

UPTIME'S **2010** **POTY** **PROGRAM OF THE YEAR**



Front Row From Left:

Sergio DeSimone - *Vibration Engineer, MCA Coordinator,*
 Marc Comtois - *Senior Engineer,*
 George Sheppard - *MCA Senior Engineer,*
 Kedrick Swain - *Vibration Engineer*

Back Row From Left:

Tom Alexander - *President, The Lightship Group, LLC, MCA Project Manager*
 Herb Payan - *Vibration Engineer, MCA Facility Security Officer.*

Not Pictured:

Bob Carver - *Commander, USNR, Technical Advisor,*
 Mark Libby - *MCA Program Consultant*

The Lightship Group Equipment List

Hardware: DCA-50
Software: ExpertALERT

The Lightship Group, LLC • Azima DLI COMMANDER NAVAL AIR FORCE (CNAF) Ships Force Machinery Vibration Analysis Team (SFMVA)

ABSTRACT:

Aboard the Navy's fleet of active aircraft carriers, members of the ship's force are providing timely, accurate, and detailed assessments of the mechanical condition of rotating machinery through a program of periodic vibration measurements and analysis. The Ship's Force Machinery Vibration Analysis, SFMVA, is a self-sufficient, shipboard condition monitoring program, using portable data collector/real-time analyzers and PC-based software to provide a local capability for detection and diagnosis of early stage machinery faults.

The SFMVA program is managed by the Commander Naval Air Forces Maintenance Officer.

Annual cost-benefit studies show that the SFMVA input to CBM produces significant savings in maintenance functions with an ROI greater than 15:1.

INTRODUCTION

A US Navy nuclear aircraft carrier is an enormous warship of nearly 100,000 tons displacement that provides the launch, recovery, and maintenance facility for 80 to 90 aircraft. It is a floating city with an airport and some 5,000 men and women to support the ships mission. The array of machinery in the aircraft carrier ranges from large propulsion turbines and reduction gears to small centrifugal pumps for cooling electronic equipment; from catapult water brake pumps to reactor support equipment; and hotel services from ventilation fans to sewage transfer pumps. The current MCA project includes over 500 machines per ship. To ensure data consistency, a Vibration Test and Analysis Guide, or VTAG, is provided for each type of machine.

CONTINUOUS IMPROVEMENT

A continuous improvement program has been implemented whereby feedback based on machine repairs and/or unexpected failures have prompted revising fault templates and alarm thresholds in the Automated Diagnostics System. The program manager meets via teleconference with the contactor for review and discussion. The changes are processed against all similar machines throughout the fleet to ensure false positives are not triggered. The results have uncovered degradation of a few machines previously deemed satisfactory.

TRAINING AND CERTIFICATION:

Previously, the vibration classes were presented on a per ship basis about once a year. Under the new guidance, classes are being held in aircraft carrier homeports once or twice a year. The regional classes are attended by personnel from multiple vessels, resulting in a more flexible and complete coverage, and a 25% savings over previous training costs.

SUPPORT FUNCTIONS

Technical support for the SFMVA program is provided through the Machine Condition Analysis Engineering Services contract that is administered by CNAF. Data are encrypted and exported to the contractor for review. The turnaround on the analysis is in most cases less than twenty-four hours. This process provides ships force worldwide support on machinery condition. The current prime contractor is The Lightship Group located near Newport, Rhode Island, and DLI Engineering, Government Division, located near Seattle, Washington as its subcontractor.

SUMMARY

The revitalized SFMVA program is demonstrating that the properly equipped and support ship's force team can produce timely and accurate machine condition assessments as part of their routine inspection and maintenance programs. The SFMVA program is achieving success and is meeting the objectives of providing timely and accurate machine condition assessments required for effective RCM and Condition Based Maintenance strategies.



The Lightship Group, LLC