

TWP ARCS-2 Site
RESET VISIT-11N Report
Nauru: 24 June to 07 July 2000
Nauru IDI
Denig District, Republic of Nauru

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Attachment 2—Audit-Out Report

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1.0 INTRODUCTION:

The main goals of the TWP Operations RESET-11N Visit (routine) to ARCS-2 at Nauru were the following: 1) Install the BBSS DCP, 2) Repair the Brusag tracker, and 3) Perform instrument calibration. 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-11N 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-11 Nauru Members:

- Bill Kornke, LANL, 24 June to 07 July 2000
- Bill Porch, LANL, 24 June to 07 July 2000
- Dennis Morrison, Sandia, 24 June to 07 July 2000
- John Short, Univ of Wisc, 04 July to 07 July 2000
- Ralph Dedecker, Univ of Wisc, 04 July to 07 July 2000
- Mal Pendergast, MTI, 24 June to 07 July 2000
- Colin Maxfield, Australian BOM, 24 June to 26 June 2000

Nauru IDI On-Site Observers:

- Nicholas Duburiya, OIC
- Megan Aliklik
- Henry Harris
- Franklin Teimitsi

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 Tasks Performed:

A. Train Observers:

05Jul00

- 06:10 GMT –Dennis cleaned up the Observer’s computer and demonstrated the on-line manuals available on the new CD-ROM. Observers indicated they will be taking computer courses in Nauru.

07Jul00

- 23:00--We spent a couple of hours going over various training. We covered training on the new DCP and its initialization; we covered the new weather trainer software that they were very interested in (Meagan is learning codes for weather conditions). We also covered their work with the word tutorial, and I showed them how to use the TWP manuals CD.

B. Troubleshoot ADaM:

27Jun00

- 21:28 GMT – Rebooted ADaM and EVE, which I believe, did not restart properly after the power outage. The instrument interface was locked up.

28Jun00

- 20:30 GMT – A prompt from TWPP0 concerning the SkyRad not reporting caused me to investigate. SkyRad is operating properly; an INGEST problem suspected. Since ADaM was rebooted this morning for the network switch replacement, we’ll see if things return to normal.
- 23:03 GMT – ADaM system did not start. Morrison is rebooting the system.
- 07:00 GMT – Morrison was able to look at the H&S for the site and found a bunch of red. All the instruments are okay but ADaM was hung with an “Updating WSI

Status.” Morrison reports that this is the second time he has seen this. We have rebooted with an “init 6” but suspect some calls to PNNL tomorrow.

29Jun00

- 20:00 GMT – After seeing all the “red” on the H&S, Morrison and I found that ADaM was not ingesting. Since the reboots apparently did not work, we called PNNL. It should be noted that ADaM was again hung on “Updating WSI Status” at this time.

02Jul00

- 21:30 GMT –Dennis checked the GOES report and found the SMET red. I checked ADaM and found the data process hadn’t been turned ON which brings us to the next question: Why are there two buttons, one for the instrument interface and one for data processing? Doesn’t one imply the other in the logger case? Anyway, yesterday both processes were turned OFF but only one was turned back ON.

04Jul00

- 23:00 GMT – I removed some of the larger log files from ADaM and disk1 and 2, but this did not affect the percentage used. (DM)

05Jul00

- 21:00 GMT –Dennis and I both know the SMET is in the “RED” but everything looks OK from here and we are hesitant to perform a bunch of arcane AdaMisms that will cut into the tasks at hand. I’m pretty sure we need to offload SMET data and re-initialize ZENO. I think it might be the memory problem. The important thing is -WE HAVE VERIFIED THAT SMET IS LOGGING DATA AND HAS BEEN FOR THE PAST WEEK, WE HAVE DOWNLOADED SOME FOR ARM FTP. –BK
- 22:00 GMT – The ADaM disks need changing. Will wait until after the 4th. –BK

05Jul00

- I spent some time fixing the SMET; had to offload a lot of files to ADaM, reinitialize the logger memory and reset. The logger should be back on-line. Please tell the DMF folks the file smet.000707 in /data/ will have to be edited. Although most data from 28/06 until today will be there, there was some I couldn’t retrieve.
- I let Koontz and Helsel know that the raid had a bad drive (Automated fix-it software did not fix the problem). Conclusion is to leave it as is. Disk capacity is adequate without this drive.

