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C1Or4B-02: Overview and status of the Long-Baseline Neutrino Facility Far Detectors cryogenics system

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The Sanford Underground Research Facility (SURF) will host the Far Detectors of the Deep Underground Neutrino Experiment (DUNE), an international multi-kiloton Long-Baseline neutrino experiment that will be installed about a mile underground in Lead, SD. Detectors will be located inside four cryostats filled with almost 70,000 metric tons of ultrapure liquid argon, with a level of impurities lower than 100 parts per trillion of oxygen equivalent. The cryogenics infrastructure supporting this experiment is provided by the Long-Baseline Neutrino Facility (LBNF). An international engineering team is designing these systems and will manufacture, install, test, commission, and qualify them. This contribution presents the status of the design and procurement of the various systems, along with present and future functional and performance requirements to support the DUNE experiment. It also presents modes of operation, layout and main features of the LBNF Far Detectors cryogenics system, which is composed of the following subsystems: argon receiving facilities, nitrogen refrigeration system, argon distribution system, argon purification and regeneration systems, argon circulation system, argon condensers system, internal cryogenics, miscellaneous items, and process controls.

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