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The Neutrino Beam for the Homestake-DUSEL Long Baseline Experiment MARY BISHAI, Brookhaven National Laboratory, DUSEL COLLABORATION — The proposed very long baseline neutrino oscillation experiment utilizing massive detectors at the deep Underground Science and Engineering Laboratory (DUSEL) requires a neutrino beam that is well matched to the physics goals and the performance of the DUSEL detectors. Fermi National Accelerator Laboratory (Fermilab) is located 1300km from the DUSEL location in Homestake Mine SD. This baseline has been shown to be well matched to the physics requirements of a next generation neutrino oscillation experiment. We present preliminary designs and performance studies for a high power DUSEL neutrino beam utilizing the 120 GeV Main Injector (MI) proton accelerator at Fermilab. These studies are based on the experience gained from the design and operation of the NuMI neutrino beamline which has been operating at the MI since 2005.

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