The Nationwide Automatic Identification System Newsletter
Issue #1 – 3rd Quarter FY 2007

Welcome to the first issue of *The Guardian*, a quarterly newsletter issued by the Nationwide Automatic Identification System Project Office, Commandant (G-AIS). The primary objective of *The Guardian* is to inform the field and general public on significant plans and developments concerning the Nationwide Automatic Identification System (NAIS) over the life of the project. This newsletter will be distributed to our Coast Guard shipmates and made available on the NAIS Project website. Since this is the first issue of the newsletter, we shall begin with a very brief overview of the project.

Project Overview

The U.S. Coast Guard (USCG) is implementing the NAIS in response to the Maritime Transportation Security Act of 2002 to enable the tracking of vessels in or bound for U.S. waters. The NAIS is essentially a two-way maritime data communication system based on Automatic Identification System (AIS) technology and international standards. AIS is a maritime digital broadcast system that continually transmits and receives voiceless vessel data. The AIS technology and communication protocol has been adopted by the International Maritime Organization as an international standard for ship-to-ship, ship-to-shore and shore-to-ship communication of navigation information. AIS users operating in proximity to each other automatically create a virtual network. Shore stations can join these virtual networks and receive shipboard AIS signals, perform network and frequency management, and send additional broadcast or individual informational messages to

AIS-equipped vessels. The NAIS will provide the infrastructure to allow command centers to exchange safety and security information with AIS-equipped vessels.

The NAIS Project is classified as a Department of Homeland Security (DHS) Level 1 (>$50M) investment and is a USCG major systems acquisition project. The goal of NAIS is to enhance Maritime Domain Awareness (MDA), with particular focus on improving maritime security, marine and navigational safety, search and rescue, and environmental protection services. AIS data (e.g., vessel location, course and speed) collected by NAIS will help form an overarching view of maritime traffic within or near U.S. and territorial waters.

Armed with this view of our nation's waters, NAIS will complement other surveillance and intelligence systems; thus greatly aiding operational decision-makers in responding to safety and security risks. NAIS information will be provided to the Maritime Common Operational Picture (COP) and the Marine Information for Safety and Law Enforcement (MISLE) system. It will also be shared, along with correlated data and intelligence as appropriate, with sister DHS components, other Federal agencies and local authorities. Coast Guard command center personnel will be able to transmit AIS messages (e.g., text messages) to individual vessels or multiple vessels in defined geographic areas and perform other functions designed into the international AIS standard. Furthermore, users will have access to archived vessel movement data to investigate maritime incidents, analyze

risks and improve vessel traffic patterns. The NAIS project is being implemented over three phases or increments. The first increment is designed to provide AIS receive only coverage within 55 critical ports and 9 coastal areas by October 1, 2007. Increment 2 will build on this capability by providing seamless shore-based AIS receive coverage out to 50 nautical miles and AIS transmit capability out to 24 nautical miles along the entire coastline of the U.S. and its territories. The third increment will extend AIS receive coverage out to 2,000 nautical miles by the combined use of satellite communications and VHF services on offshore platforms and deep ocean buoys. Full operational capability of Increments 2 and 3 is scheduled to be delivered by the end of fiscal year 2013.
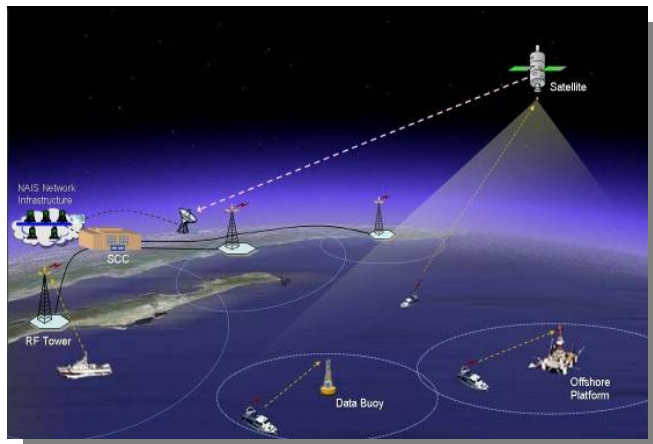
Project Status

The project has been in development for nearly four years and in January 2007 received DHS approval to proceed to full production for Increment 1 and to award initial capability demonstration contracts for Increments 2 and 3. Having achieved Initial Operational Capability in December 2006, we are well into NAIS Increment 1 (NAIS I-1). The project team is busy completing site surveys for the final few sites and is simultaneously installing receivers at approved sites. The project team is made up of members from the NAIS Project Office in the Headquarters Office of Acquisition, Headquarters Office of

Maritime Domain Awareness (CG-522), Research and Development (R&D) Center, Operations Systems Center (OSC), Command and Control Engineering Center (C2CEN), Navigation Center (NAVCEN), as well as the Department of Transportation - Volpe Transportation Systems Center and the U.S. Naval Sea Logistics Center (NAVSEALOGCEN). NAVSEALOGCEN was selected as the main systems integrator for NAIS I-1 and has brought on a number of contract support personnel to assist in the deployment efforts.

