

For SSA Spring 2009 Special Focus Group: Seismological Field Work: The Good, Bad and Ugly

Title: EXTREME SEISMOLOGY: HOW TO RECORD CONTINUOUSLY THROUGH THE COLD, DARK AUSTRAL WINTER ON THE ANTARCTIC PLATEAU

Authors: Beaudoin, B.C., Parker, T., Bonnett, B., and Tytgat, G., IRIS/PASSCAL Instrument Center, New Mexico Tech, Socorro, NM, 87801.

Seismic deployments in Antarctica stress the limitations of both the field personnel and the seismic equipment. To mitigate some of the personnel stresses, PASSCAL has designed a station that is quick and easy to deploy while wrapped in layers of clothing. To simplify installation our station enclosures are packed with datalogger, SOH communications and batteries in the lab or base camp, so that access to the internal components is not necessary at the cold, remote site. Bulkhead connectors allow a user to fully interact with the system without ever having to open the enclosure, preventing cold air and blowing snow from entering. To address the equipment limitations requires a strategy that harbors the little heat produced by the system ($<2W$) to maintain temperatures within manufacturers specifications and a power system that can be efficient at extreme temperatures (e.g. $-40^{\circ}C$). We have achieved these two goals by utilizing a PASSCAL designed and fabricated vacuum panel station-enclosure, and by using primary Lithium Thionyl Chloride batteries. We will discuss our challenges and successes during tests on the Antarctic Plateau where winter temperatures are well below $-50^{\circ}C$.