C. Perform Calibration:

26Jun00

- Arrived at site and unpacked, only thing we cannot find is IRT 432 cable. Thought it was sent from Manus? -DM,BP.
- 00:30 GMT—We setup network connections to SMET, SKYRAD and GNDRAD, and MFRSR on GOES laptop using HyperTerm. (BK)
- 1:00-3:00 GMT –We captured configuration files for loggers, MWR, Vceil, MFRSR, and AERI. (BP)

- 3:00-8:30 GMT—We began downloading data files from Loggers, MWR, MFRSR (many problems with MFRSR files, but it is cloudy so data are not very useful yet anyway).
- 04:10 GMT –We mounted and aligned dual NIPs on tracker. (BK)
- 06:00 GMT – I installed new PIRs on Cal Stand with ventilators running. (BK)
- 06:30 GMT – I repaired two ventilators for Cal Stand PSPs. One had a bad fan; the other had a 120VAC fan. Both fans replaced w/ 12VDC and internal fuses removed. Because the power distribution box provides circuit protection, there is no need for the hard to replace internal fuses. I suggest all internal fuses be removed when doing future maintenance. (BK)

27Jun00

- 20:00-24:00 –We prepared for and completed electrical calibration of Cal Logger (new logger had serious problems, old logger OK but did observe a tendency for the NIP channels to offset >50 uV after disconnecting and reconnecting; looks like logger problem not grounding.) We will turn logger OFF and ON when disconnect instruments this time in comparison when instruments are switched. This worked and will be incorporated into procedures. (BK,BP)
- 21:50 GMT – I finished installing the two PSPs on the cal stand. All Pyranometers are ventilated. Franklin will include the cal stand instruments when he does the daily dome cleaning. Porch and I are starting the cal logger electrical calibration. (BK)
- 22:55 GMT – Porch and I tried to load the cal configuration on the spare CAL logger but the logger reported an “internal error, call Coastal” “zero 18bit A/D offset.” At this point I’m thoroughly disgusted with Coastal products. I burned in the spare logger before I shipped it; tested menu options and rebooted several times without a problem. I have sympathy for whoever inherits this junk. After the system was returned to ATOSS, Bill K. took it apart and put it back together and it no longer had this error. Suggests that shipping caused a connector problem. (BK)
- 02:09 GMT – Porch and Kornke have completed electrical calibration of the Cal logger. Except for the NIP2 channel, which takes a long time to settle when signal levels are changed (50uV offset), the logger is stable and all measured values are within requirements, according to Porch. (BK)
- 03:00-04:00--I worked to transfer BBSS and MFRSR data. BBSS OK but MFRSR had to get Dennis to show me how to shorten name for raw files. Porch tried sending data to floppy but kept making erroneous files and paths (hope this doesn’t make ADaM choke). Bill Kornke showed me how to “ftp” files once name was shortened). (BP)
- 04:10 GMT – Cal logger is installed and logging data for 2-PIRs, 2-PSPs, and 2-NIPs. Cal logger is mounted at eye level w/ temporary bracing. All cables are labeled and routed. Although logger is collecting data, I need to do some modifications to complete the comm link to the van. (BK)
- 04:15-04:40 GMT—We began side-by-side radiometer comparison at 04:15 and turned Gndrad facing up at 04:40. (BK,BP)
- 05:00-08:45—We’re trying to transfer data to <ftp.arm.gov>. We had no luck.

Kornke zipped the files and is sending them to vega.lanl.gov/wkornke/reset11.
The connection is very slow.

28Jun00

- 20:30 GMT – Kornke connected optical fiber from Cal Logger to laptop in D-Van (this will help with collecting data for Chris Cornwall and filling out rad comparison cal forms). (BP)
- 23:30 GMT – The electrical calibration of the spare Skyrad logger is completed. Porch and Kornke took ~30min of real-time data from fielded Skyrad and Cal loggers during sunny period for comparison. We'll send the data to Cornwall for verification. (BK)
- 02:30 GMT – I collected new version of ceilometer configuration. (BP)
- 03:30 GMT – The data downloads from Skyrad and Cal loggers begun by Porch/Kornke. Skyrad download will interfere with INGEST for this period. Electrical calibration of the fielded Gndrad was begun, so it will show up in the GOES. Should be back on-line before quitting time tonight. (BK)
- 06:50 GMT – The Gndrad logger electrical calibration is completed and back online. Porch and Kornke discovered some discrepancies on the IRT channel. The shorted input value reads ~4Volts; the 500mV and 1000mV levels, both, show 10mV offsets. A floating input is closer to zero but still shows a 50mV offset. Dick Hart will be contacted. We are also starting our Skyrad, Gndrad and Cal logger data downloads and ftp xfers. Cornwall should have fresh data in the morning. (BK)

29Jun00

- 21:10 GMT – SkyRad logger being brought in from the field for electrical calibration.
- 23:00 GMT – The SkyRad logger electrical calibration is completed and it is now back on-line.

