

DeNOVUS

Case Study: Deck Edge Elevator Remediation - U.S. Navy



Typical corrosion on the Deck Edge Elevator cables



DeNOVUS Deck Edge Elevator system

PROBLEM

Current Deck Edge Elevator wire ropes become corroded due to the severe marine exposure. U.S. Navy and environmental regulations required changes in the lubricants used for wire ropes. The goal was to develop and test products that were nontoxic, environmentally safer and which would reduce corrosion damage.

TESTING

The DeNOVUS Deck Edge Elevator kit was tested for 100 days in cyclic wave spray corrosion. The test environment consisted of a flood spray at a nominal velocity of 9 knots. Spray frequency was 4 times per hour. Spray duration 5 seconds. Spray solution 5% NaCl in DI water. Test chamber temperature 99°F. Test duration 100 days. Preliminary specialized cyclic tests were developed and executed on scaled down samples to evaluate a broad range of alternatives prior to performing tests on full sized wire rope samples representative of deck edge elevator construction. The scaled test protocol was designed to combine stress and environmental factors to accelerate corrosion. Toxicity and biodegradability studies were conducted by certified laboratories.

DeNOVUS

1 Hunthausen Drive, P.O. Box 280, Moberly, MO 65270
TELE: (660) 269-3700, (800) 457-1363, Fax (660) 269-3737

The information given here is considered to be correct and is offered for your consideration, investigation and verification. No warranties are expressed or implied since the use of our products is beyond our control. Statements concerning the use of DeNOVUS products are not to be construed as recommending the infringement of any patent.

Revision Date: November 18, 2002

DISCUSSION

The preliminary cyclic corrosion test procedures proved to be very aggressive by generating a tensile strength loss of up to 83% on scaled samples. The control standard construction full sized sample experienced a 15% loss in strength as a result of the 100-day cyclic wave spray exposure.

1270EPL and systems maintained 93.4% to 99.2% of ultimate tensile strength in this testing. Toxicity tests demonstrated that E-1270EPL is not toxic at concentrations up to 100 ppm. Biodegradability testing revealed that E-1270EPL is between 15% and 57% biodegradable.

CONCLUSIONS

Based upon these laboratory results and 18-months of deployment operations experience, the Navy is installing DeNOVUS products on aircraft carrier deck edge elevator applications as improvements. Previously this system has experienced premature failure due to corrosion. Eliminating corrosion failures has typically required extensive maintenance. The E-1270EPL combined with DPS 601 dramatically improved the life of the Deck Edge Elevator cables. The improved life will reduce



maintenance costs and improve the reliability of the Deck Edge Elevator.

DeNOVUS

1 Hunthausen Drive, P.O. Box 280, Moberly, MO 65270
TELE: (660) 269-3700, (800) 457-1363, Fax (660) 269-3737



The information given here is considered to be correct and is offered for your consideration, investigation and verification. No warranties are expressed or implied since the use of our products is beyond our control. Statements concerning the use of DeNOVUS products are not to be construed as recommending the infringement of any patent.

Revision Date: November 18, 2002