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14. ABSTRACT Letterkenny Army Depot (LEAD) located in Chambersburg, PA utilizes a one-of-a-kind motor test station (Figure #1) to evaluate the motors associated with the Phased Array TRacking Intercept of Target (PATRIOT) missile system. The existing transmission used in the test station was worn from more than twenty years of use and a replacement was not readily available. LEAD had experienced problems with the transmission in the past and requested the National Center for Defense Manufacturing and Machining (NCDMM) provide a reliable solution to extend the life of the existing test station. The original transmission manufacturer is no longer in business and the transmission is not easily repairable. This test station is the only method of testing the PATRIOT motors in a production environment.					
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Transmission for PATRIOT Missile Test Station

NCDMM Project No. 06-0117-10



PROBLEM / OBJECTIVE

Letterkenny Army Depot (LEAD) located in Chambersburg, PA utilizes a one-of-a-kind motor test station (Figure #1) to evaluate the motors associated with the Phased Array TRacking Intercept of Target (PATRIOT) missile system.

The existing transmission used in the test station was worn from more than twenty years of use and a replacement was not readily available. LEAD had experienced problems with the transmission in the past and requested the National Center for Defense Manufacturing and Machining (NCDMM) provide a reliable solution to extend the life of the existing test station. The original transmission manufacturer is no longer in business and the transmission is not easily repairable. This test station is the only method of testing the PATRIOT motors in a production environment.



Figure # 1 PATRIOT Motor Test Station

ACCOMPLISHMENTS / PAYOFF

Process Improvement

The NCDMM evaluated the transmission in order to develop a solution that met the requirements specified by LEAD. The transmission mounts and related equipment were recorded and envelope drawings were generated. The lubrication system and couplings were also inspected and it was determined that they were in need of replacement.

After considering the motor requirements and evaluating potential sources for a replacement transmission, the NCDMM specified requirements for a replacement transmission to The James A. Staley Company, located in Carmel, NY. With these

specifications, The James A. Staley Company was able to fabricate a custom replacement transmission.

The NCDMM traveled to LEAD along with The James A. Staley Company in order to install the replacement transmission, lubrication system, and couplings.

Implementation and Technology Transfer

The transmission and couplings were successfully replaced and installed and the full range of motors was tested on the test station. The new lubrication system (Figure #2) was installed with low pressure and high temperature sensing devices in order to prevent the system from running without adequate lubrication.

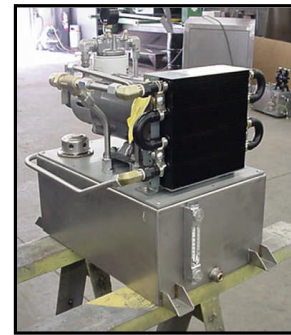


Figure # 2 Lubrication System

Expected Benefits

By replacing these worn components and adding monitoring devices, LEAD will significantly extend the life of the PATRIOT motor test station.

TIME LINE / MILESTONE

Start DateOctober 06
Implementation Date..... May 07
End DateMay 07

PROJECT FUNDING

This project was funded under the current engineering support contract between the NCDMM and Letterkenny Army Depot.

NCDMM Funding..... \$50K

PARTICIPANTS

The James A. Staley Company
Karadon Corporation
Letterkenny Army Depot

Kopflex
NCDMM

For additional information about the NCDMM visit our website at www.ncdmm.org