

TWP ARCS-2 Site
RESET VISIT-10N Report
Nauru: 10 to 17 April 2000
Nauru IDI
Denig District, Republic of Nauru

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1.0 INTRODUCTION:

The main goals of the TWP Operations RESET-10N Visit (non-routine) to ARCS-2 at Nauru were the following: 1) repair the WSI arc drive, 2) replace the CIMEL head, and 3) stress test and trouble shoot the UPS system. 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-10N 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, 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-10 Nauru Members:

- Fred Helsel, Lead, 10 to 14 April 2000
- Bill Kornke, 10 to 17 April 2000
- Larry Jones on (SET-3), Daily Reporting, 10 to 14 April 2000

Nauru IDI On-Site Observers:

- Megan Aliklik
- Henry Harris
- Franklin Teimitsi
- Andrew Kaierua

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 AIS/ATSS, instrument mentors, and shipping personnel is critical. Prioritization and task rejection is a difficult and important part of RESET visit preparation.

4.0 Tasks Performed:

A. Perform Audit-In/Site Condition Report: (Jones)

10Apr

- Completed.

B. Replace WSI Arc Drive and Change-Out Heater: (Helsel/Kornke/Jones)

10Apr:

- On the WSI, Kornke and Helsel replaced the arc drive, recalibrated the electronic stops and mechanical limit switches, changed desiccant anticorrosion packs, tightened leaky coolant fittings, resealed the covers and housings with proper sealant, and repaired the broken heater connector. Rebooted the WSI and the occulter found its proper position. WSI electronic brake is making a noise.
- At around 15:00 it was noticed that the 50hz outside power breaker was tripped. When it was reset to get the WSI running, the MWR heater smoked. The MWR heater is the culprit that brought the WSI and MMCR antenna heaters down; all are on the same circuit breaker.

C. Maintain WSI: (Kornke/Helsel)

12Apr:

- Fixed two fluid leaks and topped off the coolant.
- Replaced the WSI anticorrosion cartridge. (Kornke)
- Replaced the WSI desiccant cartridge. (Kornke)
- At 21:00 Helsel completed installing the RUNWSI upgrade. Occulter appears to be properly tracking the moon.

13Apr:

- The WSI dome has a small scratch at the base on the east side.

D. *Install Proper WSI Power Feed: (Kornke)*

11Apr:

- WSI power upgrade completed.

E. *Make Backup Copy of Artecon: (Helsel)*

11Apr:

- Made backup copy of Artecon.

F. *Perform Artecon Patch: (Helsel)*

11Apr:

- Attempted the Artecon patch, but when ADaM came back up, it was not the primary, EVE was; it has the same problem as on Manus.
- Artecon patch completed.

G. *Post "Use ONLY for Fire or Emergency" Signs: (Helsel)*

11Apr:

- Posted "Use ONLY for Fire or Emergency" signs in U-, E-, and D-Vans. There were only three signs, so we were unable to post it in I-Van. We need one more for a future RESET Visit.

H. *Train Observers: (Helsel/Kornke/Jones)*

10Apr:

- Purchased fishing rod and reel with Kaierua for MTI training.

11Apr:

- Helsel installed MTI "Boxcar" software on Observers' Laptop.

12Apr:

- Helsel and Kornke took the Observers through a test run of the MTI procedure. The actual test always shows things you never thought of. The bobber needs to stay in the channel (we were able to cast it about 30 meters out), but wind can blow it into the shallow reef on either side (this will be hard to determine at night). The wind just about blew the toolbox into the ocean with all the sensors and everything. Fish nibbled on the sensor for part of the time it was in the water. We are concerned about a large fish taking it, especially when it is blinking at night. We also wondered if a) the test could be done in the calmer harbor, and b) how much leeway we will have on the timing - it would be great to have them do this at 12:30 while the balloon is in the middle of its flight.
- Jones went over the new BBSS procedure, Shipping procedure, and the new

rounds with Observers Kaierua, Aliklik, and Teimitsi ,and updated the Observers Manual.

- Jones did a safety walk-through with the Observers and held a screening of the TWP video. He went over the "Emergency Shut-Off" button warning, among other things.

13Apr:

- Observers did a third round of MTI training. Helsel shortened the procedure so that the data collection is not shut-off until the Observers return to the E-Van and download the data. There were noo strikes last night or today.
- Introduced the Observers to the Windows 98 tutorial.
- Jones met with Observers on site rules.

