



BLUE FORCE TRACKING

Affects on the Automatic Identification System VHF Data Link



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1. Introduction and Background

The United States Coast Guard's (USCG) Blue Force Tracking (BFT) system is a part of the Hawkeye project, an initiative aimed at integrating the technology supplying a large scale Common Operating Picture (COP) to all Coast Guard and friendly force assets. The Automatic Identification System (AIS) is a communication system required by law on most commercial and Coast Guard vessels. Using an existing software simulation at the CG R&D Center and available real-world AIS data collected in New York and Seattle, this project determines the conditions under which the presence of vessels equipped with BFT version 2 will cause significant communications disruptions on the AIS Very High Frequency (VHF) Data Link.

2. USCG Blue Force Tracking

BFT-equipped vessels transmit over the VHF Data Link (VDL) an encrypted message decipherable only by other

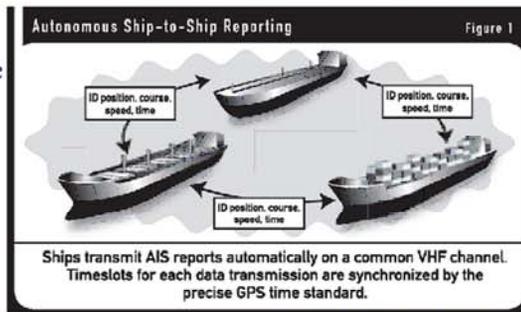
AIS-equipped units in possession of the decryption key. The goal is to make unit positions available only to other friendly force assets like U.S. Navy vessels and port partners, and acts as a way to disguise AIS identification of a cutter or aircraft acting in its law enforcement capability.



3. Problem Definition

Although the AIS network is currently operating within its total communications capacity, the potential exists that an overcrowded VDL could result in the loss or garbling of a vital

transmission, with the possible consequence of a vessel collision. As the U.S. government presses to have Nationwide AIS implementation and the USCG expands its use of AIS BFT v2 within the fleet, AIS VDL interference by BFT equipment may become a safety issue.



4. Design and Objectives

This project focuses on determining:

- length of time between a garbled AIS vessel transmission and its next transmission,

- range of vessel from a designated antenna,
 - all in an area containing AIS BFT v2 equipped vessels and other AIS vessels,
 - comparing theoretical results data from real AIS base stations around the nation
- The length of time before a vessel's next received transmission as a gauge of the severity of VDL disruption. Testing will be conducted using a software model of the VDL uplink. This project has just entered the testing and data collection phase, and all analysis and documentation will be completed by May 2nd of this year.

