Nationwide Automatic Identification System (NAIS) Overview

CG-939 | Mr. E. G. Lockhart
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### Nationwide Automatic Identification System (NAIS) Overview

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Agenda

Concept of Operations

Acquisition Strategy

Architecture

Timeline

Project Status
• Increment 1
• Increment 2
• Increment 3

Summary

NAIS Points of Contact
NAIS Project Overview

Concept of Operations

• Automatic reception of AIS messages from AIS-equipped vessels out to 2000 nm
• Transmission of AIS messages out to 24 nm from shore
• Correlation with other database systems for intelligence and operational decision makers
• Shared with others & displayed on a Common Operational Picture

Incremental Acquisition Strategy

• Increment 1 – “Receive only” in 55 critical ports and 9 coastal areas
• Increment 2 – Nationwide 50 nm receive and 24 nm transmit
• Increment 3 – Extend receive out to 2000 nm
NAIS Architecture

WAN & Diverse Remote Site Connectivity

NAIS may support changes to these systems to meet NAIS requirements

NAIS Scope

GCGS*, C2PC*, CG-C2*, SCCS* (C^n Systems including Common Operational Picture)

Intelligence Community Systems

Foreign Gov’t. AIS Systems

Web-based Applications (Port Partners)

MAGNET/JMIE

GALE Lite

SANS

Ship Arrival Notification Centers

PAWSS/CG-VTS

Ports Waterways Safety System/ CG - Vessel Traffic Services

MISLE

Maritime Information Safety & Law Enforcement

VHF Data Link

Commercial Vessels

Government Vessels

Recreational Vessels

Cutters and Deepwater Assets

Aids to Navigation

SAR Aircraft

LAN

Rx

Rx/Tx

Rx/Tx

Rx
NAIS Project Timeline

Incremental Acquisition

• Increment 1 – In Sustainment
  - Initial Operational Capability (IOC) – 31 Dec 2006
  - Full Operational Capability (FOC) – 30 Sep 2007

• Increment 2 – In Source Selection
  - Contract Award – Q4 FY 08
  - IOC – Q4 FY10
  - FOC – Q4 FY16

• Increment 3 – Currently In Concept Development
  - Assess prototype data feed performance and address technical issues
  - Refine acquisition strategy and performance requirements
  - Expecting contract for AIS data services over required areas
Increment 1 Conceptual View
Increment 1 Predicted Coverage

Blue – New Sites  Buff – Legacy/Contract/Partner Sites
Increment 1 Received Tracks - Pacific
Increment 1 Received Tracks - Alaska
Increment 2 Conceptual View

Nationwide AIS Operational View 1
Increment 2 - Transmit + Receive Nationwide

NAIS provides data link for asset tracking and information exchange

Legend of Connectivity
- Current State
- NAIS INC 1
- NAIS INC 2

Coverage gaps filled by INC 2

Coastal Coverage

NAIS Increment 1
- Critical Port Coverage
- Critical Coastal Coverage

NAIS Increment 2
- Nationwide Coastal Coverage

Shipboard AIS used on AIS-enabled vessels for navigation priority

Enrolled AIS used for Blue Force Tracking

Network Node
- Manages the Local Tactical Picture
- Provides direct feed of AIS data

Sector Command Center
- Provides direct feed of AIS data

Navigation Center
- NAIS Management & Monitoring
- NAIS Management & Monitoring

Operations Systems Center
- NAIS Storage & Dissemination

Maritime Intelligence Fusion Centers & other Users of NAIS data

Provides net-centric connectivity across domains

Current Coverage in VTS Ports and at Prototype Sites

CGSN/OneNet/Internet, and other networks or portals (e.g., COP)
Increment 2 Status

Increment 2 Procurement

- Increment 2 divided into two phases
  - Phase 1 – “Core” functionality: AIS Transceiver Base Stations in 3 Sectors, Enterprise Data Center, System Operations Center, and Data Network
  - Phase 2 – Build-out of remaining 32 Sectors
- Phase 1 Request for Proposal Released December 2007
- Proposals Received March 2008
  - Source selection in process
  - Anticipate award by 30 September 2008
Increment 3 Conceptual View
Increment 3 Requirements / Solutions

• Requirements
  – Provide offshore receive coverage 50 nm out to 2000 nm
  – Update vessel tracks 50 – 300 nm every 2 hrs
  – Update vessel tracks 300 – 2000 nm every 4 hrs

• Possible Solutions
  – Offshore buoys – NOAA weather buoys
  – Offshore platforms – oil rig platforms
  – Satellites
  – Blimps / Aerostats
  – Unmanned Aerial Vehicles (UAVs)
Increment 3 Offshore Prototype Status

Increment 3 Prototpyes

• NOAA Weather Buoys
  – Low-power package, store-and-forward via Iridium satellites
  – Four buoys deployed to date
  – Equipment issues (broken antennas)
  – Funding provided to repair and operate initial four through FY 09

• Offshore Oil Platforms
  – Four sites initially equipped with AIS base stations / receivers
  – One site destroyed by Hurricane Katrina
  – Three sites continue to feed NAIS via Vessel Traffic Systems (VTSs)
Increment 3 Satellite Prototype Status

Orbcomm Satellites

• Launched 6 Satellites 19 June 2008
  - Five AIS-equipped Orbcomm Quick Launch (QL) satellites
  - One AIS-equipped Concept Demonstration Satellite (CDS)
• CG receives 1 yr of CDS data (renewable), 90 days of QL data
• Limited testing began 29 June 2008
  - Approximately 270,000 messages being received daily
  - Tracking 16,000 individual vessels
  - Initial vessel track coverage very promising
  - Data flow to CG initiated August 2008
  - Status of data analysis results to date will be provided in tomorrow’s session
Initial ORBCOMM Tracks – North America
AIS Satellite Challenges

Technical

• Receiver saturation (VDL loading)
• Timeslot collisions / message de-confliction
• Adjacent channel interference
• Downlink bandwidth requirements
• Overpopulation of transponders when Class B’s are fielded

Political

• Tracking of vessels outside US
• Spectrum management of adjacent and AIS channels
Summary

NAIS Status

• Increment 1 - Operational
• Increment 2 – Phase 1 ready for contract award
• Increment 3 – Concept Demonstration Payload and Prototypes deployed, data validation and assessment is ongoing
NAIS Points of Contact

**NAIS Staff**

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**NAIS Link**

- Project Site:  http://www.uscg.mil/nais/
Questions?