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SUMMARY FINAL REPORT  
ON  
CRITICAL SEA TEST SUPPORT



*Science Applications International Corporation*

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SAIC-88/1776

July 1988



*Science Applications International Corporation*

Prepared by:

A. Eller  
Undersea Science & Technology Division

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Prepared for:

Naval Ocean Research and Development Activity  
Stennis Space Center, MS 39529-5004

Contract N00014-86-D-0137  
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SCIENCE APPLICATIONS INTERNATIONAL CORPORATION  
1710 Goodridge Drive  
P.O. Box 1303  
McLean, Virginia 22102  
(703) 821-4300

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**SAIC**  
Science Applications  
International Corporation

The CST Support project is a two-year effort that addresses further development of the SAIC Active System Model (NOP Baseline<sup>1</sup>) for at-sea modeling support. This report covers the first installment of this model development.

Efforts during this phase primarily have been directed to reconfiguring the graphics portion of the model in order to provide more flexible graphical display of the computed arrays and to allow graphical output of the environmental data bases. A second major effort has been directed at the development of algorithms for backing out bottom scattering strength coefficients.

The revised graphics developments include new graphics routines to present sound speed profiles, bathymetry, and transmission loss along selected radials, and to present plan views of bathymetry. Efforts were directed also at planning how to read in transmission loss and reverberation from other sources for plotting by the present Baseline graphics routines. The graphics improvements also were directed at providing greater flexibility to the user for color selection in plots.

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The SAIC Active System Model: General Description of Physics, SAIC-87/1719, 19 September 1987.

Effort was directed at including a PE model within the NOP Baseline framework that exchanges input data with Baseline and produces PE-based transmission loss that can be plotted with Baseline graphics. Some effort was devoted also to passing external reverberation values through the Baseline reverberation graphics. Finally, efforts were expended to develop a routine to provide graphical displays of the reverberation-to-noise ratio and to provide the capability to use a vertical receiver.

Completion of these several developments is planned during the second phase of the overall project.