30Jun00

- 20:50 GMT – The Skyrad and Calrad were shut down to perform the radiometer changeout. Data processing was deactivated from ADaM. The old radiometers were removed and the cal stand radiometers were installed in their place. The spares were then installed on the Cal stand.
- 22:40 GMT – The Skyrad and Calrad loggers were powered up. Data processing was reactivated. We are now collecting spare rad data. The Skyrad data from this point will be from the new PSPs, PIRs, and NIPs. (BK)
- 03:10 GMT – SMET data process turned OFF at ADaM. Porch and Kornke are dropping the SMET tower. (BK)
- 05:10 GMT – SMET Anemometer wind speed and direction cals are complete. No corrections required. Tower tipped back up and data process restarted. We will do temperature and RH tomorrow. (BK)
- 05:30 GMT – Porch is doing the ORG cal. (BK)
- 07:10 GMT – We are doing the end of day data downloads to arm ftp site. (BK)

01Jul00

- 21:33 GMT –I scoped out the U-Van for 240/50Hz circuit for the tool room dehumidifier. I assembled a water bath system for the temperature/RH calibrations. I removed the IRT for Porch so he could perform a cal. Again, the bolts that fasten the IRT to the J-Box were corroded and seized. I had to drill them out. I've re-tapped the mounting holes for 8-32; they were metric and plain steel. I tagged the IRT with some tape to let subsequent RESET members and others know that it's been modified. (BK)
- 03:00 GMT – Porch and Kornke are doing SMET T/RH cal. SMET data processing turned OFF on ADaM. (BK)
- 05:30 GMT – The temperature cal is complete and the chilled mirror assembly setup. This entails mounting J-Boxes to house the black boxes from weather during the overnight data collection. The SMET was turned back ON. (BK)
- 06:45 GMT – Skyrad and Calrad data collected; proceeding with ftp to ARM FTP site.

03Jul00

- 20:30 GMT –I downloaded chilled mirror data from the Tattle-Tale; this time it worked.

05Jul00

- 03:00 GMT – Porch and Kornke changed out the old Gndrad rads for the fresh ones from the Cal stand. Porch changed the coefficients and updated the config version. The data looks good so far. As stated in a previous report, all the various mounting hardware is severely corroded, and we are using valuable time getting things taken apart and reassembled. I think an overall hardware/fastener upgrade should be performed on a future RESET for Nauru. The aluminum/stainless steel interface is particularly bad. I suggest S.S. and silicon bronze. (BK)
- 06:10 GMT – I am removing equipment from Cal stand and packing calibration equipment. Porch has filled out calibration forms. (BK)

06Jul00

- 20:00-24:00—I updated SMET, RAD and compared calibration forms and configurations. (BP)
- 00:00 – 5:00 GMT—I completed calibration forms on Ceilometer, MWR, and MFRSR. (BP)

D. *Perform MTI Installation Training:*

(See MTI report attached)

02Jul00

- 12:00 GMT – Porch, Pendergast, and Kornke met at the boat dock for night time MTI ground truthing measurement. After some delay, we finally were able to get data. The whole process took over three hours. (BK)

03Jul00

- 00:00 GMT –Everyone went on the MTI sensor trolling experiment. I controlled the below-surface temperature probe. We rounded the island. (BK)

- 03:30 GMT – We returned from MTI outing. Porch and Pendergast downloaded data from the temperature probe and IRT.
- 12:00 GMT – Completed 2nd nighttime sea surface temperature boat trip (Nauru Fisheries). Results almost identical to previous night. The bottom line for these measurements showed that there is a 1 to 2 degree Celsius gradient in temperatures near where the observers are casting the sensor. Ideas were discussed to improve the representativity of the observer's measurements. These included going out on North Jetty (dangerous at night and sometimes during day), taking out a boat, and using a small remote controlled boat to take sensor farther from harbor. No final recommendations yet.

04Jul00

- 00:00 GMT – We all went out on the Nauru Fisheries boat for some MTI temperature measurements. We managed to fit in some fishing time.
- 23:00-23:30 – I met with Joe Cain to request copy of Nauru ARCVIEW GIS survey of Nauru for MTI image registration. This has been received at a copy sent to Mal Pendergast. (BP)
- 01:00 – 4:00--I took Mal Pendergast to airport. (BP)

E. Upgrade BBSS DCP:

27Jun00

- 07:30 GMT – The DCP system is setup and running; I installed antenna and reprogrammed the sysgen. I will use the normal launches for testing. (DM)

28Jun00

- 05:00 GMT – I connected to Wallops Island to see if the BBSS data from last night's launch was sent out on the satellite; it had not, so I am troubleshooting the system. After rechecking the sysgen and reinitializing the DCP, I loaded the data from the last launch into the DCP, which was successful. I will now wait for the next transmission window to see if the data is sent; this will occur at 7:17 GMT. (DM)
- 07:20 GMT – The data I sent to the DCP successfully was sent out on the satellite, I will check tomorrow if it made it to Wallops Island. (DM)

29Jun00

- 21:00 GMT – I connected with Wallops Island and saw that the BBSS data is making it there; I will continue to check to make sure it is consistent. (DM)

30Jun00

- 21:00 GMT – I checked with Wallops Island and the previous night's BBSS data had made it. (DM)

01Jul00

- 20:00—I checked in with Wallops Island and saw that the BBSS data is consistently making it.

