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C3Or1B-01: FRIB Cryogenic System Status

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The FRIB cryogenic plant has been successfully commissioned, including compressor system, 4.5 K cold box system, sub-atmospheric (2 K) cold box system, and the distribution system for two of the three Linacs. This plant uses the Ganni-Floating pressure process, allowing the compressor discharge and 4.5 K cold box supply pressure to automatically vary from 6 to 21 bar, without introducing additional loads or capacity exergetic losses (e.g., throttling turbine inlet valves). The 2 K (31 mbar) load is supported using five stages of centrifugal compressors, housed within the sub-atmospheric cold box, which recompress the helium to 1.15 bar (and around 30 K). In 2013, FRIB assumed the responsibility, in collaboration with JLab to design and procure some of the sub-systems after the decision by FRIB to move away from an industry supplied turn-key system. FRIB was responsible for procurement of all systems, all onsite activities, including the installation and integration of all the subsystems, development of the control systems, as well as, the integration, commissioning, and testing of each sub-system. At present this has culminated in the production of the first beam through the first Linac segment. An overview of the planning and execution of the project will be presented, which allowed accomplishment of scheduled goals and anticipated performance, and prevented the need to store or 'double-handle' any equipment.

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