Increment 1 (I-1) Implementation

The mission of NAIS I-1 is to establish a reliable network of AIS receivers in the vicinity of the nation's critical ports and waterways as quickly and efficiently as possible. Overall acquisition risk, deployment time, and cost is being greatly minimized by using commercial-off-the-shelf and government-off-the-shelf products in addition to reusing existing infrastructure, including towers and other AIS-capable systems (e.g., the Ports and Waterways Safety System , Hawkeye, etc.)

Site Selection
In early 2006, an initial list of sites was compiled that provided coverage of the designated critical ports and coastal areas. Whenever possible, NAIS chose Coast Guard owned sites with existing towers. Based on interaction with our Project Sponsor, the Assistant Commandant for Policy and Planning, Commandant (CG-5), as well as with the areas, districts and sectors, this proposed list was refined to ensure that it represented the best receiver locations to provide required coverage.

Site Surveys
Teams from NAVSEALOGCEN visited selected sites and reported on their suitability for I-1 deployment. A Site Installation and Integration Plan (SIIP) was developed for each survey site unless the site appeared less desirable than expected or could not support an installation. For

sites that were eliminated after being site surveyed, an alternative site was researched and subsequently surveyed.

Site Approval

When finished, a SIIP developed by NAVSEALOGCEN is submitted to G-AIS. The Project Office reviews the SIIP and determines whether the plan is appropriate, clear, correct, and cost-effective. If errors or questions are sited, a request for revision and/or clarification is made. When the SIIP is approved by the Project Office, the Civil Engineering Unit (CEU) is tasked with reviewing the SIIP. A Professional Engineer at the CEU reviews the plan for feasibility and correctness. Feedback and/or approval are given to the Project Office to proceed with the site installation.

I-1 Initial Operational Capability (IOC)

Three sites in Sector Baltimore were the first to be installed and were used to demonstrate the Initial Operational Capability of NAIS. With the help of R&D Center, site coverage was tested by collecting and analyzing data from an AIS-equipped test vessel as it navigated the Chesapeake Bay. The sites indeed received AIS signals and the information was transferred to the data processing subsystem for archiving and further distribution.

Site Installations

Site installations are being performed by NAVSEALOGCEN and their contractors. Site installations are on schedule and moving along at a measured pace. The map on the next page lists I-1 installation status as of June 8 2007.

In addition to NAVSEALOGCEN, I-1 site installations are being supported by R&D Center, OSC, NAVCEN, and C2CEN. R&D Center confirms connectivity and provides the initial technical support for the NAIS equipment installed at each site. Additionally, R&D Center has provided much of the software that is critical to the I-1 system. OSC provides the storage and processing of AIS data received from each site.

OSC also manages distribution of near real-time and archived AIS data. The NAVCEN, serving as the System Operation Center (SOC), is the 24/7 NAIS Help Desk that remotely monitors, manages, and trouble-shoots the NAIS network. Finally, C2CEN conducts the system operational verification test to ensure that all of the equipment was properly installed. C2CEN is also the designated System Support Activity, and as such, will track and approve changes to the NAIS site equipment and facilitate system updates during the sustainment phase.

The following photos are of Station Brunswick, GA, which was one of the first post-IOC units to have an NAIS I-1 installation.

Entrance to USCG Station Brunswick, GA

Station Brunswick, GA, tower with NAIS I-1 Antenna installed

NAIS I-1 Resource Guide

In the coming weeks, G-AIS will be distributing a resource guide to all Sectors to provide operators information on the NAIS system and the applications available to view AIS data. AIS data can then be used to enhance maritime domain awareness, improve navigation safety, reduce maritime security risks, and support investigations. This guide should be useful for anyone with a need to track vessels. It will describe the overall architecture of NAIS and the elements associated with the NAIS I-1. Increments 2 and 3 are yet to be completed and will not be described in detail. Finally, this document will give a brief description of various organizations and commands involved in NAIS which provide support functions and how the overall system is maintained.

ET2 Spalding from ESD Mayport examining the NAIS I-1 equipment installation

NAIS Education Corner

What is AIS?
AIS is a broadcast transponder system in which ships continually transmit their ID, position, course, speed and other data to all other nearby ships and shore authorities on a common Very High Frequency (VHF) radio channel. A selected ship's data is formatted and transmitted in a short data burst on a pair of dedicated VHF channels. When received on other ships, this AIS data is decoded and displayed for the officer of the watch, who can view AIS reports from all other AIS-equipped ships within range in graphic and text format. The AIS data may optionally be fed to computer-based graphical displays and to the ship's integrated navigation systems and radar plotting systems to provide AIS tags for radar targets.

In coastal waters, shore authorities may establish automated AIS stations to monitor the movement of vessels through the area. These stations may simply monitor AIS transmissions from passing ships, or may actively poll vessels via the AIS channels, requesting data such as identification, destination, ETA, type of cargo and other information. Coastal stations can also use the AIS channels for shore-to-ship transmissions to send information on tides, notices to Mariners and local weather forecasts. Multiple coastal AIS stations and repeaters may be tied together into Wide Area Networks (WAN) for extended coverage.