F. Repair Brusag:

26Jun00

- 23:30 GMT—I changed primary axis range from +/- 200 to 270. (BK)
- 01:00 GMT—I observed tracker for ~20min. No rotation other than normal tracking noticed; shading was also normal. (BK)
- 03:49 GMT - The tracker appears to be shading PSP/PIR properly. I will continue to observe over next few days. (BK)

28Jun00

- 01:45 GMT – The tracker is performing flawlessly – so far!! I inspect it several times daily from 8 am local until dark!! (BK)

G. Changeout LyncSys Switch:

28Jun00

- 20:30 GMT – Dennis shut down ADaM to replace network switch. ADaM backed up at 22:00 GMT.

H. Upgrade Ceilometer CPU:

28Jun00

- 01:30GMT – Porch and Kornke are starting the Ceilometer hardware upgrade. (BK)
- 02:12-02:16GMT – We upgraded software on ceilometer to version 2 to improve cloud detection. (BP,BK)
- 02:30GMT – I collected new version of ceilometer configuration. (BP)

04Jul00

- 06:30-07:30 – I seem to be getting more window contamination errors with new software. Tried adjusting the *win_clean* value, but we made it smaller than before and things got worse. Tomorrow I will monitor the window contamination setting and adjust it if need be. (BP).

06Jul00

- 20:00 GMT—I called Vaisala regarding frequent widow contamination warnings. They suggested that I do what I had already done and found that it made it worse. I will investigate this more when I get back. (BP)

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

06Jul00

- On the terminal server upgrade, I noticed that the chips had been sent and were supposed to be here four days ago; I wasn't aware of this and had Nicholas go to check but he didn't have much luck and needs the air bill number.
- Not completed this visit – should be done on future RESET Visit.

J. Arrange Gate Padlock Inside Links' Welding:

27Jun00

- 23:00 GMTI spoke with Nicholas about having another chain link welded to the site fence so that the site could be locked from the inside to prevent entry during nighttime balloon launches. (DM)

K. Perform H2 Generator Maintenance: (Australian BOM)

(See attached report)

26Jun00

- Colin Maxfield completed the H2 Generator leak repair and the routine maintenance. Maxfield left the island today.

07Jul00

- Verified with Nicholas that the Hydrogen generator work was completed as follows:
 - ⇒ Replaced 5 ea. Electrolyser side tubes.
 - ⇒ Repaired electrolyser cell that was leaky, was welded at NPC.
 - ⇒ Added new chemicals.
 - ⇒ Routine maintenance. (DM)

L. Upgrade AERI Hatch Hardware:

30Jun00

- 23:45 GMT –The AERI hatch is closed while I change out the pivot hardware. This should only take an hour or so. (BK)
- 02:50 GMT –AERI hatch hardware upgrade completed; normal operation restored. Pivot pins replaced with SS bolts, brass locknuts, and silicone bronze bearing washers. I also modified the existing SMET ventilator mounting to support a second ventilator during calibration visits. We'll leave it in place since it is unobtrusive. (BK)

M. Perform AERI Upgrades:

(see attached AERI Report)

04Jul00

- 23:30 GMT – John Short from Wisconsin has just arrived but their equipment hasn't. (BK)
- 08:00GMT –The AERI guys have started work; their equipment had been on the island for a while as it turned out.
- AERI folks did the Conner Flynn AERI hatch diagnostics and it works fine. The hatch opens and closes on reboots.

