

**ARM Darwin Research Station
RESET Visit 16D Report**

Visit Duration: 12 Aug 2002 – 23 Aug 2002

Darwin, Australia

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A. Introduction

The main goals of the TWP Operations RESET16-D Visit (routine) to ARCS-3 at Darwin were the following: 1) Instrument Calibration 2) Instrument Change-out 3) Zeno Logger EPROM Upgrade.

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-16D 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 Porch
- John Glowacki (BOM)
- Rex Pearson (BOM)
- Troy Culgan (BOM)

C. Tasks Performed

1. Site Audit in

1. Instrument Calibration -Completed

14 Aug:

- a. Rex with John and Troy made up instrument cables for the comparison radiometers (we just barely had enough connectors). There must be 20 or more of these cables somewhere (but not here), because this has to be done almost every RESET.
- b. Performed an Audit-in that I would like to use as example for the BOM guys.
- c. Worked with Rex on how to access BOM Darwin site for radiometer, met and sounding data for this two-week period to include in calibration comparisons.

15 Aug:

- a. Transferred raw data from the Skyrad, MPL and MFRSR to the TWP ftp site.

16-18. Aug:

- a. Transferred raw data from the loggers, MFRSR, and instrument configuration from the WSI, and calibration records from the cal and spare Rad logger to the TWP ftp site.

19 Aug:

- a. Completed analysis of sounding data and MWR values. Found that the units are off on the MWR H&S plots for MWR (ticks don't align and 5 ticks for only four units). However, integrated water from Rain-Sonde seems to track MWR (general drying trend). The integrated values are a little low, but there is not the same resolution in the significant level data as the data we get from our BBSS. Sent calculated integrated water vapor calculations to TWP web site.

20 Aug:

- a. Gave Rex a copy of YESDAS Manager so that he can look at raw MFRSR data (need to change the names of the raw files so that they end in .xmd).

21 Aug:

- a. Found spider webs completely covering IRT. Cleaned and calibrated both Grndrad and Skyrad IRTs. Found that the Grndrad IRT had got disconnected (probably when the wiring was redone on the wind direction). Gndrad reconnected, and data agree within 0.3°C with portable blackbody.

22 Aug:

- a. Completed calibration on the SKYRAD IRT. John made a nice stand so that the portable blackbody would fit over the mirror.
- b. Troy completed the calibration of the Ceilometer.

23 Aug:

- a. Comparison data analyzed and forms completed.

2. Radiometer Comparison testing-Completed

14 Aug:

- a. John had mounting plates machined for the comparison radiometers (only one was at Darwin site). He is drilling and tapping them for non-metric threads.
- b. Rex determined that mounting a comparison NIP in the standard way that the NIP is mounted would not work as the connector hits the top plate at night (he

comes in before sunrise). This happens when a NIP is mounted in the top brackets. John and Troy were able to mount the NIP using only one bracket. To avoid the connector problem, they also moved the sun position detector to the top so that the cavity radiometer can fit on the bottom brackets on the other sides.

Aug 15:

- a. John and Troy set up the cavity. We got it to run with no problems with the new Lab view based software.
- b. We are collecting NIP data for comparison.
- c. We just finished mounting the comparison instruments (2 PSPs, 1 NIP, 1 Cavity, and 2 PIRs. We are short of PSPs here in Darwin. We only have 8 including a spare that just went out of calibration. Since 3 need to go to Nauru, and 3 to Manus for RESET16N and RESET16M, we had to use the spare with the out of date calibration as the second comparison PSP. The new PSP will replace PSPs.
- d. The cavity is giving values about 6% lower than the NIP. I think this is normal and due to the window.

Aug 16:

- a. We entered the calibration factors and began taking comparison data about noon local time (one small mistake corrected at about 5PM).
- b. We downloaded the configurations and sent them the TWP ftp site.
- c. We downloaded the cavity data and the cal logger data for the day and sent them.
- d. I wrote up the instrument layout and will send it and the data to Chris Cornwall.

Aug 17:

- a. Continued comparison with comparison radiometers and the cavity (John replaced PSC2 with 8-48 and the two comparison PIRs with other two PIRs on site).
- b. Sent data to TWP ftp site.

Aug 18:

- a. Change out PSP2 and PIRs on comparison logger (no change yet on Skyrad).
- b. Sending new layout and configurations to Chris Cornwall.

Aug. 19:

- a. Completed Excel comparison results for 16,17, 18 Aug. and sent to TWP ftp site.

