

**ARM Manus Research Station
Site Visit 0308M Report**

Visit Duration: 18 August to 22 August 2003

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 Site Visit 0308-M Visit (routine) to ARCS-1 at Momote Airport on Manus, PNG were the following: 1) Repair the H2 Generator 2) Install the TSI.

This report is organized according to the planned tasks or work units performed during the Site Visit. Within these work units the activities accomplished are arranged chronologically. Most of the information was put together by the Site Visit Team members based on the actual visit, daily reports.

B. TWP Operations Management and Site Visits

Site Visits are scheduled on approximately four-month intervals and are focused mainly on routine maintenance, instrument calibration, instrument replacement, and training. Sometimes non-routine visits are needed for technical tasks such as emergency repairs, retrofits, and/or the addition of new instruments. A formal audit-out is performed before departure.

The work on the Site Visit is performed by the Site Visit 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 Site 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.

Site Visit Members

- John Glowacki
- Elijah Garietz

C. Tasks Performed

1. Replace SMET logger with spare and notify Mather.

21 Feb

- SMET logger replaced with spare and configuration file updated.

25Feb

- Changed logger output format to include two decimal places.

01 Mar

- Purged and filled both Skyrad and SMET loggers.

1. H2 Generator – repair Electrolyser

18 Aug:

- Started fault finding Electrolyser fault. Found R6 wider connection open circuit between R6 and Plug P2. Investigations continuing.

19 Aug:

- Completed wiring checks on R6.
- Reassembled Electrolyser and powered it up, still very low current. Found that a bolt had broken on the rear contact on cell two. While checking the other connections for cell two we found that the front contact bolt was loose and turning. We checked the residual voltages and found the following:
 - Cell1 (Left) Front 0.05V/Back 0.28V
 - Cell 2 Front 0.00V/Back 0.20V
 - Cell 3 Front 1.35V/Back 1.36V
 - Cell 4 Front 0.64V/Back 0.68V
 - Cell 5 (Right) Front 1.24V/Back 1.25V
- Have emailed Troy and Grant Jeffrey for advice. The rest of the day was spent cleaning buss bar contact areas and removing cell 2.

20 Aug:

- The Manus electrolyser is up and running on four cells. I have asked the operators to limit the current to 200Amps. Cell 2 was found to have a broken bolt on the electrical connection on the rear group and a bolt that had come adrift from the electrode on the front group. While removing the tape to check the connections on the other cells we found two cracked nuts plus corrosion. The buss bar system was stripped and cleaned, reassembled. Cell 2 was

bypassed using the ready-made jumper cables. The spare cell held at the site was found to be used approximately six years ago. The used cell had not been stored correctly and was covered in dirt and rust.

- Both unserviceable cells need to be refurbished.

22Aug:

- Check the Electrolyser and found cells 3 and 4 running much warmer than cells 1 and 5.
- Asked the observers to reduce the operating current from 200 to 150 Amps.

2. Install TSI

21Aug:

- Unpacked TSI105 and set it up in D-van to preparation for going out onto the stand. The unit didn't power up correctly and then emitted an arc and smoke. I think the AC power cord shorted out to the high power resistors on the main power supply unit. We powered the unit off and checked the fuses and then removed the power supply for inspection. We found that Resistor R19 had burnt and is now an open circuit. We have a spare power supply unit in Darwin. Do you want the spare shipped to Manus or the whole TSI shipped to Darwin for repair and checking? Emailed Chuck Long for advice

22 Aug:

- Vic Morris asked that the spare TSI power supply from Darwin be sent to Manus.

3. SAT phone troubleshooting.

22 Aug:

- Checked sat phone and handset in E-van and found both to be working correctly.

4. Locate spare UVBs

21Aug:

- Only UVB found on site is on the Skyrad stand, serial number 5796. During the search we came across a plastic case for a Precision thermometer type 4600 (ser # 95H100180 OMS tag 1200173). The only things in the case were a temperature probe for the 4600, TRH probe HMP 41/45 ser # W2710037 and a HMP45. No indicator unit.
- What would you like done with these?

5. Label Anemometers WIND1 (high), and WIND2 (low), on the logger can.

6. Check if there are spare fiber pairs at the skyrad stand

21Aug:

- Checked fibers on the Skyrad stand. There are two spare fibers and another two set up for another data logger.

7. Check for Brusag tracker parts on site.

22 Aug:

- Doesn't appear to be any parts from the Brusag tracker mounting hardware left on site.

D. Items required at Manus:

- Spare indicator light bulbs for Electrolyser.
- Spare rubber hose for sampling tube.
- Rubberized tape
- Fine grade wet and dry paper.
- Power Supply for TSI – send spare from Darwin.
- 2 Electrolyser Cells.

E. Items to be Shipped to SGP:

- Plastic Case containing a temperature probe for the 4600 Precision Thermometer, TRH probe HMP 41/45 ser # W2710037 and a HMM45. Final destination is LANL.

Prep

1. Obtain H2 Gen repair parts
2. Send additional fiber for TSI
3. Obtain new handset