06Jul00

- AERI folks say they have completed their work even though the AERI is red on the GOES. Will investigate. (BK)

07Jul00

- 23:00 GMT – I learned from Ralph DeDecker how to get the configuration files for the AERI, and I got the configuration and documentation on how to interpret it.
- DeDecker says the AERI is OK, but I noticed no files being ingested. I stopped and restarted the process but we won't be around to see the results. I think someone will have to dial in and do some cleanup. We are signing off for now! (BK)

N. Upgrade ADaM with MMCR Shutdown Scripts:

- not done this visit

O. Perform Laptop Upgrades, i.e., Changeouts with Core Configuration:**01Jul00**

- 3:00 GMT—I began working on upgrading the laptops with the new version of the CPCC. (DM)

03Jul00

- 20:30 GMT – I began working on upgrading the laptops with a current version of the CPCC. I began with the MWR computer and was about 75% through the upgrade when the laptop began having problems with reading the CD. I tried multiple times with no success. This implied that either the CD was bad or the CD drive was bad. I tried running an installation on a spare computer and had the same problem, so the CD was bad. The CD worked at ATOSS so it must have been damaged in transport even though I had it in a padded CD case that I carried with me. Since the MWR computer had an unusable file system, I ghosted the drives from the ceilometer computer using zip disks and reinstalled the original CPCC on the MWR computer. (DM)
- 03:00 GMT – I returned to the site to do the data download. Dennis is working on the Ghost Imaging but is having problems with the MWR.

04Jul00

- 13:00 GMT – I completed installing the original CPCC on the MWR computer and restarted it and the ceilometer computers. Unfortunately, we will not be able to install the upgraded CPCC at Nauru or at Manus. (DM)

P. Replace MWR Window and Power Cable:**26Jun00**

- 07:34 GMT—I replaced power cable on MWR.

27Jun00

- 20:00 GMT – Morrison noticed the MWR laptop not booted. We probably had another power outage.
- 22:00GMT –I replaced the MWR window.

Q. *Install Phone Manager:***26Jun00**

- The phones are “out” at the site.

27Jun00

- We still have no phones at the site or the hotel.

28Jun00

- 20:00 GMT – I arrived at site to find only 3276 line working. Porch is trying to get connected to lab server.

29Jun00

- 21:40 GMT – I fixed the FAX machine jam caused by a staple.

05Jul00

- 22:50 GMT –I’ve spent the morning working on the phone manager. It is not going to be easy. The telephone line conduits are useless because of a sharp bend that the wirepuller does not want to go past. I’ll have to resort to some temporary overhead runs for now.
- 04:30 GMT – I have completed the Phone Manager (PM) installation. I plan to do a test from the Menen tonight but will require a stateside test tomorrow. I wired 3278 into the D-Van where the PM will reside (needs 60Hz power). I then ran two pair to the E-Van for the PM phone and fax ports. This will provide any one of the three lines we are supposed to have. I will train the observers on the Phone Manager after tests are completed. I’ll do an official document and wiring diagram when I get back.

R. *Upgrade Anemometer Cable:***06Jul00**

- The anemometers didn’t get done; we are just out of time and still have much to do tomorrow.

S. *Obtain EVE-2 Fix from Wilcox:*

- not done this visit.

T. *Install U-Van Dehumidifier:***04Jul00**

- 07:30 GMT –The 230VAC 50Hz circuit for the U-Van dehumidifier is completed and the dehumidifier is connected and running. I changed out the plug on the

dehumidifier since it was identical to a 120VAC standard plug that could cause damage if plugged into our 120VAC receptacles. I added an Aussie receptacle to the U-Van wall and changed the plug on the dehumidifier to Aussie. I bought the materials at Cappelles.

06Jul00

- The dehumidifier is pulling over two gallons of water a day from the tool room and the tools are dry as a bone. I ran the drain through the mail slot.

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

04Jul00

- Completed by Kornke.

V. Perform Routine Maintenance Tasks:

07Jul00

- Replaced one ventilator.
- Checked BBSS antenna connections along with all other connections.
- Checked all listed MMCR checks, cleaned filters and replaced desiccant and checked ray dome cover.
- Did WSI maintenance including checking filter on side, coolant level and checked for leaks.

W. Visit School:

28Jun00

- Morrison talked to Nicholas about a tentative school visit sometime next week.
- 00:30 GMT – Porch and Kornke met with Wes and Steven at the high school to schedule our visit. We tentatively agreed on Tues. July 3rd at 9:00am. It will be the last week of school for young Nauruans. (BK)

04Jul00

- 19:30 GMT –We arrived at the site to prepare for the school visit. I spent a few hours gathering materials for the experiments. Bill Porch removed the Gndrad IRT so we could use it for our demonstration. (BK)
- 21:30 GMT –We arrived at the school; Steven White, the computer teacher, gathered the kids into a classroom where we could set up the demonstration. Kornke and Morrison were the front men performing the air pressure experiments with the balloon and inverted water cup. We picked kids out of the classroom to also demonstrate the experiments. The Nauru kids are very reticent but we were persistent and got them to laugh about what we were doing. Porch did his scientist thing and once again the kids were mesmerized by his interesting facts about the climate. He also demonstrated the IRT. Our only wish was that the Nauru kids were more inquisitive; they were, however, polite and never rude. We feel that we left them knowing some things they never knew before and hopefully with a spark of curiosity about the environment. As usual, they got an enormous

kick out of the weather balloon release. We released two balloons and chose a boy and girl from the group to release them after all the kids signed the balloons. Thanks also to Megan for her presence and participation. (BK)

