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CUORE: The Three Towers Test LAURA SPARKS, ALISON GOODSELL, California Polytechnic State University San Luis Obispo, CUORE COLLABORATION[1] — Cryogenic Underground Observatory for Rare Events (CUORE) will be part of the next generation of detectors used to search for neutrinoless double beta decay (0vBB). Located in Assergi, Italy at the Gran Sasso National Laboratory (LNGS), CUORE will be a large cryogenic bolometer composed of 988 tellurium dioxide (TeO2) detectors with a total mass of 750 kg, and will search for 0vBB in 130Te. As the experiment will monitor the extremely rare event of 0vBB, all factors contributing to background need to be minimized to effectively increase the sensitivity. We assisted the LNGS researchers over the summer of 2008 by supporting Research and Development efforts to reduce the radioactive background of the experiment. Activities involved decontaminating the copper frame of radon daughters, and chemically etching and lapping the TeO2 crystals with nitric acid and silicon dioxide, respectively, to remove surface contaminants that contribute to background counts. This work was supported in part by NSF grant PHY-0653284 and the California State Faculty Support Grant.

[1]We are affiliated with but not members of the CUORE Collaboration.

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