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Neutral Beam Development for the Lockheed Martin Compact Fusion Reactor REGINA SULLIVAN, FRANS EBERSOHN, NICOLO MONTECALVO, GAREN ORDOYAN, MELISSA SHOWERS, CFR TEAM, Lockheed Martin — The Compact Fusion Reactor project at Lockheed Martin Skunk Works is developing a neutral beam injection system for plasma heating. The neutral beam plasma source consists of a high current lanthanum hexaboride (LaB6) hollow cathode which drives a ring cusp discharge similar to gridded ion thrusters. The beam is extracted with a set of focusing grids and is then neutralized in a chamber pumped with Titanium gettering. The design, testing, and analyses of individual components are presented along with the most current full system results. The design and development of an imaging calorimeter for beam profile characterization is also presented. The goal of this project is to advance in-house neutral beam expertise at Lockheed Martin to aid in operation, procurement, and development of neutral beam technology. ©2019 Lockheed Martin Corporation. All Rights Reserved.

Regina Sullivan
Lockheed Martin

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