15Apr:

- Franklin and Jones went to the jetty today for the MTI measurements. We took about an hour's worth of data with both TidBit loggers attached at the same time. The Observers are very conscientious about keeping the logger in the channel. I asked them to also note tidal conditions. Franklin and I went to the jetty today for the MTI measurements. We took about an hour's worth of data with both TidBit loggers attached at the same time. The observers are very conscientious about keeping the logger in the channel. I asked them to also note tidal conditions. I will email the file to Savannah River and Porch.

I. *Swap Cimel Head and Control Box to Update Calibration: (Helsel)*

11Apr:

- Worked on the CIMEL upgrade. The procedure cautioned not to mixup the azimuth with the zenith, but when he looked in the box out in the field, the connections were already reversed. He left it that way assuming there was some reverse wiring going on. Awaiting sun tomorrow for final testing.

12Apr:

- Completed the CIMEL upgrade after talking with Morrison at ATOSS.

13Apr:

- We still haven't heard back from Morrison on status of CIMEL. Helsel says the Cimel looks good from here.

J. *Install New EMWIN UPS: (Helsel)*

11Apr:

- Installed the new EMWIN UPS, therefore removing the noncode-compliant, extension chord.

K. Audit Laptop/PC: (Helsel)

11Apr:

- Laptop inventory completed.

L. Perform AERI Hatch Diagnostics and Lubrication: (Kornke)

12Apr:

- We had a brief shower last night, and the AERI hatch closed just fine. It was open this morning (not raining) when we got to the site.

13Apr:

- AERI hatch disassembled, inspected, and measurements taken for new pivot hardware. Most pivot points are severely rusted. We then greased the Pivot points. We put two new screws in the arm. We restored the blower airflow after cleaning out the intake filter (see attached pictures for forwarding to Connor).

14Apr:

- Kornke performed the diagnostics on the AERI hatch as described in 3/1/00 e-mail. Kornke faxed the results of the tests and other observations to Conner F. The hatch seems more consistent and is perform during the daily rains, but it behaves oddly when the computer reboots (repeated toggling OPEN/CLOSE). We observed the hatch repeatedly open and close (approximately six times) each day at 00:00GMT.

M. Maintain Diesel Generator by NPC:

10Apr:

- Generator maintenance person "Marino" of NPC will come to the site on Tuesday to do maintenance on the GENSET.

11Apr:

- Kaierua arranged for the NPC Generator maintenance person, Mariano Laee, to come to the site, meet with Kornke and change the oil. They discussed the possible need to replace the turbo. We need to order a spare turbo.
- Changed oil with the site oil (about 5 gallons) changed oil and fuel filters. (Completed at 21:45 GMT - 495 Hours at oil change-out.) (Franklin/Megan)

N. Repair Diesel Generator Fuel Line: (Kornke)

15Apr:

- I replaced the diesel fuel line. I had to replace the fuel filter as the existing one was removed to install the fitting. The diesel was then primed and run for ~15 min.

O. Perform I-Van UPS Diagnostics: (Helsel/Kornke)

13Apr:

- We did some I-Van UPS diagnostics testing. The full-blown “tear it down and check it out” diagnostics was not performed. Then at 13:00 we brought the entire site down to test the various UPS systems as well as the Generator. We found the circuit breaker on the Generator was OFF, which was probably done by the NPC Generator maintenance personnel. But other than that, the system performed flawlessly. Therefore we will not do a changeout of the UPS this trip. Possibly at a later RESET visit if failures continue and we can schedule it early in the visit.

P. Visit Local School to Launch HS-Balloon: (Jones)

13Apr:

- Visited the new Nauru College (Jr. High School) near the site.

Q. Photograph Observers: (Kornke)

13Apr:

- Took pictures of Observers (except Harris and Nic).
- Note: one attached picture is the MTI crew of Andrew, Megan, and Franklin.

17Apr:

- Photographed entire site, including interior of vans.

R. Re-label Logger Connectors: (Kornke)

13Apr:

- Relabeled the Logger cables to be consistent at both sites.

S. Remove Old ADaM Equipment from Storage:

11Apr:

- The remaining old ADaM equipment was set out for removal; most of the equipment was already gone.

