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## CYGNUS PERFORMANCE ON SEVEN SUBCRITICAL EXPERIMENTS

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The Cygnus Dual Beam Radiographic Facility includes two identical radiographic sources - Cygnus 1 and Cygnus 2. Cygnus is the radiography source used in Subcritical Experiments (SCEs) at the Nevada National Security Site (NNSS). The machine specifications are: Electric 2.25 MV, 60 kA, 60 ns; Radiation 4 Rad, 1 mm, 50 ns; Operation single shot, 2-shots/day. Cygnus has operated at the NNSS since February 2004. In this period, it has participated on seven SCE experiments - Armando, Bacchus, Barolo A, Barolo B, Pollux, Vega, and Ediza.

SCE projects typically require over a hundred preparatory shots culminating in a single full-fidelity or SCE shot, and typically take over a year for completion. Therefore, SCE shots are high risk and high value making reproducibility and reliability utmost priority. In this regard, major effort focuses on operational performance. A quantitative performance measurement is valuable for tracking and maintaining Cygnus preparedness. In this work, we employ a model for analysis of Cygnus performance that uses dose distribution as the basis for calculation of reproducibility and reliability. It will be applied both to long-term (historical) and short-term (readiness) periods for each of the seven SCEs.

**Authors:** SMITH, John (Los Alamos National Laboratory); Mr GARCIA, Michael (Sandia National Laboratories); ORMOND, Eugene (Sandia National Laboratories); PARRALES, Martin (Sandia National Laboratories); FLORES, Paul (Mission Support and Test Services); Mr HOGGE, Keith (Mission Support and Test Services); Mr HUBER, Steven (Mission Support and Test Services); Mr MISCH, Michael (Mission Support and Test Services); Mr PEREZ, Jesus (Mission Support and Test Services); Mr ROMERO, Thomas (Mission Support and Test Services); Mr TRUONG, Hoai-Tam (Mission Support and Test Services)

**Presenter:** SMITH, John (Los Alamos National Laboratory)

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