

*TWP ARCS-1 Site
RESET VISIT-2
Report*

22 August - 07 September 1997

*PNG NWS Momote Station, Manus Province and
PNG NWS Headquarters, Port Moresby,
Papua New Guinea*

CONTENTS:

- 1. Introduction*
- 2. TWP Operations/Reset Management*
- 3. RESET Preparation:*
- 4. Tasks Performed:*
 - A. HRPT Satellite system at Port Moresby
 - B. ARCS-1 Site Audit-In
 - C. Install GPS BBSS
 - D. Retrieve MWR Tip Mode data
 - E. Sync up ADaM and EVE
 - F. Reload OS/2 on MPL computer
 - G. Replace Skyrad NIP with Calibrated NIP.
 - H. Update Observer & RESET Manuals
 - I. GENSET maintenance
 - J. SMET R/H Aspirator check
 - K. SKYRAD Logger configuration upgrade
 - L. MFRSR upgrade
 - M. Tape logger connectors
 - N. Van Air Conditioners
 - O. Diagnose D-Van Humidity problem
 - P. Modify IRT box
 - Q. Visit local schools
 - R. ARCS-1 Site Audit-out
- 5. Next RESET Visit*
- 6. Lessons Learned*
- 7. Attachments*

1.0 INTRODUCTION:

The main goals of the TWP Operations RESET-2 Visit (non-Routine) to ARCS-1 at Momote Airport on Manus, PNG were: 1) Install the new GPS BBSS to replace the NOAA Omega based system and train the on-site observers in its use; 2) Retrieve MWR tip mode data and change coefficients; 3) Sync up ADaM and Eve; 4) Reload OS-2 on MOL Computer; 5) replace the NIP on the Skyrad Stand with a calibrated one; and 6) Install the HRPT Satellite system printer at Port Moresby NWS office.

This Report is organized according to the planned tasks or work units performed during the RESET Visit. Within these work units the activities accomplished is arranged chronologically. Most of the information was put together by the RESET-2 members based on the actual visit daily reports.

2.0 TWP OPERATIONS/RESET MANAGEMENT

Once an ARCS Site is established the Operations part of TWP is responsible for keeping the site running and reporting data. Operations also coordinates equipment retrofits at these established sites. This is accomplished by the local NWS personnel at the site, routine RESET visits and non- routine RESET visits.

Routine RESET visits are scheduled on approximately six months 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.

One **non-routine RESET** visit is budgeted for each year. These visits are intended for technical non-routine tasks such as emergency repairs, retrofits or the addition of new instruments.

The work on a RESET visit is performed by the RESET Team, but many times in close coordination with the local On-site Observers. The team has a daily tasking meeting each morning at the site using the proposed RESET visit tasking schedule. After each day's work the team meets to summarize what was done and an assigned team member writes a "Daily Report" to be E-Mailed back to TWP personnel in the US. Because of the time zone differences, necessary calls to instrument mentors in the US are done in the morning.

RESET-1 Members:

- Mark Fiscus, TWP RESET Lead
- Fred Helsel, TWP RESET Team Member

PNG On-Site Observers:

- Geasa Stoesel, OIC

- Francis Anuma
- David Akia

Others on site:

- Colin Maxfield, Australian BM/Vaisala rep

3.0 RESET PREPARATION:

Preparation for RESET Visits requires a long lead time to line up reservations, visas, shots, medication, documentation, procedures and training plans. Close coordination with AIS/ATSS, instrument mentors and shipping personnel is critical well before the departure date. Prioritization and task rejection is a difficult and important part of RESET visit preparation.

4.0 TASKS PERFORMED:

A. *Install HRPT Satellite system Printer at Port Moresby*

On 8/22 Fiscus and Helsel upgraded the HTRP system with the new TERA SCAN software and installed the new printer (that arrived after they arrived). The printer software didn't seem to install the way it did in San Diego, but after a few trials and lots of errors we got the printer working. Don Fay of SEASPACE sent Fiscus and Helsel direction that helped them get the system going.

Fiscus and Helsel didn't understand why they were trained at SEASPACE in San Diego on the new TERA SCAN software that doesn't exist at PNG and why they were not trained on software that was there. The software in place at PNG is TERA X CAP CON.