T. Commence Installation of Portable Met Station at High School: (Jones)

17Apr:

- Did some recon for the SPARCE MET station that is to be installed at the high school. While I was there, I met Steve, the science teacher and James, the Principal; nice Aussie chaps. They were helpful and gave good suggestions on the best cable route. I then met with Roy Harris the senior fireman. He gave the OK for installation of the MET tower on the firehouse roof. However, final approval lies with David Watson, Civil Aviation official. I tried to meet with him today, but he was out. I will try again tomorrow before I leave. At any rate, I have a parts list.

U. Ship Back Fiber Kit and SDL Laptop (MAC) to ATOSS: (Helsel)

11Apr:

- The equipment shipping back (fiber kit, SDL laptop) is identified and set aside for Observers to ship to ATOSS.

V. Perform Supply Shelf Organization, Inventory, and Bar-Coding: (Jones)

17Apr:

- The inventory is completed and the shelves organized. I had Franklin accompany me so he could show me everything. Franklin has been very helpful and dependable.

W. Check IRT Rain Sensor: (Helsel)

11Apr:

- Checked the IRT sensor and it looks fine.

X. Install External Phone Ringer: (Kornke)

14Apr:

- Installed and tested the outside phone ringer.

Y. Fix SMET Anemometer Cable Connection for Convenient:

11Apr:

- Fixing the SMET anemometer cable connection, should be delayed and scheduled for RESET-11 when the anemometer is calibrated.

Z. Move GOES H&S Antenna: (Helsel/Kornke)

12Apr:

- We moved the H&S GOES antenna to a mounting low(to reduce interference

on Sonde transmissions) on the west side of the D-Van. Because the EMWIN antenna blocked this new position of the GOES, it was moved and attached to the east side of the D-Van. We found a good deal on a new 10 foot galvanized steel pole.

AA. Other:

10Apr:

- Harris and Teimitsi met us at the airport at 3:00 AM. Duburiya is still in the hospital in Brisbane but hopes to return to Nauru on the Wednesday flight. Harris is in hospital at Nauru. Teimitsi is "holding down the fort." We performed a site walk-through. The site looks good, instruments looked clean. Cenpac has been down for the last two weeks (Russ is working it with Telkom). We unpacked shipment boxes.
- At around 15:00 it was noticed that the 50hz outside power breaker was tripped. When it was reset to get the WSI running the MWR heater smoked. The heater and cable burned out. The Teflon window sustained damage and needs replacing. We found a spare heater and will try to repair the cable and replace the Teflon window. Since the WSI pump was found to be OK, this sequence of events probably means the MWR heater (and the MMCR antenna heater) hasn't worked since the WSI pump stopped (recorded in the daily rounds), sometime after the arc drive failed a month or so ago. The MWR heater was probably the culprit that brought the WSI and MMCR antenna heaters down at that time; all are on the same circuit breaker.

11Apr:

- Helsel and Kornke repaired the MWR from yesterday's flameout. The spare heater assembly was used, and a power cable was jury-rigged. There are no spare Teflon windows at the site. We need send some spares sent for installation at RESET-11. Helsel photographed the in-place window.
- Helsel did some troubleshooting on AERI with Flynn. The AERI looks fine from here. Flynn wonders if it may be a GOES or ADaM ingest problem?
- MWR: - Kornke is delivering MWR data to Vic Morris for review.
- Communications: It is very difficult to dial in from the site. I can connect only one in ten tries. (L. Jones)

14Apr:

- Removed iced-up dehumidifier from E-Van. The corner was wet; we took everything outside to thaw and dry. Van may already be too dry for the dehumidifier to work properly. Will consider installing it in the U-Van.
- Jones and Kornke visited IDI and Telecom today. Telecom's tech, Nelson, explained the situation with the two remaining pair of the 10-pair overhead line from Capelle. He was not qualified to make a determination nor was David Gadaraoa available to advise us. We also inquired about the possibility of running our own overhead line. We know it can be done but, again, nothing was resolved today. Kornke will lookup David on Monday for specific information on the installation of our own line. The measured distance from

ARCS2 to Telecom is ~3.5km.

- Jones tried to contact the head of IDI for a direct request of at least one of the two remaining pair but again was not able to make contact. Nauru has just chosen the president (same guy); it was payday and Friday, so most officials were out of the office for most of the day.
- Kornke installed a new ballast in the Y-van lighting fixture.