X. *Hook Up School Met Station:*

30Jun00

- 03:30 GMT – I completed assembly of the met station equipment and began checking it out. I visited the school and made arrangements to install the equipment. I began running the sensors to see if they are working properly. We need to order spare sensors for the system, such as wind speed, wind direction, T/RH probe. (DM)

01Jul00

- 01:00 GMT – I worked on checking out the met tower for the school. I discovered that the temperature probe was not working; I also checked two other temperature probes that were also bad. I checked them with a second logger with no luck. I didn't think it would be a good idea to give the school something that doesn't work, but wanted to defer the unfortunate decision not to install the system. We need to order spare sensors for the system, such as wind speed, wind direction, T/RH probe. (DM)

04Jul00

- 07:30 GMT – I continued assembling gear for the school met tower installation. (DM)

05Jul00

- 00:30 GMT –Dennis has returned from the MET station installation at the school. All went well and the tower is installed, but he has to return to install the PC as Steven White, the teacher, had the day off and the classroom was locked. (BK)

06Jul00

- 7:20 GMT – I went to the school this morning and trained Steven White on the use of the Met tower, he picked it up easily and seemed interested to use it in his classes.

Y. *Review CIMEL Procedure and Replace CIMEL Property Tag:*

06Jul00

- I replaced the property sticker on the Cimel and reviewed the documentation to make sure it was good; it was.

Z. Troubleshoot I-Van UPS:

26Jun00

- At 12:55 local the grid power went out; the I-Van UPS did not maintain the load, i.e., the entire I-Van instruments went down. This is the first time the observers have seen it do this. We will definitely want to replace the UPS module this trip. (DM)

29Jun00

- Dennis is tearing into the I-Van UPS so expect the I-Van instruments to show up red for a day or two. –(BK)
- 07:05 GMT – Morrison and Kornke finished the I-Van UPS repair and battery testing. Unfortunately, when we tested the system with a full site shutdown we saw the same symptoms as before – the UPS drops out and the instruments lose power. I've detailed the sequence and sent it to TWP Ops for additional stateside support.
- Morrison, Kornke, and I worked most of the day replacing the control module/unit and doing load tests on all the batteries. The batteries are all fine with a 12amp load for ~5 min, never dropping below 12.23VDC and all batteries within a 20-40 mV range. Each one was tested individually. However after getting it all done and back together, we performed a site shutdown to test the UPS. Here is the scenario that also happened when we first arrived. We will try to call Mark Alcala but someone at ATOSS should be a back up.
 1. Site grid power switched off at service disconnect.
 2. I-Van UPS switches to backup mode and all I-Van instruments stay up.
 3. Genset comes on.
 4. I-Van UPS stays in backup mode after D-Van UPC AC indicator comes on, then it finally gets AC (AC indicator on).
 5. Grid power restored.
 6. Genset takes a few minutes to transfer and starts cool down.
 7. Genset stops.
 8. Here's what's weird. After ~10 min the Genset restarts. The I-Van UPS drops out and all I-Van instruments lose power. The D-Van is OK. There was no loss of island power because Nick verified with several neighbors. We observed the same thing when we arrived and suspect this has been going on for some time.

30Jun00

- 22:50 GMT – The grid power went off. The Genset started but the I-Van UPS FAILED AGAIN!! (BK)

01Jul00

- 22:00 GMT –Grid power outage; I-Van UPS backup OK. (BK)
- 22:20 GMT – Another power outage; this time the I-Van UPS failed. (BK)

02Jul00

- 23:30 GMT –Power outage; the I-Van UPS FAILED! (BK)

04Jul00

- 07:30 GMT – I reassembled the I-Van UPS enclosure. Bill K. and I checked the ground on the UPS and it was good. (DM)

05Jul00

- 05:00 GMT – We are having a series of power outages (~4-5) for the past several hours. The I-Van UPS has failed half the time. Dennis had removed the surge suppressors from the UPS output. He also adjusted some settings on the XFER Switch control board to within required specs. We both verified proper grounding. We did all this before the power outages. One thing we noticed was that the SAMS display shows the I-Van battery voltage in the red at 26Volts. The only other option would be to install the D-Van UPS in the I-Van to eliminate the UPS as the culprit but this would require two days and wouldn't fix it, only find the cause. We are definitely open for suggestions! (BK)
- 06:10 GMT –Power outages are continuing with I-Van UPS failures. We are removing equipment from the Cal stand. We're packing calibration equipment. Porch has filled out calibration forms. Dennis cleaned-up the observer's computer and installed the on-line manuals. (BK)

