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C3Po1G-04 [40]: Status of The LCLS-II Cryogenic Distribution System

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The LINAC Coherent Light Source II (LCLS-II) located at SLAC National Accelerator Laboratory (SLAC) in Menlo Park, CA, is a U.S. Department of Energy project tasked to design and build a world-class x-ray free-electron laser facility for scientific research. The Linac has superconducting radio frequency cryomodules that are connected to the cryogenic plant by the Cryogenic Distribution System (CDS), which consists of distribution boxes with heat exchangers and reliefs, feed caps, end caps, and surface, vertical, and bypass transfer lines. The CDS components were designed and built to specification by industry. The components have been delivered and their installation at SLAC will be discussed. The as-built relief system design will be presented, showing minimization of relief inlet pressure drops while meeting capacity requirements. The relieving flow pressure drops along the lengths of the CDS to centrally located reliefs at the distribution box were analyzed to satisfy Pressure Vessel and Process Piping Code criteria to ensure relief performance. The sub-atmospheric 2 K circuit relieving approach will be discussed, which includes a three-way diverter isolation valve suitable for sub-atmospheric service. The component anchoring load design approach and installation into concrete floor will be discussed. This addresses loading, including seismic loading, along the component's load path to floor anchoring system.

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