

Spring 2025 Colloquium

Physics and Astronomy, East Texas A&M University

Thursday, January 30, 2025

4:00 pm to 5:00 pm, McFarland Science Building 127

(coffee and cookies will be served at 3:50 pm)

Mission Engineering at the Pantex Plant

James O. Thomas & Mandi Wheeler

Abstract

Pantex is one of six production facilities in the National Nuclear Security Administration's Nuclear Security Enterprise. As the cornerstone of the nation's Nuclear Security Enterprise and the High Explosives Center of Excellence, Pantex applies unique capabilities to ensure the effectiveness of the U.S. nuclear stockpile in support of the Nation's nuclear deterrent.

The Pantex mission has grown over the decades as other facilities closed and responsibilities for life-extension, surveillance, assembly and high explosives operations were moved to the site. Since 1975, Pantex has been the nation's primary assembly, disassembly, retrofit, and life-extension center for nuclear weapons. Pantex builds and delivers nuclear weapons for the nation's stockpile, replacing parts and components to extend the lives of these weapons. Since the country no longer tests nuclear weapons, Pantex plays an important role in confirming the effectiveness of the weapons in the stockpile, through Joint Test Assembly builds, quality evaluations, and surveillance work.

Operations at Pantex are primarily conducted on 2,000 acres of the 18,000-acre site. Pantex has approximately 650 buildings, including specialized facilities in which maintenance, modification, disassembly, and assembly operations are conducted. The Pantex Plant maintains its own water-treatment, sewage, and steam-generating plants. Five wind turbines generate enough power to support more than 60 percent of the Pantex Plant's annual energy.

The strength of Pantex lies in the dedication and patriotic commitment of its more than 4,600 full-time personnel.



James O. Thomas -- James is a development scientist within Mission Engineering at the Pantex Plant in Amarillo where he focuses on nuclear nonproliferation, radiation detection and characterization, and seismic and acoustic propagation. He holds a Bachelor's degree in physics from West Texas A&M University and a Master's degree in physics from Texas A&M University-Commerce. After completing PhD course work at SMU while working at the Large Hadron Collider at CERN, he decided to enter the work force.

Mandi Wheeler -- Mandi is a development scientist within Mission Engineering at the Pantex Plant in Amarillo where she focuses on advanced modeling and simulation software, data analysis, and project management. She holds a Bachelor's of science from Angelo State University in mathematics and chemistry and a Master's of science from Texas Tech University in applied mathematics. Prior to coming to Pantex she spent 20 years teaching math, statistics, and data analysis at Texas Tech University and Amarillo College.