06Jul00

I-Van UPS Diagnostics and Test Plan with Results:

- The frequency of Nauru power outages during the RESET11 visit has given us the opportunity to observe the behavior of the I-Van UPS. The UPS has long been suspect for power cycling of the I-Van instrument computers as well as unexplained problems with the MMCR and MWR.
- Morrison and I have already performed suggested diagnostics, replacement of the UPS control module, and draw down tests on the batteries. The UPS continued to perform poorly with an ~50% failure rate.
- We have implemented the following diagnostics and test plan that will include an interim solution depending on the results. The plan began at 22:00 GMT:
 1. Run extension cords from D-Van UPS to all I-Van instruments.
 2. Shut down all I-Van instruments and connect to extension cords.
 3. Restart all I-Van instruments.
 4. Shut down site grid power at 15-minute intervals for 1 hour starting at ~23:00 GMT.
 5. Observe D-Van UPS behavior as well as I-Van instruments.
 6. Repeat step 4 at ~01:00 GMT.
 7. Disconnect I-Van instruments from D-Van UPS.
 8. Check all I-Van outlets for polarity.
 9. Redistribute I-Van UPS loads.
 10. Put I-Van UPS back online with redistributed loads and instruments ON.
 11. Perform site shutdown as described in Step 4 above.

Depending on the result, one of the following options will be implemented:

1. The I-Van UPS is faulty and the D-Van UPS will temporarily service the I-Van by extension cords run along the patio roof rafters into the mail slots.
2. The redistributed loads or possible wiring problems with polarity will allow the I-Van UPS to operate properly.
3. Either option will solve the current power problems and provide continued data collection.

Test Results:

- ~22:00 Dennis ran the extension cords from the D-Van UPS, shut down the I-Van instruments, and reconnected to the D-Van UPS.
- ~22:30 GMT -We shut OFF site power at ~15min intervals.
- ~00:00 GMT – WE HAVE NOT HAD ONE FAILURE OUT OF FOUR CYCLES!
- ~00:50 GMT –The Genset started by itself. There was NO noticeable grid power loss. It would be good if SAMS could monitor transients. No UPS failure.
- 01:00 GMT –Started next series of 4 shutdowns with D-Van UPS.
- 01:30 GMT –Noticed the D-Van lights turn ON-OFF-ON when Genset power is phased on for the D-Van. I observed this twice.
- 02:00 GMT –Completed second series of power downs. Again, NOT ONE D-Van UPS FAILURE!
- 02:15 GMT –Checked polarity of all “Orange” receptacles in I-Van. That checked out OK but when measuring the impedance of the line side, I noticed UPS1 is ~50K Ω while the other circuits are in the MegOhms. The next step will be to put the I-Van back to original and try to make it fail. We’ll then redistribute the loads as the final test.
- 02:50 GMT –Dennis is shutting down all the I-Van instruments for reconnection to the I-Van UPS.
- 04:00 GMT –Dennis has the I-Van in it’s original configuration. We performed a power down and the UPS failed but only when grid power was restored. This points to a transfer switch/sequenced power on but all tests haven’t been done.
- 04:20 GMT –As the final test we removed all equipment from UPS-1 and redistributed the load to UPS-2, 3, and 4. We performed another power down but this time everything stayed ON. We are going to run another series of power downs in an attempt to make it fail.
- 05:00 GMT –The UPS failed on the power down! It did not carry the I-Van equipment for any period –simultaneous with switching site power OFF and during the delay before the transfer switch does its function.

CONCLUSION:

- We are going to run the extension cords from the D-Van ups to the I-Van equipment.
- We pulled extensions through the I- and D-Van mail slots and now have the D-Van UPS supporting the I-Van instruments. Dennis was very busy and supportive.

AA. Other:

27Jun00

- 23:00 GMT – I spoke with Nicholas about the cargo container outside the site. The container is in very bad shape. All along the rooftop perimeter is splitting apart and rusting. In one three-foot section you can see daylight through a one to two inch crack. In the middle of the roof, there are puddles forming and at least one spot where we could see water dripping. It would be difficult to effectively patch the container. One option would be to completely cover the container with corrugated metal roof material. Nicholas said he would look around and see if there were other containers available for use. (DM)

06Jul00

- I had the observers build a shelf for the U-Van tool room; I cut all the wood.
- Verified that gas cylinders were safely supported from falling.

BB. Perform Audit-Out:

07Jul00

- 23:00—I completed instrument replacement forms. When I looked for an audit-out form, nobody had one (we also didn't have an audit-in form). I can complete an audit out-form when I get back by combining the calibration records and the instrument replacement forms. Somebody please FAX Dennis and Bill these forms for Manus. Porch will complete Audit out.

