

ARM Darwin Research Station

Site Visit 0409D Report

Visit Duration: 30 August to 10 September 2004

Darwin, Australia

SV 0409D (Calibration)

Site: Darwin Proposed Dates on Site: 30 Aug to 10 Sept 2004 Team Members: Troy Culgan Rex Pearson Bill Porch				
Priority	System	Date Completed (dd/Month)	Service Time in Hours	Tasks/Description of Work/Process <small>For each priority item insert new line(row) for each date/time entry</small>
1	CAL			Create and document new calibration procedures for use with the new Cambell Logger System
		30-Aug-04		8/30 Planning meeting in AM to discuss how best to modify calibration procedure for Campbell loggers. Found out that we have to work out a different way to get data from r1 or use the collector to get comparison data.
		1-Sept-04		Revised getting configuration for ceilometer procedure
		2-Sep-04		Pete Goseff had a good idea about checking Campell loggers that we'll incorporate in logger calibration procedure.
		3-Sep-04		Worked with Rex on a procedure to do an electronic calibration of the loggers when factory calibration expires next year. Basically it involves calibrating the two cal loggers and a spare before each RESET at Darwin and replacing the loggers at the site after the comparison is done. Took pictures of the logger electronics with Rex pointing at test points for incorporation into a full procedure.
		5-Sept-04		Wrote new Campbell logger calibration procedure and a new logger calibration form and sent it to Rex and Troy to read and revise.
		7-Sep-04		Worked with Rex and Troy on a procedure to do the Smet calibration involving radio communication as it is now impractical to connect directly to the Smet logger at the tower. It worked well.
2	CAL			Record configurations before and after cals
		31-Aug-04		Collected configuration files for original Skyrad, Gndrad, and Smet loggers. Created and collected configuration files for the calloggers 1 & 2 from Campbell .csi files.
		1-Sep-04		Collected configuration files for Ceilometer, MWR, WSI, and MFRSR.

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		2-Sep-04		Retrieved current configuration .csi files for calloggers1 & 2 and new skyrad logger .csi file after calibration error for NIP corrected.
		3-Sep-04		Collected the final configuration of the Skyrad and new configurations for the callogger.
		6-Sep-04		Rex revised the .csi files for the loggers to include a version number in the same format as the old Coastal loggers.
		7-Sep-04		Downloaded new configuration file for Gndrad after instruments were replaced today.
		8-Sep-04		Collected final instrument configurations.
		9-Sep-04		This task is complete.
		10-Sep-04		Completed revision of Smet procedure. Rex edited it. This task is complete.
3	CAL			Provide Cal Kit inventory list
		9-Sep-04		Included Cal equipment in a revised audit-out form. This task is complete.
4	DAQ			Calibrate all Instrument loggers and Spares
		3-Sep-04		Decided not to electronically calibrate the loggers as the factory calibrations are still fresh. Worked on procedure development described above.
		9-Sep-04		Procedure reviewed and accepted by Rex and Troy subject to operational testing. This task is complete.
5	CAL			Calibration/comparison skyrad radiometers
		30-Aug-04		Awaiting power supply for completion of new cal logger for comparison. Rex and Troy worked out communication problem with a hub that didn't work. The cal logger will be ready tomorrow.
		31-Aug-04		Troy installed cal logger at 01:51 GMT. Added second PSP to callogger2 at about 03:00 GMT. Corrected the cal coefficient for second PSP on callogger 2 at 05:40 GMT.

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		1-Sep-04		The comparison went well after we got things sorted out with the new cal logger with two exceptions. One of the newly calibrated PIRs appears to be broken (suspect broken connection to internal temperature sensor). Also, the cavity and the replacement NIPs agree very well but the NIP on the Skystand is about 50 W/m ² low. We tried realigning and it did not improve. Will send data to Peter Gotseff tonight and ask him what we should do with the bad PIR (we tried and old PIR here and it was much better but was low by about 10 W/m ²). We may end up deciding to not change one of the PIRs on either the grndrad or skyrad as no newly calibrated spare was sent from SGP (so we are short one).
		2-Sep-04		Found problem with NIP cal coef. Was 8.62, and should be 8.04. We updated the calibration coefficient at 23:50 GMT. Will submit PIF etc. Talked to Pete Gotseff and got permission to switch radiometers on the cal stand and skyrad stand. Troy switched the skyrad instruments with the comparison instruments that compared best beginning at 03:15 GMT, updated the .csi files on the skyrad logger at 03:48 GMT. The cal-logger coefficients were changed at about 03:58 GMT. Instrument replacement forms were filled out and the new configurations captured to send to Peter Gotseff.
		3-Sep-04		Sent Peter the data for 2-Sept after the Skyrad Instruments were changed. Completed Calibration form. Instruments compared to within 2%. Switched out cavity and replaced with spare NIP at 3:30 GMT.
		4-Sept-04		Got word back from Peter that the current set-up looks ok. He is having trouble figuring out what is where and will show me how he likes it when I see him later this month. This task is complete.
6	CAL			Install Cavity Radiometer for Comparison
		30-Aug-04		Cavity installed on stand. Will take data when the weather becomes less cloudy.
		31-Aug-04		Turned on cavity at 23:15 GMT (8:45 LT). Turned cavity off at 18:00 LT. Collected data for comparison. Cavity is being run without a window.

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		1-Sep-04		Cavity installed at 22:30 GMT (8:00 LT).
		2-Sep-04		Cavity installed at 22:15 GMT (7:45 LT).
		3-Sep-04		Cavity shipped to SGP (worked well). This task is complete.
7	CAL			Calibration/comparison gnrad radiometers
		1-Sep-04		Consulted with Jim Mather on plan to test gnrad PIR and IRT radiometers near cal stand.
		3-Sep-04		Decided to wait until Monday to minimize disruption of data from Gndrad. Also, for better overlap with people taking off the 3 day weekend.
		6-Sep-04		A special set-up was made to compare the present Gndrad instruments with their potential replacements as requested by Jim Mather. We sent Jim and Peter Gotseff the data. The PIRs and PSPs compared within 5 W/m2. The IRT compared well with the Blackbody.
		7-Sep-04		Gndrad instruments replaced 4:20 GMT and .csi file compiled. This task is complete.
8	SMET			Calibration/comparison smet instruments and logger
		7-Sep-04		Calibration/comparison of Smet completed the instruments compared well enough that no replacements seem necessary
		8-Sep-04		Chilled-Mirror comparison complete and final Smet cal form completed. This task is complete.
9	IRT			Calibration/comparison IRT gnrad
		7-Sep-04		The Gndrad IRT compared well with the Blackbody (0.3-0.5 oC). Comparisons with the PIRs will be done by Jim Mather and Peter Gotseff.
		8-Sep-04		This task is complete.
10	IRT			Calibration/comparison IRT skyrad
		6-Sep-04		Blackbody comparison were performed on both the Skyrad and Gndrad IRTs. These compared within 0.3 to 0.5 oC.
		7-Sep-04		This task is complete.
11	CEIL			Calibration Ceilometer
		9-Sep-04		Cal complete. Cal record sent. This task is complete.
12	CAL			Place Cal/replacement records on Ftp Site.
		4-Sep-04		Completed Replacement forms for 2 PIRs, 2PSPs and NIP replacement on skyrad and sent to ftp site.
		9-Sep-04		Completed Replacement forms for Gndrad and sent to ftp site. This task complete.

