



# AMERICAN BOA INC.

Expansion Joints - Bellows  
Automotive Decoupling Joints - Flexible Hoses

News Bulletin NB0048

## American BOA Designs and Supplies Products for US Navy Sealift Command Vessels



Northrop Grumman Avondale Industries recently contracted with American BOA to design and build the expansion joints required for the T-AKR Sealift vessels powered by diesel engines. The LMSR's (Large, Medium-speed, Roll-on/Roll-off) ships can carry an entire US Army Task Force, including 58 tanks, 48 other track vehicles, plus more than 900 trucks and other wheeled vehicles. The ship carries vehicles and equipment to support humanitarian missions, as well as combat missions. The new vessels have a cargo carrying capacity of more than 380,000 square feet, equivalent to almost eight football fields. The LMSR ships are Large (950 feet long, 106 feet wide, 55,000 long ton displacement), Medium Speed (24 knots) Roll-on/Roll-off vessels. The ships are self-sustained RO/RO and Lift on/Lift off (LO/LO) operations at a pier or over the shore.

### T-AKR-300 USNS Bob Hope Class

#### American BOA Design and Engineering Team Meets Challenging Requirements

Each vessel requires (16) 36" and (2) 54" expansion joints for the four engine exhaust system. The challenging design required: (a) very low natural frequencies to allow resonance during start-up and each bellows location had unique requirements depending upon orientation and firing order; (b) total movement and vibration stress needed to be extremely low (<20,000 psi); (c) aggressive vibration required the 5 ply universal bellows to use special convolution geometry; (d) bellows were produced from Inconel 625LCF to resist salt water chloride attack; and (e) each unit had to fit into a piping space less than three feet long.



Post Office Box 1301 • Cumming, GA 30028  
Phone: 770.889.9400 • Fax: 770.781.3968 • E-mail: [info@iwka-abi.com](mailto:info@iwka-abi.com)

The Flexible Solutions Group a Group of 