

Abstract Submitted  
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**Designing a Nuclear Device as a Learning Exercise**<sup>1</sup> DAVID KAHL, CHAD HUIBREGTSE<sup>2</sup>, STEVE ABBOTT, ELIZABETH BOATMAN, ELON CANDEA, SARAH JOHNS, JASON MARMON, JARED NANCE, ERIC STALL, JOHN STIERNA, LOREN WARMINGTON, Beloit College — The goal of this project was to examine in detail the difficulties involved in designing and constructing a nuclear weapon. The research was initiated as a class project in a course on nuclear physics. The workload was divided into three primary sections: Acquisition and Enrichment of Fissile Materials; Bomb Physics; and Bomb Effects. Using only publicly available materials, we were able to successfully devise a step-by-step design for building a 20 KT uranium bomb, as well as detailing the processes for uranium refinement and the results of its detonation. Our work is relevant to the broader scientific community because it demonstrates that the major difficulty encountered in building an atomic weapon is acquiring fissile material.

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