AIS transponders comply with international communications standards developed jointly by the International Maritime Organization (IMO), International Telecommunications Union (ITU) and International Electrotechnical Commission (IEC). AIS equipment must meet the provisions of all three documents.

AIS is already required equipment on all ships of 300 gross tonnage or more engaged in international voyages, all cargo ships of 500 gross tonnage and on all passenger ships regardless of size. In addition, many private vessels already use AIS technology and it is expected that the number of users and applications will grow. NAIS provides the USCG the ability to receive AIS data from ships and other AIS users and use the message data, along with other data, to

improve Maritime Domain Awareness, coastal security and the USCG's capability to respond to distress calls and other maritime emergency situations.

Additional information on AIS can be found at the USCG Navigation Center's website, http://www.navcen.uscg.gov/enav/ais/

Contact Us

We hope you enjoyed this first issue and found the information we provided useful. We welcome your suggestions to help keep this newsletter both timely and valuable. Please send your comments or suggestions to the NAIS Project Office, by e-mail at NAIS@uscg.mil or call 202-475-3149. Also, please feel free to visit our website at www.uscg.mil/hq/g-a/ais for more resources and information.
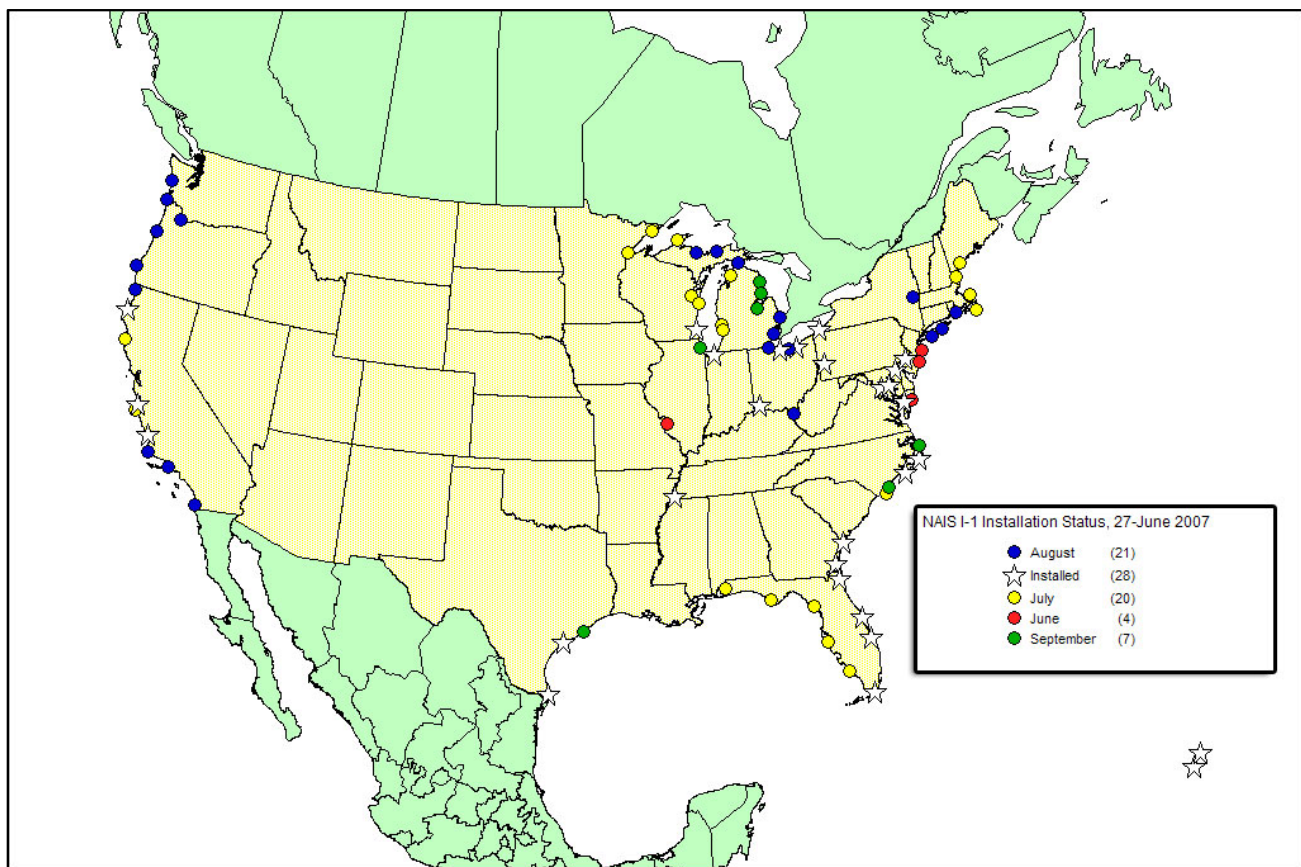
Status of I-1 Deployment as of 27 June 2007