5.0 FUTURE RESET VISITS:

Include the following items in the task planning for the next RESET visit:

- Install terminal server flash and ram memory.
- I suggest all internal fuses for the Cal Stand PSPs be removed when doing future maintenance. (BK)
- 22:55 GMT – Porch and I tried to load the cal configuration on the spare CAL logger but the logger reported an “internal error, call Coastal” “zero 18 bit A/D offset.” At this point I'm thoroughly disgusted with Coastal products. I burned in the spare logger before I shipped it; tested menu options and rebooted several times without a problem. I have sympathy for whoever inherits this junk. (BK)
- I recommend a complete ventilator hardware upgrade to silicon bronze; the current ventilators on the sky stand will have to be refurbished because most of the adjusting screws are corroded and seized. This should be done on next RESET. (BK)
- I removed the IRT for Porch so he could perform a cal. Again the bolts that fasten the IRT to the J-Box were corroded and seized. I had to drill them out. I've re-tapped the mounting holes for 8-32; they were metric and plain steel. I tagged the IRT with some tape to let subsequent RESET members and others know that it's been modified. (BK)

- I think an overall hardware/fastener upgrade should be performed on the old Gndrad on a future RESET for Nauru. The aluminum/stainless steel interface is particularly bad. I suggest S.S. and silicon bronze. (BK)
- Check hookup to UPS circuits and document.
- Check for possible Y-Van leak.
- The anemometers cable upgrade didn't get done; it needs to be done on future RESET Visit.
- Redo phone wiring and setup with proper phone box terminal with proper jacks

6.0 FOLLOW-UP ACTIONS:

- Diagram phone manager configuration (Kornke)
- Get new storage Van (Jones)
- Get gate lock for inside of site (Duburyia)
- Power diagrams for I, D, & E Van (Helsel)
- Purchase VCR cleaning tape
- Problem with SKYRAD IRT, water collects on lens even when shutter is closed

7.0 ATTACHMENTS:

- Attachment 2—Audit-Out Report (On-Line)
- Attachment 3—RESET-11N Tasking Plan
- H2 Generator Maintenance Report by Australian BOM
- AERI Replacement Report by University of Wisconsin
- MTI Activity Report by Mal Pendagast

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

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

Attachment 3—RESET-11N Tasking Plan

RESET-11N

Nauru Team:

- Bill Kornke, 24 June to 07 July 2000
- Bill Porch, 24 June to 07 July 2000
- Dennis Morrison, 24 June to 07 July 2000
- John Short (Univ of Wisc), 04 July to 07 July 2000
- Ralph Dedecker (Univ of Wisc), 04 July to 07 July 2000
- Mal Perdergast (MTI), 24 June to 07 July 2000
- Colin Maxfield, 24 June to 26 June 2000

Nauru Priority Tasks:

1. Perform Audit-In/Site Condition
2. Train Observers: (Morrison)
3. Troubleshoot ADaM: (Morrison)
4. Perform Calibration: (Morrison/Porch/Kornke)
5. Perform MTI Installation Training: (Kornke)
6. Upgrade BBSS DCP: (Morrison)
7. Repair Brusag: (Kornke)
8. Changeout LyncSys Switch: (Morrison)
9. Upgrade Ceilometer CPU: (Porch)
10. Expand Terminal Server's Flash and Ram Memory: (Morrison)
11. Arrange Gate Padlock Inside Links' Welding: (Morrison)
12. Perform H2 Generator Maintenance: (Australian BOM)
13. Upgrade AERI Hatch Hardware: (Kornke)
14. Perform AERI Upgrades: (Deedecker)
15. Upgrade ADaM with MMCR Shutdown Scripts: (Koontz remotely)
16. Perform Laptop Upgrades, i.e., Changeouts with Core Configuration: (Morrison)
17. Replace MWR Window and Power Cable: (Morrison)
18. Install Phone Manager: (Kornke)
19. Upgrade Anemometer Cable: (Kornke)
20. Obtain EVE-2 Fix from Wilcox: (Morrison)
21. Install U-Van Dehumidifier: (Kornke)
22. Switch D-, E-, I-, and U-Vans' Smoke, CO Alarms to "Bypass": (Kornke)
23. Perform Routine Maintenance Tasks: (See List Below)
24. Visit School: (Porch, Kornke, Morrison)
25. Hook Up School Met Station: (Morrison, Kornke)
26. Review CIMEL Procedure and Replace CIMEL Property Tag: (Morrison)
27. Troubleshoot I-Van UPS: (Morrison/Kornke)
28. Other
29. Perform Audit-Out