

Castle Report

February 2015

Introduction

This report aims to summarize the West Castle field work executed on February 18 2015. The trip was comprised of several objectives detailed in the preliminary 'West Castle Itinerary'; mainly

- Data collection from all three stations
- Installation and troubleshooting of HMP45 at Riker
- Replace internal logger battery at Riker
- Coax length reduction

As per email correspondence with Brad, Jock and Stirling, mountain conditions were similar to early spring, than to that of winter. That is: no snow at base; patches of snow at tree line; perennial slab on Gravenstafel; niveo-aeolian deposits and sastrugi along the ridge N-NE towards the ham tower. Although snow pack stability was reported as moderate (avalanche.pc.gc.ca), the locally reported conditions would have allowed for a safe route to each station as well as moderate to easy mountain traversal; providing ample time to complete the objectives as well as to safely carry the required tools and equipment. However, the locally reported conditions were not only inaccurate, but additional precipitation, not mentioned in the GOC weather report, had fallen starting at about 1500m; mountain travel became very slow. The treeline temperature moved from 0°C at 1030hr to approx. 3°C at 1230hr then rapidly dropping to approx. -2°C at 1330hr. The anticipated 5 m/s wind gusts in the early afternoon increased to approx. 15 m/s as forecasted by the GOC, increasing niveo-aeolian deposits and sastrugi. Because these weather conditions are conducive to an increase in snow pack instability, travel to the ham tower moved from challenging to complex and the traverse was not executed; data collection from this station was no longer possible. The decision was made at 1500hr; location: Riker (Mid-mountain tower). Began decent at 1600hr. Arrived WCR lodge at 1800hr.

Completed Objectives

RIKER

All main objectives for this site were completed.

- ✓ Installed HMP45
- ✓ Dug out enclosure
- ✓ Sensor wire hole drilled
- ✓ Internal logger battery replaced
- ✓ Main battery power checked
- ✓ Collected data
- ✓ Correctness of sensor outputs verified
- ✓ Shortened the length of coax
- ✓ Structural integrity of tower checked
- ✓ Trained PDF on HMP45 install and programming as well as basic use of Loggernet

Summary

Snow loading on the tower has caused the tower collar to buckle and twist. This torsional force has bent the hook (east side) used to attach the guy wires to the collar. The snow around the tower was removed (to access the enclosure) alleviating the stress due to loading. Structurally the tower is sound and appears to be firmly situated in the foundation. If the project is to continue through another winter season the collar and hooks will need to be upgraded. The current location of the HMP45 (aprox. 2 m from ground) and SR50A (aprox. 3 m from ground) will need to be raised. The HMP45 is a mere 50 cm from snow level and the SR50A aprox. 2 m. This being a below average year for snow depth we anticipate the HMP45 to be buried during an average snow fall and both sensors buried during above average snow fall. New LMR400 should be installed at this location (in the spring or summer) to reduce RF attenuation. Due to weather and time constraints it was not possible to replace the coax during this trip. It should be noted that a bi-product of digging out the enclosure was a clear view of the snow pack. A rudimentary analysis was performed, reinforcing AST1 learning objectives.

Snow Depth - RIKER

At enclosure: 1.5 m

30 cm up slope of and perpendicular to enclosure: 2.7 m

T-REX

Not all objectives were completed. Tower climbing was not advised due to wind gusts. RF401 battery voltage was checked remotely and is at capacity.

David S. (Jock's boss) has instructed us to move the antenna to the middle of the current tower on the downhill side. He has offered the services of the WCR metal fabrication shop to build an appropriate mounting bracket. He also mentioned that we can raise the antenna elevation if needed; again, the assistance of the metal fabrication shop will be available to us.

Concluding Summary

- Mountain traversal was slow and difficult.
 - The additional travel time reduced the number of completed objectives
- Riker is fully functional in terms of sensor operation and validity
- Riker tower has been snow loaded guy wire hooks and tower collar must be replaced
- Antenna on T-REX must be relocated in spring
 - WCR metal fab shop services have been offered
- Kira is functioning but data was not collected
- RF comms still need attention
- Uleth-WCR PR appears to be healthy and well established
 - Continued interest and support