

October 24, 2007

The National Energy Technology Laboratory Wins the FLC Mid-Atlantic Region Technology Transfer Award for Commercialization of Cast Steel Armor for Department of Defense

The Mid-Atlantic Region of the Federal Laboratory Consortium this year presented the Regional Excellence in Technology Transfer Honorable Mention Award to Mr. Paul Turner, Mr. Jeffrey Hansen, Dr. Paul Jablonski, Mr. Jim Ogilvy, Mr. Matthew Burkins, Mr. William Gooch, Mr. Michael Keele, Mr. David Kleponis, and Mr. Kirk Stoffel of DOE National Energy Technology Laboratory for their work on "Commercialization of Cast Steel Armor for Department of Defense,"

The Department of Defense (DOD) needs 10 million pounds of P-900 cast steel armor to be delivered starting the last quarter of calendar year 2007. According to the Office of the Secretary of Defense (OSD), this program is the highest priority program at DoD. In late July of 2007, OSD sent the Army \$200 million of FY07 funding to procure the first set of castings. This cast armor will be used as add-ons to retrofit US military vehicles to protect soldiers from the effects of improvised explosive devices (IEDs). A number of foundries will be required to produce the approximately 200,000 castings within the specified time frame. Each foundry has to be qualified both ballistically and for its production/business plan to ensure that it can deliver.

About 20 years ago, NETL (then U. S. Bureau of Mines) scientists Jeff Hansen and Paul Turner, at the request of U.S. Tank and Automotive Command (TACOM) and Army Research Laboratory (ARL) personnel, had developed a process to make P-900, which is a cast slotted steel armor produced using the lost foam process. A patent was issued in 1993 covering a portion of this process. TACOM metallurgist (now retired) Jim Ogilvy and ARL engineers Bill Gooch and Matt Burkins developed the armor's ballistic specifications. Earlier this year, NETL scientist Paul Jablonski and technicians produced castings for ARL using a new heat treatment to optimize ballistic performance against IEDs. ARL engineers Burkins, David Kleponis, Michael Keele, and Kirk Stoffel performed ballistic testing and evaluation of these test plates which proved so successful that TACOM decided to put out the market call. At present, NETL is the only source of production-sized patterns.

TACOM and NETL contacted eight different foundries throughout the U.S. to produce this armor. Since the need is so pressing, some foundries will use the lost foam method to produce the castings while others may use a different, but more expensive technology. To help with the process of qualifying foundries to produce this large quantity of castings, Paul Turner provided technical expertise along with polystyrene P-900 patterns for them to use in making test targets. NETL also volunteered its pattern tooling to TACOM in order to make additional patterns to help jumpstart the production process while the foundries await full-size patterns.

Once foundries are qualified, the plan is to go into full-scale production to produce in excess of 200,000 castings, with foundries producing between 100 and 600 castings per day each. Paul Turner, NETL Division Director, is now visiting the foundries, ARL and the Undersecretary of Defense for Industrial Policy (director of the overall P-900 effort). The purpose is to help the foundries meet the program needs and to help DoD write the MilSpec for the new P-900 armor.

One of the most coveted awards in the field of technology transfer, FLC awards for Excellence in Technology Transfer recognize laboratory employees who have accomplished outstanding work in the process of transferring Federally-developed technology to the marketplace. The award was made on September 21 at the region's annual meeting.

The Federal Laboratory Consortium is comprised of the technology transfer offices of all of the Federal laboratories throughout the country while its Mid-Atlantic Region focuses on the 70 Federal laboratories in DC, DE, MD, PA, VA and WV.

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