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Poster

Title:
Recovery and calibration of legacy analog data from the Leo Brady Seismic Network for the Source Physics Experiment

Abstract
The Leo Brady Seismic Network (LBSN) was established in 1960 by Sandia National Laboratories for monitoring underground nuclear tests (UGTs) at the Nevada Test Siteâ€”renamed in 2010 to the Nevada National Security Site (NNSS). The LBSN has been in various configurations throughout its existence, but it has been generally comprised of four to six stations at regional distances from the NNSS with evenly spaced azimuthal coverage. In the pre-digital era, LBSN data were transmitted as frequency-modulated (FM) audio over telephone lines to the NTS and recorded in analog on hi-fi 8-track AMPEX tapes. These tapes have been stored in temperature-stable bunkers on Kirtland Air Force Base in Albuquerque, NM for decades and contain the sole seismic record of hundreds of UGTs from the analog era. We have been developing a process over the past few years to recover and convert the data to digital waveforms, and we derive the full instrument response from historic descriptions of the seismograph and measurements of calibration pulses recorded on the waveforms, themselves. We present an example of the instrument response and calibrated data of the BOXCAR event on April 26, 1968 from a station in Leeds, UT, and compare its peak ground velocity to contemporaneous measurements from other seismic networks. Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energyâ€™s National Nuclear Security Administration under contract DE-NA0003525.