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**NIF Discovery Science Eagle Nebula***[1] JAVE KANE, DAVID MARTINEZ, Lawrence Livermore National Laboratory, MARC POUND, University of Maryland, ROBERT HEETER, CHANNING HUNTINGTON, Lawrence Livermore National Laboratory, ALEXIS CASNER, CEA/DAM/DIF, BRUNO VILLETTE, CEA, ROBERTO MANCINI, University of Nevada — For almost 20 years a team of astronomers, theorists and experimentalists have investigated the creation of the famous Pillars of the Eagle Nebula and similar parsec-scale structures at the boundaries of HII regions in molecular hydrogen clouds, using a combination of astronomical observations, astrophysical simulations, and recently, scaled laboratory experiments. Eagle Nebula, one of the National Ignition Facility (NIF) Discovery Science programs, has completed four NIF shots to study the dense 'shadowing' model of pillar formation, and been awarded more shots to study the 'cometary' model. These experiments require a long-duration drive, 30 ns or longer, to generate deeply nonlinear ablative hydrodynamics. A novel x-ray source featuring multiple UV-driven hohlraums driven is used. The source directionally illuminates a science package, mimicking a cluster of stars. The first four NIF shots generated radiographs of shadowing-model pillars, and suggested that cometary structures can be generated. The velocity and column density profiles of the NIF shadowing and cometary pillars have been compared with observations of the Eagle Pillars made at millimeter observatories, and indicate cometary growth is key to matching observations. *Prepared by LLNL under Contract DE-AC52-07NA27344.

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