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A Water Cherenkov Detector prototype for the HAWC Gamma-Ray Observatory MEGAN LONGO, MIGUEL MOSTAFA, FRANCISCO SALESA GREUS, DAVID WARNER, Colorado State University, HAWC COLLABORATION — A full-size Water Cherenkov Detector (WCD) prototype for the High Altitude Water Cherenkov (HAWC) gamma-ray Observatory was deployed, and is currently being operated at Colorado State University (CSU). The HAWC Observatory will consist of 300 WCDs at the very high altitude (4100m) site in Sierra Negra, Mexico. Each WCD will have 4 baffled upward-facing Photomultiplier Tubes (PMTs) anchored to the bottom of a self made multilayer hermetic plastic bag containing 200,000 liters of purified water, inside a 5m deep by 7.3m diameter steel container. The full size WCD at CSU is the only full size prototype outside of the HAWC site. It is equipped with seven HAWC PMTs and has scintillators both under and above the volume of water. It has been in operation since March 1, 2011. This prototype also has the same laser calibration system that the detectors deployed at the HAWC site will have. The CSU WCD serves as a testbed for the different subsystems before deployment at high altitude, and for optimizing the location of the PMTs, the design of the light collectors, deployment procedures, etc. Simulations of the light inside the detectors and the expected signals in the PMTs can also be benchmarked with this prototype.

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