



Senior Design Project Electrical & Computer Engineering



Modeling the Impact of Blue Force Tracking On the Automatic Identification System Very High Frequency Data Link

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Project Goal

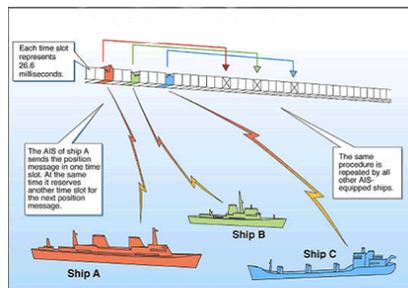
To provide data to decision makers to determine the potential impact of a Coast Guard Blue Force Tracking System to Class A vessels operating on the Automatic Identification System (AIS) very high frequency data link (VDL).

Background Information

What is AIS?

AIS is communications system that allows vessels and shoreside operators to exchange voyage and maneuvering information to improve safety of life at sea. Data is exchanged electronically

over VHF radio links through a self organizing TDMA protocol. BFT could be deployed over AIS to provide a cost effective data network for Blue Force Tracking.



"AIS Overview," <http://www.navcen.uscg.gov/naais/ais/default.htm> (accessed December 2007.)

Project Objectives

- Determining the level of politeness: Will Blue Force Tracking on the AIS VDL impact Class A commercial AIS users by interrupting their transmissions?
- Analyze operational data to quantify BFT data loading
- Simulate the Class A AIS VDL impact by modeling AIS data sets
- Complete an alternative analysis of Blue Force Tracking systems

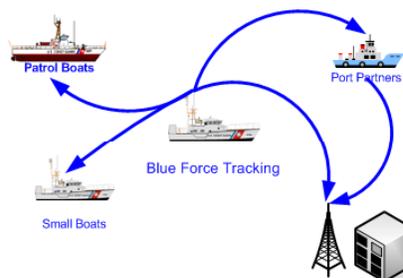
System Design/Future Plans

The U.S. C.G. Research & Development Center's AIS VDL simulation software is modified to incorporate operational BFT data loading projections. The outputs of the simulation will quantify the impact on the AIS VDL by comparing VDL slot usage before and after BFT data is added to the simulation. Excessive loading on the AIS VDL following the addition of BFT data may suggest that CG BFT requirements may negatively effect Class A vessel communications. An alternatives analysis will be included to consider other BFT prototypes currently under development.

What is Blue Force Tracking?

Blue Force Tracking is a generic description of any system designed to provide situational awareness of Coast Guard and port partner assets. BFT systems enable assets to communicate with one another and to shoreside command and control centers through electronic data exchange. Requirements for a CG

BFT system have been defined and include: the ability to transmit and receive position data, high interest vessel data, overlays, e.g., search patterns and



Preliminary Results

The result below contains simulation data which highlights the AIS channel capacity in a typical U.S. port. This information will help determine the impact of BFT by comparing pre and post loading conditions. Contiguous slots represent availability for BFT data exchange, e.g., position data (1 slot), text message (5 slots).

