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The Development of a 1-ton scale Cryogenic Detector Development Test Facility FORREST CRAFT, NORM BUCHANAN, THOMAS CUMMINGS, JOHN JABLONSKI, DAVID WARNER, RYAN WASSERMAN, Colorado State University — The Long Baseline Neutrino Experiment (LBNE) has been proposed to use an intense neutrino beam created at the Fermi National Accelerator Laboratory (Fermilab) directed toward the Sanford Underground Research Facility (SURF), in Lead, SD to study neutrino properties. The liquid argon far detector at SURF will need to be equipped with photon detector equipment to reduce cosmic ray background (for a surface located detector) and provide a trigger for non-beam-related events such as supernovae neutrinos and proton decay. Many of these photon detectors are developed and manufactured at institutions that do not possess the equipment to do full scale cryogenic performance and calibration verification before installation in the SURF facility. To test the performance of the full sized LBNE photon detectors and their support equipment at cryogenic temperature a 1 ton scale test facility required development and implementation. A large scale cryogenic facility presented several safety and logistics concerns that were carefully controlled and mitigated before the detector could be brought online. With the facility now running with full liquid argon future plans for testing and detector improvement can be discussed.

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