down Sky, Gnd and SMET loggers for changeover to new DC power system.
- 08:00GMT--DC Power upgrade is completed. You may have noticed a lot of "Red" today. Instruments are back on-line and should be reporting. All "smoke" tests proved negative. A bonus - the SMET aspirator works when plugged into the logger. I removed the battery boxes from the field and they are now outside the E-Van near but not too close to the mail slot. FYI, I used only two boxes for battery back up, each containing four 6V in series/parallel for 12V. I then series'd the two boxes for 24V.
- We are mostly done with the fiber optic com lines, but won't do the final test until Sunday, local.

16Jul00

- Bill completed installation of the fiber data lines to <u>all</u> instruments and for the record he would like it known that they all worked on the first try. Old copper cable pulled out of conduit.

19Jul00

- Fiber optic spares done.

H. Expand Terminal Server's Flash and Ram Memory:

14Jul00
- 01:00 GMT--Began terminal server upgrade, backed up old software and configuration, installed new Simms and Dram, however, when I tried to install the new configuration, the file was not there, so I reinstalled the original configuration. I must talk to Dick Eagan to find out where the configuration file is.
- Hardware was upgraded. Eagan can install software remotely.

I. Perform H2 Generator Maintenance:
(See attached report)

14Jul00
- 00:30 GMT--Jeffery showed up and began work on the hydrogen generator.

18Jul00
- Electrolyser cleaned by Jeffery.

J. Replace Emergency Generator's Gages:

- not done this visit

K. Install GRNRAD Stand Lightning Rod:

19Jul00
- GRNRAD grounding rod installed and connected.

L. Switch D-, E-, I-, and U-Van Smoke, CO Alarms to "Bypass":

19Jul00
- Starting cleanup, photos, and smoke detector bypass -- done.

M. Perform Routine Maintenance Tasks:

12Jul00
- 07:40 GMT—I completed routine maintenance for MMCR, replaced filters and desiccant; the radome fabric looks good. The MWR fan was making noise, so I replaced it; there is still one spare fan left. (DM)

13Jul00
- 00:00GMT—I shut down the MWR to replace the window, back up at 01:00. (DM)
- 5:00 GMT—I completed maintenance on the WSI, replaced filter, fixed coolant leak, and topped off, checked pump lubrication. (DM)

18Jul00
- Francis Anuma checked on HVAC repair people and said the guy who used to do it for the island has moved away and he doesn't think anyone else on the island can do it. Francis believes off-island people must be doing it.

N. *Fix Sparce Station at ECOM HS:*

13Jul00
- 02:00 GMT—I went with Francis to checkout the SPARCE met station which was vandalized; we spoke with the principal who said the wind set was still at the police office and a teacher had the laptop. They will acquire these and we will meet next Tuesday.

18Jul00
- Francis and I went to the school today to repair the met station and discovered the wind set was beyond repair. It will need a replacement. Could replace it with a system like at Nauru.

O. *Repair IRT Rainshutter:*

18Jul00
- Bill mentioned that the IRT rain shutter repair is not necessary, as it has been working perfectly. No modification was done.

P. *Troubleshoot MMCR GPIB:*

12Jul00
- 05:00 GMT—I shut down MMCR and reseated GPIB board on Radar computer.

13Jul00
- 11:00 GMT--Francis called at the hotel and informed us that the MMCR was shut down, I don't know what caused this. I had him power the rest of the way down and then restart.

18Jul00
- The MMCR radar computer display is showing up in black and white. I think we had a problem with one of the computer displays in the past. We have a replacement display card, but the computer seems fine, other than no color.

20Jul00
- I shutdown, depowered, and restarted the MMCR, but it didn't fit the problem.

Q. *Repair WSI Leak:*

13Jul00
- 5:00 GMT—Completed maintenance on the WSI, i.e., replaced filter, fixed coolant leak, and topped off, checked pump lubrication.

R. *Other:*

10Jul00
- 23:00GMT --The SMET data cable box was filled with water. It has been very rainy. Replaced box.

11Jul00
- 08:50GMT--Began the day with the SMET terminal cable fix, i.e., water damage and corrosion; I'm bringing the SeaCon back so everyone can have a look.

12Jul00
- 01:30GMT--The I-Van power went down; the workers tried running a conduit heater from the UPS circuit #4. When the #4 breaker popped, all instruments on the UPS went down. When the circuit was reset all the instruments came back up. It could be that the laptops only went off and the instruments stayed on. This must be a protection for the UPS. (DM)

13Jul00
- 22:00GMT--The Genset was running when we showed up at the site.

15Jul00
- Fixed outside ringer that was not working on the 470-9384 number.

17Jul00
- Paul Johnston arrived today.

19Jul00
- Paul Johnston began sending ISS data to ADaM again; we activated the instrument and processing icon for the ISS.

21Jul00
- Morrison, Kornke, Gareitz departed.