Aug. 20:

- a. Replaced NIP with spare in comparison sent Chris Cornwall layout and configuration file.

Aug. 21:

- a. Today, when I tried to collect comparison data for yesterday I found a big block of data missing. What we think happened is that it took so long the computer screensaver came on. To activate the screen, I hit a spacebar. The logger doesn't like spacebars and deletes data. Have updated procedure to warn others.

Aug 22:

- a. John replaced the PIRs, PSPG, and NIP on the Skyrad stand with the comparison stand instruments and put the replaced instruments on the comparison stand.

Aug 23:

- a. Comparison data analyzed. New instruments seem to be functioning properly.

3. Radiometer change out- Completed

4. Replace MFRSR head (Completed-no head to replace)

5. Replace UVB (Completed-no spare on site)

6. Replace T/RH probe (Completed-Probe calibrated well, no need to replace)

7. Cal and Rad Logger Calibration-Completed

14 Aug:

- a. John and Troy are working on wiring up cal logger (two connectors and a 24 to 12 volt converter we taken out to get other logger equipment working) for installation.
- b. John found that the fan in the comparison respirator was missing and replaced it with one here (Monty he will need another as a spare).
- c. We began planning for how to install chilled-mirror logger and sensor on the tower.

15 Aug:

- a. Troy, John and Rex completed the electronic calibration on the cal logger. There was a problem with a disconnection in the white box that Bill Kornke made that caused a problem at first. Rex solved the problem by using a breakout box he made in Nauru.
- b. Troy completed the electronic calibration of the spare Rad logger.

16 Aug:

- a. Troy completed the calibration of the Skyrad logger and the gndrad logger.

18 Aug:

- a. John mounted Logger and chilled-mirror for comparisons.

8. SMET and Spare SMET Logger Calibration-Completed

18 Aug:

- a. John mounted Logger and chilled-mirror for comparisons.

20 Aug:

- a. Tilted tower and began SMET calibration at 04:10 GMT 20 Aug. Lots of problems with wind direction. Found out reference and signal wires were reversed on both wind sensors (this turns out to give pretty good numbers during dry season prevailing winds but incorrect values at other directions).

21 Aug:

- a. John helped me get the chilled-mirror (humidity's agree very well with T/RH sensor, within about 2% RH). Had a problem with time in the Campbell logger (needed to convert Mountain time set to local time to GMT). Rex helped figure out how to do it.
- b. Troy did a great job with the SMET calibrations. We will get the forms filled out tomorrow.

22 Aug:

- a. Troy and I worked on completion of SMET calibration form.

23 Aug:

- a. Discovered that the spare SMET logger does not have correct connectors. Awaiting proper connectors for spare SMET to be operational.

9. Calibrate Barometer in SMET Logger-Completed

21 Aug:

- a. This was completed today. The comparison showed that the logger and standard agreed to 0.1 MB (unfortunately we forgot to get the logger barometer serial number when Troy had the can open. We'll get this later).

10. Logger EPROM 185...1.4 version upgrades (PIF 991124.2)-Completed

Aug15:

- a. Troy upgraded the EPROM on the spare RAD Logger.

Aug 16:

- a. Troy upgraded the EPROM's on Skyrad logger and the gndrad logger.

Aug 18:

- b. Troy upgraded the EPROM's on the SMET logger.

11. Ship back equipment- Completed

14 Aug:

- a. Got email guidance from Chris Cornwall on which radiometers to send to Nauru.

15 Aug:

- a. We went through the PSPs and selected 3 each for Nauru and Manus. This leaves only two here in Darwin for comparison including one with a cal date of 7/26/01.

23 Aug:

- a. Calibration equipment separated and packed by Troy for RESET16N.
- b. PSPs and NIPs needed for RESET16 N and M packed for Manus and Nauru.

12. Audit In – Completed

16 Aug:

- a. Sent Audit-in form to TWP ftp site.

13. Audit out-Completed

- Spares inventory-Completed

23 Aug:

- a. Audit-out completed.

- Config files from Rad Loggers, MFRSR, Ceil, MWR, etc.-Completed

16 Aug:

- a. Initial configuration files sent to TWP ftp site.

18 Aug:

- a. Sent WSI configuration.

21 Aug:

a. Sent MPL configuration

- Replacement records

22 Aug:

a. We completed and checked the instrument replacement forms.

- Re-label faded labels- Labels are OK.
- Complete Audit-Out form

23 Aug:

a. Audit-out form completed and sent to TWPPO ftp.