

Abstract Submitted  
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**Science on NIF Eagle Nebula**<sup>1</sup> JAVE KANE, DAVID MARTINEZ, Lawrence Livermore National Laboratory, MARC POUND, University of Maryland, ROBERT HEETER, Lawrence Livermore National Laboratory, ALEXIS CASNER, CEA/DAM/CESTA, BRUNO VILLETTE, CEA, ROBERTO MANCINI, University of Nevada — For over fifteen years astronomers at the University of Maryland and scientists at LLNL have investigated the origin and dynamics of the famous Pillars of the Eagle Nebula and similar parsec-scale structures at the boundaries of HII regions in molecular hydrogen clouds. Eagle Nebula is one of the National Ignition Facility (NIF) Science programs, and has been awarded two days of NIF shots to study the cometary model of pillar formation. The NIF shots will feature a new long-duration x-ray source prototyped at the Omega EP laser, in which multiple hohlraums mimicking a cluster of stars are driven with UV light in series for 10 ns each to create a 30 ns output x-ray pulse. The drive generates deeply nonlinear hydrodynamics in the Eagle science package, which consists of a dense layered plastic and foam core embedded in lower-density background foam. The scaled Omega EP shots validated the multi-hohlraum concept, showing that earlier time hohlraums do not degrade later time hohlraums by preheat or by ejecting ablated plumes that deflect the later beams. The Omega EP shots illuminated three 2.8 mm long by 1.4 mm diameter Cu hohlraums with 4.3 kJ per hohlraum. At NIF each hohlraum will be 4 mm long by 3 mm in diameter and will be driven with 80–100 kJ.

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