S.   *Perform Audit-Out:*

19Jul00:
- Starting cleanup, photos, smoke detector bypass.

5.0   *FUTURE RESET VISIT:*

The following items should be considered for inclusion in the task planning for the upcoming RESET visits:
- Address corroding AC units.
- Run AC power to instrument stands for tools.
- Check hookup to UPS circuits and document.
- Upgrade CPCC Laptop.
- Upgrade ADaM with MMCR shutdown scripts (remotely by Koontz).
- Purchase spare MWR; there is still one spare fan left.
- One thing I'm finding, which is very frustrating, is the lack of good design and foresight. The Sky stand power distribution box has a stainless steel panel that is used for a heat sink. There are two problems with that: 1) S.S. is a lousy thermal conductor and 2) it's almost impossible to drill and tap in the field, which we must do to mount the new DC-DC converter. My NWS tech is having a difficult time and we've spent a halfday only to do a temporary install. I am recommending removal of the S.S. panel and installation of the proper aluminum as on all the power distribution boxes of my design. If the panels are not available in aluminum you can have Reliance cut one for you; it costs no ore. – BK
- Have items for Monty to send when we get back.
- Install a working DCP unit at Manus.

- Install seacon "plugs" to protect unused logger can terminals.
- Generator modifications: fuel gage replacement, oil gage replacement.

6.0 FOLLOW-UP ACTIONS:

Perform the following actions as a result of this RESET Visit:
- Send new BBSS DCP for installation by observers.
- Purchase seacon "plugs" to cover unused terminals.
- Purchase replacement AC units.
- Kornke to electrical outlet explanation.
- Eagan to install terminal server flash and RAM memory remotely.
- Purchase VCR cleaning tape.
- H2 Generator Maintenance Report – Australia BOM.
- Apple purchase correct batteries for loggers to make Manus the same as Nauru.
- Need 12 V batteries to replace 6 V batteries in boxes in field. Put them in E-Van to replicate Nauru.

7.0 ATTACHMENTS:

Attachment 1—Audit-In/Site Conditions Report
Attachment 2—Audit-Out Report
Attachment 3—RESET-11M Tasking Plan

Attachment 1—Audit-In/Site Conditions Report (On-Line)

Attachment 2—Audit-Out Report (On-Line)

Attachment 3—RESET-11M Tasking Plan

<u>**RESET-11M**</u>

Manus Team:
- Dennis Morrison
- Elizah] Gareitz
- Bill Kornke
- Grant Jeffery
- Paul Johnston

<u>**MANUS**</u>
Priority tasks:
1. Perform Audit-In
2. Train Observers
3. Upgrade BBSS DCP
4. Changeout Observer Laptop
5. Replace MPL Laser Diode
6. Connect New Phone Lines and Redo Phone Manager
7. Upgrade and Label Seacon Connector
8. Perform DC Power Modifications
9. Expand Terminal Server's Flash and Ram Memory
10. Perform H2 Generator Maintenance
11. Replace Emergency Generator's Gages
12. Install GRNRAD Stand Lightning Rod
13. Switch D-, E-, I-, and U-Van Smoke, CO Alarms to "Bypass"
14. Perform Routine Maintenance Tasks
15. Fix Sparce Station at ECOM HS
16. Repair IRT Rainshutter
17. Troubleshoot MMCR GPIB
18. Repair WSI Leak
19. Other
20. Perform Audit-Out

Manus Routine Maintenance Tasks:
1. Have OIC arrange Bard and Fredrich AC Unit maintenance by local personnel during visit.
2. Check BBSS Antenna connections
3. Check Zeno Loggers (Pressure check, Battery changeout)
4. GENSET?
5. MMCR maintenance (Check 12V DC fan for lotech MUX 488/64, Check operation of Antenna Heater Element and Blower, Check Radome fabric and connectors, Clean Receiver/modulator Interface Filters, Clean Computer filters(foam), Clean 4mm tape drive, Changeout Antenna Heater filters, Inspect, changeout TWTA Dessicant, Review MMCR, MMCR rounds with Observers)

6. MWR maintenance (Check mounting bolts, Replace Teflon window, Check fan screen for reduced air flow, Review MWR, MWR rounds with Observers)
7. NET maintenance (Change out both domes, Review NET, NET rounds with Observers)
8. Ventilator maintenance(PIR G&D, PSP G&D - Check operation and screen)
9. Logger box batteries (Check water level, Change out batteries??)
10. UPS Maintenance (Test I-Van, Test D-Van, Change out batteries??, Review UPS with Observers)
11. Vans maintenance (Check Vans for rusting, Replace smoke/CO alarm batteries, Review Vans with Observers)
12. WSI maintenance (Check coolant flow, Check for cloudy coolant in lines, Check for corrosion, leaks, Check oil pump bearings, Replace metal screen filters in blue box, Review WSI, WSI rounds with Observers)