15Apr:

- Took T/RH readings in E-Van; RH was at ~ 70%, so I will put the dehumidifier back in but at a lower setting.
- The old EMWIN dish support was removed from the pathway to the U-Van.

17Apr:

- The humidifier was placed back in E-van.
- MET tower was dropped today for about 30 min., 10:00 local time, for anemometer verification and inspection. We tightened WIND1 and changed out the rusting bolts on the tower base.

BB. Perform Audit-Out: (Kornke)

17Apr:

- Audit-Out was completed. Some remaining questions on configurations;. I'll talk to Clif tomorrow. I did this myself so I could get familiar with the instruments.

5.0 FUTURE RESET VISITS:

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

- The task to fix SMET anemometer cable connection was delayed and should be scheduled for RESET-11 when the anemometer is calibrated.
- MWR: There are no spare Teflon windows at the site. We need to have some spares sent for installation during RESET-11.
- Diesel Generator: We may need to order a spare turbo.
- Helsel posted "Use ONLY for Fire or Emergency" signs in U-, E-, and D-Vans, but there were only three signs, so we were unable to post one in I-Van. We need one more for a future RESET Visit.
- Tasks that will not be attempted this visit are 1) the school visit, 2) check DC power for future upgrade (Manus only), 3) installation of portable met station, , and 4) retagging faded labels.
- The UPS system performed flawlessly to testing. Therefore a change-out of the UPS was not done this trip. Possibly at a later RESET visit if failures continue and we can schedule it early in the visit.
- The U-Van could use a dehumidifier. The tools are rusting.

6.0 FOLLOW-UP ACTIONS:

- Not urgent, but could use an assortment of S.S. all-thread, 1/4 to 1/2 inch.
- During our audit-out and inventory on 17April, Kornke had the opportunity to inspect the gas cylinder racks. He found filled bottles with no caps and no restraint. Large pieces of rusted metal are spalling from the cylinders and existing caps are so rusted they crumble like crackers. He also found unrestrained and uncapped filled bottles at two places near the vans. He photographed everything. He talked with the Observers on proper cylinder storage, and restrained all filled cylinders. I think we have to cleanup our storage area. (Kornke)
- Need brighter lights in all the I, D, E Vans.
- Storage Van outside fence has hole in roof that needs repair.

7.0 LESSONS LEARNED:

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

- Don't send large resupply shipments unless they are tied to a RESET task or timed with a RESET Visit. We are running out of room and things get lost.

8.0 ATTACHMENTS:

- Attachment 1—Audit-In/Site Conditions Report
- Attachment 2—Audit-Out Report
- Attachment 3—RESET-10N Tasking Plan

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

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

Attachment 3—RESET-10N Tasking Plan

RESET-10N

Nauru Team:

- Larry Jones (Lead/Daily Reporting)
- Fred Helsel
- Bill Kornke

Tasks:

NAURU

Priority tasks:

1. Perform Audit-In/Site Condition
2. Replace WSI Arc Drive and Change-Out Heater
3. Maintain WSI
4. Install Proper WSI Power Feed
5. Make Backup Copy of Artecon
6. Perform Artecon Patch
7. Post “Use ONLY for Fire or Emergency” Signs
8. Train Observers
9. Swap Cimel Head and Control Box to Update Calibration
10. Install New EMWIN UPS
11. Audit Laptop/PC
12. Perform AERI Hatch Diagnostics and Lubrication
13. Maintain Diesel Generator by NPC
14. Repair Diesel Generator Fuel Line
15. Perform I-Van UPS Diagnostics and Inverter Module Change-Out
16. Check DC Power Supply Terminal for Future Power Upgrades
17. Visit Local School to Launch HS-Balloon
18. Photograph Observers
19. Re-label Logger Connectors
20. Remove Old ADaM Equipment from Storage
21. Commence Installation of Portable Met Station at High School
22. Ship Back Fiber Kit and SDL Laptop (MAC) to ATOSS
23. Perform Supply Shelf Organization, Inventory, and Bar-Coding
24. Check IRT Rain Sensor
25. Install External Phone Ringer
26. Fix SMET Anemometer Cable Connection for Convenient
27. Move GOES H&S Antenna
28. Retag Faded Labels
29. Other
30. Perform Audit-Out