On 8/23 Fiscus and Helsel trained the staff at the PNG NWS. They were eager beavers and seemed to whiz through the software like a buzz saw. The operators did not know how to update the orbital elements.

On 9/7 Fiscus and Helsel went to the PNG NWS office at Port Moresby with Ken Zorika to provide additional training for the local operators but no one showed up. They tested the system and its auto scheduling and writing of satellite passes. They had problems printing. After reloading the software, the printer, worked fine. Zorika said that he hadn't received any of the orbital elements from SEA SPACE since 8/22/97. Because there hasn't been any orbital elements faxed to the NWS they couldn't tell if they knew how to enter them. The old ones they entered in August were still being used. Zorika said they were changing tapes twice a week.

B. *ARCS-1 Site Audit-in:*

Upon arrival at the ARCS-1 site an inventory is taken to establish the baseline status of the instruments and equipment at the site. All changes during the RESET visit are compared to this inventory.

On 8/26 Fiscus and Helsel performed a site "Audit-In" using the attached form. Major finds were:

- The SMET logger had lost its positive pressure and is leaking out the Barometer input tube.
- The clips that hold the glass on the I-Van MPL roof port were all unclipped except for one. All clips were refastened on **8/25**.
- The Teflon was cracking on the MWR. It was replaced on **8/28**.

(See the attached AUDIT-IN/OUT form for specifics.)

C. *Install GPS BBSS*

On 8/25 Fiscus and Helsel unpacked and installed the BBSS Digicora, the computer in the I-Van and the antennas on the outside of the I-Van.

On 8/27 Fiscus and Helsel installed the sonde aspirator in the balloon barn. They also launched a test balloon and it seemed to work with no problems. Frances Anuma operated the Digicora. This was the start of the local Observer training on the BBSS.

On 8/31 Fiscus and Helsel received a procedure from Barry Lesht at Argonne to reprogram the Digicora for Omega sondes. By following the procedure the Digicora was able to write and print Temp data. Fiscus edited the procedure. Today's balloon launch was successful.

On 9/5 Fiscus and Helsel found another problem. Initially they thought that the balloons were popping around 250 Mb to 160 Mb, but they eventually found out that the balloons are taking off away from them and then drifting back over the site. When the balloon came back over the BBSS it lost the UFH signal and terminated the sounding. This was discovered by returning to the BBSS and finding the balloon still aloft. The problem was that the observers are used to launching the balloon then doing some thing else, not baby sitting the BBSS. This is a known problem with the type of UFH antenna being used. Hopefully the problem will go away when the EL Nino ends and the winds return. In the mean time we are going to have to live with 250 Mb to 160 Mb flights or convince the observers to stay with the BBSS and be ready when it times out and terminates the sounding.

D. Retrieve MWR Tip Mode data:

On 8/27 Fiscus and Helsel retrieved the MWR Tip Mode data. The tip mode data was zipped and dumped to a zip drive for return to the states.

On 8/28 Fiscus and Helsel put in latest coefficients by changing 28.3 Ghz 197.97 to 197.06 and 31.4 Ghz 171.82 to 172.07 at 23:00Z .

E. Sync up ADaM and EVE:

On 8/27 Fiscus did Sync up for ADaM and EVE. He also did a full system backup to tape before doing the sync.

F. Reload OS/2 on MPL computer:

On 8/28 Fiscus reloaded OS/2 onto the MPL computer.

G. Replace Skyrad NIP with Calibrated NIP:

On 8/26 Fiscus and Helsel replaced the NIP on the Skyrad stand with the calibrated NIP sent from the states. It had previously been reported that the NIP that was in place had condensation inside it.

The replaced “wet” NIP and an out of calibration spare NIP was shipped back to the states.

H. Update Observer & RESET Manuals:

On 9/3 Helsel replaced the contents of the RESET Manual and the Observer’s Manual with new inserts and discussed the updated material with the on-site observers.

I. GENSET maintenance:

On 8/28 Helsel replaced the GENSET air filter. The filter is #61-2502.

On 8/31 Helsel replaced the GENSET URNKDR Raecore fuel filter. Helsel also turned on the water jacket heater to prevent cold starts and prolong engine life.

