

Y-12: Seawolf to National Prototype Center, part 2

Continuing to quote from the 1998 press release (http://www.oakridge.doe.gov/media_releases/1998/r-98-007.htm) announcing the establishment of a National Prototype Center at Y-12, we see the center established. However, we also see that this is not really a new idea but an evolution of what Y-12 has been doing for some time.

"Companies selected for the partnership competition will be asked to locate a team of between two and twenty employees in Oak Ridge where they would work side-by-side with engineers and scientists from DOE facilities. Preference would be given to companies willing to locate manufacturing facilities in the area to produce the product developed with the help of the DOE and the NPC."

"Success of this competition will allow companies access to resources for expanding their business more quickly and provide opportunity for economic development and job creation in the region," Hall stated.

"The NPC is a resource through which both government agencies and private industry can find the capabilities, skills, and resources needed to turn great ideas into innovative, affordable, manufacturable products. The NPC specializes in high-risk, complex prototype work integrating manufacturing, engineering, and scientific capabilities."

"Y-12 has been developing unique one-of-a-kind prototypes for more than 50 years beginning with demanding requirements for national security missions in the early 1940s. More familiar examples of prototype successes include the Apollo 'Moonbox,' the Seawolf Submarine Propulsor Project, and the 'hospital-in-a-box' developed last year for the U.S. Army and the Marine Corps. Currently, work is under way on the Marine Corps' Advanced Amphibious Assault Vehicle that will serve as a weapons platform for the Marines' challenging missions."

"The Y-12 Plant has more than a half century of prototype successes for the U.S. government and now it's time to take proactive steps through this competition to make these prototyping capabilities more readily available to the private sector to boost the U.S. economy," Hall added.

"The Y-12 Plant is managed and operated by Lockheed Martin Energy Systems for DOE."

In the Y-12 Report, Fall 2005, Volume 2, Issue 3 appears the following story titled *Prototype jet engine fan cases*.

"At the request of GKN Aerospace, a major supplier of aircraft components, Y-12 is machining prototype fan cases for the next generation of General Electric jet engines. Working as a supplier to GE, GKN Aerospace has been tasked with designing all of the tooling and building a fan case from composite materials to improve strength while reducing weight."

"Y-12 has stepped in to perform the initial work of establishing machining parameters and is producing the first prototypes. This partnership reaffirms Y-12's reputation for solving tough manufacturing problems and its designation as the National Prototype Center."

Today, Y-12 holds the designation as the nation's Uranium Center of Excellence and remains a National Prototype Center. The ever expanding scope of Y-12's support to the nation now includes specialized nuclear material handling and management training as well as security related training for nuclear facilities.

Chris Clark, senior director for Strategic Program Development at the Y-12 National Security Complex stated recently, "Y-12 will evolve into a multifaceted resource responding to the nation's needs for cutting-edge capabilities growing out of the expertise required for its national security missions."

Chris also notes that "Y-12 maintains an ongoing contract with the University of Tennessee Center for Industrial Services to provide assistance to Tennessee industry when commercial manufacturing problems arise. This is much the same as the earlier Oak Ridge Centers for Manufacturing Technology efforts, but is refined and builds upon lessons learned from that earlier historic innovation."

See the linkage between programs in past years? The evolution continues even today.

A recent technological development with ties to the Seawolf era was cited by Knoxville News Sentinel Senior Writer Frank Munger in his *Atomic City Underground* blog on September 27, 2011: "Ed Ripley, a nuclear metallurgist in Y-12's Applied Technologies Division, is credited with development of the technology, which was referred to as Code 4 (a police term meaning situation under control, no further assistance needed) Armor in-house..."

"...The Y-12 contractor said the armor also could be used for building protection, such as teller booths, guard checkpoints, and embassies, or as exterior shielding on military vehicles.

"Ripley said in the Oak Ridge plant's Y-12 Report, 'Our ceramics, metallics and composites can be put together in a number of combinations based on a customer's application and parameters such as cost, performance and weight. The possibilities are limited only by one's imagination.'"

This new material with the light weight and hardness of ceramics while retaining the strength of metal is exclusively licensed by Y-12 to Venture Incite, Inc., which will further develop and commercialize the process. The aim is to create more effective protective armor for soldiers, police officers and others whose life is in danger from attack.

This is but one of many areas where Y-12 technological advances have far-reaching potential impacts.