J. SMET R/H Aspirator check:

On 8/30 Fiscus and Helsel checked Geasa’s repair of the heater assembly in the RH Aspirator - it looked fine. They also replaced the broken fan in spare R/H Aspirator assembly.

K. SKYRAD Logger configuration upgrade:

On 8/30 Fiscus and Helsel installed the new Skyrad logger configuration after installing the new replacement NIP. Data started at 05:10 Z.

L. MFRSR upgrade:

The MFRSR data logger box had been collecting water.

On 8/27 Helsel drilled holes in the MFRSR logger box to vent it.

On 8/28 Fiscus and Helsel replaced the MFRSR logger board and head with parts sent over ahead of the RESET Visit.

M. Tape logger connectors:

On 8/30 Fiscus and Helsel taped the connectors of all the data loggers with Electrical tape(Scotch 33) for UV protection.

N. Van Air Conditioners:

On 8/31 Helsel changed the air conditioners filters for all the vans. In the D-VAN the fresh air flaps were duct taped to prevent humid air from being sucked from out side the van. The air conditioner parts to repair the E-Van units arrived, but Wilson the repair man was sick and did not make the repairs.

O. Diagnose D-Van Humidity problem:

On 8/27 Fiscus and Helsel took humidity readings that corresponded to the GOES readings for comparison.

On 8/28 Fiscus and Helsel installed a shower curtain over door in D-van to help control the inflow of humid air every time the door opens.

P. Modify IRT box:

Helsel found water had been collecting in the Skyrad IRT box.

On 8/27 Helsel drilled holes in the IRT outer box to vent it.

Q. Community Relations / Visit local schools:

On 9/1 Fiscus and Helsel visited ECOM High School to set up a SPARCE MET station. They found out that the small 12 vdc transformer wouldn't operate properly on 50 HZ. After finding a 50 HZ transformer and extension cord the system operated fine. It cost 64 kina for transformer, extension cord and plug adapter. Bozzal, the science teacher for ECOM High school, was very excited to have the system up and running.

On 9/2 Fiscus and Helsel visited Bundrahei High School and talked with Ben Wama the science teacher there. Stoesel had a SPARCE rain gauge and pole that they left with them. Ben said that some of the previous equipment was broken and some of it was vandalized. Ben thought the program was very important and would like to receive a minimum and maximum temperature thermometer and Dry wet bulb thermometer. Ben commented that he doesn't have any way to view the video tapes he receives from SPARCE.

On 9/2 Fiscus and Helsel also visited the Buliso Community school where Simon Chicku showed them around. Fiscus gave a presentation to the students about the ARCS. Buliso has 2 SPARCE rain gauges. Simon said that he and the students read the gauges daily. He uses his own money to mail the readings to the USA.

On 9/3 Fiscus, Helsel and Geasa Stoesel were interviewed on the local radio station in Lorengau. Fiscus talked about El Nino.

On 9/3 Fiscus, Helsel and Stoesel gave the local teachers (including Simon Chicku) a tour of the ARCS site.

R. Site Audit-out:

Upon departure from the site an inventory was taken to identify the changes made during the RESET Visit and list resupply issues to be addressed upon our return.

On 9/5 Fiscus and Helsel performed the site Audit-out using the blank Audit-in/out form. Issues:

- Although Helsel saw a spare MFSR logger board at the site, he couldn't find during the audit-out.

(See the attached AUDIT-IN/OUT form for specifics.)

5.0 NEXT RESET VISIT:

The following items should be considered for inclusion in the task planning for the next RESET visit:

- Replace the Ceilometer Computer or engineer a fix to the data transmission problems between it and ADaM.
- D-Van charge controller needs replacement.
- MET data logger is not sealed, is breathing through the barometer tube. The tube needs to be replaced/repared and the logger purged with dry air.
- The E-Van RH/T needs a new NDU for the sensor.
- Need to change the design of the MWR heater screen to deter corrosion better.

6.0 LESSONS LEARNED:

The following observations were made by the RESET members that should be considered for future TWP installations and operations:

- There are education expectations for the TWP that exists at the local schools. We should schedule outreach activity as part of each RESET Visit. Also, there seems to be no feedback from SPARCE to the participating schools.

7.0 ATTACHMENTS:

- Audit-in/out form